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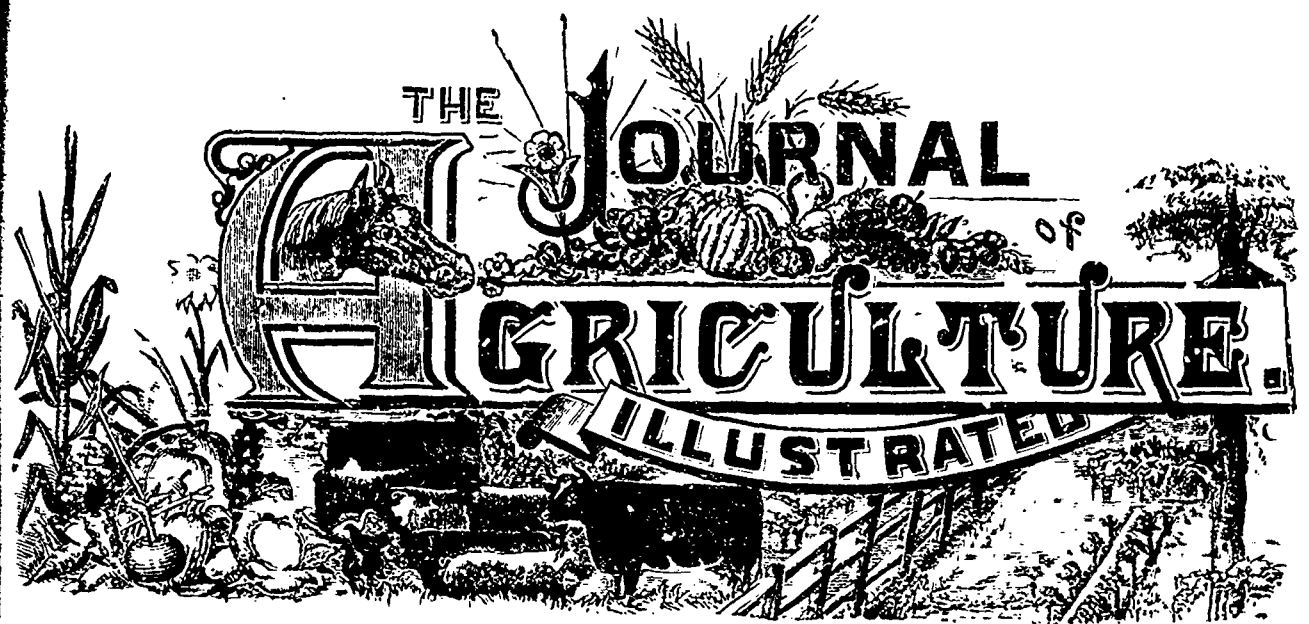
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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, No. 4 Lincoln Avenue, Dorchester Street West, Montreal—or to Ed. A. Barnard, Director of the *Journals of Agriculture, &c., Quebec.*

OFFICIAL PART.

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SAINFOIN.

The following article is from the pen of M. H. Nagant, the editor of the French edition of the Journal.

Our readers will perhaps remember that last year—see the July number of the *Journal d'agriculture*, 1890—we published an engraving of a stalk of sainfoin. We stated that experiments on the cultivation of this fodder-crop (then unknown in Canada) were being pursued, at Lachine, by Mr. Jenner Fust, and that we would not fail to advert to the results obtained as soon as we obtained the necessary information.

The experiments were begun in 1889, in the spring of

which year, Mr. Jenner Fust sowed (1) with sainfoin a small plot of land on the Maple-wood-farm, belonging to the Messrs. Dawes, of Lachine. At first, the appearance of the crop was not encouraging; the seed came up badly; the plot was in bad order; the land was very uneven, full of hollows which held water, and the winter of 1889-90 was nothing but a succession of thaws, frosts, and rain; consequently, when the spring of 1890 arrived, the sainfoin had but a poor appearance. But one of the characteristics of this plant is its power of putting forth fresh shoots, in which it is only exceeded by couch-grass. So, when this spring—1891—arrived, the land was well furnished with sainfoin, and, even in the spots where the rain and frost had apparently destroyed the plant, it had shot forth again and looked very promising.

But now comes the most marvellous result of this crop:

Close to the sainfoin-plot, Mr. Dawes had sown, common red-clover (*trifolium pratense*) with the barley-crop, after a heavily manured root-crop. (2) Well! this clover was only 5 inches high when the sainfoin had already attained a height of 17 inches and was coming into bloom. In fact, the sainfoin was ready to cut for hay on the 10th of last June, in spite of a month of May so cold and so rainless as was the last, and in spite of the hill-side on which it grew being as dry as a desert-sand.

A few days ago, Mr. Jenner Fust sent to the Department of Agriculture and Colonisation, at Quebec, a sample of this

(1) The plot was about 300 yards long by ten yards wide. The two sorts of clover afterwards mentioned enclosed the sainfoin-plot between them.

A. R. J. F.

(2) Any one who knows the Lachine farms of the Messrs. Dawes will know what a "heavily manured" crop on their land means!

A. R. J. F.

sainfoin, accompanied by a sheaf of common red-clover and another of perennial red-clover—cow grass—(*t. pratense perenne*). These three samples had been grown on exactly the same soil, quite close together. We had an opportunity of seeing and comparing them: we saw with wonder how superior the sainfoin was to the other two fodder-crops. The sample was magnificent, and showed a vegetative power perfectly extraordinary. It is twice the height of the clovers, and, other things being equal, weighs ten times as much as the same clovers grown on the same ground; besides, it possesses the advantage of being fit to cut at least three weeks earlier.

We are now, then, in possession of a new fodder crop, extremely productive, and especially valuable in seasons of drought. We congratulate Mr. Jenner Fust on having so thoroughly succeeded in endowing Canada with so useful a plant.

H. NAGANT.

(From the French.)

DE OMNIBUS REBUS.

Value of farmyard dung.—Monsieur Ville, in his valuable work on Chemical Manures, being desirous of making the cost of farmyard dung as high as possible, tries to prove that, whereas M. Boussingault set the cost of his at \$1.00 (4s. 2d. stg.), it in reality amounted to \$2.85! This he does by charging the fodder, roots, &c., at market—instead of at consuming—prices.

On the other hand, Mr. Brown, of the Agricultural college, Guelph, being anxious to prove that the farm in connection with that establishment was a paying concern, tried to show that the dung made there was worth \$2.50!

Now, surely if one thing is clearer than another, it is that, if the raw material is to be charged at market-price, the finished article must also be so charged; i. e., if roots and fodder are to be charged at what they will sell for, so must the dung be charged at what it can be bought for. No farmer near Montreal will deny that dung can be had for, at most, \$2.00 per annum for each horse kept in the large stables, the C. P. R. &c.; allowing each horse to make only 8 tons of manure a year, this will bring the cost to 25 cents a ton; which, therefore, is the value of a ton of horse-manure: q. e. d.

At Sorel, the price of dung is 10 cents a load. According to my experience, 3 Sorel one-horse loads are about a ton when ready for the land; therefore, the value of a ton of dung there is thirty cents.

Where, then, is the wealthy place at which dung will sell for \$2.50 a ton. Not in London certainly, where it only fetches one dollar; not in Paris, for in that city the value is also 5 francs, or one dollar, according to the *Journal d'agriculture pratique* of July 9th, 1891.

The fact is, that the fall in the value of manurial constituents in fertilisers has been so great since M. Ville's book was published—1878—that all his arguments founded on the then prices are fallacious. For, taking present prices as our guide: Nitrogen at .12 cents.

Ph. acid " .05 "
Potash " .06 "

and allowing that Ville's statement of the constituents of 40 tons of farmyard dung is correct, viz.:

Nitrogen..... 358 lbs.
Ph. acid..... 165 "
Potash..... 330 "

we find that the value of a gross ton—2240 lbs.—of dung is \$1.77, according to Ville's formula, which, of course, relates

to carefully preserved manure kept under cover and not to an ordinary farmer's mixen.

Consider, too, the waste of manurial constituents in the dung. Ville puts the loss of nitrogen in it alone as one-third, or more, on account of the decomposition which the manure must first undergo before it can exercise its action.

In reference to this subject—farmyard dung—I observe that Messrs. Blackwood and Eugène Casgrain, the Judges of the Provincial Competition of Agricultural Merit, 1890, say in their report: M. Vezina's system is very defective..... he top-dresses, during the summer, part of his pasture, the first year, and the remainder, the second year, but the manure, so spread, and burnt up by the sun, loses a great part of its value." With all due deference to these gentlemen, I hold that when manure has been properly kept and fermented, the ammonia, the only volatile salt present, is fixed and no loss can occur. Our meadows in England are all permanent grass, hundreds of years old, many of them, and they can be manured in no other way than by top-dressing. (1) M. Vezina is, of course, quite wrong in using manure in this way, as his farm is all heavy soil, and the mechanical effect of ploughing the dung in would be of great use to such land. But there is no waste, or hardly any worth speaking of, in top-dressing.

Grain-crops.—Too many grain-crops in succession? Yes, I should think so! One of the competitors in the Provincial Competition "sows grain after grain, three and even four years running! Not a lazy man, by any means, for the Judges say "he works very hard"; but what a course of cropping:

Meadow.....	3.75 arpents.
Pasture.....	19.00 "
Wheat.....	5.50 "
Oats.....	9.50 "
Pease and oats.....	23.00 "
Barley.....	5.00 "
Corn.....	— .33 1/3 "
Potatoes.....	— .33 1/3 "
Tobacco.....	— .33 1/3 "
	66.75 "

And this on land that the Judges define as: "very rich and worthy of the highest degree of cultivation!" Now, I know the land well, and it is as good as can be. It would grow horse-beans famously, and if they were drilled in rows 24 to 27 inches apart and horse-hoed, the crop, with a little dung and plaster, should be at least 30 bushels an acre. Where pease grow too much haulm and are slow to ripen, the tick bean, or pigeon-bean should take their place. Nothing better for horses in hard-work during spring, autumn and winter, one bushel of beans being equal to two of oats. Then, with a few acres of potatoes, roots, corn, and tobacco—all hoed crops, the land would be in a fit state to yield a crop of spring-grain, sown down with grass-seeds, to be followed after four or five years of mowing and grazing, by a crop of oats, or oats and pease.

(2) it is rare that such farmers as spread their manure in the summer months on their pastures take much pains in the previous preparation of such manure. Then, our droughts and heat are very different from English weather, in summer, where rain is nearly of daily occurrence. We are strongly impressed with the loss of ammonia from such spreadings as MM. Blackwood and Casgrain complain of and would rather spread manure on our meadows than our pastures, selecting wet weather for the operation. The grass will then absorb at once all escaping ammonia and nothing can thus be lost. Then again, what is the effect of a prolonged season of exceptional heat, such as we have in July, on the soluble parts of manure? Will it not make them insoluble and, therefore, less valuable?

E. A. BARNARD.

Thus, the rotation would be :

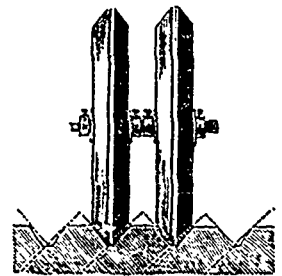
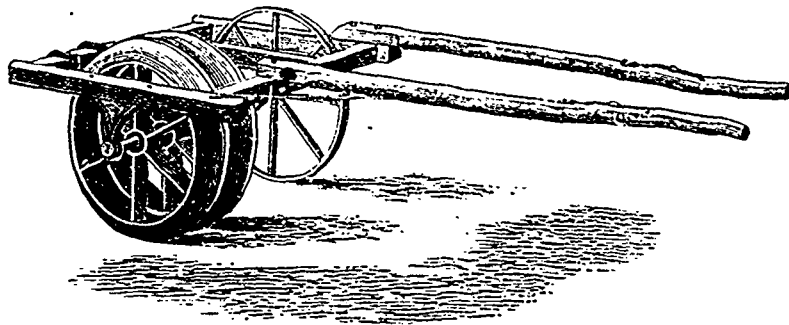
Hood crops.....	8½	arpents.
Grain	8½	“
Grass 5 yrs.....	41½	“
Oats, or oats and peas.....	8½	“
	66½	“

The grass limb of the rotation could be lengthened out as long as desired, but with so much *ox-eyed daisy* about, I think even five years too long.

I should like to try a rotation of this kind on some of the fine, heavy soil of Vaudreuil.

I do not think the Judges need apologise for finding fault with some of the farms entered for competition. They were evidently very badly managed.

Effects of frost on wheat.—M. Piot Fayet, farmer in the Department of Marne, France, in which district the fall wheat suffered greatly by the frost of the winter of 1890-91, mentions, in the *Journal d'agriculture pratique*, that certain parts of his fields escaped with little or no damage, and those parts were clearly such as had been submitted to extra pressure; for instance :



THE PRESSER-ROLLER.

“In some spots, where the land was heavily pressed, and where no farmyard manure was used, the wheat escaped injury.” Mr. Stephens, in his *Book of Farm*, “especially recommends that the dung on the fallow for wheat should be ploughed in a month before seed-time and the land allowed to solidify.” I can conceive of nothing so likely to make wheat *root-fallen*, as the interring of a lot of strawy dung immediately before sowing.

Again : “On the headlands, on account of the treading of the horses in the turns, the wheat resisted the efforts of the frost to draw it out; and so of the wheat sown with the drill; the row next the wheel, over which the wheel passed on its return, was not injured, while in all the other rows, the wheat was completely frozen-out.

In fact, wherever there was a solid piece of land, and wherever there had been no dung ploughed in recently, there the wheat stood the frost. But the greater the quantity of dung interred, and the nearer seedtime it was applied, the worse was the effect of the frost on the wheat. “This, I must attribute to the fact that the dung keeping the land more ‘hovery’ (*Canticé* for light), the frost penetrated more rapidly and deeper.”

“Thus, I have a small piece of about ½ of an acre, that had only nitrogenated phosphate as manure, in which the wheat is very fine, while the next piece, which was dunged, had to be resown.”

All this agrees perfectly with the system of growing fall-wheat I have so often recommended in this periodical : bury

the seed deep, and do not meddle with the land until the following spring. We employ, in England, a machine for this purpose, when sowing wheat on land where the plant is likely to be thrown out, and this is simply two cast-iron wheels, about 4 cwt. each, bevelled off on the periphery, and attached to a pair of shafts, and a third wheel, a plain carriage-wheel, rather higher than the other two. This “presser” follows in the work of two ploughs; the horse in the furrow, the third wheel running on the unploughed land, and the two heavy wheels pressing down the earth, weeds, &c., into the bottom of the last two furrows made by the ploughs. I have seen beautiful work done with this machine; the ploughs, being fitted with small knives before the coulters, pared off the edge of the furrows and cast the grass and rubbish to the bottom, while the presser following, made a perfect groove of from 2½ to 3½ inches deep, the bottom of the furrow being thoroughly firmed and affording the most resistant root-medium to the plant.

On this preparation, the wheat may be sown broadcast, or as is sometimes done, a small drill-apparatus be fixed on behind, worked by a chain attached to the axle, and the seed dropped immediately behind the presser, in the furrows, and covered by a tine of the harrows. The engraving annexed will convey a perfect idea of the implement.

You see at once, my readers, that a roller will not do to consolidate wheat-sown lands in the fall. A smooth surface, like that given by a smooth roller is almost certain to form a crust after the spring-rains.

I want to know this : if Mr. James Drummond, of Petite Côte, can grow fall wheat every year; if the Messrs. Campbell, of St. Hilaire, can grow fall wheat every year; why should not every farmer in the district of Montreal, who has a well drained—naturally or artificially—piece of land, do the same?

The secret is easily learnt : bury the seed deep, and let the land alone till spring. As the great prize winning farmer at Champagne, Seine et Oise, says : “When sowing, we do not aim at pulverising the soil by repeated harrowings, &c; we prefer leaving what in England is called a good round *cud* on the ground, to prevent the soil from being beaten down by the rains, and when March arrives, we finish the preparation of the field with the harrow and the roller.” Precisely our England system by which we grow an average crop, on all sorts of land good and bad, light and heavy, of 30 imperial bushels to the acre!

A. R. J. F.

Farms and farming.

Tuesday July 7th being a very fine day, I started by the C. P. R. to pay a long promised visit to my friend Mr. Charles Tylee at Ste. Rose. A finer exposure I hardly ever saw, the

main part of the little farm—25 acres—slopes towards the south, and is sheltered on the north-side by a sufficiently lofty hill.

The idea that dominated the laying out of the farm was to make it a farm-garden, for the supplying of pease, fruit, &c., to the market of Montreal, and very well Mr. Tylee has set his idea into operation. A few beds of strawberries, some of raspberries, were in full bearing. The raspberries I thought rather too crowded, but I am told there were 1400 baskets picked off the space of $\frac{1}{2}$ an acre so I think they must be profitable.

Mr. Tylee keeps his cows and horses—3 of each—in the stables throughout the year, feeding, in winter, on ensilage, made from maize cut when the ear is glazed, and in summer with grass, clover, &c., a ration of bran with oats, when not too dear as that grain was this year, straw and a little hay. The cows seem to have been unfortunate, as they have not stood to the bull, but I was told that at the last churning, the yield of butter was at the rate of 1 lb. of butter to 20 lbs. of milk.

On this farm every thing that will make manure is carefully preserved. At the back door, by the kitchen, is a barrel on wheels to receive the slops, when full, it is taken to a covered shed and emptied on to a *micen* composed of all sorts of rubbish. As this excites a considerable amount of heat in the mass, I suppose all the seeds and root-weeds are destroyed.

The horses are good, big-framed, useful animals, but I fancied the stables were rather too confined for them in such hot weather. I prefer open yards, with a shed for shelter, for both cows and horses.

Mr. Tylee does a great deal of work in carting clay from one part of his farm to the sandy soil on the slope. He thinks it costs him nothing, as the boys who pick his fruit do this and other jobs in the morning before the strawberry beds are dry enough to enter upon.

Are one and a-half bushels of oats—Mr. Tylee's dose—enough to seed an arpent of land? I think not, nay, more, I am sure he would profit by doubling the quantity.

No melons, and the cucumbers in cold-frames were not in bloom even on July 7th! By the time they are marketable I fear they will not pay the cost of transit.

Mr. Tylee does not approve of ensilage clover. Why, he did not explain.

On the whole the farm is conducted in a workmanlike manner; not many weeds in the hay; what there are being chiefly wild chicory, ox-eyed daisy, and a plant called by the French-Canadian *gayot*, but I do not think that is the way to spell it. The rest of the farm is very clean.

Mr. James Drummond's farm, at Petite Côte, near Montreal, which I had not seen for ten years, is, as it used to be, a perfect model of advanced agriculture. The hay-crop was poorish, for the district of Montreal was almost utterly rainless up to July 15th, and the soil is a light, thirsty limestone. The grain looked flourishing, however, and the fall wheat was fit to cut on July 15th, the day on which I visited the farm. Roots were of course good, and the cultivation perfect. In fact, I do not see how anything could be better. Every inch of the land is made use of, the horses, when finishing the ploughing of a field, being put *a-trip*, so that not more than a couple of feet are left unploughed next the stone-fences.

The rotation pursued on the farm is, as the Judges remarked last year, adopted to the gradual and steady improvement of the land. But, in truth, no regular system need be pursued on a farm when, in addition to a very large stock of cattle, hundreds of loads of manure are annually drawn from Montreal: whatever pays best should be grown.

I need not expatiate on the value of Mr. Drummond's Ayrshires. They have swept the board of prizes at our exhibitions so often that they will now retire on their lands and will no more be shown. I was—shall I say *fortunate* enough?—to pick out the favourite young cow of the proprietor, and a beauty she is, but the whole herd in milk are models of what a milk seller's cows ought to be. Mr. Drummond prefers receiving autumn-dropped calves to those born in the spring, as he finds them cheaper to rear.

Last year, a piece of land in sugar beets yielded about ten tons to the acre, and paid fairly well; but, then, Mr. Drummond's men know how to single out roots economically from long practice. If we are going to grow these roots on a large scale in the province, it would not be a bad plan to send men who have learnt the art of singling, from Mr. Drummond or M. Séraphin Guévremont, about the French country to teach the farmers how to do it. A four-inch hoe would be about the right size, the hoe to be followed by two women or children to single the bunches left in *chopping out*.

One of the finest sights, agriculturally speaking, on this farm is ten acres of sweet corn for ensilage. Last year, the cobs were sold in Montreal market for \$50 an acre, and the stalks, leaves, &c., ensiled. M. Choquette, of the Experiment Station at St. Hyacinthe, analysed the silage and found it very superior to the average samples sent him. This must be profitable indeed! The silo—in the barn—contains nearly 90 tons of silage; i. e. $9 \times 18 \times 22 = 3564$ cubic feet.

Mr. William Evans, who accompanied me in the visit, is a devout believer in timothy-hay, wherein Mr. Drummond and I disagree with him entirely, we preferring clover-hay. I was glad to hear my opinion confirmed by such an experienced man. I tried to go a bet out of Mr. Evans, but he was too cautious, though he promised to be convinced by Wolff's analysis, if it agreed with my view: He is convinced now.

Hay	Albumi- noids.	Carbo- hydrates.	Fat.	Value per 100 lbs.
Red clover—digestible.	10.7	37.6	2.1	\$0.89
Timothy.	5.8	43.4	1.4	0.70

cravo, red-clover hay is worth $27\frac{1}{10}\%$ more than timothy hay.

A hundred pounds of timothy *grass*, in its green state, is of course more valuable than a hundred pounds of green clover, on account of the additional quantity of water— $10\frac{1}{10}\%$ —contained in the latter. But, clover-hay, cut when the majority of the blossoms are full out, is the finest hay in the world. Mr. Drummond tells me that this hay comes into the Montreal market in a much improved condition to the stuff—only stems and blossoms—that used to be sent there twenty years ago. I wish I could get a sample cut from an English stack of clover-hay sent over: it would surprise some of our people. The lower third of the stack cuts out as juicy as a plug of chewing-tobacco. I will try to get a sample in time for next year's exhibition.

Mr. Drummond's farm, especially the clever way in which water is led into large troughs, with valve taps, for the supply of the cattle, is so well described in the report of the Judges of the Dominion Competition, 1890, that I need say no more about it. The award was "88.45 points, a silver medal, and the Diploma of Distinguished merit," the number of marks being the highest awarded to any farmer in the province except M. Champagne, who received 91.30 points.

M. Séraphin Guévremont's farm, at Sorel, I visited in July, but as it is under consideration by the Judges of the P. C., I shall reserve what I have to say about it until they have given their decision.

A number of the farmers in the St. Hyacinthe and other districts have, it appears, injured themselves by exclusive devotion to the raising of hay. Their farms have consequently

degenerated, they are no longer able to keep cattle, and having no cattle have no manure. One of these farmers told the editor of the *Courrier de St-Hyacinthe* that he had long been of opinion that hay culture fertilised land instead of exhausting it, but he was now convinced of the contrary, and he gave illustrations of certain deteriorations on which he based his convictions. Another evil result was that so many farmers raising a single crop, the market was over stocked with it, and prices went down instead of advancing. Many of the farmers in the neighbourhood of St. Hyacinthe have come to the same conclusion. Last spring they began to modify their plans, diminishing the extent of their meadow land, keeping more animals and sowing vegetables. Undoubtedly in older Canada, as in the West, mixed farming is best. Too much dependence on one crop is a losing game in the end.

The above is an extract from the *Montreal Gazette* of August 3rd. It is surprising that a continued succession of hay-hops should so long have been thought beneficial to the soil. In England, it is not so. Our family-tenants in Gloucestershire are subject, in their leases, or rather agreements, to a fine of \$50.00, if they mow an acre of the pasture lands. The observations of the editor in the citation are very sensible.

Editor Jenner Fust of the *Montreal Journal of Agriculture*, quotes the eccentric Joaquin Miller as saying that "no English man knows how to ride, and that there never will be one who can ride," and adds a quotation from Sairey Gamp to the effect that this is "laying down the law pretty positive." So it is, Mr Jenner Fust, and you are quite right in stating it as "the common opinion in Europe that we Englishman are the best riders across country in the world." Mr Miller, notwithstanding his adopted pronomen, is probably of English descent, and therefore the only real question at issue between the American-bred and the English-bred John Bull is whether the horseman of the Plains, or the horseman of the hunting field, possesses the exclusive and only genuine art of horsemanship. Perhaps it may be as well for both to remember that there are usually a good many ways of doing the same thing. Who, for instance, can decide dogmatically whether the French or the Spanish are the best dancers? Each is probably best in his own way—and when they are entirely civilised they will both recognize the fact. We suspect that neither Brother Fust on a bucking broncho, nor Mr. Miller in an English fox-hunt, over a stiff country, would feel himself quite at home.

Always some goodnatured fun in Dr. Hoskins chaff. I do not know whether a "bucking broncho" is worse to sit than any other buck jumper, but I think, thirty years ago, either one if them would have found it difficult to get me off. A propos of this, it happened queerly enough that as I was reading one of Arch. Forbes' articles, Dr Hoskins *Vermont Watchman* was brought me by the post. In the sketch by the great War Correspondent on *Social Australia*, I ran up against the following queer passage:

As a dignitary, the Australian Bishop has no prestige. His diocese, (F. is speaking of Queensland) is about as large as England. He makes his progress through it on horseback, the news being found by the scattered settlers. At first, they used, in pure fun, to furnish him extensively with *buck-jumpers*, and he went in wait to see the catastrophe, but when they found that he sat a buck-jumper as if the animal symbolised the arch-fiend himself, they took him to their hearts.

The bishop in question was Dr Stanton, of Stanton, Yorkshire a member, of a very old fox-hunting family. He had nothing much to learn as to horse-flesh when he left England, and no doubt he sat his mounts all the more securely for being dressed in the episcopal knee breeches instead of trousers.

The travelling dairy.—Question—do you think it would pay me to grow ensilage for a cheap winter feed? I can grow from seven hundred and fifty to one thousand bushels of mangolds per acre and find them splendid feed.

Mr. Foyston—Is not corn more exhaustive on land than roots? I find that roots leave the land in better condition for grain than corn. I think I can grow a ton of roots as cheaply as a ton of ensilage.

Answer—Corn is not more exhaustive than roots if cut before it becomes mature. If the root-tops are ploughed in, roots will be less exhaustive. If you think you can grow roots as cheaply as corn, then roots may be as cheap for feed, but you require more hay to feed with roots than with ensilage.

Mr. Foyston—I planted corn in drills $3\frac{1}{2}$ feet apart and cultivated thoroughly, but I like roots better. I manure roots with 12 loads farmyard manure per acre, also apply wood ashes, and plough in the tops after the crop is taken off.

Mr. Boston.—I find that unripe corn gives sour ensilage, and mature corn sweet ensilage.

Roots vs. ensilage.—The above article, from the *Montreal Witness*, is instructive in one way, that it shows the men who are accustomed to growing roots are not inclined to give them up. I do not see, at all, that more hay is required to be given to cattle with roots than with silage.

Linseed.—Mr. Parker talks of giving cows 7 lbs. of flaxseed a day each! About three times as much as is usable. Mr. E. W. S. Stewart talks of English feeders giving 8 lbs. of cake a day to a fattening steer. the usual allowance, after the first month, given by the great Eastern-counties men, was a stone—14 lbs. a day! As $\frac{2}{3}$ of the linseed, when given whole, even if boiled, goes through the animal undigested, it is easy to see that our plan of *crushing* the flaxseed enables 2 lbs.—the usual ration, with 5 lbs. of bean-or pease-meal—to do almost as much work as 7 lbs. uncrushed. Linseed is in England invariably crushed between two equal-sized rollers—not ground—and I never heard of more than two pounds being given to a fattening beast, and one pound and a half to a cow, soaked in hot water and mixed with chaff and meal. To my mind there is nothing like it for butter-production, and I have used tons of both cake and seed.

How to Feed Flaxseed

EDS. COUNTRY GENTLEMAN.—I notice that "A. B. W." (p. 180), inquires how to feed flaxseed safely and profitably to pigs, calves and cows where proper mills are not at hand. We all know that grinding or making it into cake is the easiest way for the farmer to feed it but if you are to have its full benefit, there is nothing so good as boiling it gently for about half an hour, letting it stand until cold, but that requires a large copper, fire and attention. An easier and cheaper way (though not so good, is to get two tubs that will hold the quantity of liquor you require, put the seed in that you want to use for 24 hours, fill with cold water to the quantity you want, and let it soak for 24 hours or longer if it keeps sweet, with occasional stirring. While one tub is being used, the other will be soaking. It can be mixed with cut straw, hay or corn ensilage, and when your cows have once taken to it they will eat and relish almost any rough fodder you may put up and mix with it, or if they be at pasture and no fodder required, they will drink it and do equally well. It is too loosening for very young calves, unless they get some old milk with it. Pigs, after they are three months old, will do well on it.

I am surprised to see that most writers on flax or linseed or oilcake, as it may be, recommend such small quantities of it. I have experimented in dairy cows with it and almost every other known food, and for milk and butter and cheese I have found only one food that will equal it—English horse beans. Oats come next, then Indian corn meal, but it is not safe to give large quantities of corn meal without boiling or scalding it, whereas linseed or oilcake is perfectly harmless. An average dairy cow, with a fair constitution, will eat ten pounds of seed. I have known them to eat more for the first two months, but they will generally settle down to about seven pounds per day, which is a fair feed. Another curious thing to me is that bran should be recommended so much for milch cows when it is at nearly the price of flax or linseed. Any practical dairyman knows that if you are to force a large quantity of milk from a cow she must be fed on loose and opening stuffs, but why use bran when flaxseed answers the purposes better, and at the same time gives you a rich cream!—whereas bran, or even ground wheat with all the flour in, will give you a thin blue milk with scarcely my cream at all.

An easy test of its merits is to choose two cows of equal quality in their cream. This can be done by setting the two cows' milk separate for cream. You will know in 24 hours if they are both of like thickness and quality. Thus satisfied, feed one with oilcake or boiled linseed, the other with bran or even ground wheat (there is not much to choose between them as a butter producer) and you will find at the month's end that the one fed on oilcake will remind you of the old saying: "A mouse could run across her cream without getting in;" whereas that of the one fed on bran will be thin, and a slight puff with your mouth will blow it aside.

If your correspondent has plenty of cheap flaxseed, he need fear nothing in keeping up a good dairy if he will give his cows plenty of it.

Middlesex County, Mass.

JOHN PARKER.

Oilcake and Flaxseed for Cows.

I was pleased to see, on page 580, John Parker's remarks on "how to feed flaxseed." His view of the value of flaxseed as a food is not exaggerated. His feeding it, after soaking 24 hours in cold water, is a new method, and I wish he would state what quantity of flaxseed, thus soaked, he fed to each cow per day; and also whether he noticed the droppings carefully to see whether any passed undigested.

There can be no doubt that cows would soon learn to eat the flaxseed liquor, mixed with coarse fodder. I wish Mr. P. would also state whether, when his cows were fed upon 7 lbs. of flaxseed for a considerable time, it did not produce too great looseness, and also cause the butter produced to be very soft and oily.

2. I wish to consider Mr. P's views concerning the amount of oilcake and flaxseed which he thinks economical to be fed to a milch cow per day. The question is not how much an animal can consume of any given food, but how much can be economically and profitably fed. If a milch cow can consume, and remain healthy, 10 lbs. oilcake or 7 lbs. flaxseed per day, is it profitable to feed so much? Ten pounds cake costs at the lowest 13 cts. per day, and 7 lbs. flaxseed at \$1 per bushel costs 12.3 cts., while 4 lbs. malt sprouts, 4 lbs. corn meal, and 2 lbs. boiled flaxseed would cost 8.3 cts. and with prairie hay would make a good milk and butter ration.

To determine this question, we must also see whether a ration containing 7 lbs. of flaxseed would be properly balanced, and we will take as nature's best balanced ration, pasture grass, which is certainly a model ration for milk. It would require 100 lbs. of pasture grass for a day's ration, because it

is 80 per cent. water. This would contain—albuminoids, 2.50; carbohydrates, 10.90, fat, 0.60. Suppose now we make a ration 40 lbs. corn ensilage and 7 lbs. of flaxseed; this would have—albuminoids, 1.68; carbohydrates, 6.12, fat, 2.66. This contains $\frac{1}{3}$ less albuminoids, 4.10 less carbohydrates, but $4\frac{1}{2}$ times as much fat—and if P. regards an excess of fat as important, then it is difficult to see how he could find English horse-beans to equal flaxseed, when this bean is deficient in fat and contains only 1.17 as much fat as flaxseed. There can be no doubt the fat in 7 lbs. of flaxseed is very excessive as a day's ration for a milch cow. English feeders have been in the habit of giving 8 lbs. of oil cake to a fattening steer, when the steer could not digest and assimilate so much. But they fed to make rich manure, and, in this view, it may be justified, but the American feeder has not yet reached that point.—E. W. S. (*Country Gentleman.*)

OUR ENGRAVINGS.

Arab Stallion.—See p. 136.

Press roller.—See p. 131.

Southdown ram.—See p. 137.

INSPECTION.

INSPECTOR PAINCHAUD.

TO THE HON. THE COMMISSIONER OF
AGRICULTURE AND COLONISATION, QUEBEC.

Sir,—I have the honour to submit to you my report, for 1890, as inspector of creameries and cheese-factories.

I began my inspections on June 18th, and finished 26th September. I visited 102 cheese-factories, 42 creameries, and 8 combined factories: in all, 152 establishments.

I find that rather less progress has been made in the process of manufacture this year than in the preceding years, many makers are negligent and follow the old routine, though they could do better. As for those who know nothing, or hardly anything, about the business, I advise them to go to school.

As in my former reports of the last few years, I will mention the defects that I found in my visits as regards the manufacture of butter and cheese. This is going repeatedly over and over the same thing, but, after all, this is the purpose of the inspectors' reports.

The construction of the factories is slowly improving; still remain many built like barns, and the cheese-room, in which it is of the greatest importance to retain an equable temperature for the ripening of the cheese, is the part chiefly in fault. With precautions, it is possible to make good cheese in an inferior building, but it is utterly impossible to preserve it in good order in a room that varies with every change of temperature out of doors. There are still many factories with bad fittings, and here I must observe that in several places there are far too many factories. In places where one good one would suffice, there are three or four, all acting in opposition, and, generally speaking, turning out by no means the best goods. These small factories are usually badly supplied with the utensils and conveniences necessary to furnish the best article of cheese. The work in them is done infamously (*à la diable*), and it is in such factories that second-class makers are generally to be found. But this multiplication of opposing factories is often the fault of the patrons, who, fearing lest the proprietor of a factory should make money, although he may give them perfect satisfaction, say among themselves: "he's going to get too rich, we must start an

opposition ;" and immediately, a factory is built which often returns less profit to the patrons, and, almost invariably, causes a deficit to the proprietors. As a general rule, in order that a factory be carried on in a proper manner and give entire satisfaction to the patrons, it must pay a profit; otherwise it would be better to "shut up shop."

Before speaking about the chief faults in the process of manufacture, I will say a word on the care to be bestowed on the milk at the patron's house. During my inspections, I have paid much attention to this important point, and after having closely examined the thing, I find that the milk is, in general, very carelessly treated.

First of all, the cans, full of whey, are allowed to remain part of the day exposed to the sun. How often have I seen them standing late in the afternoon, on the little platforms along the road? And after the can has been thus tainted, it is sometimes only washed with cold water; a treatment of which I have, accidentally, been twice a witness; and if it is washed with hot water, it is often only rinsed. What sort of milk can be expected to be received at the factory in such carelessly treated vessels, especially if this milk has not been well cooled and aerated, particularly the latter; and it is in this point that the patrons generally sin. As to the cooling, that is usually more or less sufficiently attended to, but the stirring and the aeration it is almost impossible to get done.

But it must be allowed that in past times the patrons have been so used to take badly cared for milk to the factory, that, nowadays, they fancy the advice given them by the maker as to the care of the milk is nothing but a caprice of his own.

Makers must redouble the precaution and severity they exercise in receiving the milk, and strive to persuade their patrons that they are hasarding their own interests in treating their milk with so little care; they must especially make them understand that bad milk yields less cheese than good, and that of inferior quality. Let us follow the example of our neighbours the cheese-makers of Ontario, of whom I have met several during my summer journeys. They are all very careful about the reception of the milk.

Another point in the reception of the milk, and one about which very few concern themselves, regards its adulteration. Out of the 152 factories visited, there are not certainly 12 where this is carefully attended to. It is true that it would be a difficult task for many makers, as they do not know how to test milk. I consider this to be a very important point, for to neglect it is neither more nor less than to encourage theft, and, in some degree to take part in it, for the maker is regarded justly as the guardian of the interests of all the patrons. If some of them enrich themselves at the expense of the others, owing to the negligence of the maker in not exercising proper vigilance, he must bear his share of the responsibility. We, the inspectors, having often occasion to test the milk in divers places, are in a position to say that more frauds are committed in this matter than is usually supposed, either by skimming or by adding water.

One day, in the month of August, I was requested to examine the milk of all the patrons of a creamery; the maker, though otherwise pretty well skilled in his work, knew not how to test milk. He said to me: "It takes 25 to 26 pounds of milk to make a pound of butter; I do not understand how that can be; I think my patrons put water to their milk;" he had learned, from another quarter, that some of them did so; and, indeed, after having examined the milk, I found signs of the addition of water in a good many samples. My inspection having frightened the people, it produced a very good effect, for the next day, the quantity of milk had diminished and the percentage of butter had increased. There are many places like the above, where frauds are carried out on a scale more or less great. Patrons who are dis-

posed to be dishonest rapidly gain assurance when they are not watched.

Among the faults in the manufacture I will only mention the principal and most general. First as to the temperature. As a general rule, makers do not sufficiently attend to the temperature during the whole time occupied in making, from the adding of the rennet to the moulding of the curd. The temperature is decidedly one of the most important points in the manufacture; it is the temperature that governs almost entirely the whole work, and, in a measure, on it depends the good or bad results of the manufactured article. For the adding of the rennet to the milk, the heat must be varied according to the season and the staleness (*degré d'avancement*) of the milk. As to the heating (*cuisson*), it only varies in the case of very stale milk; this may be heated one or two degrees less high than usual—98° F. When the curd remains rather longer than usual in the whey, especially when the vat is not very full, we must not forget to warm it up again as much as it requires to keep it always at the same temperature. It is especially after the drawing off of the whey, while the curd is fermenting in the vat, that it must be looked after, in order to keep the heat always at the same degree, that the fermentation may go on well: in proportion to the cooling is the delay in the fermentation.

To keep the curd warm, a lid that covers the whole vat is required: this is often made too small, so that a space is left open all round the vat, and, made in this way, it is of little use.

One very great, and common error is that the curd is not allowed to gain enough acidity before the whey is drawn off. The curd applied to a hot iron must give distinct and very numerous threads of from $\frac{1}{2}$ a line to a line in length. If whey is drawn off in too sweet a condition, the cheese will be invariably soft and open.

Many, too, commit the fault of grinding the curd too soon; it is not allowed to ferment long enough, because the maker wants to have finished his work. The consequence of this hurry is that the cheese has not the desired firmness.

In concluding these remarks on the making of cheese, I will recommend the makers to attend more carefully to the pressing of the cheese, to tighten the press very often during the first few hours, to make the pieces consolidate well together; unless this is done, the cheese will not be firm. I also advise them to make their cheeses more uniform in size, and to make them as large as possible that the boxes may be well filled up.

What I said about the care to be taken in the reception of the milk is as important at the creamery as at the cheese-factory, but in spite of that, it is at the creameries that this is the least attended to. Generally speaking, the whole of the milk is accepted, so long as it is not too sour, and that it will go thorough the separator without curdling. It must be remembered that bad milk, stale or in a state of decomposition, will yield less butter than good milk: it is less easily skimmed. Bad milk, of whatever kind, should not be accepted at the creamery any more than at the cheese-factory: it affects the quality of the butter as much as that of the cheese.

One improvement has been this year made in our creameries, at least in those I have visited: the number of ice-houses has increased. They are not all well made or large enough; still, there is a good beginning made.

As to the making of the butter itself, the treatment of the cream, the churning, pressing, &c., the same routine is almost always followed. The rarity of good butter-makers sufficiently explains this. In looking over the list of the creameries I visited this season, I can only find the names of 15 men whom I can recommend as good makers; this easily accounts for our butter not being always of good quality.

Rare enough are the creameries in which you will see the cream sufficiently cooled after skimming, and preserved and treated on the best principles up to the time of churning. As to the cooling, it is not always the maker's fault; when he has not the water and ice at hand, it is not very possible to cool the cream to a low temperature immediately after skimming and thereby get a firm sound-keeping butter. Stirring the cream often is of importance if it is desired to make a butter with a fine aroma; besides, cream that has been frequently stirred (1) will yield more butter than cream that has been less frequently agitated.

Churning is always done at too high a temperature in hot weather. Instead of starting at 55° to 57°, as it should be, it is often at 62° to 63°; so that, instead of butter,

ject of factory syndicates will prosper, for it is indisputably the best system of instruction that we can adopt. An inspector that has 25 or 30 factories to visit several times in the season, can do twenty times as much good by his teaching and by staying the requisite time in each factory, as he who, as is the practice to-day, has to visit 150.

Respectfully submitted,

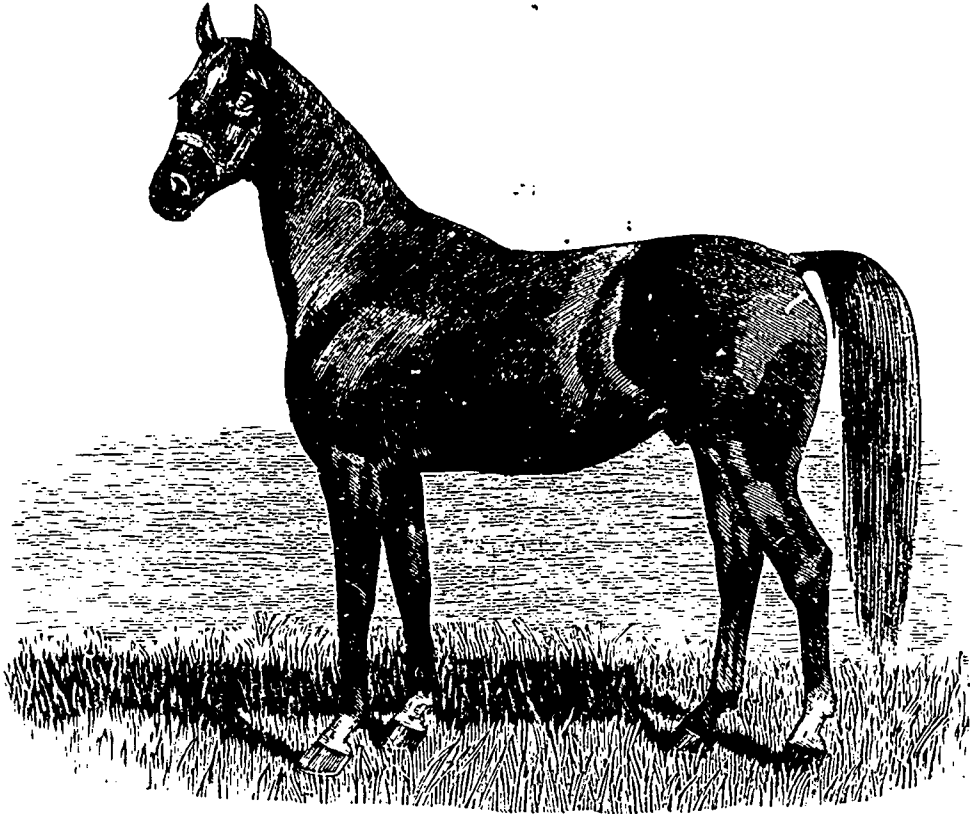
(Signed)

J. L. PAINCHAUD.

(From the French.)

MR. FISHER.—*Mr. President and Gentlemen,*

I feel great difficulty in expressing myself in French, so I trust you will pardon the mistakes of pronunciation and idiom I commit in the course of the few explanations I am



ARAB STALLION JAMROOD.

something like a mash (*boulette*) is produced; and this, as it can neither be washed nor be freed from the butter-milk, is greasy and will not keep.

Factories that have a cold chamber for the keeping of their butter are not yet common; still, there is an improvement on this side. A good number of them have, this summer, sent their butter to Montreal in a fresh condition, either to be sold at once, or to be sent to the ice-house while waiting for sale. This is an excellent plan, and will, it is to be hoped, become general; it is the surest way of always getting the highest market price.

The manufacture of our dairy-goods, especially of butter, suffers under a pressing want of improvement if we wish to sell them with profit.

To this end, practical and thorough instruction is needed; without it we shall never succeed. It is to be hoped the pro-

going to give you on the subject of the syndicates that were established in my neighbourhood this year.

We had, previously, different factories all working each after his own plan: now, dealers want, above all things, uniformity of quality. We found that these merchants would always willingly pay us more for our cheese if it were made of a uniform quality throughout the entire district. The only way to bring this about, was to teach all the makers to follow the same system of manufacture, and to this end, we decided to engage an inspector, the whole of whose time should be devoted to our factories.

We, therefore, engaged a maker, recommended by Mr. Robertson, the Commissioner of Dairy-industry for the Dominion, who turned out to be a man of ability, and one who knew his work well. Mr. Wherry devoted his whole time and attention throughout the season to only 30 factories. I hear that MM. Painchaud and Côté visited perhaps from

(1) A brewer would use the word "roused".

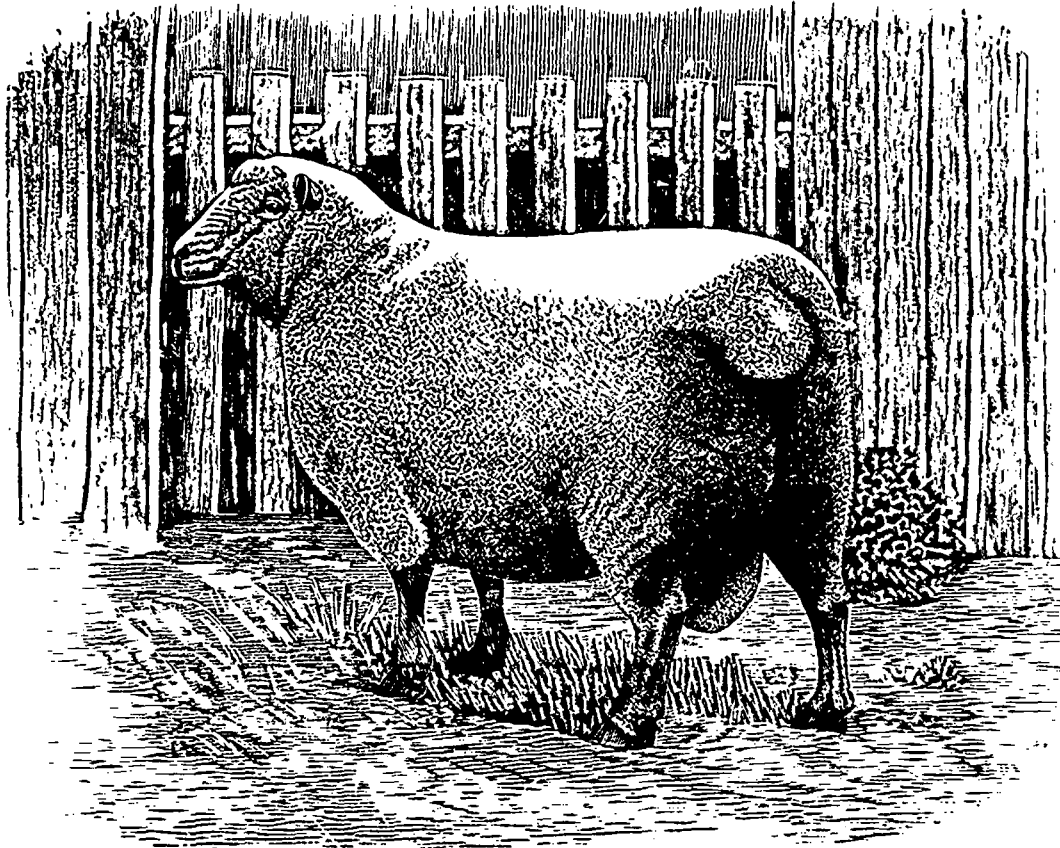
150 to 175, each, during the season. I am sure every one of those establishments has reaped some profit from these visits, but that is not enough: a single visit in a season will not do much.

Our inspector paid 4 visits and more to each factory, and at each visit he passed the whole day in working with the cheese-maker and in giving him the necessary instructions.

I am ashamed to say that our inspector found a great deal of inferior milk in our district. At the beginning of the season he discovered that 11% of the patrons were in the habit of either skimming their milk or of putting water to it. Later on, he found out as many as 17% of such fraudulent patrons.

I am absolutely sure that the province of Quebec needs more than two or three inspectors; the task is too great for such a small number. The inspection must positively be local, and the people in each locality must feel themselves sufficiently interested to be willing to provide part of the cost.

The establishment of a factory-school has been asked for to-day. I approve of the project, but I think it is a question, Gentlemen, that ought not to be decided upon at present. The makers that are now at work cannot possibly find time to go to school. But when the system of local inspection is established, there will be factory-schools in every part of the province of Quebec.



THE SOUTHDOWN RAM, NEWCASTLE.

Every time he verified the existence of this unfortunate state of things he wrote at once to the patrons, and notified the committee, which dealt with the matter. We have ascertained that since they were thus treated cases of fraud are much fewer in number, though there are still cases that occasionally occur.

As M. Taché told you our expenses of inspection have amounted to nearly \$550 for the season. We have raised the money in this way: each factory paid 50 cents for each ton of cheese made, and this rate or subscription gave us nearly \$400 during the season, the 30 factories having made nearly 800 tons of cheese. We had also a promise from the Department at Quebec that it would pay half of the outlay of our syndicate, up to the amount of \$250. The makers and patrons were so well satisfied with the working of the syndicates this year, that next year 60 factories will demand inspection; i. e., next season, we shall want two inspectors instead of one.

These inspectors are not appointed solely to test the milk, it is their duty also to instruct the makers.

This year, a neighbouring maker told me that, at the beginning of the season he did not wish for inspection, that he had not subscribed for it, but at the end of the season, he saw clearly that he could not sell his cheese so high as those could who had enjoyed the benefit of the inspector's instruction, and he asked the inspector to visit his factory. On two occasions, the inspector showed him why he had not made good cheese. It was due to a trifling error, an error in the process that could have been corrected in five minutes. Since that correction, that man has made good cheese and been very successful: "If," said he, "I had had the visit from the inspector at the beginning of the season, it would have saved me \$200."

For these reasons, Gentlemen, I think it very important that syndicates be organised throughout the province of Quebec. As M. Taché very properly says: it is not enough for

us to make good cheese, it is important to each maker that his neighbour should make in his factory as good an article as is made in his own. Local inspection will bring this uniformity about.

Mr. Foster. (1)—I am sorry I cannot address you in French, as then I should be sure of being understood by all of you. It is with great pleasure, I assure you, that I find myself present at this convention: meetings of this kind will place the province of Quebec in the position it ought to occupy before the world at large as a county producing both butter and cheese.

As to the syndicates, I consider that it is solely by their means that we can arrive at the establishment of such a severe style of inspection in our factories, as will enable us to gain the end we are aiming at.

I do not think that inspection can be made of practical use, unless it be restricted, in each case, to at most 25 factories.

If an inspector have more than that number to deal with, he cannot have time to test the milk. Now, I feel constrained to say, that in the Bedford district, last year, a great deal of milk came to the factories in a state that was hardly fit for pigs. An inspector could remedy such a state of things, while a maker could not, since he has friends against whom he won't act, and others against whom he dare not act. On the contrary, the inspector has no cause to hold his tongue, he denounces the thing at once to the committee, which puts a stop to the abuse at once.

I thank you for this opportunity of laying my opinion before you on the matter. I trust that by our united efforts we shall succeed in organising these syndicates, for I believe that this is the only way to give practical effect to the system of inspection.

M. TARDÉ—I wish, in conclusion, to make a few remarks in defining the position of the association on this matter. At a meeting of the board of directors, yesterday evening, it was decided that the inspector of the association should, next season, devote the whole of his time to the surveillance of the sub-inspectors of the syndicates; so that the members of the association must reckon upon this: unless they belong to the syndicates, they will not be visited by our inspectors, for they, the chief inspectors, will have to devote their entire time to overlooking the inspectors of the syndicates. The question is so important that we have come to this conclusion: it were better to suppress entirely our inspection, if such action be necessary to enable us to establish the system of inspection by syndicates.

To day, as we are here in convention, it must be a matter of importance to pass a resolution calling once more the attention of the Hon. Commissioner of Agriculture and of the members of the government to this project of syndicates. The Department of Agriculture has in its possession a set of papers explaining the method of working to be pursued by the syndicates: the programme indeed, that was distributed this spring, and on Wednesday morning a delegation will go to Quebec, to meet the Commissioner of Agriculture, and make fresh efforts to get him to assist us in bringing this project into a definite form, in order that we may begin at once to set about forming syndicates in the province of Quebec.

Certain special arrangements will be needed for the organisation of these syndicates. To the efforts of the makers must be added these of the directors. If any of you wish to organise syndicates in your district, we will send some one to assist you.

The President gives us the strongest possible reasons to hope that the government intends to help us. All that remains for us to do is to give the last tug at the collar.

(1) Of Knowlton.

And, if nobody thinks it inopportune, it would perhaps be wise to pass a resolution at once, this fore noon, praying the government to take the question into its consideration.

There are present here our natural judges, the buyers of our products, who are represented by several merchants of Montreal, and I should be very glad to have their personal opinion on the working of these syndicates. Messrs. Vaillancourt, Picket, Scott, Wilson, and some others, will, perhaps, tell us what they think about them.—(From the French.)

The Summerbury Flock of Southdowns.

Among the Southdown flocks of England there is perhaps none more noted, both in the show-yard and in the prices realized for its draft ewes at the annual sales held in August each year, than the Summerbury flock, owned by Mr. Edwin Ellis, of Summerbury Hall, Shalford, Guildford, England. The flock, although only established about ten years, has taken a most prominent position in Southdown circles, and during the past four years has captured over \$7,260 in prizes, among which Mr. Ellis had the distinguished honor of carrying off at the French International Exhibition of 1889 three first class prizes, three champion prizes, and *le grand prix d'honneur*, (the grand prize of honor) for the best collection of sheep of any breed in the show-yard. But it is not alone at the breeding shows that Mr. Ellis has been successful. At Smithfield, last year, he carried off the fifty-guinea cup for the best pen of sheep in the show-yard, as well as the breed cup in his class. These successes have been achieved by a large expenditure, not only of money, but also of attention and skill in mating animals of the best strains and most perfect symmetry. The foundation of the flock was laid by the purchase of some of the choicest ewes of Messrs. Bouting's breeding which combined the Rigden, Coleman, and Penfold blood. These ewes Mr. Ellis crossed with those two wonderful sheep, Ripon and Merton, which he purchased at very high figures at Lord Walsingham's sale. From time to time Mr. Ellis has been careful to add to his flock none but those of the highest merit, and has succeeded in forming a type of sheep of very special characteristics, being short on the legs, very thick through the heart, and with wonderful legs of mutton.

The Summerbury flock consists of about 430 ewes, and on the 6th February last lambing was going on under very hopeful circumstances, 266 lambs having fallen from 184 ewes with only two deaths of ewes recorded. The ram at the head of the flock is Royal Newcastle, an engraving of which, made from a photograph especially taken for this purpose, is contained in this issue. Royal Newcastle was bred by Mr. Ellis and is sired by the celebrated sheep Merton (purchased by Mr. Ellis of Lord Walsingham for over \$533), and out of a ewe by Coleman's No 3. Newcastle is a noted winner and has taken first and champion prizes wherever shown, including those at the Royal Agricultural Society's Shows in 1897 and 1888, and an idea can be formed of the estimation in which he was held by the judges of the Royal at Newcastle by their report, in which they referred to him in these words: "Mr. Edwin Ellis could not be denied the first place for one of the most wonderful sheep in the show, rarely have we seen a better carcass of mutton on so young a sheep. The depth and width are remarkable, and we do not recollect ever to have seen a better leg of mutton on a one year old sheep of any breed." Since 1888 Newcastle, notwithstanding the most tempting offers that have been made for his use elsewhere, has been entirely devoted to stud purposes in Mr. Ellis's flock, where he has been assisted by Baronet, Coleman's No 18, Webb's No. 35, Marquis, End, Duke, and a son of Royal Newcastle, all names connected with a line of illustrious progeny in the show-yards of 1889 and 1890.

The Summerbury flock is not only famous in England but has a world-wide reputation. During the past seven years sheep have been exported from it to Africa, Australia, Jamaica, Canada, the United States, France, and even Switzerland, and we understand that at the coming World's Fair at Chicago, specimens of Mr. Ellis breeding will be among the competitors.—*Country Gent.*

The engraving (reproduced for the COUNTRY GENTLEMAN from a larger plate issued by the London Live-Stock Journal) shows an Arab stallion called Jamrood, a son of what our contemporary speaks of as "the well-known Arab steeple-chaser, Maidan, and his dam, Jerud, was bred by Mr. Wiffrid Blunt, by Pharaoh (a Seglawi Jedran) out of Jerboa (Managhich Hedrnj)." Jamrood is a golden bay, and was bred and is owned by the Hon. Miss Dillon, Shipton-under-Wychwood.

THE POULTRY-YARD.

CARE OF YOUNG TURKEYS.

THE COUNTRY GENTLEMAN.—Will "A Farmer's Daughter" be so kind as to inform an old subscriber how to feed turkeys for the first six weeks? A. S. *Detroit, Mich.*

Young turkeys are so tender, and so easily injured, that I find it best to remove them from the nest when only a few hours old. The mother hen is perhaps the most affectionate of all fowls, yet, owing to her size, she is extremely liable to crush her little ones, when moving around in the nest, in her anxiety to make them comfortable. For two days, then, I keep the young poultz nestled down in a basket snugly wrapped in soft warm flannel, lifting them out for an airing now and then during the second day, in order to let them learn the use of their clumsy little legs, and to offer them something to eat. Their food is prepared after the same old receipt which I and so many others (for so they have written me) have found so good: "Into a shallow pan placed over the fire pour one pint of fresh sweet milk, and into this drop two eggs well beaten, stirring the mixture until it boils and assumes the consistency of jelly." If the brood is small, half this quantity should be prepared, as it should be made fresh every day. Little turkeys never have any appetite until two or three days old, and then the egg custard will tempt them earlier than anything else. At first they peck at it in an indifferent sort of way, seeming to feel rather relieved when they miss their aim entirely, but as soon as they feel the need of anything to eat, having been hitherto nourished by the remainder of the yolk of the egg, then they begin to eat with avidity, and afterward show much more life and animation.

When they are three or four days old, I put them back in the evening with the mother hen in a clean, large coop, on the short dry grass, and confine them for another day or so. At this age they need some sort of green food, as tender onion tops, lettuce or cabbage, cut small enough for them to swallow; and as they have learned to eat pretty well, I now season their custard with a pinch of black pepper, and after it has cooked, thicken it slightly with the soft crumb of egg-bread. Part flour bread would be good for them, but it is apt to stick in their mouths and worry them. Sweet milk should be offered them to drink once daily, being given in a shallow pan containing small stones or bits of wood—anything that will prevent the foolish little things from getting themselves wet. But even then do not leave the milk in their reach, as they never know when they have had enough.

When the poultz are about five days old and have been with their mother one or two days, I let them out for a few

hours' run if the weather is warm and bright. The hen and her brood must be closely watched, though, for the little ones are very timid and do not yet know how to follow; sometimes, too, the mother is so elated at once more regaining her freedom that she will slip away and hide among tall weeds and bushes, and most probably lose some of her young brood. There is no end of dangers and pit-falls that beset the first appearance of little turkeys into the poultry yard; they are objects of great curiosity, and animosity too, sometimes, to the rest of its inmates who worry them no little, walking after them, an old gobbler or rooster occasionally treading upon one with his great clumsy feet, or killing it outright, either in wantonness or spite. Young turkeys are perhaps the most defenseless of all young fowls, and neither they nor their mother have the slightest instinct of avoiding danger. They haven't half as much sense as a young chicken.

At the first indication of fatigue, the young brood and her mother should at once be recoped, the length of time for their airing being increased each day, as the poultz grow older and stronger, until, when two weeks old, they may be let out in the morning, as soon as the dew has dried from the grass, and allowed to remain until near sundown. I am satisfied that many poultz are lost from over-fatigue. The old way was to keep them confined in a close board pen until they were old enough to fly over the top, but very few ever did—the confinement killed them. Fresh air, sunshine, exercise and the opportunity to gather insects and to feed at will upon tender vegetation, are what constitute the life of a little turkey, and when deprived of these they will surely die. So whenever the weather permits, let them run out, if it be only for the half hour between showers, but until they are large enough to be out of danger from drowning, restrain their wandering, to a lot near the house, so as to be able to recop them should a hard shower threaten. And no matter how mild and fair the weather, always see that they come nights.

Five meals a day they should have at first but after they are older and may be out most of the time, three meals are sufficient. When a month old, egg-bread scalded in sweet milk may be substituted for custard and bread, and butter-milk or cladder for sweet milk.

The most satisfactory coop I have ever had for young turkeys was box-shaped, 2 by 3 feet, tall enough for the hen to stand upright, and while sufficiently close near the bottom to confine the young poultz, yet well ventilated under the eaves, over which the inclined board roof projects on every side to keep the rain from getting in. In the front and rear two of the slats extend out as handles, for the coop is light enough to be easily lifted to a clean spot every day. Short thick grass makes the best of floors, but care must be taken to select ground that drains itself naturally, lest water should collect after a hard shower. Turkey hens give the keeper less trouble if they come off in pairs, for being company for one another they are less restless and wandering, and therefore take better care of their little ones. If early in the season, when the weather is still cool and inclement, fifteen poultz each are sufficient, when hatched later on, they may have more. Should several broods go together the hens must each have a separate coop, and the young be divided among them at night, as they have a great fancy for crowling together and smothering each other.

My directions are thus minute because they are intended especially for beginners, who as have no experience of their own, and are therefore liable to make many disastrous mistakes. And while I do not say that my way is the very best, yet I do affirm from some years of experience that it is a remarkably successful one. I have reared entire broods without the loss of a single poult, and the little fellows make such rapid and vigorous growth that disease is a thing un-

known. When fully matured, their general development, weight, symmetry of form, and beauty of plumage, as nearly approach the standard of perfection that I am fully repaid for all my trouble. Indeed, I find that while studying the nature of my pets and striving to make them comfortable and happy, the work of caring for them is often merged into a pleasure.

Logan County, Ky.

A FARMERS DAUGHTER.

Montreal, July 2nd 1891.

A. R. JENNER FUST, City.

Dear Sir,—Drove from Howick through St. Etienne to Beauharnois, 30 miles.

From Howick to St. Etienne the crops all seemed good and rain to have been enough although more is now needed, except potatoes which are poor. Crops—principally pease and oats—looked very fair. Hay also, I thought it looked short and thin, but the driver said it was good length and thick underneath.

From St Etienne to Beauharnois every thing seemed much poorer, but those I talked with said crops were good.

Watson, near St. Etienne, has truly fair good looking crops; particularly hay.

Yours truly,

GEO. R. COLE.

CORN FODDER.

"The thin or thick seeding of corn" editorial on page 398, is worth more than a passing notice by the reader. This matter of corn-fodder must be more fully understood, and the point to understand is how thick or thin shall we sow the seed for ensilage. The question for seed-corn seems to be pretty well settled—fifty-two rows, and about fifty two hills to the row, on an acre, with four plants in a hill, or 11,236 plants. If drilled in, sixty-five rows, with about 13,000 plants to the acre. But with silo corn the case is different. How much solid matter can be obtained from an acre, is the problem. Will more—thicker—fodder and less corn give us the desired ration? Does the maturing of the grain draw solid matter from the stalks? Is the solid matter of the stalks greatly different from the solid matter in the grain? Shall we, if we plant four quarts more seed per acre than we do now—thirteen quarts in all—obtain an excess of solids in the increased amount of fodder that will compensate us for the loss of the ears that we should secure with this planting? I have a neighbour with five siloes, and who usually winter-milks about 125 cows, who, after some year's experience, is a strong advocate of thicker seeding, saying that as compared with raising grain on the ensilage fodder, and less tons of ensilage, he can buy what grain he needs cheaper. I will admit that the feeder is not always a safe authority, as compared with the man who makes a close study of the matter, with scales and chemist at hand to verify every step. If by planting one third more seed we can increase the solid matter obtained from the field by a corresponding amount, it will weigh rather more than the kernels of corn obtained from an acre, for we must not count the cobs of 100 bushels as grain.

There is also another phase to this fodder-corn ration. When it goes into the silo, one of two things takes place, the corn must be quite mature, or during the process of ensiling it loses its plump appearance, and becomes apparently absorbed. Whether or not any of its feeding value is gone, the shrinkage being due to the ensilage absorbing some of the moisture of the kernel, leaving the solids in the case of the kernel, should be ascertained. Who can say? If corn gets mature enough to keep its form for months in the silo, the

fodder is usually too ripe, does not pack as solidly as it should, and there is more loss by mold than where less advance maturity is counted as just as well.

These are important matters, and not only are Prof. Roberts, Armsby, Henry and others doing valuable work along this line, but the *Country Gentleman* is worthy of praise for doing messenger service in conveying the information to so many, and the editorial referred to, in bringing up a fresh presentation of thick and thin seeding, will awaken much thought and investigation. Last season a little experience of mine along this line had a tendency to make me think a little more seed to the acre would be a benefit, as I had decided to use eleven or twelve quarts of seed per acre this year, instead of eight, as in the past. Next winter, when the ensilage is fed, I can give a shrewder guess in regard to the plan, but the experiment stations must, by their investigations, make it positive.

JOHN GOULD.

Western Reserve, O.—Country Gentleman.

SUCCESSFUL HAY MAKING.—A Pennsylvania correspondent in *Southern Farm* has the following to say on the subject of successful hay making. The proper time to begin cutting hay is during the latter part of June. The grass which contains most clover should be cut first. The most of our hay is cut as soon as possible after the wheat is cut, as that is an excellent season for curing hay. The mower should be started about 4 o'clock p. m. and kept going until night. All hay that is too heavy to dry of itself should be turned or shaken up before dinner time the next day. By 1 o'clock, or soon after, the hay will be ready to rake up and haul to the barn (1) If the hay does not seem to be dry enough when raked, it should be allowed to stand for a few minutes, as all damp hay is turned up and it will soon dry. If hay is put up in this way, it will not be necessary to spend precious time cocking it up and a large amount can be put up in excellent condition. Hay should not be cut after oats are ripe. The hay containing the most clover should be stored away in a separate place for the cows. Then it can be obtained for use or for market. The hay containing no clover may be allowed to stand longer if intended for horses, but will be wasted by the cows. This is the manner in which our hay was cured last year, and we have no trouble in selling it, while others can hardly dispose of theirs at all. Hay should never be stacked, as, by doing this, there is a great amount spoiled, and it is difficult to separate the spoiled hay from the good hay. When we have hay that is sweet to our own tastes, at this time of the year, we may be sure we have hay that the cows will appreciate and that we have been successful, as far as hay making is concerned.

We have not a word to say against the keeping of dogs by any who are able or willing to feed them. Dogs have their uses, as have other domestic animals; but, like other domestic animals, they should be kept under reasonable restraint. We cannot let our cattle, sheep or hogs, or even our chickens, run at large over our neighbor's premises, if he objects. Then why should his dog be allowed to roam at will over ours?"

MR. CHEEVER adds force to his argument by relating an illustrative experience that is often repeated in New England, as follows: We are reminded anew of the damage dogs are doing to the wool and mutton industry of New England by the experience of a farmer, who three years ago, purchased a fine lot of sheep. All went well till his number had increased from the small beginning to a goodly-sized flock, such as one could rightfully feel proud of. Then some miserable night-

(1) If so, the grass must have been too old by far before mowing.

walker of a cur made a raid, killing several, wounding others, and rendering the whole flock practically worthless. This experience is not his alone, but is the experience of the large majority of those who, seeing the need of encouraging sheep husbandry in New England, have given the business a trial."

The most unfortunate thing about the matter here in Vermont, is the apparently selfish indifference existing among our dairy farmers who do not keep sheep. We have tried long in vain to arouse their interest in the matter. They constitute the most influential portion of our farmers, and their gain would appear to be to so diversify our farming as to lessen the excessive output of butter which is so often disastrous to prices. Hundreds of our farmers would abandon dairying for sheep, if all their fellow-farmers would heartily unite to abolish the dog nuisance. We believe that dogs are far more injurious in this way to the dairy interest than the oleo-makers.

DR. HOSKINS, in *Vermont Watchman*.

CABLE.—Mr. Chaplin, president of the British Board of Agriculture, stated in the House of Commons Friday that between June 1st, 1890, and June 1st, 1891, there had been 216 outbreaks of pneumonia among cattle in Great Britain, and 892 diseased and 8820 healthy cattle had been slaughtered.

BARNARD.

The farmers' meeting, Saturday evening, was well attended. The topic for discussion was, "Which is the most profitable stock for a farmer to keep, cattle or sheep?" The question on its merits was decided by a vote of the house in favour of the sheep industry.

SHEEP WASHING.

I wish more of your readers had responded to your invitation to express views based upon experience with reference to this important subject.

We are so apt to imagine local customs to be universal and our own practices to be so much superior to those followed in other counties, that we are often led to sweepingly condemn without sufficient knowledge systems which differ from our own "custom of the country."

My experience relates to a flock of 1,100 Oxfordshire Downs, kept on arable land all the year round, and with us shearing in the grease is simply unheard of. If from any reason a sheep with a broken leg, or which is otherwise unable to travel, is shorn without washing, the fleece is kept by itself, as are those which are obtained from sheep which have died, or been "killed to save their lives," where there is sufficient wool upon the pelt and sufficient difference between the price of skin and fleece wool to make shearing the skin worth while. When the wool stapler comes to weigh up the wool he looks very suspiciously at these fleeces, weighs them separately, and makes a heavy deduction. On one occasion after washing a lot of fat tegs the trade went down and I kept them upon the straw a month longer than I intended without shearing. In this case the stapler did nothing but grumble during the whole of the time he was dealing with these fleeces. What he would have said and done had all the fleeces been taken from the sheeps' backs just as they came off turnips in March, April, and May, I am at a loss to conceive.

I grant it would be an immense saving to the sheep farmer if washing could be dispensed with, and in the case of some breeds of sheep kept upon grass land I can quite understand

it to be possible. But in this district we are obliged to keep tegs carrying from 10 lb. to 14 lb. of wool upon the ploughed land all the winter. The result is that in wet weather the wool upon the lower parts of their bodies is one mass of mud. In the spring this dries, but I fail to see what shepherd could shear such sheep, or what wool staplers would look at the wool unless the sheep had first been put through the washing process. I have attended many wool fairs and sales in my district but invariably found all the wool offered to be washed and not greasy.

I know of no more anxious time for the sheep farmer than after he has selected a truck-load of fat tegs or shearlings in the month of March, and has then sent them to be soured in the nearest mill stream. Often rather than do this I have sold in the wool, but recently I have tried the practice of washing at home in a tank, and using warm water. This I find to be preferable to driving them two or three miles along roads they have never seen before, keeping them twenty four hours without food, and submitting them to the washing process, with all its attendant fright and bruising. Often the sheep have never been driven before, and they have to be hunted by shepherd and dog in order to make them go in the right direction. They arrive at the washpool hot and tired, and unless they are allowed to rest and get cool while the men are standing idle or drinking at the neighbouring public-house, fatal consequences follow. Then quite possibly other flocks may be at the washpool, and this may mean vexations mixing, and possibly disastrous communication of disease.

By all means, therefore, let us know if sheep-washing can be dispensed with under such conditions as I have described. Your correspondent of May 4th is right in saying the custom is not "dead" yet. It is also "old," but to some of us it is not "absurd."

June 11th.

CERES, in *Eng. Ag. Gazette*.

Prof. Caldwell on Leguminous plants.

Four crops are used in the country for green manuring—rye, buckwheat, clover and peas. All of them will serve to add to the humus of the soil, just in proportion to the amount of green vegetable matter which they yield to be plowed in. Clover is a deeper-rooted plant than any of the others; through those long roots it can perhaps get phosphate, potash and possibly some nitrogen compounds from deeper parts of the soil, and leave the largest portion of these near the surface when plowed in, to help some crop that cannot go so far down for its food. But the pea, and almost certainly clover also, can do something that rye and buckwheat cannot. For them the free nitrogen of the air is made into food, and seemingly in a very curious way. Little swellings appear on the fine rootlets of these plants; these swellings are caused by some of the minute, living beings, that we hear so much about, now-a-days, called bacteria; and somehow, with the help of these bacteria, working in these swellings or root tubercles, the plants get nitrogen from the air in the pores of the soil. The larger the amount of nitrogen that the plant gathers in this way, the larger the number of tubercles found on its fine rootlets, when it is pulled up; thus it is indicated that they have something to do with supplying the nitrogen.

But the good work of the bacteria does not stop here. Green vegetable matter is not food for plants, it must not decay; and the help of bacteria, is needed to carry this work through. Therefore, to get the best results with green manuring we must cultivate the bacteria. They need moisture, warmth and air, the moisture they have in any soil in fair condition; warmth enough they can have only in the warmer

months of the year; air they cannot find in a soil that is full of water, or compact and hard.

Summing up all that these facts teach us about the way to get the most profitable returns from green manuring, the most useful crops, of the four that were mentioned are clover and peas, for they will add just as much humus to the soil as the other crops, and besides that a very considerable amount of nitrogen also, so that the farmer gets his nitrogen for nothing, instead of paying 14 cents a pound for it in fertilizers. The crops should be grown on a well-drained and fairly porous soil, so that while it is growing the nitrogen of the air can reach the roots freely, and also so that when the crop is turned under, the oxygen of the air will be supplied freely to the other bacteria that work then for the decay of the crop. Decay consumes oxygen; the crop should be plowed in early, so as to give the bacteria as long a period of warm weather to work in as possible. It should not be plowed in deep, for then the air cannot reach it so freely. The covering of soil should be loosened once or twice, to still further favor access of air. Finally, a crop should follow the green manuring that specially needs nitrogen food in the soil, and such a crop is wheat or rye, or any one of the cereal crops.

M Bousquet on Agriculture.

Speaking of the prospects of the coming harvest, the President said that the advices received from several agencies of Bank were so far unfavorable, the absence of rain in many localities being most severely felt, and the hay crop in Lower Canada would undoubtedly be below the average, while the grain crops might still be largely benefitted by seasonable weather. As a rule he had advised the farmers to sell their crops promptly whether they required the money or not, but his present advice to the farmers of this province was to retain in their own lands as much of last year's hay crop as they could conveniently hold, the large quantity of hay now being put upon the market having reduced prices to a minimum, from which there must, in the near future, be a considerable reaction, particularly should the present dry weather continue.

Advices from the agencies inform us that a considerable portion of the hay meadows have either been ploughed up or converted into pasturage, a change rendered necessary not only by the McKinley tariff but by the fact that many of these meadows have become exhausted. The President concluded by repeating his advice of last year in which he urged upon Canadian farmers the importance of adopting a more thorough system of agriculture, a larger use of fertilizers and the breeding of a class of horses and cattle better adapted for export to Great Britain and other European countries. (1)

GREAT NORTHERN RAILWAY MARKET (Kings Cross), SATURDAY.—Prices of best qualities have ruled a little higher, and closed as follows:—Magnum Bonus, Dunbars, 140s. to 150s.; Yorks, 125s. to 140s.; Lincolns, 115s. to 130s.; Blacklands, 100s. to 110s.; Imperators 70s. to 90s.; Bruce, 120s. to 140s.—*Coupe. Bowic, and Taylor, 26 and 27 Great Northern Potato Market, King's Cross.*

Leaner Hogs Required.

May we ask space in your valued *ADVOCATE* to urge farmers not to make their hogs so fat. We have just killed a very handsome lot, a car-load from near Guelph, they were perfect models of symmetry, well rounded and pleasing to the

(1) Bravo, M. Bousquet.

A. R. J. F.

eye, but on dressing them we find them extremely fat. Twenty-five years ago they would have been considered perfect, but when the meat is sold in London, England, it will not bring within one half, and perhaps one cent per lb. of leaner stuff, not so pleasing to the eye of the farmer.

But aside from this the feeders are acting contrary to their own interests, as it is very well known that after hogs reach 180 lbs. they will not put on flesh in proportion to the feed as previously.

Again we would entreat the farmers to give us *long, lean pigs*, reasonably well fattened, weight 160 to 200 lbs.

In this connection would say the following letter has just been received from our agents in London, which speaks for itself:—

33 Tooley-st., London, Feb'y 19th, 1891.

MESSRS. WM. DAVIES & Co., Toronto:

Dear Sir,—Just a line to say that we notice a marked improvement in Canadian hogs as required for bacon purposes since you have ventilated the wants of the London bacon market in the agricultural press so thoroughly. Look to-day at values. Canadian bacon is fetching ten, twelve and fourteen shillings per hundred weight more than American. This one fact should stimulate Canadian farmers to give earnest attention to hog breeding and feeding. One strong feature we want you to impress upon the farmers, that is the weight of the hog to fetch the highest price. No Canadian side of bacon should be packed under 45 pounds, as a minimum, to 65 pounds as a maximum. This will give the farmers sufficient room to feed their hogs for profit. (This means hogs between 160 and 200 lbs., alive.—W. D. & Co.) While the bacon of this size will always fetch top market price, anything above or below these weights must be sold at from two to four shillings per hundred weight less money. But now, a most important point: long, lean bacon only is wanted in London, the sides full of flesh, and the best hogs to create this are the Improved Large Yorkshire Breed, as useful all over Denmark. What is the outlook for the supply of hogs in Canada for early spring and summer trade?

Yours truly, J. WHEELER BENNETT & Co.

We cheerfully corroborate the above, but we feel painfully (that is, in our pockets,) how much room there is for improvement on the points named in the foregoing letter.

About one in three or four of all the pigs we buy are thieves and robbers, they not only make no profit, because they are either, too large or too small or too fat, but they rob the vest.

Thanking you for so many opportunities of putting our views before farmers, we are

Yours truly, WM. DAVIES & Co.

Farmers' Advocate.

SEASONABLE NOTES.

HOING TURNIPS.

Sufficient attention is not given to the hoeing of root crops. The system of task work has indeed much to answer for, as it appears to be fatal to the kindly care which is so essential a feature in the tending of both plants and animals. The singling of turnips needs judgment and kindly care, for it is not only desirable to space the plants regularly but to leave the best plants in the row, and to destroy the enemies which have sprung up around them in the form of weeds. If we were asked to name the points which ought to be kept in mind

by both master and man in hoeing a crop of young turnips we should say: First, take care that the plants are properly spaced, second, that puny plants are not out, and well developed ones are left; third, that the ground is well nursed between the plants, and, lastly, that all weeds are out through. The success of the aftergrowth of turnips largely depends upon the fitness and cleanness of the surface soil, and therefore the mere chopping out of the surplus plants should not be considered a sufficient definition of sagging or first hoeing.

Harrowing and horse-hoeing are both valuable aids in the cultivation of turnips, and with their assistance, and the thorough use of the hand-hoe, we shall preserve a fine, moist, and clean field for the uninterrupted development of the crop.

HAY MAKING IN WET WEATHER.

Most of the valuable parts of hay are easily washed out. This is made clear by taking a wisp of hay, placing it in a bucket, and pouring boiling water over it. The result is a brown fluid which has received the name of hay tea. Cold water will extract the juices in a similar manner, if a little more time be allowed. This, then, is what takes place when half-made hay is allowed to lie abroad over the surface, and is not made into cocks. No water draws tea so well as soft water, and rain is soft, and it draws the hay just on the same principle as it would draw tea.

When hay has been wet for a few days, it begins to turn black. If we examine the blades and stalks of grass closely, we shall observe that each of them is coated with a sort of crust or rime, which is really a growth of fungus. The hay begins to smell fusty, and when it is cut out of the rick, such hay will be dusty and fusty, and smell like bad mushrooms. This is as serious an evil as the loss of nourishing parts by washing, already mentioned.

Both of these evils are prevented by getting the hay into cocks as soon as possible, and to "cure in cook" is a maxim well worth remembering.

Labourers who have been accustomed to make hay upon a careless or slovenly principle are difficult to persuade, and even masters sometimes will argue in favour of a method which they have always seen practised. There is, however, no doubt that curing in cook is the only correct way of securing good hay, even when the season is difficult.

CARTING HAY TO THE RICK.

It is important to know when to cart hay. A very good farmer once replied to the question as to when to cart—"When it is fit." What we want to know is this very thing, and we ask, When is it fit? Perhaps everyone does not know that hay may be overmade. This is, however, perfectly true, because hay should heat sufficiently in the rick to get a "good sweating." A "good sweat" makes the hay lie close, and gives a compact heavy rick when it is cut out. Over-made hay comes out of the rick loose and without flavour or aroma. Hay which has heated enough and not too much in the rick becomes brown in colour, and has a rich flavour. If over-heated it becomes dark brown, or almost entirely black, and there is a great risk of the rick taking fire from spontaneous combustion. The hay is also ruined in quality, and becomes an unwholesome food for stock. There is evidently then a proper time to cart hay, when it is neither too dry nor yet too moist. A good test is to take a wisp of hay from a cock, or from the ground, and twist it up tightly with both hands. Then unwind the wisp and feel it. If warm and comfortable it is fit to cart, but if this pressure seems to bring sap or moisture to the surface, it is not fit. Old men who have been long accustomed to the work will often give a reliable opinion if the master is in any doubt on the subject.

BUILDING HAY-RICKS.

The building of a hay-rick requires some experience in order to keep the sides perpendicular and the corners square. Each rick should also be finished off with a neat sloping roof, which will be conical or ending in a point or dome, in the case of round ricks, and shaped like the roof of a house in the case of long ricks. They are then thatched with straw, and roped securely, to prevent the wind from blowing off the thatch. After a rick is built it settles down, owing to its own weight and only ceases to do so after the lapse of about two months. When it is settled it will be found to contain one ton of hay to every nine to twelve cubic yards of hay. That is to say, a space three yards long, three to four yards wide, and one yard deep, will contain one ton of hay. A rick ten yards long, seven yards wide, and three yards high, measured to about one foot above the eaves, would contain $10 \times 7 \times 3$ cubic yards = 210 cubic yards, or about twenty tons of hay. In measuring hay ricks, the extreme length, breadth, and height should not be taken, as a fair allowance must be made for outsides, tops, and bottoms. In calculating the contents of a rick by measurement, a good deal of judgment and experience are needed.

Clover hay-making differs from meadow hay-making in some important points. The broad leaves of the clover are liable to become brittle when dry, and to break off and become lost. It is this peculiarity which makes the difference in treatment between the two sorts of hay. Grass may be tedded and turned with great benefit, and the more it is so treated the quicker it will be in drying. Clover is better left alone after cutting for three or four days, according to the amount of sun and wind. When the upper side is dry it should be gutty turned with a rake and allowed to lie for another day or two. Three swathes are then thrown together towards the middle, so as to form a wind-row, and this is broken into cocks, which will quickly become ready for carting.

The horse rake must be considered an important labour-saving machine in the hay or harvest field. The net result of the mowing machine the hay-tedder, and the horse-rake is a cheapening of the process much below the cost when hand labour is only employed.

It is not often that we indulge in prophecy, but we cannot forbear expressing a strong hope amounting almost to a conviction that we shall see some good hay made this season. We have been somewhat unfortunate for two years in succession, and a fine summer is due. There are indications of settled weather, after a long period of vicissitude, as we are now living in hope that the next few days will see a large weight of good fodder satisfactorily secured.

Artificial Manures on Grass.

A few remarks on this subject may be worth insertion, although it is too late this year to apply any but the most soluble manures. The different effect of soluble and insoluble manures in dry or wet summers is very striking. Soluble manures, like nitrate of soda, superphosphate, &c., are almost wasted during wet seasons, and the effect of the less soluble, like farm manure, raw bones, slag, and kainit is very apparent, whereas in a dry time these manures would be practically useless, no matter to what crop they were applied.

If we look at some of the results obtained in the two recent years, 1887 and 1888, we shall have an illustration of this fact. These years showing such a marked contrast in rainfall and temperature especially during the summer we may expect to find a corresponding difference in the application of

manures. In 1887 we had a mean temperature for June, July, and August under 57 deg., and a rainfall of 3½ inches. In 1889 the mean heat was some 4 deg. higher, and the rainfall about 10½ inches, or just three times that of 1887.

The Dyson's Wood experiment for 1888 are very instructive, as showing the effect of the manures in a wet season on grass land. The most striking points may be briefly referred to. To make the distinction clearer, we will take the most soluble manures first, and compare them with the rest. The increase or decrease refers to the gain or loss per acre over the unmanured plots.

SOLUBLE MANURES, 1888 (WET SUMMER).

	Grass. cwt.	Hay. cwt.	Cost. s. d.
1½ nitrate soda, decrease.....	16	equal	16 3
3 cwt. super, &c., "	—	decrease	15 9
3 cwt. dissolved bones, increase.....	4½	increase	8¼

LESS SOLUBLE MANURES.

1 cwt. sulphate ammonia, increase.....	26½	9	14 0
3 cwt. Peru guano "	28½	5½	21 9
4 cwt. slag, &c. "	50	8	15 6
10 cwt. gypsum "	25	4¼	15 0
10 tons farm dung "	81	21½	60 0

SEASON 1887 (DRY.)

The results here are widely different, but are given in hay only. As the salient points of the experiment are confirmed by others, viz., Woburn, Norfolk, Essex, and other districts, it will not be necessary to do more than quote roughly the result of the Dyson's Wood trials once more.

INCREASE, &c., OVER MANURE AND PLOTS

	Increase cwt. qr.	Profit. per acre.
1. Season 1887.		
{ 1. Nitrate soda, &c.	18 2	2 16 6
{ 1. Dissolved bones	18 2	2 16 6
3. Decorticated cotton-cake.....	13 0	0 17 0
4. Raw bone meal.....	12 3	1 13 9
5. Farm dung.....	11 1	—
6. Peru, guano.....	10 2	1 0 3
7. Boiled bones.....	9 0	0 18 0
8. Slag and kainit.....	7 3	1 0 6
9. Gypsum.....	2 1	—

The results of sulphate of ammonia and superphosphate are not given here, but there is a little doubt that the 1888 results would have been reversed in a dry season. These trials are very useful to farmers in general, and help to prove also that the best manures for the crop are not always the cheapest. Farm dung is a most costly article for instance, and yet its effect varies enormously with the season, and no doubt vast sums are lost by its application during dry seasons, especially when applied late. The same remark cannot hold good with regard to any artificial manures, the cost being so much less, and the celerity of application being a great feature of success. Yet we must have farm manure as long as we keep live stock and grow bulky crops for their maintenance, though some may not agree with this, and vote it a nuisance. So much dead weight with a nucleus of fertilising matter. It has made a brave stand against scientific farming and artificials.

A. F. P., in Eng. Ag. Gazette.

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