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The Illustrated JOURNAL OF AGRICULTURE

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THE ILLUSTRATED Journal of Agriculture.

Montreal, February 1, 1897.

The Farm.

MANGELS : DANIEL DRUMMOND.

Fall manuring—Two Ploughings—Spring preparation—Keep the moisture in—Hoing and singling No earthing up.

THE CULTIVATION OF MANGELS(1)

The soil best suited to the cultivation of mangels is a loam, either a clay or a sandy one; the clay loam will probably give the larger crop but will be a little more difficult to work.

Mangels are generally sown after a grain crop and the preparation of the soil should commence immediately after the removal of the previous crop. Our custom is to apply the manure to the land first, as we approve of manuring in the fall (2) for mangels; then plough lightly, say 5 or 6 inches deep and set it lie; during this time a great many weed seeds will germinate, so that when we come along with our second ploughing we kill them, this second ploughing may be as deep as possible say 8 to 9 inches deep and leave it turned up to the winters frosts to mellow it. In the spring, as soon as the land is dry enough to harrow, give it a good harrowing to start some more seeds, leave it alone until it is in a thorough good condition to work, then it must be prepared by a thorough good cultivation. If it is inclined to be clayey, this may be done by the cultivator, but if friable, by all means plough it again, but be sure and follow the plough with harrow and roller immediately so as to prevent a too rapid drying of the soil, as this is one of the most common errors made in the cultivation of a root crop and is very often the reason of a blanky crop (3). After the land is thoroughly prepared we drill it up about 27 inches wide but not too high roll the drills,

(1) Another of the 1895 Competition Essays.
(2) On heavy land, but surely not on light land. Ed.
(3) Very good indeed, Mr. Drummond. Ed.

and then sow your mangels in the top of the drill.

We have found it a good plan to mix some quick germinating seed with the mangel seed and have found turnip seed very good for this purpose, about 1/4 lb per acre; mix before putting the seed into the sower, then if there happens to be any blanks in the mangel you will be very likely to have a turnip and it may be left. (1) The time of sowing should be as early as possible as they need the whole season for growth. Sow about 5 lbs of seed per acre. (2)

As soon as the rows can be distinctly seen, they should be side hoed, and then when about 3 inches high should be singled out to from 9 to 12 inches apart in the row, this can be almost all done with the hoe. After the thinning they must be kept thoroughly cultivated by horse hoe and also by hand, until about the middle of July when the leaves will be covering almost all the ground; as to earthing up unless the land is very flat and not drained would not do it, as there is no benefit to be derived from it expect surface drainage. (3) We have succeeded in always growing large crops of mangels by the foregoing manner of cultivation, the crop ranging from 20 to 40 tons per arpent and without much hand weeding.

An excellent description of very good work. Ed.

COMPTON MODEL FARM.

A visit to that institution would convince any reasonable person that the directors of the farm have done a good deal towards making that establishment one of the best schools for giving young men a practical training and scientific knowledge of farming. With this end in view, the directors have made arrangements with Prof. John Ewing, of Melbourne, to give weekly lectures to the students of the school, and fortnightly in the Town Hall, Compton, to all who may attend. The butter factory connected with this institution has been a success from the very start, and the highest price has been obtained by the patrons for their butter. Still, the government, with the directors of the school, have decided to build a new creamery, of a larger capacity, with all the modern machinery that can be procured, and when complete, to rank as one of the best in the Dominion. The foundations are now laid and the walls built, with running water, so to be ready for operation by the 1st of May, 1897.

In order to give to the farmers in the vicinity of Compton as well as to those who reside at some little distance from the creamery an equal chance to patronize the new creamery, the directors at their annual meeting held at the Model Farm on the first day of December passed the following resolution:—

"That on and after 1st May, 1897, all patrons bringing milk to this factory, residing outside the following limits, would receive a rebate of \$1.00 per ton on all their milk delivered at this fac-

(1) But the main object is to distinguish the rows where the mangels will be and so get the horse-hoe to work earlier.—Ed.

(2) Good, again.—Ed.

(3) Except in the extreme north of England and in Scotland, earthing up roots is never practised; and even potatoes are now hardly ever so treated. Why confine the rootlets that would travel in search of food if they could? Ed.

tory, viz: West of Grand Trunk Railway track, East of Moe's River, North of the Waterville Road leading from the Charles Rae place, and South of the Belanger road."

"The Sherbrooke Examiner."

FIRM COUNTRY ROADS.

Easily Secured by the Use of the Scraper and Tile Drainage.

The progress made during the past few years in the improvement of streets and public roads has been as surprising as in other lines of public concern. By the use of tile drainage and of machinery for grading, the ordinary prairie roads are kept as smooth and firm during the larger portion of the year as the best macadamized streets of the cities. Perhaps no better implement has yet been made than the steel scraper in the form of a long blade carried at an angle suspended to a frame on wheels, corresponding to the running gears of a wagon. This machine is owned usually by a township and is operated by men and teams employed for that purpose by the day. The force necessary to operate it consists of two men and from four to six horses.

The prompt operation of a force like this answers as the ounce of prevention and the pound of cure at the same time. The work is rapid and cheaply done, and if applied two or three times a year, the frequent dressing up prevents the wasting away of the road bed and maintains at the same time the smoothness of surface not obtainable in any other way. Two or three times round carries the movable surface towards the centre of the road. There are two or three methods in Illinois in force by which the funds for road making are expended. By a vote at the town meeting an assessment is provided for and the tax is invested in road improvement by the town commissioners.

Where no such vote is taken, the work is principally done by the poll tax, which enables people to work it out at their leisure and about as they see fit. By this plan the work is usually done in a slipshod manner. The roadmaster may be competent, but the work is not sufficiently under his control to enable him to systematize and use the labor which is legally available for such purpose to the best advantage. By the use of the same amount of ready money as may be represented in the poll tax, much better results may be obtained than can possibly be expected from that labor expended without any definite object in view. It is surprising to see what good roads and well-kept lanes do for a country in the appearance and the real value they bring to those who are willing to devote some attention to the subject. In fact the character of the public roads is an indication of the character of the farmers whose holdings are tributary to them. The sides of the lanes should be kept smooth enough for the mower, which should be used as often as needed.—Farmer's Union.

ECONOMY IN HAULING LOADS.

In a talk on good roads A. J. Johnson, a civil engineer who has done some very effective work in road construction in New Jersey, gave the following rea-

sous why good roads should be constructed :

"It has been proved that on sandy roads 30 bushels of grain are a load for two horses ; on so-called pike roads 50 bushels are the maximum load , on macadam roads 100 bushels, and on the best grades of telford roads 200 bushels can be carried. (1) If these figures are correct, and there is no reason to question them, they furnish an impressive argument for the improvement of roads--an argument moreover, which ought to appeal most forcibly to farmers, whose interest in the question has thus far been rather sluggish. The agitation for good roads accomplished little so long as it was discussed from the speculative point of view. People who read appeals on the subject agreed with them in theory, perhaps, but they saw no reason why they should personally do anything in the matter. But there are other practical arguments in favor of good roads that also appeal strongly to the farmer. It is said that certain New Jersey canneries pay two cents less a basket for tomatoes that have been hauled over rubble roads, because they are injured by the jolting they receive."--Wisconsin Agriculturist.

FERRETS FOR EXTERMINATING RATS.

EXPERIENCE HERE AND IN ENGLAND.

Ratcatchers--Sorts of ferrets--Treatment.

EDS. COUNTRY GENTLEMAN. -- It must be that the sporting laws of Michigan contain no provision against the use of ferrets in hunting rabbits, else the rearing of these useful little animals, as described by Mr. W. Z. Hutchinson on page 897, would not be so openly carried on or be so apparently profitable. In this state any one caught ferreting rabbits is liable to arrest with fine or imprisonment to follow, while any owner of a ferret is apt to be viewed with suspicion, certainly by the fee-hunting game constable, and even by some of his neighbors who suspect that many an illegally-gotten pot-pie graces his table.

But the usefulness of ferrets as exterminators of rats seems not to be generally known in this country, or at any rate taken advantage of. In England rat-killing by means of ferrets and terriers is not only the delight of all boys and men, but the professional ratcatcher is a person of no mean importance. His appearance generally with three or four disreputable looking curs at his heels, on his periodical visits to the different towns and villages on his route, is hailed with almost as much éclat as the time-honored circus, years ago he used to carry a tin box strapped to his shoulders on which was painted the British coat of arms with the initials V. R. in big letters on either side, by which it was meant we should understand that he owed his appointment to the express command of her majesty. (2) If I remember rightly, his charge was

(1) Very vague ! 200 bushels of wheat weigh 12,000 lbs ; of oats, 6,800 lbs. Ed.

(2) There really was, in 1835, a "Royal Ratcatcher," under the "Master of the Horse !" We have often seen him with his dogs. Commonly, we used to pay about \$10.00 a year to a roving ratcatcher for an average sized farm. So much per rat? Mercei ; pas si bête !--Ed.

three pence a rat killed and it was sometimes basely insinuated that previously killed rats were smuggled into the count to make his tally as large as possible. Be that as it may, farmers and others gladly availed themselves of his services, judging correctly that their cost was nothing compared to the loss sustained in consumption of grain and destruction of property by rats. There were two kinds of ferrets then in vogue ; one, called the fitcher or fitchew, was of a dark brown color, very nimble and combative and small, enabling it to thread the mazes of any rat's quarters ; the other, called the polecat ferret, was of a cream color, much larger, less active and pugnacious, and was used for rabbit-hunting. Female ferrets are prized more than the male, on account of their courage and ferocity when attacked, necessary qualities when they have to face two or more desparate rats ; it is well-known that a bitch pack of foxhounds or harriers will hunt with more vigor and tenacity (1) than a dog pack.

Large farmers, owners of granaries or slaughterhouses or of any large establishments likely to attract rats should undoubtedly keep ferrets ; but is a question whether it pays owners of small properties to do so, especially in States where ferreting rabbits is forbidden, except for the sake of amusement ; and this amusement is not always easy to find, for when one has visited all the neighbors' barns, pig-pens and granaries within a fair circuit a few times rats, become scarce. To keep a ferret in good "fettle" regular hunting exercise is necessary ; inactivity for weeks at a times makes it sluggish and takes the edge off its keenness for hunting. A well trained ferret at work, assisted by some equally well-trained terriers, is an exciting scene.

Though I kept ferrets and fox terriers for fifteen years in England, I found that my ferrets had outlived their usefulness in less than three years here, and I disposed of them. Neglect in cleaning out or carelessness in feeding will soon end the life of a ferret. A bread and milk diet is a good one, though care must be taken that none is left to sour, else a scoured and sick ferret will be the result. In the meat line I fed English house sparrows, and when these were not obtainable small pieces of fresh, raw cows' or pigs' liver, occasionally putting a pinch of sulphur in their milk. Never feed any meal that has been cooked with salt or, fether still, give raw flesh only. When ferrets are used for rabbit-hunting only, meat can be dispensed with almost entirely. I have heard many old ratcatchers declare that ferrets should never be fed, as it encourages them to kill their enemy whilst hunting, when they gorge themselves and lie in the rats' nest to sleep off their repast. (2)

A young ferret, taken when just weaned kept perfectly clean by constant change of bedding and fed principally upon bread and milk, can be handled (the oftener the better) and fondled without any risk, and there will be very little unpleasant odor attached to it. I have carried them for miles loose in my great coat pocket. The last ferret I had was a female fitchew ; when the door of her hutch, standing about two feet from the ground, was opened, Teaser (a fox terrier) would place his paws upon the

(1) No, emphatically. The bitches have more dash, the dogs more patience over a cold scent. "Va ; je m'y connais." Ed.

(2) Do they live if not fed?--Ed.

floor of the hutch, when she would run down his back, come to where I stood and climb up my legs and body on to my shoulder, yet a keener, braver little hunter never entered a rat's hole. It is best not to lend your ferrets, unless you are sure the would be borrower is accustomed to them ; a timid handler will soon spoil a ferret, and especially is this true when the ferret is coming out of a hole ; it seems to resent irresolution in capturing it and when two or three futile attempts have been made will often back into the hole and there stay ; in addition to which the bungler may consider himself lucky if he does not get bitten. If you have to handle your ferrets with tongs you had better retire from the business. The methods to be employed to ferret a building thoroughly so that no rats escape require judgment as well as a knowledge of rats' habits, and to give them now would occupy too much of your valuable space. J. H. C.

"Monroe County, N. Y."

The Dairy.

THE PREMIUM ON EXPORT BUTTER.

Most of our readers are aware that during the last two years, the Quebec government has granted a premium of one cent a pound on all butter exported, in good condition, to England. The aim of this encouragement having been attained, as we shall show, the premium will no longer be payable.

When MM. Gigault and Leclair visited England, in 1894, they found that the universal demand among the dealers was for regular consignments of butter every fortnight ; whereas our Montreal exporters bought the butter when it was cheap, i. e., in summer, and did not despatch it abroad till the autumn, by which time it had lost much of its fine quality.

In consequence of this treatment, instead of our butter selling in the English market for a satisfactory price, it was regarded as only of third or fourth quality, and was sold to the pastry-cooks, instead of making its appearance on the breakfast-tables of the wealthiest classes.

So, in order to re-establish the reputation of our butter, the local government, despairing, after many attempts, of overcoming the reluctance of the shippers to forward consignments at least once a month, determined to give a premium of one cent a pound to those makers who should export butter regularly every month to England in steamers fitted up with refrigerating compartments.

In 1895, the Federal government arranged measures for the establishment of "cold-storage" on board our steamers: what were the results? Marvellous, indeed, were they, for, the shipments of butter from Montreal to England which in 1894, were only 32, 137 boxes or tubs reached, in 1895, the figure of 63, 664 boxes, and, in 1896, attained the truly remarkable number of 157,321.

And, if we take the valuation of each of these boxes of butter, many of them weighing 70 lbs each, at the very low rate of \$10.00, the increase will appear still more apparent ; since, the value of the butter exported in 1894, when there was no premium, amounted to only \$321, 370.00 ; whereas, the butter exported in 1896, the second year of the premium, was worth at least \$1,573,210.

00, an increase in value of \$1,251,840.00! And how much did this grand result cost the province? The whole amount paid by the province of Quebec for the encouragement of the export of butter to England in 1895 and 1896, was the trifling sum of \$5,000.26.

REFRIGERATORS.

Before the year 1895, several of the lines had built refrigerating compartments on board their boats. Unfortunately, owing to the lack of business, some lines, notably the "Dominion Line," had, in consequence, abolished these refrigerators ; so, it was found necessary to go to work and persuade our makers to try the effect of exporting butter regularly once a month.

We give, here, a few instances of the opinions held by divers dealers on the English markets as to the condition of the butter from Canada when it reaches those entrepôts.

Manchester. Messrs. Pierson and Butter:

"Too stale".

" " Lonsdale and Thompson :

"Almost invariably, stale."

Birmingham: Messrs. Bloomer & Co.

"Most of it unfit for the retail trade."

Liverpool: Mr. George Fletcher :

"Almost always too stale, and consequently unsalable."

Manchester: Messrs. James May & Co.

"Very little ever reaches us, and then, only inferior qualities."

" Mr. A. J. Brownson.

"The condition is bad, and it is generally too stale."

As regards other points adverted to by the circular sent by MM. Gigault and Leclair, respecting any other observations the dealers in England might see fit to make for the benefit of the exporters of Canada butter :

Messrs. Bloomer and Co., of Birmingham replied :

"Make creamery butter, and send it off at once for immediate sale. Pack it properly, surrounded by parchment-paper, and put it into refrigerating compartments."

Mr. Sam. Hughes, Liverpool :

"Weekly consignments, for immediate sale at the market-price then going ; that is the most profitable plan for the exporter."

At page 185 of the report of MM. Gigault and Leclair, Messrs. Nickson and Co., Liverpool, speaking of butter, make the following observations :

"Of all qualifications, uniformity is the most important. Consignments should be made weekly, and by no means intermittently, as at present, but every week, and previous notice of despatch should be sent by cable. Your butter should never be exposed to heat, otherwise its condition and flavour would be found to be seriously affected on its arrival in this country.

Moreover, it is absolutely necessary that the boats by which butter is sent hither be furnished with refrigerating chambers like those on board the Australian steamers."

And the Delegates, MM. Gigault and Leclair, report that :

"All the dealers in England agree in the following advice :

1.--Improve your method of manufacture, so as to make a type of butter of better quality and greater uniformity :

"Send your butter away weekly, so as to prevent its contracting that "stale" taste, so much complained of."

Unfortunately, many Canadian exporters neglect this advice, and, as we said before, persist in not consigning butter to England in the early summer because prices are then low, and keep the butter till its quality is injured and the reputation of our dairies and creameries impaired.

In April, 1895, a request, signed by Messrs. Albert Orr, M. D. Curran, and others, was received by the Hon. Louis Beaubien, to the following effect:

"The only profitable branch of the dairy industry of late years, has been the manufacture of cheese. If all milk-producers turn their attention to making cheese, the result will be that this industry will very soon become unprofitable, owing to over production. It is neither wise nor business-like to depend altogether upon one channel of outlet for the disposal of our entire milk-production."

The petition concluded by asking the government to grant a premium for a specified quantity of our finest fresh creamery-butter, to be shipped to Great Britain weekly, in sufficient quantity throughout the season, while fresh and in a condition to secure a reputation for itself.

Petitions, of a like character, were signed, in 1894, by representatives of nearly 200 out of the 240 or 250 creameries existing at that time in the province, and supported by a resolution, passed unanimously, by the Convention of the Dairy-men's Association, held in December 1894, as well as by a resolution unanimously carried by the Chambre du Commerce (Board of Trade) of Quebec.

Montreal, January 18th, 1897.

A. H. Jenner Esq.,
4 Lincoln Ave., City.

DEAR SIR;—

We herewith return the letter which you handed us to-day, and would advise that the only steamer of this line that was ever fitted out with cold-storage was the "Labrador". When this steamer first came out, she was fitted with cold-storage, but it was subsequently taken out, as the shippers would not use it.

Yours truly,

D. TORRANCE & Co.

BUTTER FOR EXPORT.—At the late Iowa Convention the following statement was made as to the character, flavour, etc., required to satisfy the English consumer of butter, and the most popular shape of the package:

"The exporter wants a square box made of white wood, twelve inches square inside, holding fifty-six pounds. The British retail dealer strips the butter from the box, and has a square from which he can cut pound quantities conveniently. The British require a paler butter than we have been making, with less salt in it, and drier than is customary with our makers; that means working the butter twice, so as to get more water out." Quite right, on the whole. The English of the higher classes object to too much flavour or too much colour in butter. A nutty flavour and a colour not deeper than "primrose" suit their palate and eye; and, moreover, the English of all classes object to pay for water instead of butter.

MILCH-COWS.

The Canadian cow — Guernseys — Jerseys — Ayrshires — Crossing — Dairy Shorthorns.

At a late agricultural meeting, at Jollette, I think, our worthy minister of agriculture for the Dominion, congratulated his French-Canadian hearers upon possessing the finest breed of dairy cows in the world. What is the breed, that the Hon. M. Fisher speaks of? As a matter of fact he has always kept a herd of thoroughbreds Guernseys himself, and is one of the vice-presidents of the American Guernsey cattle club. He apparently prefers them to cows such as the farmer can get here, and I think it is a pity that we do not think as he does, and are quite satisfied with what we have got, having been told that we are the lucky possessors of the finest dairy cows in the world.

Like the Canadian pony, the Canadian cow has been crossed and mongrelized out of existence as a type, and the cows that we now have in this district (1) cannot be said to belong to any breed, all that you can say of them, is that they show a cross of this or that breed. You could not find about here if you tried, a single specimen, that Prof. Couture would say was a genuine Canadian cow. There may be some parts of this Province where cows are to be found, more or less similar to the old type, about which their admirers have so much to say, more in the way of tradition and of latent possibilities of development than of actual superior merit; but there are certainly none here. If the old Canadian cow was anything at all, she was a small, hardy cow, giving a moderate quantity of rather rich milk, on poor feed, and quite useless for beef. There have always been plenty of cows of this type in different countries, doing fairly well, under local conditions, such as the Kerries, the Dexters, in Ireland; the small Brittany cow, etc., etc., that have either not been considered worth taking up and developing, so as to attempt to rival the great dairy breeds of England and America, or, if the attempt has been made to a partial extent, have quite failed to succeed in doing so. The great Dairy breeds of England and America, we know, and their reputation rest upon a solid foundation. They breed true to type, and by their aid, with crossing and selection, improvement is both certain, and progressive. I do not know of any more heart-breaking task than to endeavour how to get the French-Canadian farmer to improve his live stock. From year's end to year's end, the immensely large majority of our habitants keep on the same average number of cows they have been accustomed to keep on their farms, without any attempt at weeding out the bad ones, or improving or even keeping up the average of good ones. They know perfectly well, without any assistance from the Babcock, which of their cows are large milkers of poor milk, or moderate milkers of rich milk, and which give little of either milk or cream; but they keep them on all the same, because their neighbours do not want to buy their bad cows, and they think it would cost too much to fatten them for beef. A habitant is generally anxious to get a heifer calf out of a cow that he knows to be a good milker, but, after having reared this heifer, more or less carefully, he will

(1) Ste-Thérèse.

afterwards, no matter how well she turns out, put her to any bull at all, provided it costs him nothing. But, that is indispensable. He will not pay 50 cents for the service of the best registered Guernsey (1) or Ayrshire bull;

(1) Our own Guernsey bull "Rufus," from Sir John Abbot's herd, stood 3 years at Sorel for 50 cents a cow, and only served 2 cows besides those of his owner! Ed.

Even if it cost him nothing, he will not do even that, if he has some distance to go, and can turn his cow into a "pacage" of his neighbour's, where any sort of a scrub bull is running with the cattle. There is no attempt whatever made to have cows to come in calf at any certain time, nor can it be otherwise, as the bull is always allowed to run loose with the cows. Of course under these circumstances anything like an attempt at winter dairying is impossible. They will listen to all the arguments in favour of winter dairying, and go on doing just the same as before.

Our native cattle in this Province, owing to their inherent defects are not capable of improvement by selection alone, but they are good enough to serve as foundation stock if judiciously crossed, and constant efforts at improvement and selection were followed. There will of course always be, even amongst scrub cattle, some exceptionally good specimens, but it would be as unfair to take these animals as representatives of a so called race, as it would be to take the most inferior individuals amongst Ayrshire or Guernseys, for instance, and judge them according to that standard. It is possible to create a distinct breed of animals, breeding true to type; out of almost anything, if time and money be no object. Mr. Havemeyer, of New-York, is at present carrying out an experiment in the way of breeding dairy cattle, which may, not be successful. He is crossing Simmenthal and Normandy cattle on Jerseys, and vice versa.

Leaving out the money part, which is not the least important to us millinaire farmers of Lower Canada, it takes about 40 years of time. We shall not improve our cows much by starting herd-books alone, because a herd-book is of no use until a breed has been established, and all the careful process of selection and proper mating has been accomplished by such natural born breeders of animals, endowed with that natural intuition for the fitness of similarities and the unfitness of dissimilarities, which constitute the art of the breeder, and has always pre-eminently characterized English breeders and farmers.

The whole object of a breed of domestic animals is the concentration as much as possible of certain desirable attributes, with the certainty of having these attributes faithfully transmitted by their descendants.

We all know the four great dairy-breeds of this country or if you like it better, of England and America. The Dairy-shorthorn, the Ayrshire, the Jersey and the Guernsey. I have never known nor have I ever heard of any herd of Dairy shorthorns in this Province, but we know what they are good for; and what they can do. They give a very large quantity of milk of a very fair quality, the large yield practically making up for the lack of richness, so that a large quantity of butter can be made. They are very large, fatten easily, and make beef of the best qua-

lity. The Shorthorn of the type affected by the English Dairyman, is the nearest approach to perfection in the way of a general purpose cow; and they certainly would be very useful, if we had them here.

The Ayrshire, a smaller cow than the Shorthorn, gives a lesser quantity of, somewhat richer milk, is of a hardy constitution, is easily kept and fattens fairly for beef. The Ayrshire cross crops out most frequently among the cows in this part of the country, and appears to be the favorite one.

The Jersey is of course the butter cow, par excellence, where a fine quality of butter is desired to be made on the farm. The late Father Labelle introduced some Jersey blood into the north of this district and the benefit has been felt in the way of Jersey grades, that have remained. Individually, while admitting that a first class Jersey is unrivalled as a butter cow, I have a preference for Guernsey for the following reasons:

The Guernsey is the most placid, docile, easily managed and universally good-tempered cow that I have ever seen, and much superior on this respect to Jerseys, whom, in my experience, I have often found, shy, nervous, and difficult to handle, if not bad tempered. There is not much difference in the richness of the cream, and they are supposed to give the deepest coloured butter; (1) on dry feed, without artificial colouring; of any breed. I think that there are fewer poor Guernseys, than inferior Jerseys. Jerseys in America have been boomed and advertised according to characteristic yankee methods, as no breed of cattle ever has been before. We hear a great deal about the butter tests of phenomenal Jerseys, but we do not hear anything at all about the numerous cows with long pedigrees, but very, very small quantities of milk. Both Jerseys and Guernseys, are larger and coarser on this side in type than the Island cattle, and the Guernsey is always a medium sized, cow, often inclining to large, and fattens quite well for beef, producing just about that size of carcass, that the Montreal butchers, at any rate, prefer. (2) They do not want very large carcasses even of the finest quality of beef, as the large cuts are not saleable. I do not think that any farmer wishing to make high class butter at home, or having a personal connection in some good market, where he can obtain a good price for rich milk, could do better than to keep Guernseys or Guernsey grades. The man who sells milk to a creamery, may find it more profitable to keep Ayrshires. There are different methods of procedure amongst dairy farmers, and they ought to know their requirements, and the kind of cow, that suits them best. Only, having once made up your minds about that, do, oh my beloved brethren stick to these lines, and breed for continuous progressive improvement in your dairy herds. In view of Mr. Lister's remarks about the possibilities of Canada as a Dairy country, and of competition with Denmark, the subject of the improvement in the quality of our cows, as well as the augmentation of their numbers, is one of great importance.

"To obtain a fair share of this trade, Canada will have to establish fully two

(1) The English, as our friend knows, abhor deep coloured butter. Ed.
(2) And the best English trade too. Ed.

thousand more creameries and increase her number of cows proportionately."

In this connection, I cannot think of any more profitable encouragement to the special agricultural industry, for which this Province is supposed, and asserted to be by the "savant" conferencers" and others most judiciously fitted, than to devise some means, in combination with co-operative associations amongst farmers, by which farmers throughout Quebec, may be able to obtain as cheaply as possible, pure-bred bulls of dairy breeds, by the crossing of which, upon our native foundation stock, such as it is, we may be enabled in time, to bring it up to that condition, in which it may be really capable of producing "the finest dairy cows in the world."

A word, in conclusion, about thoroughbred stock and pedigrees; from "Sanders, on breeding."

"A pedigree is the genealogy of an animal. As usually understood, it consists of the names of the ancestors for a greater or less number of generations. Its value consists not so much in the number of generations through which the ancestry can be traced to some distinguished progeniture, as in the quality or character of the ancestry and, in proportion as we approach, the "top" of a pedigree—that is, the immediate progenitors of a given animal—the more important does the character of the ancestry become. However desirable it may be to have a record connecting our horses with Flying Childers or Eclipse, and our cattle with Hubback, or Favorite, at a distance of from ten to twenty generations, it is manifestly of far greater importance to know that our own cattle and horses are good, and that their ancestors for the last four or five generations were of surpassing excellence. If our own animals are good and the "top-crosses" have been uniformly of the same character, we may reasonably expect the progeny to be satisfactory; while, on the contrary, if we have no special merit in the sire and dam, or their immediate ancestors, we may show as many lines as we like to some great ancestor ten or fifteen generations removed; and it will not wipe out the stain of the defective recent crosses."

C. F. BOUTHILLIER.

A CASE OF MILK FEVER CURED.

Physic—General treatment—After yield.

To the Editor "Farmer's Advocate:"
SIR,—In reply to your request for our treatment of "Calamity Jane" for milk fever, I enclose a recipe given by Dr. McIntosh, V. S., of the University of Illinois (who said he never lost a case since adopting the remedy), which I clipped from an American paper over two years ago and have had the medicine on hand for all that time. Fortunately, we did not need to use it before, but it came very serviceable in this case. A leading breeder in Illinois State also reports using this remedy with the best of results for years. He keeps a supply of this medicine constantly on hand and has no dread from this commonly called fatal disease. I can claim no credit for the treatment, but can endorse it from our experience. The only credit I can claim is in having sense (for a wonder) to profit by my reading. This is important. There are done too many good cows—never will

be. Many will read this, say it looks sensible, and forget about it till he loses a cow, then will be sorry for it. Reader you had better cut this treatment out. Right now. It may save you many dollars and a favorite cow some day, as it has us. Here it is:

"1st. Give one and one-half pounds Epsom salts and one ounce powdered ginger in one-half gallon of water.

"2nd. Mix together ten ounces aromatic spirits ammonia and twenty ounces of spirits of nitrous ether, and immediately after giving the first give three ounces at a dose in a pint of cold water and continue every half hour until five doses are given, then give three ounces every hour until balance of medicine is used.

"Also take one pound of ground mustard, mix with hot water and rub in well along the back; cover well to keep up the heat; when mustard is dry it will rub off."

As symptoms somewhat vary, I will briefly state our experience. Cow calved on a Friday afternoon. Udder was not very full (at least, not for her) and cow not in high condition, as she had only been dry four weeks. She appeared to be doing very well; in fact, so much so that we neglected to give a big dose of salts, as is our custom. On Sunday morning found the cow, though able to rise, unable to stand any time, as her hind quarters seemed stiff. Knowing this to be milk fever, I lost no time in giving her a pound of salts (all I had) and at once commenced giving the ammonia and ether, and then applied mustard to back. After giving four doses went to town for more salts and to consult our veterinary surgeon; got back with V. S. at 11 a. m. Cow had been given a dose while away. As the doctor thought the medicine was in rather strong doses, gave her two pounds more of salts and a longer interval between doses. She appeared very bad and in great pain at 12, which attack might not have occurred if we had given the medicine as often as directed. Gave more medicine and cow soon got into a comatose state. At 1 p. m. V. S. thought there was not much chance for her pulling through. After this we could only keep her body as warm as possible with blankets and cold cloth on her head. V. S. came again at 10 p. m. and relieved her bladder, then thought she would live. At 1 a. m. Monday commenced to show a brighter eye and improve, till at 7 a. m. she ate a bran mash. Got up two days after; hind part still cramped and unable to stand any time. Third day could stand all right; leg still stiff, which has now nearly wore away after two weeks. On account of swelling and stiffness in hind legs have had to keep her on a limited ration. Has eaten all given her and, though thinner than usual, is now giving three (3) pails of milk daily.

A. & G. RICE.

Oxford Co., Ont.

(NOTE.—"Calamity Jane," referred to above, was the Holstein-Friesian cow that won the sweepstakes prize in the dairy test at the Guelph Fat Stock Show of 1895, under the rules of the British Dairy Show; also capturing "Farmer's Advocate" special trophy for best pure-bred dairy cow.—"Editor.")

DAIRY SHORTHORNS.—Mr. Stockwell, of Danville, whose letter appeared in the December number, is good enough to be satisfied with my explanation that the "Dairy-Shorthorn" has nothing to do with the "Pedigree Milking Shorthorn," though there is not the slightest doubt that the great

originators of these marvellous animals made use of the Teeswater as a foundation on which to build their herds. The following, from Sir Nigel Kingscote, one of our Gloucestershire Shorthorn breeders, will show that the modern pedigree Shorthorn-men are not going to be left behind in the dairy-qualities of their favourites, and we heartily wish them success, for we are entirely opposed to the idea, so prevalent in some parts of this continent, that a "general purpose" cow is an absurdity.

REASONS WHY THE SHORTHORN SOCIETY SHOULD OFFER PRIZES FOR PEDIGREE MILKING SHORTHORNS.—The following has been circulated among the members of the Council of the Shorthorn Society:

(1) It is claimed for the Shorthorn and I think rightly, that it is the general-purpose animal; viz., that it will milk and afterwards feed, being in this respect superior to all other breeds; and is, consequently, the best breed for the farmer.

(2) At the Fat Stock and county shows the feeding qualities of pedigree Shorthorns have been fully demonstrated, and it is probably owing to this successful demonstration of the Shorthorn as a beef-producer that the impression is abroad that pedigree Shorthorns will not milk. This prejudice is so strong that, generally speaking, THE DAIRY FARMER WILL NOT USE PEDIGREE BULLS. If this prejudice can be removed a larger field will be open to breeders of pedigree Shorthorn bulls.

(3) The Society's prize scheme for bulls is doing good to the Shorthorn interest, and it will be wise to continue these prizes. The scheme has done much to stir up a desire among breeders to see to the pedigrees of their stock, and the attention of agricultural societies has been called to the value of "pedigree." If prizes were also offered for PEDIGREE MILKING SHORTHORNS ENTERED IN THE HERD BOOK, a further impetus would be given to the value of "pedigree."

(4) With regard to the suggestion that if the Society offered prizes for milking Shorthorns it would be differentiating in favour of a particular strain, it might just as reasonably be said that the Society in offering prizes for bulls, and at the national shows for bulls and cows, is differentiating in favour of beef producers, seeing that the highly-fed cattle are the winners of these prizes. Milk, however, is, or should be, a characteristic of the breed, and belongs exclusively to no tribe or strain.

(5) I do not think there can be any question as to the legality of the Society offering prizes. It has been done since 1879, and there is surely no better way of "maintaining unimpaired the purity of the breed of cattle known as Shorthorns" than by offering prizes for animals whose pedigrees must be entered in the Herd Book, and whose personal merits must be of sufficient excellence to obtain a prize (see also paragraph 3).

(6) The question of offering these prizes is of interest to a large number of members of the Society, and it will be politic for the Society to offer them. A Lincoln Red Shorthorn Society has been established, and some of its members call attention to the merits of the Red Lincoln cattle as milkers. It is not to the interest of the Shorthorn Society that other societies of Shorthorn breeders should be called into existence. It is, I think, the duty of the Shorthorn Society in offering prizes to recognise all classes of its members, and by offering prizes for milk-

ing Shorthorns, and continuing the present prizes for bulls, this will be done, and the society will popularise itself, and be greatly strengthened, and will receive the cordial support of all its members.

NIGEL KINGSCOTE.

34, Charles Street, Berkeley Square, W.,
December, 1896.

MILK PRODUCING CROPS.

We have been requested to describe for the information of our readers the crops best suited to the production of milk in this province. Many of these, especially the root-crops, have been so recently treated of in this periodical that we shall confine ourselves to a description of what are called green, or fodder-crops, the principal of which are rye, tares or vetches, the clovers, sainfoin, lucerne, maize, and certain mixtures of some of the above with grain.

And, first, of "rye." The common error, in this part of the world, is the sowing of too little seed for grain-crops. It is a great mistake, particularly when an early cut is required, as it almost invariably is here. Rye particularly demands plenty of seed, as the thicker it is on the ground the more tender is the stem. Two and a half bushels to the "arpent" is not too heavy seeding, whether of spring or fall rye, both of which should be grown, as the spring sown will be likely to succeed the other in its turn, or very nearly so. As the seed of rye is very small, compared with the other cereals, the land should be very carefully prepared for its reception. Fall rye should be put in about 2½ to 3 inches deep, and the chief cultivation done before sowing, as the rougher the surface lies during the winter the better. In England, we like a good "clod" on the top for all autumn sown seed.

Unfortunately, rye runs through its courses so rapidly that it becomes uneatable in a very few days, so there is no use putting in too large a piece of spring rye at a time. All green-fodder-crops should be sown in succession, say, every fortnight.

TARES, OR VETCHES.—The invaluable small-seeded winter tare, or vetch, is not sufficiently hardy to stand the frost of this country, and that is a pity, for it is far superior in quality to the large-seeded spring tare.

Tares are seldom sown alone, as they need support. A bushel of oats, of the stiffest strawed kind, or of wheat, with 2 or 2½ bushels of tares, in well prepared land, is enough seed for an arpent, but not too much by any means. After well harrowing the seed in, roll the land. Rolling will pay if only for the sake of ease in mowing the crop.

The "Country Gentleman," in a reply to an inquiry as to the proper way to grow this plant, advises a seeding of ¾ of a bushel to 1 bushel as a fair dose to the acre! (See Ill. J. of Ag. Feb. 1896, p. 281.) and states that tares will do well "in the good soils in Western New-York provided the land is not composed largely of clay." Now, tares are emphatically a heavy land plant, and many a hundred acres of them are sown on our stiff Kentish clays, and, with red-clover, they supply the plough-teams with most of their green-meal in the latter summer.

The tare should not be begun to be cut till the plant is showing for bloom, as it is apt to scour horses and cows, though sheep, with their naturally cosine habit, do well upon it at any time.

Cut early, when the dew is off, and let the swathe lie for five or six hours to wilt before giving the tares to cattle.

The heaviest crop of vetches we ever grew was measured with 336 lbs. of the old style of Peruvian grains; 14 p. c., of nitrogen; it was an enormous production.

Do not try to make vetch-hay, unless you are sure of a fine time. When half-made, it is utterly spoiled by a shower of rain, and as for dust, only ask any one who has over threshed it for seed after its getting drenched!

No reason why silage should not be made of tares as well as of red-clover. As for the latter, ask Mr. James Drummond, of Petite Côte, Montreal, what he thinks about it. As for tares not keeping "on account of the large percentage of nitrogen they contain"—v. "Country Gentleman"—that is an illusion.

Every one knows all about red-clover, except that some people will not believe that if sown too frequently in the same piece of land it will ultimately refuse to grow at all.

SAINFOIN is one of the durable plants. Like lucerne, if properly put in on well prepared suitable land, it will stand for several years. It is "not" impatient of frost, though it does not like to lie in a hole where the alternate thaws and frosts are naturally hostile to its health. Sainfoin may be sown among the barley, oats, or wheat in spring, and, as the seed is large, should be buried pretty deeply—about an inch. Three and a-half bushels of the rough seed, and rather less than a bushel of "milled" seed, are enough for an arpent. No use sowing it on land devoid of lime. On a hill-side at Lachine, in 1889, it did well, though its first winter was a trying one. As the first year's crop is rather thin, generally speaking, it is as well to add 6 or 7 pounds of yellow "hop-clover," (1) to make up a good swath. The way in which the sainfoin thrived out at Lachine was marvellous; and now comes the wonderful part of it. "Common red-clover sown with barley after a heavily manured root-crop, alongside the sainfoin, is (in the spring of 1891) only 5 inches high, on the 20th May, whereas the sainfoin is 17 inches high, and showing for bloom. To-day, June 18th, the sainfoin is 33 inches high, and should have been cut, if for hay, on the 10th": v. Journal, July, 1891, p. 107.

M. Nagant, writes—v. Journal p. 130, Sept. 1891—as follows: "A few days ago, Mr. Jenner Fust sent to the Department, at Quebec, a sample of sainfoin, accompanied by a sheaf of common red-clover. These had been grown together on exactly the same soil, quite close together. We saw with wonder how superior the sainfoin was to the other fodder-crop. The sample was magnificent, and showed a vegetative power perfectly extraordinary. It is twice the height of the clover, and, other things being equal, weighs many times as much as the clover grown on the same ground and is three weeks earlier. We congratulate Mr. Jenner Fust on having so thoroughly succeeded in endowing Canada with so useful a plant.

(Signed) H. NAGANT.

LUCERNE.—This plant has been so recently and so frequently described in this paper that we need hardly do more than allude to it as a good food for milch-cows if not allowed to grow too long before cutting. It rarely affects

(1) Commonly called, in England "trefoll."

the bowels of any stock injuriously, so it may be given when in its earlier stages of growth. Mr. Peck, a well-known writer in the U.S., papers, saw M. Bouthillier's crop of lucerne in the past autumn, and declared that it was the best he had ever seen in any country.

Lucerne is sown broadcast, just like clover, with the grain-crops; and perhaps should be buried a trifle deeper than other seeds. For other information see Journal for 1896 pp. 300, 346.

MIXTURES.—But our favourite food for summering milch-cows, in addition to such quasi permanent plants as lucerne and sainfoin, is a mixture of grain and pulse: 2 bushels of oats, 1 bushel of pease, and 1 bushel of vetches to the arpent. This should be drilled in about 2 inches deep—or, if there is no drill handy, dragged in with a grubber—on the well harrowed surface of a fall furrow; harrowed again, and rolled as usual. M. Séraphin Guévremont and his cousin, of Sorel, unite in saying that, on their farms, no green-food has ever produced so much and such rich milk as this our special mixture. To be cut when the pulse is in bloom. If a trifle of rape, say, 3 lbs. to the arpent be sown on the piece just before the rolling, some fine pickings for the sheep will succeed the fodder-crop.

MAIZE.—When allowed to stand till the grain is well advanced, is no doubt capital food for cows; but, thick-sown, green maize cannot be worth much for any purpose.

Flax-seed (linseed) for Calves.

Ever since we contributed to the columns of this periodical, (1) we have recommended the use of linseed and skim-milk for the rearing of calves in places where full milk is too valuable for that purpose. The only trouble in using linseed is that it must be crushed in some way or other if the goodness is to be extracted from it. This, as we have often observed, must be apparent to any one who will take a grain of the seed and try to crack it with his teeth. He will find a gummy envelop form at once over the grain that will defy all his efforts to break it; consequently, the gastric juices can in no wise affect the contents, and, as has been practically proved, 9 grains out of 10 pass away from the animal to whom they are fed undigested.

How to crush flax-seed is a puzzle, as handy crushers are scarce here. If milled alone, the oil exudes and is lost from within the mill-stones. In this country, we have taken equal parts of oats and linseed, ground the mixture between the stones, and the oats, acting as an absorbent, seemed to save waste. The only thing against this proceeding is the danger of the husk of the oat causing calves to scour, and in this way we lost, on the first trial, two good calves. But, afterwards, by carefully sifting the coarser parts of the husks away, we found no ill effects from the use of this food.

The calf being, taken away from the cow as soon as dropped, and fed on her milk in its natural state for the first week, may then be turned on to skim-milk and crushed linseed, the latter at the rate of two large table-spoonfuls a day, steeped in boiling water till thoroughly soaked, the whole drink to be given warm: nothing causes diarrhoea in calves more commonly than cold milk. In

(1) Now 18 years ago—1870.

a couple of weeks, more linseed may be used—the state of the bowels must be the guide—and at six weeks old, the addition of a few pease to the grist will be found advantageous.

We cannot too earnestly advise farmers to grow flax; the seed for the use of their stock, the lint for manufacturing purposes.

FLAX.—If we are to sow flax, we must first make up our minds for what purpose we intend to grow it: for its seed alone; for good fibre and a fair yield of seed; or for fine fibre, for the manufacture of linen, cambric, etc., and an inferior yield of seed. Upon these three points will depend the quantity of seed used to the acre.

We may as well say at once that we have grown this crop very successfully



Fig. 1.

viz., for a fair crop of seed and a good quality of fibre, though not so fine as the lace-makers of Valenciennes, etc., require for their delicate work. It is probably a superstition, but the great Belgian and French-Flanders flax-growers persist in asserting that no good flax can be "retted" except in water from the river Lys.

PREPARATION OF THE LAND.—As we said above, no dung should be applied to the land for the flax-crop when good fibre is desired. Perhaps the best precursor of this plant would be a heavily manured crop of potatoes or roots. After the removal of the roots or tubers, the land should be ploughed a moderate depth, say, six inches, the ridges as wide as possible, being made quite flat, that is, not rounded in the least, and the water furrows most carefully drawn out. As

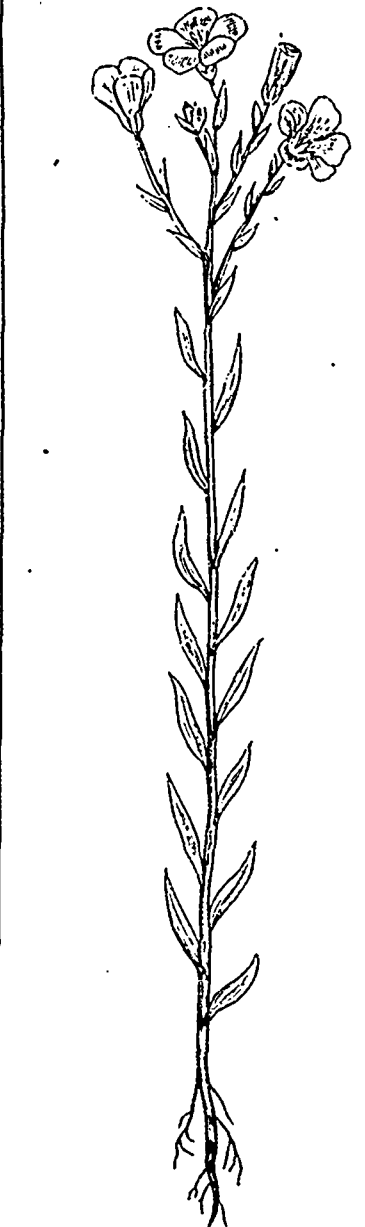


Fig. 2.

in England, and what we shall state here in describing its cultivation: is entirely derived from our own practice.

SOIL FOR FLAX.—The best soil for flax, as for pretty nearly everything else, is a moderately light loam. The best crop of this textile we ever grew was on a fine gravelly flat; alluvial deposit; on the banks of the river Cam on the borders of Essex and Cambridgeshire; the previous crop was wheat (44 bushels to the acre), but the land was full of dung and had never been hard worked. The rule used to be never to manure for flax directly, but if a dressing was considered necessary it was given to the antecedent crop. The flax we are now considering was sown for the 2nd purpose mentioned above,

in this high-waged country hand-weaving is out of the question, we must do our best to clean the land thoroughly before sowing; therefore, when spring arrives, we must work the grubber and not the plough, by which means the stale-furrow surface will be kept constantly in its place, and no fresh weed seeds be brought up from below. Grub two or three times at intervals of a week or so, and in this way what seeds of weeds lie near the surface will sprout and be destroyed as fast as they show their first leaves.

We may do well to mention here that the reason we advise the ridges to be made broad and flat is, that it being a very important point at harvest to keep the flax as much as possible in bundles of the same length, if the ridges

were ploughed narrow and rounded, the plants growing on the lower parts of the ridges next the open furrows would be much shorter than the plants on the crowns, and it would give no end of trouble to obtain anything like uniformity of length in pulling the crop.

SEED.—A great deal depends upon the seed: the best we used to think was Riga seed; sown one season in Belgium. It should be heavy, plump, and bright. We have seen very good linseed at Sorel, but more care must be taken in cleaning it than the farmers there seemed to think worth while.

As for quantity, if rather fine fibre is wanted, $2\frac{1}{2}$ bushels an imperial acre will not be too much, but for both seed and moderate fibre, 2 bushels may do. What you want is to prevent branching: it gives seed, but also coarse fibre.

SEASON. When the maize is sown is about the time for sowing flax: the land should be warmed first.

SOWING.—Flax requires a firm seed-bed; after the last grubbing, harrow till the land is pulverised all over; no holes or rough places must be left; roll when the harrowing is finished, and then sow: but here comes the trouble. Linseed is, as every one knows, the most slippery of all grains; it must be mixed with something that the hand can catch hold of, and the best thing, we think, is road-dust well sifted. The seed should be slightly moistened before mixing with the dust; it must be sown broadcast at any rate—never drilled—, and perhaps the ordinary broadcast sowing machine will do, but as we never tried one of them for this purpose we cannot say. At all events, the hind grubber teeth of this machine, if it is used, must be taken off, as the seed must not be buried deeply.

When sown on the freshly harrowed surface a pair of light seed harrows will bury the seed deep enough, and a good heavy roller finishes the job.

HARVESTING.—When the straw, next the ground, "begins" to turn yellow, and the seeds to change to a pale brown colour, the flax is ready to "pull". In pulling, the same lengths of straw should be kept as nearly as possible together, and the sheaves should be made small, say, about six inches through, as it makes the after-process of "rippling," i. e., pulling off the seed-bolls, more easy, the small sheaves not requiring to be opened out for that purpose. The sheaves should now be put into shocks, like wheat, to dry.

In England, we used our ordinary machines to thresh the flax; but, there, the mouth of the feeding place is a $5\text{ feet } 6\text{ inches}$ wide, so the straw to be threshed is fed in at full length side ways, and is delivered utterly unbroken and as straight as an arrow. Here, our machines would smash it up into tow, and make it worthless for any fine manufacture. We must "ripple it" thus: the small sheaves are repeatedly pulled through an upright iron comb with round teeth, about a foot high and $\frac{3}{4}$ of an inch apart, with blunt, tapering points. The "ripper," seated, spreads the small sheaves, draws the ends through the comb, as his assistant hands them to him, and the bolls falling to the ground or into a box arranged handily, can afterwards be threshed, and the seed put away after being winnowed. The flax itself is now be considered ready for the after process of "retting," beetling, and scutching, though it would be much improved by being kept in stack

till the warm weather of the next season arrives.

Where the "linseed" is consumed at home, as it ought invariably to be, there is not use in threshing out the bolls, as if mixed with a fair amount of oats and pease, they will grind up famously, and help to prevent any of the oil from escaping. About 2 bushels of pease, 4 bushels of oats, and 2 bushels of the bolls, make a good mixture, which, after turning up with chaffed straw, damped, will make good milk, or fat, tender beef and mutton.

In our time, we sold the flax in the sheaf to a London Company that had a factory fitted up after the plan of the Chevalier Claussen, a Belgian. Here, the flax was "retted" in warm water, beetled, scutched and finished off by machinery. If we remember, the price was \$15.00 a ton, and seed and straw brought us in about \$45.00 an acre; but it is a long time ago—1854—and we have no notes on the subject. Here we should think, at first, what is called "dew-retting" would be the easiest plan; the flax spread out thinly on the grass, and turned frequently, until the fibre parts readily from the woody stem, when it is ready for the beetle. It takes at least a month. If, however, flax should be grown to any extent and enterprising farmers should show that they are capable of turning out samples of really fine fibre, no doubt a market will soon exist for the straw in its natural condition. We saw in the papers, two years ago, that, at Dundee, Scotland, the straw was treated mechanically by a machine then recently invented for the purpose, and that fully three-fourths of the crop grown in Fifeshire was disposed of to the factory at prices which left a better result than any other crop on the farm. There must be plenty of firms here which would introduce it into the province as soon as it can be shown to be worth their while.

This article could have been spread out to ten times its length, but we think we have said enough to show any one who cares to embark in flax-culture how to set about it. Note:

- 1.—Pull flax, do not mow it;
- 2.—Knock the dirt off the roots by a kick, or by striking it against the ground;
- 3.—Before tying, lay the two handfuls across one another.
- 4.—Never sell the linseed, but use it for your stock.

SALTPETRE.—ED. HOARD'S DAIRYMAN:—In the "Dairyman" of Dec. 5th, F. H., of Peekskill, N. Y., asks: "Can turnips be fed without spoiling the butter? If so, how?" My experience with cream that has become tainted, caused by the cows eating weeds, is that adding one teaspoonfull powdered saltpetre to three gallons of cream just before churning improves it.

One day last winter, a gentleman who has had some experience in feeding turnips paid me a visit. Our conversation drifted on to the art of butter making. I then told him of the trouble I had with tainted milk and butter during the spring and summer of that year. He said, "Have you tried saltpetre?" Yes, I replied. I use it in the cream when I churn. "Why, that is not the way to use it!" he said. He told me to take a piece the size of a large pea, for each bucket of milk, and put it in the bucket while milking, this would take the taint out entirely. I have not tried it yet, but will when I think it necessary.

I feed the skimmed milk to the cows,

but I do it in this wise. I keep it till it is just turning sour, then I stir in a little wheat bran and feed it. The cows are very fond of it and will drink it the year round.

Deer Lodge, Mont. A READER.

It is now about 45 years since we first used saltpetre (nitrate of potash) for the removal from milk of the flavour of turnips given to milk-cows, and as long as we had a dairy and fed cows on turnips or swedes, we never gave up its use. We recommend the following practice: for each cow giving an average yield of milk, take a piece of saltpetre about the size of a Barcelona nut—the top of the little finger is about the size—; dissolve it in hot water, and divide the solution equally among the cows, putting it into the pail before milking. The old plan used to be, as in the quotation, to put the piece undissolved into the pail, but the one just described is, we think, more likely to be equal. When "Devonshire cream" is used for butter-making, and the saltpetre is added, no fear need be felt of the least turnip-flavour being perceptible in the product; in fact, we once tried the experiment of feeding a cow on half-rotten cabbages—from an outside heap in winter, that had, unfortunately, been topped with straw,—and the heat and saltpetre together carried off the bad flavour entirely, so that the butter was perfectly free from it, though the milk before heating was, not to mince matters, nasty.

As to giving cows the skimmed milk, we did so once, again for experiment sake.

She, for we had only one cow at the time and no pigs, drank it freely from the first, it being quite fresh, as all skimmed milk is when treated Devonshire fashion, and her yield was largely increased. But, the milk was very poor indeed; so poor, that the plan was hardly worth pursuing.

THE "THISTLE MILKING MACHINE," we gather from "Hoard's Dairyman," has been successfully worked at "The Hospital," Illinois, and is much liked by both men and cows. The milk, in the improved machine, now passes through a glass jar into the can; so the man knows when to stop. It averages six or seven minutes to each cow: never more than the latter number, which is about four minutes less than the time usually taken by a fairly good milker of the old style to empty an ordinary udder, though many of our Gloucestershire, Eng., people milk ten cows an hour—at least they say so.

TOO MUCH MILK.—Very few farmers have milk enough, but still fewer have such a supply that they can afford to give any of their stock too much for their health. A very trite sentence, our readers will say, but it is elicited by a passage in an exchange, which runs as follows:

"Milk is undoubtedly the best food for young stock of all kinds. When taken in the natural way, i. e., from the teat, the milk is always warm, comes very slowly, and is always mixed with some saliva in the mouth and this aids digestion—don't give a whole pailful of cold milk to a young calf at once: it is almost sure to cause scouring. Milk should never be the sole food of any except of the youngest animals on account of its indigestibility."

This is all right, as far as it goes, but, practically, there is no fear of any dairyman knowing so little about his business as to scour his calves by giving them, when under four months

old, a pailful of cold milk, and the older animals may be left to take care of themselves. Four feeds of milk a day, is about the right treatment for calves under a month old, which may be reduced to three feeds a day after that age, and at three months, twice a day milk, with lots of different kinds of fodder, such as crushed linseed, clover-hay chaffed, pease-meal, etc., until the grass is ready.

Agricultural Societies and Farmers' Clubs.

Farmers' Club of St Cuthbert. (Berthier).

COMPETITION IN LIMING LAND

(Taken from the report, (in French) of the judges of the competition at St. Cuthbert on the 23rd of September, 1896.)

In our judgment, all the competitors have fulfilled the conditions laid down in the programme, but either owing to the drought, or for other reasons, the result is not entirely satisfactory.

The most favourable results were obtained by: 1st Pierre Gervais; 2nd Jos. Lamoureux.

PAUL LAVALLEE,
REV. A. BOURGEOIS.

REPORT OF M. PIERRE GERVAIS.

I will give the results of half an acre of land dressed with lime as compared with the same area not so treated.

The ground experimented upon is composed of black soil or bog-earth with a clay bottom.

No manures of any kind were used on either of the two plots entered for the competition.

The condition of the land during the three years previous to my experiments was as follows: During 1893 and 1894, these fields were used as pasture, and the following year, that is to say, in the spring of 1895, I ploughed and sowed them to oats. You will observe, therefore, that the liming was done on oat stubble.

Here is my method of preparing the soil and spreading the lime:

I ploughed the land to a depth of six or seven inches, and then spread the lime in the following manner. It was spread in three different ways. When the snow was disappearing, about the 20th of April, I took five bushels of lime, which I brought to the field to be limed, putting it in a hole in the ground, and then covering it with earth. At seeding time, about the 20th of May, I mixed the earth and lime together, put it into a cart, and spread it with a shovel; but as the quantity of lime I had prepared was not sufficient to cover all the ground, I took quick-lime, and after slaking it with water, put it in a cart and also spread it with the shovel.

As this way of spreading with the shovel required much time, making the cost of the 'mendment rather costly, I discontinued spreading it by shovel, and instead, scattered the remainder by hand; this method required twelve bushels of lime, which at twenty-five cents a bushel, amounted in all to \$2.40. After preparing the soil as above I sowed oats, with a seeder, using about a bushel and a half to the acre. I then worked the ground, mixing the lime and grain together, with an iron harrow.

I could perceive no difference in the crops resulting from either of these

methods of lime-dressing, but there was a marked disparity between the half acre on which lime had been used and the half acre not so treated. The straw of the oats on the limed field was both longer and thicker, and the ears were larger, the yield being twenty-two bushels to the acre, while the non-limed area gave only sixteen bushels.

I conclude from these facts that any one using lime as a 'mendment on black soil or bog earth (terre noire) will not only find it profitable, but will improve the condition of his land.

The land entered for the competition is bounded by a ditch on each side.

PIERRE GERVAIS.

I declare and affirm that what is written in this report is, to the best of my knowledge, true.

J. O. B. LAFRENIERE.

President of the Farmers' Club of St. Cuthbert.

Taken and acknowledged before me, at St. Cuthbert, on this 11th day of October 1896.

"Remarks"—In this province, the best time to lime land is the autumn, but when this is impossible the liming may still be done in spring provided care be taken to proceed as follows:

1o.—The lime slaked and mixed with earth is to be spread and ploughed lightly at least "two or three weeks before seeding time;" otherwise the rootlets of the young plants will be killed by the caustic action of the lime.

This interval of two or three weeks between the liming and the sowing is necessary in order to allow the lime to act on the constituents of the soil and give it time to lose its caustic effects.

2.—At the time of spreading the mixture of lime and earth "the atmosphere ought to be dry and the soil fairly dry", otherwise the lime is liable to be converted to the carbonate more or less, that is to say, that it will lose a large amount of its fertilizing properties before it can be covered by harrowing or light ploughing.

M. Pierre Gervais' results would have been better had he allowed a greater interval between the period of liming and seeding time, as I have pointed out above.

Nevertheless, in spite of this, his experiments have taught him the advantages of lime dressing, results which will continue to show themselves for several years.

THE EDITOR.

REPORT OF M. JOSEPH LAMOUREUX.

CLAY SOIL.—Two bushels of lime were put in a hole in the ground and left for two days only, when I mixed it with a little earth. I sowed in handfuls in the same way as grain. The cost of the lime at twenty-five cents per bushel was fifty-cents.

I then ploughed the ground to a depth of 6 or 7 inches. Half a bushel of wheat was taken to each half acre of ground. I harvested two and a half bushels from the limed field but only one and one half from the plot on which no lime was used.

The quality of the grain was medium; the straw was long enough but it was thin on the ground.

During the three preceding years these fields were grazed. The ground is drained by a stream, on one side, and on the other by a good ditch.

I applied no other fertilizer.

I declare and affirm solemnly that this report is to the best of my knowledge true.

JOSEPH LAMOUREUX.

REMARKS.—For a proper experiment in lime dressing at least two and a half to five bushels of quick lime per half acre ought to be used.

The lime must be well slaked till it falls to powder before being mixed with earth, preparatory to its being spread on the land. The spreading and covering in by means of the harrow or by light ploughing ought to be done immediately after mixing the lime and earth. Nevertheless, the weather must be dry and the ground free from too much moisture, otherwise the lime would readily lose its properties.

After a dressing of lime "two or three weeks must be allowed to elapse before proceeding to sow the piece. All these points have perhaps not been well attended to.

However this may be, we can see the beneficial effects of liming on the returns of the crops, this fertilizing effect of the lime will go on showing itself next year and perhaps even longer.

The soil tested seems to us extremely poor, judging by the portion not treated with lime. In such a case as this the land requires other fertilizers quite as much as it does lime.

THE EDITOR.

PROGRESS DUE TO FARMERS' CLUBS.—Farmers' Club of South Ham (Wolfe).—Clover seed—Improvements in meadows and pastures—Apple-trees and plum-trees.—The Club held this year several competitions in the growing of roots, green fodder, tobacco, tree planting, for the best method of keeping of manures, raising hogs, etc. The following are the names of those who received prizes:

Messrs. L. O. Dion, Napoléon Couture, Louis Desrochers, Isaac Goodenough, D. Pinard, Joseph Bréault, J. A. Pihault, Frs. Côté, Léon Dion, Wm. Thompson, Joseph G. Thompson, O. Lamoureux et Phyllis Auger. Much enthusiasm was manifested by the candidates.

The beneficial effect wrought by the society is already seen in the increased acreage of fodder crops under cultivation, especially of clover; the result being a great improvement in meadow and pasture lands. Greater care is also beginning to be given to the preparation of manure, and the milk-cows are also better fed.

We also learn with great pleasure that, at the suggestion of the secretary, M. L. O. Dion, no less than 1,500 small grafts of apple and 70 plum-trees were planted last spring.

The farmers' Club of Brampton Falls.—The annual ploughing match took place on the 7th October ult.

In the afternoon, M. E. W. Jobin, Mayor of the Municipality and president of the society, announced the names of the members who had obtained the highest number of marks both in the competition for the best kept farms and at the ploughing match.

Competition in farming (Aug. 13th 1896).—1st Division, 1st prize, M. Guillaume Blais.—2nd Division, 1st prize, M. Charles Pelletier.

"Ploughing competition."—1st class, for men, 18 entries, 1st prize, M. G. Hains; 2d division, lads, 14 entries, 1st prize M. A. S. Varney.

The results achieved in this locality, which are mainly the outcome of the work of the society, are, in the opinion of the secretary, \$400 received and spent for the encouragement of agriculture, a greater liking for farming as a livelihood, the wider extension of agricultural instruction, improvement in

farm buildings, in cultivation and especially in ploughing.

Farmers' Club of St-Antoine of La-Valtrie.—Competition in growing corn for fodder, potatoes, Indian corn, mangels, and carrots. 1st prizes: Messrs. Joseph Chevalier, David Beaudin, Zotique Robillard, Edouard Mousseau, and the Rev. C. S. Huet. The judges of the competition noticed a marked improvement in the various classes entered; with one or two exceptions the crops were cleaner, better worked and gave a better yield. This was especially noticeable in the case of the Indian corn and the potatoes. There were also two or three very fine fields of mangels.

According to the secretary of the society, M. S. Martineau, these competitions induce a fruitful emulation among the members of the society, as well as an improvement in methods of farming.

Ascot Farmers' Club.—The distribution of prizes to the successful candidates, who obtained the highest number of marks in the recent competition held by this society, took place on the 20th of September, in a room of the Christian Brothers' school at east Sherbrooke. Here are the names of those who, by dint of intelligent work and diligent effort, succeeded in getting the required number of marks: 1st prize, N. S. Bourque, 2nd prize, John Mulvann, 3rd prize Ephrem Lemey, 4th prize, Jos. Allard, 5th prize, Louis Simoneau, 6th prize, J. B. Duford, 7th prize Constant Bostoné, 8th prize, Séverin Déziel, 9th prize, Eusèbe Villeneuve, 10th prize, Calixte Boudreau, sr. The award of prizes in this competition being based on a certain number of marks allowed for each article in the programme, it does not followed, as the president remarked, that the successful candidates are the only deserving ones; on the contrary, more than one did excellently well in certain subjects, but, unfortunately, the number of these subjects did not suffice to obtain a prize.

Farmers' Club of Notre-Dame (Saint-Hyacinthe).—The competition in ploughing held under the auspices of the agriculture society, took place on the 15th of October, on the farm of M. Et. Chagnon.

Those taking part were very numerous, but there were no less than 300 spectators.

Before the competition, the president, the Rev. P. Rondeau, gave a very useful lecture on ploughing that interested everybody.

Eight prizes were distributed among ploughmen upwards of 20 years old.

1st prize, a steel plough valued at \$10, given by Dr Cartier, was won by M. Victor Michon.

2nd prize, a \$7.00 plough, given by M. Lemieux, was won by M. Anaclet Rodier.

3rd prize, \$5.00 given by judge Tellier, won by M. F. Laplante.

4th prize, given by M. Boas, won by M. A. Bienvenu.

6th prize, \$3.50 won by M. F. Ohapde laine.

7th prize \$3.25 won by M. Nap. Bienvenu.

8th prize, \$2.50 won by M. Pierre Pélouquin.

There were besides two classes open to lads.

In the first, two prizes of \$2.50 and 2.00 were won by the two sons of M. Nap. Bienvenu, the secretary of the society, these two young men being respectively aged 13 and 14 years.

The second class was for boys of 10-12 years of age.

1st prize, \$2.50 won by Ernest Chagnon, son of M. Etienne.

2nd prize \$2.00 won by Armand La-Haise.

3rd prize \$1.50 won by Jules Lamothe, son of Arthur.

4th prize \$1.00 won by Lionel Pélouquin, son of Charles.

5th prize 75 cts. won by M. Boulé.

Let use hope that these young men will continue to take part in these competitions, which fulfill so useful a purpose in giving a liking for agriculture and so tend to promote the prosperity of the province. In the horticultural exhibition the prizes for vegetables were nearly all given by M. J. Lemieux.

1st prize \$2.00, won by M. F. Chapdelaine.

Farmer's Club of the municipality of Emberton (Compton).—The society held competitions in bean growing with oats and pease, in fodder corn, carrots mangels, swedes and turnips. The first prizes were taken by Messrs. Sylvain Chaffler, P. Mathias Bellefeuille, Alfred Gervais, P. Hilaire Mercier.

Special mention must be made of M. Joseph Martin, who, last summer, obtained no less than 250 bushels of oats from 10 bushels sown, i. e., 25 bushels for one.

In this place agriculture has made some real progress.

Farmer's Club of Cap Santé (Portneuf).—A ploughing match took place on the 30th of October last, 12 members of the society being entered in the contest. M. Cyrille Dorval was Judge. The first prize was awarded to M. Célestine Delisle. After the distribution of the prizes, M. Bernard, N.P., gave a very instructive lecture on ploughing, the care to be taken in making the last furrow, in order to properly drain the land, the cultivation of Indian corn, clover, the production of clover seed, the preparation of manures, the cultivation of rape, the chaffing of fodder-crops, etc.

Farmer's Club of St-Gabriel of Stratford (Wolfe).—Fruit trees.—Fodder roots. This society held competition in the cultivation of potatoes, swedes, and in orchards. The following obtained the first prizes: Messrs. Alcide Béliveau, Louis Augustin Côté, Cyrille Hébert.

Messrs. Polycarpe Lavertu, Adolphe Boucher et Joseph Picard who were the judges of the competition drew attention to the number and quality of the fruit trees; the potatoes were very fine; the advantages of growing mangels-wurzel and other roots are beginning to be appreciated in the production of milk. There is the desire of improvement among all the members of the society.

Farmer's Club of Pont-Chateau.—Experiment with a fertilizer on meadow land. I the undersigned, certify that I made the following experiment on meadow, down 3 years, with plaster and ashes as recommended by the council of agriculture.

LIGHT SOIL.—On the 4th of May, 1896, I harrowed an acre of meadow with a very heavy wooden harrow. I spread over it 200 lbs. of plaster and six bushels of hardwood ashes. I then rolled it with a wooden roller.

HARVEST RESULTS.—The fertility was increased one-third.

The acre dressed yielded a ton of hay. The portion not treated with the mixture gave only 2-3 of a ton per acre.

OSCAR BESNER.

Pont Chateau, St-Ignace,
12 Sept., 1896
(From the French), by J. F. Hausen.

Notes by the Way.

COOKED-FOOD.—We have always held, as our readers know, that except in places where "fuel and labour" are very cheap indeed, cooking food for cattle cannot possibly pay. Therefore, we were highly pleased to find so good an authority as "Hoard's Dairyman" taking precisely the same view of the case as we do. The, we may say, universal practice of English farmers and dairymen is with us. There are who recommend boiling uncrushed linseed for a couple of hours or so! To them we beg to recommend, as we have done a score of times, to crack the linseed and steep it in plenty of cold water. If there is no crusher handy, a mixture of about 2 bushels of oats to one of linseed will not clog the millstones, which linseed alone will assuredly do.

"Unless fuel and labor are very, very cheap, we do not believe there will be any economy in either boiling unground barley or scalding "chopped" barley. The digestive apparatus of the cow seems to be constructed with special reference to taking her food uncooked, and we cannot find any authentic record of experiments which show that cooked food produces better results than uncooked food, provided the latter is in a condition to be properly masticated. It would not be economical to feed a cow unground barley, and if it costs less to cook it than to grind it, and not too much of the cooked grain passes off undigested, boiling may take the place of grinding."

SEED-GRAIN.—Some 40 odd years ago, we were in the habit of attending the Cambridge (Eng.) market two or three times a month during the spring for the purpose of buying barley and oats for seed. The first time we went there we were astonished to find the Webbs, Jonases, Claydens, and others of the leading farmers of Essex and Hertfordshire, buying barley for seed that seemed to us—and was—little better than "Chickens' victuals." Upon enquiry, we found that this was the growth of the fenny soils of Huntingdonshire and Cambridgeshire, and though queer to look at was pure Chevalier barley the indisputable descendant of the original five cuts of barley found accidentally and carefully perpetuated by Dr. Chevalier, near Framlingham in Suffolk. This used to be bought by the great farmers of the Chalk soils in the aforesaid counties for seed, and when transferred to their land, the thin, impoverished looking grain, that cost some 24s or 25s a quarter, became the parent of the finest malting barley in the world, for which we have known more than twice as much paid as the seed originally cost. Now, we have heard this that we have stated doubted, so our readers will understand that we were rather pleased at reading the following from the Principal of the Agricultural College at Downton, near Salisbury, England:

SEED.

There can be no doubt of the importance of good seed, and that money is well laid out upon selected pedigree barley. It is a question whether the heaviest and plumpest seed is always to be recommended, but the "sort" is of the utmost importance. First-class barley can be grown from the screenings of really good malting samples, and, rightly or wrongly, many good farmers maintain that seed, although a little thin, is capable of

growing a crop possessed of all the requisite qualities. On the contrary, big and plump seed may produce a thin progeny if the season is not propitious. (1) The well-known fact that like produces like must not be lost sight of, but in the screenings from a bulk of first-rate barley the qualities exist. If the quality of pedigree barley is only derived from repeated passages over the screen, there appears to be but little guarantee that the produce will all be of the same character. Breeders of animals know that the accidental condition of cattle or sheep is not the element which stamps excellence on the offspring. It is the "sort", not the fatness, which tells, and this would lead to the opinion that the thinner barley from good stock may be as likely to produce good quality as the fattest grains which cannot pass through the screen. It would seem, then, a pity to hold back high-priced barley for seed, when samples which have suffered a little in colour from rain, or are derived from the under side of the screen, can be bought or reserved at much advantage in price. These views are not advanced positively, and if they invite remark so much the better. They are worthy of consideration, for profits are not large enough to be diminished by sowing corn for which good money can now be obtained. The best sample of barley I ever grew was from screenings from Hallett's pedigree, from a well-known and reliable firm, at moderate market prices.

RED-CLOVER.—As we have often remarked in this periodical, if red-clover, "trifolium pratense," is sown too often on the same land, it will eventually refuse to grow. Mr. Hall, of Shebrooke and others doubt this, but the testimony of hundreds, nay of thousands, of the best and most experienced farmers in England prove the truth of the assertion. Throughout the Eastern counties of England, whereas the original practice of those following the four-course rotation was to sow clover every fourth year, no one dare sow it more than every eighth year, many postponing its recurrence to the twelfth year, as thus:

Original four-course rotation: roots, barley, clover, wheat;

Then, four-course rotation: roots, barley, clover, wheat; roots barley, beans or pease, wheat;

Now, in many cases: roots, barley, clover, wheat; roots, barley, beans or pease, wheat; roots, barley, trefoil, wheat.

Beans on heavy, pease on light, land. And this last is the course now generally adopted on almost all the farms in Essex, Cambridgeshire, etc., and its adoption is entirely owing to the prevalence of what we call clover-sickness. We beg our readers to weigh the answer given to the question we annex, from the English Agricultural Gazette, and to consider if it is likely that such an opinion would be held if there was no such thing as the "clover-sickness, the cause of which is, according to Sir John Lawes and all English farmers, the too frequent recurrence of the plant on the same land.

(1) In 1863, and again in 1865, we imported, from England some of the finest Chevalier barley we ever saw, and distributed it for seed among the Chambly farmers—gratis—on condition that they would sell us the produce for our brewery. The yield at harvest was very poor in quality, in both seasons, and it took two or three years before the grain at all resembled its parent.—Ed.

"Clover Dying off."—Will you advise me what to do with a field of clover that is dying off in spots, and daily getting worse? It was seeded down last April. It died off in the same way when last seeded out, four years ago. It is a light sandy soil. Your information will oblige.—C. T. (It looks very like clover sickness, and this view is strengthened by the description given of the soil. Four years is too short an interval, and the fact that the clover died off last time is suspicious of the land being unable to support clover at present. My recommendation is to plough up as soon as possible, and sow peas. You must judge by the condition of the soil, for if good it might grow barley. You might also bring it into roots or vetches, but the difference between a crop which brings in money and one which absorbs money is always a point to be considered.—J. W.)"

The frequent repetition of this subject is doubtless a bore to many of our readers, but the matter is an important one, and that must be our apology for insisting upon it.

CULTIVATORS OR GRUBBERS.

Mr. Wrightson, a thorough farmer in Wiltshire, Eng., does not seem to care much about the ordinary cultivators made in that country, but speaks very highly of the "Spring-tooth," introduced by an American firm; "it is," says he, "destined to alter the opinion of our farmers on this point; it is a wonderful implement, elegant in construction, immensely strong, and absolutely irresistible. A spring-tooth cultivator will tear up a row, and two or three operations will produce a tith fit for anything. The tines are of the finest steel, tempered in oil, and true as the metal from which they are formed. It is a formidable rival of steam, and is wonderfully light in draught. Besides, being fitted with a seed-box, it can be used for at once preparing a seed-bed and depositing the seed in times of pressure. Another innovation which must soon become general is the two-horse drill, also of American or Canadian origin. Who would continue to use a four-horse drill requiring two men and a driver when one man and two horses can do the work? Steerage has been rendered unnecessary, for with a pair of horses and pole, and driver seated as on a horse rake, a larger area can be drilled in the day at one half the expense." But, while we fully agree with Prof. Wrightson's opinion of the cultivator, we cannot go so far as he does in praise of a grain-drill without a steerage, as without that appendage, no use can be made of the horse-hoe, which is commonly used to hoe grain in the spring on all the best South of England farms, and very pretty, and very cheap work it does.

ARTICHOKES.—The tuber commonly called the "Jerusalem Artichoke," has one peculiar merit; whereas the potato requires to be boiled in order to break up the starch-cells, the starch in the artichoke is in a special form, known to science as "inuline," and is assimilable by stock in its uncooked state.

Another peculiarity of the plant is its name: it is not an "artichoke" at all and "Jerusalem" is only a vulgar adaptation of "Gire-sol" (sun-turner), from an old superstition that the bud of this plant continually follows the sun in its (apparent) revolution round the world.

Breconat's analysis of the tubers of this plant is as follows:

Starch—inulin... ..	30
Albumen..... ..	10
Sugar..... ..	148
Gum..... ..	12
Oil..... ..	1
Woody fibre... ..	12
Ash..... ..	17
Water..... ..	770
	1000

It contains about the same quantity of water of the potato, but is rich in carbohydrates and flesh-formers as will be seen by the following table, from "Hoard":

	Flesh formers.	Fat formers.
Carrots... ..	6	66
Sugar beets..... ..	9	136
Mangels... ..	4	102
White-turnip... ..	1	40
Artichoke... ..	10	188

The "fat-formers" are, of course the carbohydrates, and the "flesh-formers" the nitrogenous matters.

As the yield of the artichoke, if treated like the potato, is very large, we cannot see why it is not more generally cultivated, particularly as, if set in any out of the way corner, it may be left to itself for several years, there being always enough small tubers left behind in the ground after digging to afford plenty of seed for the next crop; a sufficient reason for not planting the artichoke in any land under a rotation, as it is mighty difficult to get rid of it, the frost having no more effect upon the tubers than it has upon a polar bear. As for turning hogs into the piece "to clear up the last remains a little late in the spring," as a writer in "Hoard" advises, we prefer leaving land alone at that season, for a lot of pigs rooting about before seed-time will not facilitate the obtaining of a fine tith. Did any of our friends ever dig a bed of parsnips in April or early May? A nice mess it makes, particularly if the land is a little heavy.

BRITISH AGRICULTURE.—The following extract from the "Country Gentleman" is a puzzle. What it can mean we have not the least idea. We presume the figures 1, 693, 947, represent the number of acres of wheat in England, but to say that this "average" represents an increase is absurd. The figures due to England are given to Wales, (1) that grows but little wheat; and as for Scotland, with its 122, 148, 628 bushels of wheat in 1896, that country does not grow that quantity in ten years. Why "Product" of 1895 and "yield" of 1896? It is all dark.

"British Agriculture".—The official preliminary statement of yield of cereals makes the average yield of wheat of 1896 33.68 bushels per acre. In 1895 it was 26.23. Average 1,693,947, also an increase. The yield of wheat is 4.87 bushels more than the average of ten years, that of barley 0.95 bushels more, and of oats 1.4 less. The estimates are as follows.

	1895—Product.	1896—Product.
England.....	57,052,952 bu.	37,176,257 bu.
Wales.....	70,774,776	68,670,945
Scotland.....	111,915,907	122,143,628

The estimated yield of barley is 33.63 bushels, and of oats 36.83."

(1) Curious to think, nowadays, that Palestine, which country one used to picture to oneself as so large, was very little larger than Wales, viz., 7,000 square miles! Jerusalem would go into Hyde-Park, London.—Ed.

THE FARMER'S ADVOCATE.—The publishers of the above well-known agricultural paper have kindly sent us a copy of their Christmas number, a truly marvellous production of the printer's and engraver's art. The "Native Maple-hedge, the two farms and buildings, on page 532, 533, and the "French-Canadian-Harvest-scene," are particularly meritorious.

The Horse.

THE COACH HORSE.

The Arab Thoroughbred—Its action — Cleveland Bays—French coacher — The Hackney - Trotters Laws of breeding - Studs.

In these days, when all the world is agog to find out the newest and best thing in horse-less conveyances, it seems folly, or waste of time to write on the breeding of Coach-horses, so to those who are wistful to relegate "man's truest friend" to the forgotten past, the apology is made that the following is written in the hope that it may prove of historical interest in years to come, and to those who are still dubious as to the merits of the new mode of travelling, no apology is needed.

It is a remarkable fact that, the Arabian horse is the foundation upon which has been built the superstructure representing all the breeds of light horses. From a trinity of Arabian lineage—the Darley Arabian, the Godolphin Barb, and the Byerly Turk the parent stem of the thorough bred began its growth, extending branches throughout Great Britain, and making the Hackney, Cleveland Bay, and Yorkshire coacher, passing over to France and evolving the French coacher, and finally coming to America, and assisting in the production of all the varieties of light horses. The Arabian horse, though essentially a saddler for early times, had some qualities that are included among the merits of the modern coacher. What they lacked in size they made up in quality, and beauty of finish and form. They had much of that stateliness in repose, or action, which seems to be the seal of high breeding in coach circles. Out of fair sized mares, and by an Arabian stallion typical in size, quality, and action of the kind most prized in their own country, progeny can be seen, that have smoothness, symmetry, substance, quality and action, which culminate in the high class coacher.

It is a fact that all the breeds of light horses have drawn on the thoroughbred for some of their features.

In its relation to the coach breeds, the thoroughbred has the same position as the Arabian, in as far as he can be utilized for this purpose only as a leaven.

The thoroughbred in itself, has never possessed coach characteristics to any extent, but they had some qualities which could not be done without. The action of the influences of the hoof, the strain and excitement of racing contests, on the temperament of the thoroughbred, resulted in such courage, dash, and quality of bone, tendon, and muscle, as no other breed can claim. A stallion of thoroughbred breeding invariably had these merits, and if he showed any deviation from the generality of the breed, breaking away from the stiff legged action common to most of them, towards a movement

more graceful, and with flexion of hock and knee, he became invaluable as a sire to use on coach form and style. If our Canadian breeders would take the trouble to turn out horses of this class, they would not have to go any further than Buffalo, or New-York, to realise good prices.

The Hackney horse at an early day was distinctly a trotter, as the early records well show, and it was at the time these records were made, that the breed occupied a sphere of its own, outside the pale of the thoroughbred. The coach horse of early times in England, especially those of Cleveland Bay descent, were large horses, inclined to be coarse in organization unless there was a dash of thoroughbred blood, close to the last generation. As a writer says, the type of coach horse during the time of Queen Anne, and most of the reigns of the two Georges, was "of great size, fat as prize oxen, proud and prancing at starting, all action and no go." With the change that came about in the means of transportation, and the use of lighter vehicles, a lighter horse of more quality and energy was required, and for this reason chiefly, the thoroughbred was used in the improve-

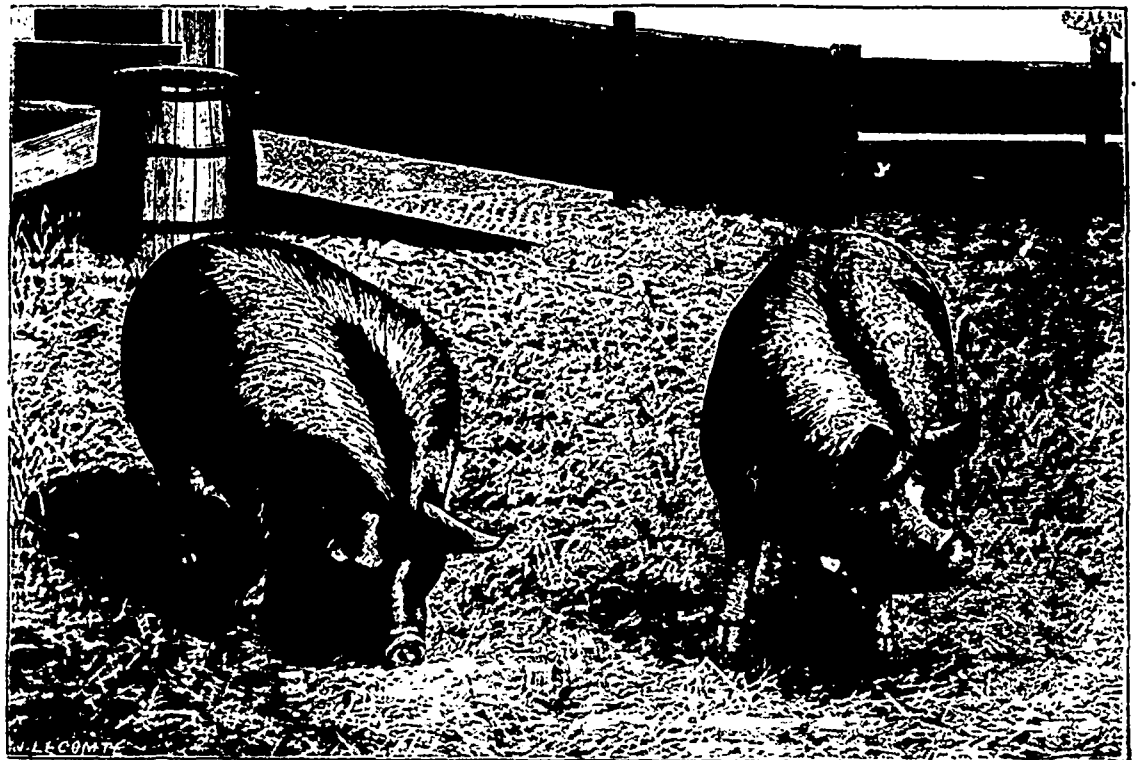
ment of all coach breeds. The French coacher, has had the quality of the individuals it includes improved in a similar manner, and it is by no means a slur on the breed to have it known, for the thoroughbred was undoubtedly the best source to go to for this merit. Of the European breeds to-day the Hackney is undoubtedly the strongest, and most independent branch, with the Cleveland Bay, Yorkshire coach, and French coach, still drawing heavily on the parent stem for sustenance. All the breeds of European coach horses have some qualities, that enable them to merit their position as such, but it is only fair testimony to say that, all things considered, the Hackney shows better breeding truer form and more perfect action, than any coach breed of to-day. But the fact that they are all being continually moulded to meet the demands of the times, is clearly illustrated by the assertion, that all the breeds of light horses, are still drawing on sources outside themselves for their foundation stock. The refining influence which the thoroughbred infusion carries with it, gives it easy access

to any of the stud books of the breeds of European coachers. In tracing out the development of the European branches of coach horses, it is clear that the thoroughbred played an important part, and there is no doubt but that in America the trotter takes the place of the thoroughbred racer. The action of the influences of the running track, has done for the thoroughbred, what the trotting track is doing for the trotter. The effect of racing has given the trotter, certain decided and clearly defined characteristics, which no other breed of horses, except the thoroughbred, subjected to the same influences, possesses to a like degree. From this source, trotting horses, have secured exceptional quality, clean limbs, and the energy and courage, which are valuable in horses for coach purposes.

In the history of the European breeds, we can see what has been done, in the making of the breeds of coach horses, that are now in existence.

From an early day, the governments of many European countries, have given such encouragement to their light horse interests. Special enactments of law have been made and liberal

methods in this country: others, that in-and-in breeding the strains we have already, would give the most effective results, while many more would advocate line breeding, within a family already known to possess the desired characteristics to a marked degree. From a general study of the breeding of all domestic animals, that which may be termed "balanced breeding" offers the best guidance in the improvement of any class of stock. Historical evidence for the animals of all breeds, shows that certain strains differing somewhat in characteristics, seem to unite, so as to produce balanced results. The coach horse above all horses, is a balanced product, and it would seem as if balanced breeding, would be very effectual. As far as one is able to study it, the reason for this seems to be in the fact, that it is the most successful way of offsetting merits and demerits of temperament and conformation. As to the breeding of horses in Canada, that shall claim with justice the title of coach horse, it should be through the union of mares of the strains that show some of the features of coach form, and much of the action required, with the stallions, that reflect the quality,



No. 9.—PRIZE BERKSHIRE PIGS, property of D. A. Robertson, Logoch, Man.

money allowances have been used to develop these interests. In England at various times laws have been enacted directing the breeding of horses along prescribed lines, and during late years, the premium system, has been used with good effect. This work carried on for years, has produced several distinct classes of horses, that up to this time, have been superior in their spheres. In France, the government has been still more liberal. Large breeding studs, in which the breeding of coach horses, has been closely studied, have been established from time to time, until now there are about twenty five hundred state stallions are used in this work. Under these circumstances, it is not remarkable that progress has been made, in developing a breed of coach horses, of national prestige. In the matter of breeding, there are many methods which will find supporters. Some would be of the opinion that cross breeding either the thoroughbred or trotter—by the latter I mean one of high class—with some European coach breeds, would be the most effective

beauty and courage, which is characteristic of the thoroughbred and best class trotting strains.

W. R. GILBERT.

IDEAL ROAD HORSE.

THE KIND OF ANIMAL THAT WILL ALWAYS BRING A GOOD PRICE.

Dr. G. M. Twitchell before the Maine Board of Agriculture said: The 15 1-2 to 16-hand horse of solid color, with broad forehead, ears of good size and well-proportioned, good length from base of ear to eye, eyes full and expressive, with lids free from meatiness, face straight, nostrils well rounded, full, large and thin lips, not thick, well closed neck of good length, shapely, clean cut at jaw, and fitting well at shoulders, which can hardly be too sloping, the point of the withers being well back of the saddle, chest of good width, forearm long and heavily muscled, knees firm, broad, straight and strong, cannons short, flat, broad and flinty, pae-

terms good length, muscular and nervy, free from meatiness, the fetlocks from toe to ankle joint being about 35 degrees, feet round, of size proportionate to the animal, free from contracted heels, of good material and with elastic frog, barrel-shaped like an inverted egg, deep at girth as well as waist, allowing full use of lungs without infringing upon other organs, back short, the point of the coupling on a line with that of hip, thus allowing for the extension of the muscles of attachment well forward over the kidneys, giving greater strength to the weakest spot in the animal's anatomy, as well as in man, quarters of good length, not too sloping, thus affording room for that free stifle action so necessary in the ideal driver. Stiffes and gaskins long, of good width, abounding in muscular attachments, heels free from meatiness, sound, strong, neither straight nor having a decided angle and not cut under too sharply at base.

Such a horse, going smooth and true, neither paddling nor toeing in forward, nor, as we say, straddling behind, will always command a top price in the market, provided he has been educated, and abounds in nervous energy. Form, size, color, symmetry and substance are essentials, but these do not insure the road horse. To these must be added individuality, the result of breeding. It manifests itself in what we term nervous energy, the up and get there power. It is the power of heredity, so desirable, so necessary. To secure this, there must be a high ideal and a fixed determination in breeding.

THE HACKNEYS AT HILLHURST

Historic Hillhurst sits upon the green Canadian hillside, commanding in its view a stretch of hill and dale and wood and lea of surpassing beauty, while in the distance rise in bold relief some rugged peaks of the Green Mountain State. Senator Cochrane says he is almost a Yankee. All his life he has lived within sight of the border, and now, full of years and honors, he is rounding out a ripe old age in the enjoyment of the beauties of that delightful country in which he has spent an active and successful lifetime. Public duties call him at times to Montreal, but the charms of city life do not suffice to draw him permanently from his loved Hillhurst that fountain-head from which have flowed great streams of pure blood for the improvement of our stocks. The historian of the era of live stock improvement on this continent will linger long among the Hillhurst archives, and rich will be the mine whose historic treasures he unearths. The part that Hillhurst has played in this great movement can hardly be here hinted at, and yet one cannot visit this old established breeding farm without harking back to the wonderful history of the Short-horn Duchesses and remembering the thousands of dollars commanded by the representatives of that famous tribe; the memory of the extensive importations of Hereford, Aberdeen-Angus and Jersey cattle and their wide-spread dissemination over this country rises to mind, and then it is recalled that Hillhurst boasts the oldest-established stud of Hackneys on the continent. Prominent indeed has been the connection of this farm with pedigree-stock breeding, and honorable has been its record, and as we wind up the hillside road to a typical Country Gentleman's home we are impressed with an appreciation of the fact that we are indeed upon historic ground.

Household-Matters.

CHILD'S WOOL PETTICOAT.—The following pattern requires 2½ oz. of Berlin wool, in two colours. It is done in crochet tricotee. Commence by doing a chain of fifty-one. Work tricotee of fifty. (Some know this stitch as idiot-stitch). Then turn back to the end. Work thirty-eight stitches, leaving twelve. Go back again. Work fifty. Fasten on another colour, and repeat as before, three rows of one colour and three of another, all thirty-six inches are done in width round the bottom. This completes the skirt itself. Join up the back two-thirds of the depth, and fasten off well. Next make a border all round the bottom of shell-pattern. The next to be worked is a band for the waist, to run ribbon through. Begin by working two rows of double-crochet on to the top of the petticoat, one of each colour. Break off the wool at the ends, and begin afresh at the commencement, with three-chain first, then do one long stitch into the row below. Make one chain. Do two longs into the next two but one of the row below, and continue. There should be two rows of double-crochet then the long-stitch row, and double-crochet again at the top to match. Run ribbon through to tie. Black and buttercup colour are pretty for this, or white alone if preferred, or almost any colour with white.

COMBINING COLORS.—It is not given to all to detect as many shades of colors as that Swiss ribbon-manufacturer who is said to be able to discern twenty-seven hundred different shades; therefore the following suggestions which he makes may be useful.

Black combines well with almost all colors, except those which are so lacking in brightness as to be too nearly like it. Black and pale pink, blue, yellow, green, red lavender and even rather dark shades of blue, clear brown and green are excellent combinations.

Brown combines well with yellow, gold and bronze if it is the shade of brown which has brightness. It is effective also with black and with certain tones of green. A chocolate and-milk brown combines well with old rose and the dull shades of pink.

Very dark green is effective when brightened by linings of narrow trimming of pale blue. A medium shade of green unites well with old pink. Brownish greens look well with bronze and copper color.

Dark blue may be brightened by lines of bright, rich red, by lines of old rose or of clear yellow. Blue of the "electric" and "cadet" varieties is best combined with black or with figured silks in which the same shade predominates.

BEAUTIFY THE POTS AND BASKETS.—There are so many ways of arranging flowers in a window that the poorest of us can enjoy owning a few plants this winter. Buy a tin basin and with a little common paste and moss a pretty dish for flowers is soon made. Paint some fruit cans a neutral color and use them for flower pots; punch a hole in the bottom or else use a handful of charcoal and pebbles for drainage. Take a small wooden bowl, bore holes in the sides to fasten in a cord or screw in rings, cover with acorns and cones, varnish the whole and you have a durable and pretty hanging basket in which to grow some light trailing vine such as myrtle, German ivy, alyssum, oxalis or moneywort. These

hanging baskets should be exposed to the sun two or three hours every day and if the surface of the basket between the plants is covered with moss it will prevent the earth from drying up quickly and the basket will look prettier.

FARM AND HOME.

KITCHEN-HELPS.—We hear much of the "little leaks" in kitchen economy which make the "big hole" in the household expenses. One of those little things is the mending of the numerous articles of tinware in use in the kitchen, a simple process which is often attended with a great deal of inconvenience when the article must be sent from home for mending, but which the cook or housekeeper can easily accomplish with a little practice, and a contributor to the "Home Queen" makes some helpful suggestions in this connection. Get five or ten cents' worth of muriatic acid, and put into it all the zinc it will dissolve. Scraps of zinc may probably be secured from some tinner. Then get some hard soldering. Whenever a leak makes its appearance in any of the tinware scrape off any of the rust that may be around it, then drop some of the acid upon it to clean it; cut off a piece of the soldering and place it upon the hole, and hold the vessel over a burning lamp, or any flame where the leak may be exposed to the heat, and let it remain until the solder melts and spreads enough to cover the hole; then remove and hold in position until the solder cools enough to harden. If it is necessary to mend any part of the tinware that cannot be exposed to the flame or stove heat have an iron spoon in which to heat the solder; treat the leak in the same manner as to cleaning and applying the acid; have a rod of iron heated at one end, and hold it on the leak until the parts around are heated, and then pour the solder on.

A material for fastening knives or forks into their handles when they have become loosened, is a much-needed article in the kitchen. A good cement for this purpose has been recommended which consists of one pound of celophony and eight ounces of sulphur, which are to be melted together, and either kept in bars or reduced to powder. For use, one part of the powder is to be mixed with half the quantity of iron filings, fine sand, or brick dust, and the cavity of the handle is then to be filled with the mixture. The stem of the knife or fork is then to be heated very hot and inserted into the cavity, and when cold it will be found fixed in its place with great tenacity.

USEFUL TO KNOW. (How to treat a Sprain).—The very first item in the treatment of a sprain is perfect rest of the limb until a surgeon can be summoned. Reduce the swelling by applications of hot fomentations, as hot as can be endured. (1) Change as often as once in three hours. If a piece of rubber cloth be not at hand, use common newspaper. Wind it on carefully outside the hot cloth. This will prevent the escape of the steam and keep the cloth from cooling. A good way to prevent the hands from being scalded is to place the hot dripping flannel in a towel; then, taking hold of each end of the towel, wring it until the flannel is dry enough to apply. Avoid violent movements of the joint for some weeks after the in-

(1) This is the invariable practice in all European theatres, in which the ballet-girls are continually spraining something or other.—Ed.

Jury. If the joint become stiff, move it gently each day; also rub gently with some stimulating lotion, such as ammonia liniment. In some cases serious disease of the bone may follow. This is the result of the original accident and cannot be averted by treatment. In any case, however slight, it pays to keep perfectly still until the injury is repaired.

A GLASS OF WATER AT BED-TIME.—The human body is constantly undergoing tissue change, says "Hall's Journal of Health." Water has the power of increasing these tissue changes, which multiply the waste products, but at the same time they are renewed by its agency, giving rise to increased appetite, which in turn provides fresh nutriment. Persons but little accustomed to drink water are liable to have the waste products formed faster than they are removed. Any obstruction to the free working of natural laws at once produces disease. People accustomed to rise in the morning weak and languid will find the cause in the secretion of wastes, which many times may be remedied by drinking a full tumbler of water before retiring. This materially assists in the process during the night and leaves the tissues fresh and strong, ready for the active work of the day. Hot water is one of the best remedial agents. A hot bath on going to bed, even in the hot nights of summer, is a better reliever of insomnia than many drugs.

HOT WATER KILLS THIRST.—It is a mistake to suppose that cold drinks are necessary to relieve thirst. Very cold drinks, as a rule, increase the feverish condition of the mouth and stomach, and so create thirst. Experience shows it to be a fact that hot drinks relieve the thirst and "cool off" the body when it is in an abnormally heated condition better than ice-cold drinks. It is far better and safer to avoid the free use of drinks below 60 degrees; in fact a higher temperature is to be preferred. Hot drinks also have the advantage of aiding digestion, instead of causing debility of the stomach and bowels.

GOOD THOUGHTS. (Don't Sneer).—Never bring a human being, however silly, ignorant and weak, above all, any little child, to shame and confusion of face. Never, by petulance, by suspicion, by ridicule, even by selfish and silly haste, never, above all, by indulging in the devilish pleasure of a sneer, crush what is finest and rouse up what is coarsest in the heart of any fellow-creature.—Charles Kingsley.

Kind words are the bright flowers of earthly existence; use them, and especially around the fireside circle. They are the jewels beyond price and powerful to heal the wounded heart and make the weighed-down spirit glad.

If we take people as we find them, welcoming all their good points and passing over the others, and being kind and generous to all, we shall come much nearer to the truth about them than if we labor to make a critical analysis of minds and hearts of which we can see only a few fragments.

HOUSEKEEPER.

DRESS MAKING.—The charges of the modern dress-maker seem to increase every year, till at last they have gone quite beyond the people of moderate means.

Thus, the latter are obliged to put up

with inferior work, and often a very badly fitting dress, which becomes a source of irritation every time it is worn. Many and "sore are the complaints" on this subject.

SENSIBLE PEOPLE.—Owing to this, a good number of sensible people have taught themselves to make their own dresses. If at first the result is not quite as satisfactory as it should be, there is the satisfaction of knowing it has cost nothing but their own labor.

COURAGE TO DO.—It only wants courage, and determination to do well, and success is sure to follow after a few trials.

PATTERNS.—Patterns cost very little now, and a new one once or twice in the year will be all that is wanted. For this one can easily be modified a little to suit any change in style when not too pronounced.

CARE IN CARRYING OUT INSTRUCTIONS.—The great trouble with amateurs in almost everything is, they will not carefully follow out instructions. If good results are to follow, the instructions must be carried out in every detail.

CARELESS PEOPLE.—If tacking is mentioned depend upon it planing won't do. Some people think they can be accurate without so much bother, but after having to pick out a badly fitting lining a few times, they soon become converts to the careful carrying out of instructions, and in the end this extra trouble, caused entirely by their conceit or laziness, will prove the best teacher.

NECESSARIES FOR CARRYING THIS OUT.—A good pair of scissors, a tape measure, plenty of pins to hold the goods during the process of tacking, a small handy pin cushion, fine cotton for tacking, No 50 best. Use white cotton for coloured goods, (good needles) and, if any sewing is done by hand, No. 36 cotton is not a bit too coarse.

A good large table for cutting out on and tacking, careful attention to every direction with patterns. A determination to do the best you can, and the result of your best efforts I hope will prove satisfactory.

Written expressly for young beginners.

The Poultry-Yard.

Farmers' Institute Meetings — The Waste of the Farm—How to make and feed a warm mash—What sort of grain to feed—Two rations per day enough—How to utilise waste.

(A. G. Gilbert).

I had the honor and pleasure a short time ago of addressing several large gatherings of farmers at the pretty village of Lanark and surrounding districts, or rather representatives from those districts who attended the Farmers' Institute meetings held in Lanark, Carleton Place and Almonte. The meetings in Lanark village were the first of the series. At these meetings, I made it a point to show what an important factor in the winter production of eggs, the waste of the house or farm may become. I was gratified after the afternoon meeting in Lanark to be accosted in the hotel by an intelligent and well

to do looking farmer who said, "You told us this afternoon just what my wife said to me the other day, that there was nothing better to bring eggs in winter than the table and kitchen waste." Of course I expressed my pleasure both at such practical endorsement of my advice and at meeting a farmer whose wife so successfully managed her hens in winter. This may lead to the query.—What is the waste of the farm?

THE WASTE OF THE FARM

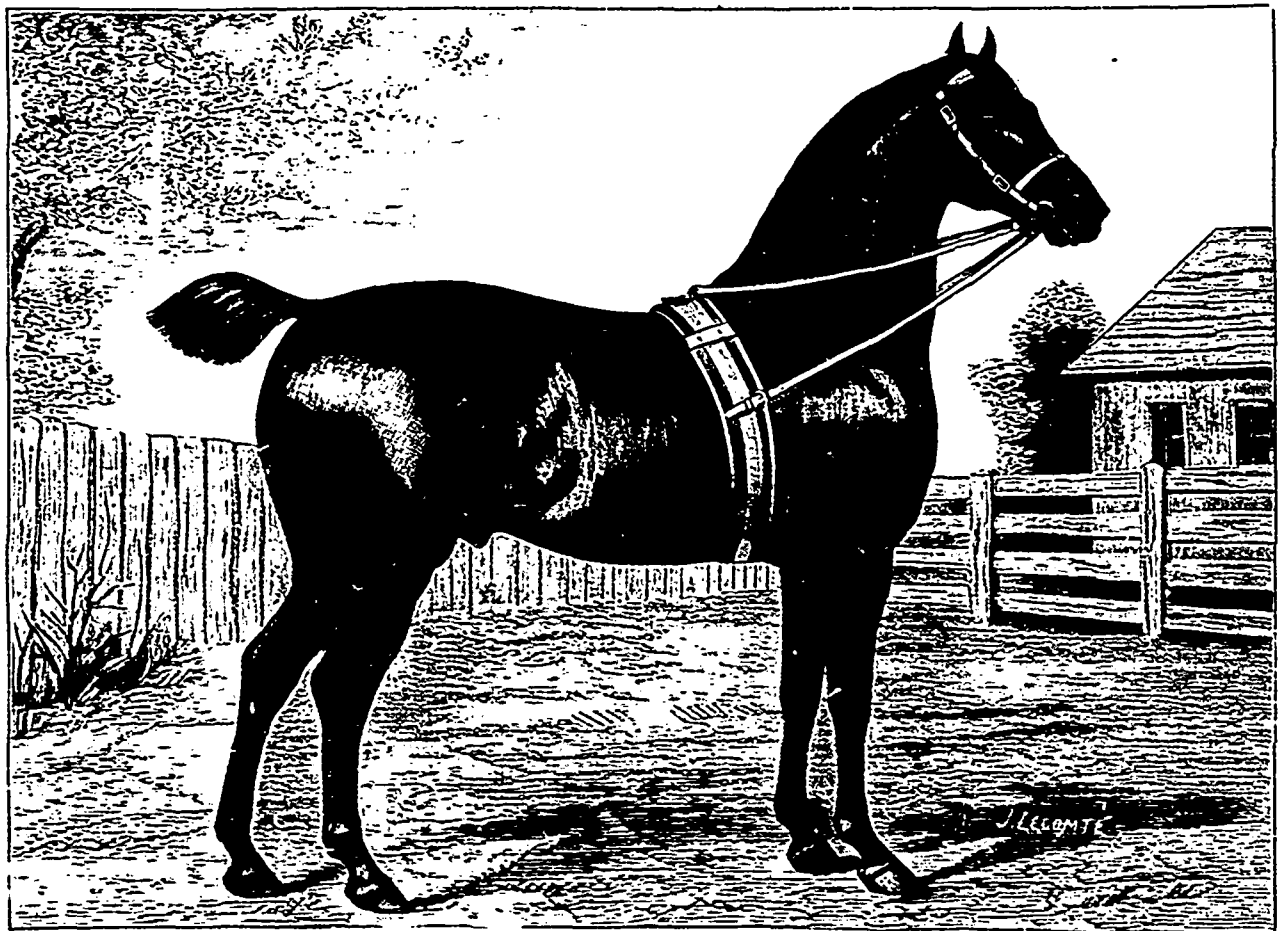
The waste of the farm may be composed of table and kitchen waste in the shape of uneaten pieces of meat, bread, vegetables, potato and other peelings, unmarketable grain, turnip, mangels, etc. The table leavings will be all the more valuable because they are cooked. Experience—which after all is about the best schoolmaster in connection with keen observation—has led me to conclude that cooked meat and vegetable

all is "crumbly." If it is convenient to thoroughly cook the mess, do so. I firmly believe it is better thoroughly cooked than half done. If red or white clover hay is plenty, and both are generally in abundance on the farm, a small quantity may be steamed and mixed into the mash. It should first be cut into quarter inch lengths. The mash might be mixed, into the water the clover was steamed in, provided the water was first brought to the boil. It is best to throw the boiling water over the clover at night, cover the pot with a cloth and let the contents steam till morning. It is astonishing how often the clover will come out quite green. If the fowls will eat the clover by itself after being steamed as described nothing will be better for them. Having made the mash so that it is quite "crumbly" and not too hot it should be fed in quantity enough to BARELY SATISFY and not to GORGE. About

the afternoon one is that the layers will go to roost with a full crop for they have a long night before them. This has been said before but it may bear repetition.

TWO RATIONS ENOUGH

Experience has taught that where vegetables are liberally fed or kept before the laying stock all the time that two rations "per diem" is all that is necessary. If cut green bone is in supply the mash should be fed only three mornings of the week and cut bone in the ratio of one pound to every sixteen hens on the other mornings of the week. On Sunday morning a grain ration may be fed. In most cases the laying stock are overfed with grain. Green stuff, which includes vegetables; cut green bones, or, boiled meat and exercise are the great factors in the winter production of eggs. A great deal too much grain is fed, and if overfed it is more apt to go into FAT than eggs. What is really



MAXWELL. (Hillhurst Stallion)

rations are better any other. Even a ration of thoroughly boiled wheat, barley or oats is enjoyable and beneficial occasionally. Boiled turnips, carrots, or cabbages make an excellent combination with ground grain of some sort, for a warm morning mash. It is not imperative that all the vegetable or green stuff fed, should be cooked. It might be troublesome to so have it. But all the unmarketable vegetables in one way or the other may be used to advantage in the hennery. So too, all the unmarketable grains may be ground up to be used in the warm morning mash.

HOW TO MAKE AND FEED THE MASH

An easy and convenient way to make the mash is to have a spare pot handy into which the table and kitchen refuse may be thrown during the day. At night or early morning pour some boiling water into the pot and mix into it whatever ground grains are most abundant and cheapest on the farm, until

a quart to every 20 or 25 hens. A farmer's wife who is very successful with her poultry says she feeds half a pail of warm mash to 50 hens in the morning. And she mixes plenty of green stuff in the mash. After the mash, throw a couple of handfuls of grain in the litter on the floor and endeavor to keep the hens in exercise all through the day.

SOUND GRAIN FOR AFTERNOON RATION

While a great deal of unmarketable grain may be utilised in the hennery, it need not follow that the grain should be musty or in any way unfit for use. We have used frozen Manitoba wheat, ground up, with good effect in winter feeding. And grain may be small and yet quite sound. The afternoon ration should be a generous one and the grain should be of good quality. It should be fed early enough in winter to permit of the hens exercising in their search for it in the litter on the floor. The object in giving a generous ration for

wanted is a well balanced ration and such a ration embraces all that is necessary to make both SHELL and EGG. In the foregoing no mention is made of grit, dust bath, regular supply of pure water, which are all essentials.

UTILISE THE WASTE

Again let me urge the farmers to utilise the waste of their farms in some of the forms described. Surely it is worth while trying to convert comparative waste into eggs and at a time when they are worth all the way from thirty to forty five cents—and even higher—per dozen? I was very much gratified to see and, I am sure so were you, that my letter in your December number received the approval and endorsement of a correspondent of one of your daily city contemporaries, who heartily concurs in my statements as to the money there is for your farmers in the proper handling of their poultry. And it was all the more gratifying, because the correspondent was thoroughly posted in what he wrote about.

Turkeys.

TURKEYS AND HOW TO GROW THEM is the title of a very clearly written little book, published by The Orange Judd Company, New-York. The description of the various breeds, or rather races, is very full of information, the type, etc., clear and well arranged, while the illustrations are both numerous and well executed.

A monster two year-old-cock, at p. 20, is about as heavy a bird as they make them; 45 pounds; though the great breeder at Dextford, Cambridge, Eng., whose usual flock exceeded 800, young and old, told us that every season he had four or five "round abouts," i. e., 18 months old cocks, that would weigh upwards of 40 lbs. each. These were always bought by the Great City Companies of London for their annual feasts on "Founder's Day", and the price was, invariably ten pounds, i. e., fifty dollars.

Young cocks, crammed for 3 weeks with pellets of a mixture of barley and corn-meal, sugar and fat, washed down with milk from a tea-pot spout, are good roasted. Young hens should be boiled with oyster-sauce.

HENS AND EGGS.

Divide the hens—Ashes in the hen-house—Bones—Grain—Price of eggs.

In the "Journal of Agriculture" of recent issues you have not had anything about poultry and eggs. (1) A few hens well looked after, and properly fed, pay the farmer better than any other class of farming. Hens should be kept in a clean bright place and not too many of them together. Should you happen to have a large henery, divide it off and do not let too many of them run together. In this way you can keep track of each lot and find out why they are not doing as they should. A hen-house should be kept warm, a good many windows in it to allow the sun when it shines to come in, and should be cleaned out at least twice a week. Wood-ashes or even the coal-ashes should be sifted in the henery, the hens roll in it and get the ashes all through their feathers, which kills lice. Poultry of all kinds, and especially hens, are very subject to have lice, so never upon any condition allow your coal or wood ashes to go to waste, they make a good absorbant and act at the same time as a disinfectant, two great factors in the poultry line. Laying hens should be fed out meat occasionally, such as deacons, (2) or other cheap meats, they require lime also, in order to form the shells. When you find eggs with thin shells, you should give lime at once, broken bone is also good for hens it is wonderful how they will eat broken bones of all kinds. Many people put them in the fire as they are then much easier broken, but they have lost all the good they possessed for the fowls. Hens should be fed one feed of soft food such as boiled potatoes mixed with ground grain, given warm daily; buck-wheat, corn, or in fact most any kind of grain is good for fowls. There should be clean dry straw or chaff on

the floor of the henery, the grain can be thrown among the straw or chaff and allow the hens to scratch over it, and work for their living, they do much better with this exercise, than if given in a trough or clean floor. Clean water should be given daily, for hens like other animals need water and a good deal of it, if cared for in this manner and you have the right kind of hens they should pay well if not too old. It has been said that, for profit, that from one to three years is the best age for laying hens. Of course I need hardly say that you must have your hens laying during the winter in order to receive the greatest profit out of them, 68 eggs in summer at 10 to 12 cents per doz. are not a paying institution. Last winter my son managed 89 hens and during 5 months got 40 cents per doz. for them. They laid from 13 to 15 doz. a week or an average between \$5 and \$6. I saw an account in a country newspaper about buying fresh laid eggs which makes it plain if you wish to build up a trade you must not try and sell 12c. eggs and try and get 30 or 40c. for them, the article it as follows: "Another buyer of eggs constrained by what he saw in last week's paper, adds his testimony. Out of 30 dozen, which he bought as laid within a week, on being candled he found only half were new laid, the rest being over two weeks old, and 5 dozen were rotten! Of all he has received since the 5th of October only 60 per cent are, when tested, found to be new-laid. Passing off eggs taken from nests, and eggs saved for a couple of months as new laid, this buyer calls stealing a man's money with the addition of lying, by declaring when they sell them they are not over a week old. He paid the farmers not less than 20c a dozen, so that the rotten eggs were a loss of that much per dozen and the staled eggs were sold in Montreal at 14c. The interesting statement is added, "I also go through the French country, and find 97 out of 100 of them honest as regards their eggs at least" which is to their credit. This dishonesty in egg, selling is disgraceful. It is worse than skimming milk."

I headed this article "poultry," but I think perhaps it should be Hens and Eggs, as this article is long enough and I may touch on poultry in a future article.

Your truly,
PETER MAOFARLANE.
Chateauguay, 10th Decemler, 1896.

Fruit and Orchard.

GROWING CELERY IN BEDS.

(By John Craig, Horticulturist, Experimental Farm, Ottawa.)

A good deal has been said and written recently regarding the advantages of "Bed culture" of celery over the ordinary single or double row system. Celery has been grown both in beds and in rows for the past three years at the Central Farm. Some data regarding the condition and yield of 8 varieties grown in beds this year are given below. The "Bed system" is undoubtedly to be recommended to those who have but a small area that may be devoted to the cultivation of this vegetable—which I may venture to remark parenthetically is much neglected and generally unappreciated by farmers. There is less labor involved if grown in beds than if grown in single or double rows,

banking up in order to secure perfect blanching being unnecessary. In order to secure satisfactory results an abundance of manure and water is needed. Without them the plants will be small, stringy and splindling.

The water question is the main drawback. It is unsafe to depend upon the average rainfall. The plants in this experiment were watered on an average twice a week by using the Garde hose.

MANAGEMENT UNDER THE BED SYSTEM.—Sow the seed in a hot bed or cold frame about the middle of April.

VARIETY.	Seedsman.	Date of sowing.	Date of Pricking out.	When planted out.	Area occupied in square feet.	No. of plants.	When harvested.	Height when harvested.	Total weight in lbs.	Average weight of stalks lbs. oz.	REMARKS.	
											CONDITION WHEN HARVESTED.	CONDITION WHEN HARVESTED.
White Plume.....	Thorb	April 7th	May 12th	Jun. 27th	27	80	7th, 22nd	2 2	141 0	12	Well blanched and fit for table.	Well blanched and fit for table.
Head New Pink Plume.....	Hond	"	"	"	48	141	"	2 2	224 0	11	Not so solid as White Plume, well blanched.	Not so solid as White Plume, well blanched.
Govont Garden Rose.....	Thorb	"	"	"	13	40	"	2 2	75 0	14	Considerably rusted, unblanched.	Considerably rusted, unblanched.
Giant Pascal.....	Thorb	"	"	"	20	60	"	2 2	116 8	15	Solid, slightly blanched.	Solid, slightly blanched.
Boston Market.....	Steele	"	"	"	40	120	"	2 2	258 8	2	Unblanched, numerous Side Shoots; these slightly blanched.	Unblanched, numerous Side Shoots; these slightly blanched.
London Red.....	"	"	"	"	40	120	"	2 2	277 0	4	Only slightly blanched, large solid heads.	Only slightly blanched, large solid heads.
Paris Golden Yellow.....	"	"	"	"	34	100	"	2 2	228 0	4	Handsome well blanched crisp free from disease.	Handsome well blanched crisp free from disease.
Golden Self Blanching.....	Thorb	"	"	"	31	160	"	2 2	196 0	15	Healthy and solid well blanched.	Healthy and solid well blanched.

It will be ready for pricking out into rows 2 inches apart each way about a month later. If it is not pricked out the young plants should be cut back to give stockiness. In this experiment the plants were set out on June 27th. Hot bed frames were used, additional soil being added till a covering of 6 to 8 inches was laid over the row well settled manure. The plants were set

approximately 7 x 7 inches apart. They grew somewhat slowly at first but soon covered the ground and made a vigorous growth till arrested by autumn frost. The sides of the frames were 12 inches high, these furnished the requisite amount of shade. The early variety were well blanched when taken up, while the late kinds needed further blanching to make them suitable for market, though they were in good conditions for cellar or pit storing. As stated before, it was found that such a large number of plants upon a comparatively small area sucked up the moisture so rapidly that it was necessary in order to preserve the plants in a healthy growing condition to water at least once a week and sometimes twice. "Celery leaf Rust" was controlled by spraying with Bordeaux mixture.

Paris Golden Yellow, White Plume, and Boston market are three excellent varieties and mature in the order mentioned.

The accompanying table shows what a large quantity may be grown in this way upon a small area. For this reason the "bed method" of growing celery possesses many advantages over the single row system to the amateur city or suburban gardener.

Arthur R. Jenner Fust,
Editor of "Journal of Agriculture", Quebec.

DEAR SIR,

I am much interested to note that, in the essay on the feeding of Milch Cows, in the December number, the writers M.M. Robertson and Ness, state their practice to be to feed their stock of milch cows twice daily. The process of feeding milking and cleaning lasting about four hours in the morning and four hours in the evening thus giving eight hours between for rest (and chewing the cud). They say that they thus get nearest to the "natural" way of feeding. This is just what I advocated sometime since in the Journal but called down a little contradiction from some high in authority. I have never seen occasion to back-down on my argument as to this "twice a day" feeding and am glad to see such practical men adopting and advocating it. I never intended to revert to the subject again, but I am quite sure that regularity has more to do with economy of time and food than to be constantly stuffing our milch cows; and economy is most important in these days of keen competition.

Your respectfully,
GEO. MOORE.

We do not advise the feeding of cows, or any other stock, in the way Mr. Moore calls "stuffing"; but our practice always was to feed four times in the day, i. e., at day break in winter, 6 a. m., in summer, at 11 a. m., at 4 p. m., and the last thing at night. This is still the practice of 99-100 of our English feeders, and seems to do well, practically. Theoretically, all the Veterinary-surgeons whom we have consulted agree with this system.—Ed.

BORDEAUX MIXTURE.

Spraying—The Stock mixture—How to make it.

The importance of spraying for the prevention of fungous diseases of plants, cannot be too frequently reverted to since an infallible remedy has been discovered in the use of sulphate of

(1) Pardon us. Mr. Gilbert is good enough to write for us pretty regularly. Ed.

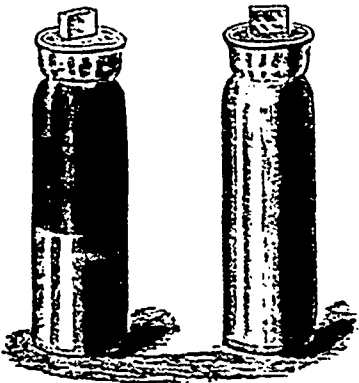
(2) Is a deacon a still born calf.—Ed.

copper and lime, properly prepared and applied.

After several years' experience it has been proved to be quite effective, cheap, harmless either to the health of the person applying it or to the crop sprayed, and has other marked favourable results beside the mere prevention of disease. Some have failed to make it so beneficial as it might be, through carelessness in its preparation. The Stations of the United States have recently issued a most important Bulletin on this subject, the salient points of which are as follows. The 50 gallons formula is the best. Water 50 gallons, copper sulphate 6 pounds, unslaked lime, 4 pounds. This method of combining these ingredients has a most important bearing upon the chemical composition of the mixture. If the copper solution and lime, only partially diluted, are put together, a thick mixture will result with chemical characteristics quite different to that which would be obtained by pouring together two weak solutions of lime and copper sulphate. Again, different results if the two are warm when mixed together are obtained than would be allowed to cool before mixing.

Where the mixture is improperly made, there is always sediment, but where properly done it is quite clear.

The difficulty experienced with many farmers is to persuade themselves to take the trouble to make the Bordeaux mixture. Now, to obviate this I will copy the method of making a stock solution and I believe it would be not only a great boon to our farmer, but a pro-



Bordeaux mixture improperly prepared properly prepared

fitable investment, if some enterprising firm would manufacture a quantity of this for sale at a reasonable price.

The following recipe for stock Bordeaux mixture is quoted from the Bulletin alluded to. Procure a barrel holding 50 gallons, weigh out 100 pounds of copper sulphate, put it into a sack and suspend it in the barrel near the top. Fill the barrel with water and the copper will be dissolved in two or three days. Now, remove the sack and fill the barrel up to the 50 gallon mark. Each gallon thus made will contain 2 pounds of copper sulphate, and under ordinary conditions of temperature will keep any length of time if tightly covered. "Stock lime." Take a barrel holding 50 gallons, or more, making a mark at the 50 gallon point. Weigh out 100 pounds unslaked lime and slake it, when slaked add enough water to make the whole 50 gallons, (when settled strain through a coarse cloth G. M.) each gallon of this will also contain 2 pounds of lime.

Provided with this stock mixture all that will be required to make the 50 gallons formula will be to add 3 gallons of the copper solution to 22 gallons of water, and 2 gallons slack lime to 23

gallons of water, then mix the two together and thoroughly stir them for a few minutes.

A simple means of testing whether the mixture is safe to apply to the most tender foliage is given. Insert the blade of a small penknife in the mixture, letting it remain for one minute, if the blade comes out copper coloured, the mixture is unsafe, and more lime must be added; but if the blade remains uncoloured the mixture is perfect. I quote these instructions in view of the vast importance of spraying, and to encourage our farmers to adopt it by simplifying the process. In the event of no one undertaking the manufacture of a stock mixture, would it not be well for the Farmer's Clubs to extend their usefulness by having a certain quantity prepared for the use of their members? or where no club exists, some one in the locality could prepare it and supply it to his neighbours, himself sharing the advantage and being remunerated for his work and time. The proof is conclusive now, that spraying will pay, and, to insure a crop, is absolutely necessary in cases where fungi produce destructive diseases. Be it remembered that now Providence has given us by the means of scientific research and experiment, the power to remedy the evil, it is unpardonable to neglect it, because we are wasting our opportunities to overcome difficulties and inflicting an injury upon our neighbours by allowing the spores of the fungi to spread to their crops as well as over our own.

GEO. MOORE.

APPLES.

Apple crop—Sales in England—Inspection Fall-ploughing, &c.,—Ploughing matches—Tile draining—Dairy-goods.

Since my last notes were written the apple crop has been gathered in, the crop is the largest on record. The "Trade Bulletin" made estimates of the crop but to my mind they were short of the actual results. It is to be hoped that before another year's crop will be ready to harvest, the Government will see about inspection, for the losses this year have been enormous; not altogether from bad fruit, but from bad packing as well, and such quantities of early fruit of poor keeping qualities were sent over that it hurt the sale of the good fruit. Without doubt, this year's crop will be double of last year's, but the net results in cash will be less than last year. The price of apples is about half of last year but there is freight to be considered, and 2 barrels to pay for instead of one.

The agitation for inspection will have to be kept up until it is secured, either by the trade, or by the Government. Vegetables are now all gathered in and a very good crop they were.

FALL PLOUGHING

In some localities, the fall ploughing is all done, a fine open fall for such work, although showery, not a great deal of rain has fallen; rivers and wells are low. The large crop of apples kept some from doing all the ploughing they intended to do; but as it is yet open at this late date, (10th Nov.) a good deal may yet be done before the land freezes up. Come, ye tardy farmers; get a hustle on you, and try and get things tidied up a bit, cross furrows cleaned up; ditches cleaned out, and everything in shape, a place for everything and everything in its place. I have no doubt but it will

be this year, as I wrote you last year, that if the weather kept open until Christmas some would not be finished.

The annual Fall Ploughing Matches have taken place, and I think as far as I have seen and heard that greater interest has been taken in them this year than formerly. Matches in new localities, not exactly new, but some having been held for a great many years, tried them this year. I may safely say that the greatest interest in any section and the largest number of first class ploughmen were to be seen in my own native district: the district of Hexhamshire. Some 8 or 9 competitions have taken place this year in that section, and long may it continue so to flourish. Some people argue that they can grow just as good a crop of oats or other grain on a crooked furrow as on a straight one. I say granted, but it is the educating influences that count in the long run, some people are narrow and bigoted, and do not wish to be enlightened on any subject, but the good work must continue.

DRAINAGE

As I said in my last, I intended to put in a tile drain, just busy at it now. The cost will be rather more than most people will care to undertake, but dear and all as it is, my belief is that it will pay in the long run; it takes a good many lessons to open some people's eyes, let us hope that, when they are opened, they will be opened wide.

Now is the time to look after stock for their winter quarters; cheese and butter have been paying fairly well for the past 3 months. The shipments of both are going to exceed any former year; not that there has been more cheese made this year than for the past 2 or 3 years, but there is less in cold storage than formerly. Our butter shipments have been good, and I see by recent advices we have got a fairly good reputation for what has been sent over this year. At a fair price, the English Market can take a large amount of butter; there is a large field for operations, while our cheese market is now limited, as during the last few years, the market has not increased, in fact has remained about stationary. With butter fall and spring, and during the cold weather, and cheese the rest of the year, the farmers of this grand Dominion should get a little something to pay them for their hard labor.

PETER MACFARLANE.

Chateauguay, 10th Nov. 1896.

Thayer for December.

THE VETERAN FRUIT CULTURIST ON WHO SHOULD GROW BERRIES.

Who should grow berries? First of all, farmers everywhere, for family use. Farmers must grow berries or do without. No one can grow them so cheaply as he. They may be produced ready for picking at two cents per quart. The farmer saves cost of picking, packing, boxing, crating, freight, express and profits of growers. He gets them at first cost fresh from the vines and to the extent of his own family, has the best market in the world—a home market. He can select the best land and location on his own farm, and is sure of a profit with half a crop.

Farmers can never have ideal homes without the fruit garden. It teaches the lessons of intensified farming, and results in better tillage, large crops, better stock and improved methods in every

way. Good gardens and poor farms never kept company long. The growing of berries for family use is easily done. The growing of berries largely, and selling them in good market, requires considerable skill and a special business tact. Only those who have good location, good market, and a taste for the business should attempt it. Many small farmers so situated are making a success by commencing moderately and increasing acreage from season to season, as experience warrants.

Berries should be grown by owners of all village homes, and acreage property in city and village may be profitably used for that purpose. The market gardener selling his own products can often make an acre or two of berries very profitable. They are suitable companions for their vegetable friends, and sell well together.

The business of professional man, almost broken with care, may recover health and strength in the pleasant walk of horticulture. It is restful to both mind and body. Many women dependent on their own efforts are securing substantial aid from their garden; berries and flowers thrive best under the gentle touch of woman. Many a bright boy may receive his first incentive to business and earn his first money by growing berries or vegetables. Give them a patch of ground and encourage them in this work. The amateur growing berries for pleasure, also gets close to the heart of nature and in common with every worker of the soil may receive her smile.—M. A. Thayer.

Manures.

MUCK: ITS NATURE AND USES.

(Continued.)

(By Prof. F. T. Shutt.)

COMPOSTING WITH BARNYARD MANURE.

This is a method applicable on all farms and one whereby the weight of manure is increased and loss of ammonia from the dung prevented. On farms insufficiently stocked or where the soil is light or deficient in humus, composting in this way is to be strongly recommended. The proportion of muck to manure will depend upon the strength of the manure—whether from horses or cows—and the character of the muck. The rule in this regard is "Use no more muck than can be thoroughly fermented by the manure." Probably the proportion of 1 part of good manure to 4 parts of muck will give the best results, if the conditions are favorable. To make the heap, spread a layer of the partially dried muck, making it 8 ft to 10 ft wide and from 1 ft to 2 ft thick. Upon this spread manure, though not so thickly; this is followed by muck until the alternate layers have made a pile about four feet high. If the manure is fresh, the weather is warm and the mass kept moist, fermentation will rapidly set in. In a dry, porous heap there is much destruction of the humus; while in the water-saturated heap, from which all air is necessarily excluded, the conditions are not such as to induce a profitable fermentation. "The best conditions are those in which the heap is kept moist and tolerably compact."

A very rich and forcing compost can be made with fowl manure. Dried muck can be used on the floors of the hen house and the whole composted together or the muck can be added to the manure and the mass kept moist

(but not wet) in a suitable barrel or bin. A manure equal to guano compost can in this way be prepared.

ANIMAL-AND FISH-REFUSE COMPOSTS

All putrescible matter can be put to good purpose in the compost heap. Carcasses of animals that have died on the farm, household waste, refuse and garbage, all yield valuable plant food when treated in this way. A word of caution however should be given here respecting animals that have died from infectious diseases. Such should not be placed in the compost heap, as the disease-producing germs will not thereby be destroyed. The carcasses of such animals should be either burnt or buried very deeply.

Fish refuse and waste can often be obtained cheaply and in large quantities from fisheries and canneries, and not infrequently shoals of small fish, dying from some disease, are washed ashore and can be had for the handling. This refuse is rich in nitrogen and phosphoric acid and ferments readily. The same rules govern its composting as those already stated, but the proportion of muck—unless a highly concentrated fertilizer is wished—may be increased.

MUCK AS AN ABSORBENT

The high absorbent power of air-dried muck or peat makes it an exceedingly useful and valuable substance in the barnyard, pig-pen and other places in and about the farm buildings where there is liquid manure likely to go to waste. By the employment of muck in this way much plant food could be saved on many of our Canadian farms, and at the same time buildings and enclosures kept clean and the well saved from pollution. A very good plan is to spread the dry peat behind the cattle before cleaning in the morning, say half a bushel or so behind each animal. The work of cleaning is thereby much facilitated and the manure thus made, after composting, will be rich in the elements of fertility. This use of muck appears to the writer as being perhaps the best for the ordinary farmer and dairyman, since by it more peat can be fermented than by making a compost heap and it ensures the retention of the liquid manure which, as we know, is by far the more valuable part of the manure.

COMPOSTS WITH LIME, WOOD ASHES, BONE MEAL ETC.

The fermentation of muck may also be induced, and the injurious acidity got rid of, by the addition of certain alkaline materials such as lime and wood ashes. These not only perform these useful functions but supply certain plant food constituents lacking in the muck. To make such a compost take 100 bushels of dry muck, 15 bushels of unleached ashes and 10 bushels of lime that has been slaked in brine, mix and make into a heap, keeping the mass moist and turning the whole occasionally. If quick lime is used in the above mixture, salt may be added, as thereby chemical changes are induced that hasten fermentation. When wood ashes are not obtainable, kainit or muriate of potash may be used to furnish potash. If there is a bed of marl on the farm, this material may be used in the place of lime, remembering that the fermentation of the heap will then be slower.

If it is desired to add phosphoric acid, ground bone will be found an excellent material—say from 100 lbs to 300 lbs

per ton of compost. Bones also are a readily nitrifiable source of nitrogen, they should always on the farm find their way to the compost heap—the proper savings-bank for all animal and vegetable refuse of the farm.

CONCENTRATED COMPOSTS

This article would not be complete without appending one or two formulae for composts richer in available plant food than the foregoing.

No. 1. Peat or muck (air-dried). 800 lbs	
Muriate of Potash... .. 200 "	
Superphosphate 200 "	
Bone Meal... .. 200 "	
No. 2. Peat or muck (air dried). 800 lbs	
Kainit.... .. 200 "	
Bone meal.... .. 200 "	
Quicklime.... .. 150 "	
Common salt... .. 50 "	

The above bear the recommendation of experienced agriculturists, but they should be considered as guides rather than formulae to be strictly adhered to. Varying circumstances require that there should be a certain latitude in making these mixtures. The general rules as regards moisture, heat and air already stated are also applicable to these concentrated composts.

APATITE.

As we are informed, by a gentleman connected with Ste-Anne de Bellevue, that the old heresy of manuring land with finely ground "apatite"—our native phosphate of lime—is being revived in that district, it may be as well to reprint an article we published on this subject some 14 years ago. In the present revival, the ground apatite is scattered over the yards, stables, piggeries, cowhouses, and mixens, the idea being that the moisture and some mysterious chemical contents of the droppings of the cattle, etc., will, so to say, "cook" the phosphate and render it fit for plant-food. The three letters, from Sir John Lawes, Professor Aitken, and the late Professor Voelcker, ought to render further argument unnecessary:

Ground phosphates—Letters from Chemists—Crystalline forms.

APATITE—GROUND vs. DISSOLVED.

The following letters from the three principal agricultural chemists in England and Scotland, Sir John Bennet Lawes, the late Professor Voelcker, chemist to the Royal Agricultural Society of England, and Professor Aitken, chemist to the Highland and Agricultural Society of Scotland, will be read with interest by all Canadians. "Qui vult decipi, decipiatur."

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Laboratory, 12, Hanover Square, London, Oct. 30th 1882.

DEAR SIR,—In my judgment it is a gross perversion of the truth to represent finely ground "apatite" superior in fertilising properties of the same material dissolved in sulphuric acid.

I go so far as to maintain that a hard crystalline material, such as apatite, ought never be applied to the land merely in a finely ground state. It appears to me a great pity that an expensive and valuable raw phosphatic mineral should be recommended for manuring purposes in a merely finely ground condition, for such a recom-

mendation if followed must inevitably do harm to the best interests of the farmer.

Believe me yours faithfully,

AUGUSTUS VOELCKER.

To Arthur R. Jenner Fust, Montreal, P. Q.

CHEMICAL LABORATORY.

8 Clyde Street, Edinburgh, 31st Oct. 1882.

DEAR SIR,—I am this morning favoured with yours of the 20th instant regarding "apatite." All my experiments with ground Canadian apatite have been such as to prove that phosphate to be unsuited for a manure until dissolved.

Where I have applied it to roots the result has been usually equal to "no phosphate," and I have never seen any effect produced by it on the succeeding cereal crop. I think farmers should be warned not to use it in the undissolved state until they have proved, each for himself, by experiment on his own land, on the small scale, that it is useful. It would indeed surprise me to hear that it succeeded any better in Canada than it has done here, but I should like to hear of careful comparative experiments tried with it on the small scale. I am, dear Sir, yours very truly.

A. P. AITKEN.

To A. R. Jenner Fust, Montreal, P. Q.

DEAR SIR,—For several years a controversy has been going on in this country in regard to the relative value of soluble and insoluble phosphates, in which I have taken no part. There can be no doubt whatever that soluble phosphates act far more rapidly than insoluble phosphates however finely ground, and as in this country the bulk of the phosphates used are required to push the young turnip out of the reach of the fly, soluble phosphates will continue to be used. The turnip, moreover, is a plant which requires both sulphur and lime, and the gypsum (1) plays an important part in the growth of the crop. If I used phosphate for cereal crops and not for turnips, I should be quite content to use a certain portion of phosphate in the ground state, provided; 1st, that the phosphate was derived from some "non-crystalline" (2) source, such as "Cambridge coprolite," or "Carolina rock;" 2nd, that the phosphate was reduced by grinding to an extremely fine powder, for instance, capable of passing through a sieve of 100 holes to the inch. I have recently seen some phosphates, sent from the States, beautifully ground. If farming in the States, I should not at all object to use a portion of that phosphate in this form. Our experiments appear to indicate that plants can take up large quantities of soluble phosphate, or soluble potash salts when first applied to the soil, but afterwards, when these substances have become fixed in the soil, they are taken up with extreme slowness, and thirty or forty years may elapse before one application is accounted for. Under these circumstances, provided a sufficient amount of soluble phosphate is furnished for the first crop, I see no reason why the residue should not be applied in a very finely ground state. Yours truly,

J. B. LAWES, Rothamsted.

To A. R. Jenner Fust, Montreal, P. Q.

(1) Gypsum is sulphate of lime. When the phosphate of lime is mixed with sulphuric acid, the phosphoric acid is set free, and the lime combining with the sulphuric acid, forms gypsum.—Ed.

(2) Apatite is a "crystalline" form of phosphate.—A. R. J. F.

The reader will observe that Sir John Lawes says, emphatically, that he would have no objection to using phosphate of lime, finely ground, as a manure, provided it was not derived from some "crystalline source," and our "apatite" is exactly the form in which Sir John Lawes objects to its use, i. e., "crystalline." Unfortunately, too many farmers argue in this way: I spread so many pounds of such or such a manure on such a field, and I got a good crop, therefore, etc.; that is "past hoc, ergo propter hoc;" the good crop came after the dressing of the manure, therefore the extra yield was caused by the manure! As if a man should say: the thunder is heard after the lightning is seen, therefore the lightning is the cause of the thunder!

We must repeat here, what we have often said before: any one who uses Canadian apatite as a manure, though never so finely ground, without having previously dissolved it in acid, or as commonly said, converting it into superphosphate, is throwing away time, labour, and money. All the experiments made in Britain with apatite have been decisive on this point, and we can hardly conceive that more evidence "contra" can be needed.

MONTREAL EXHIBITION, 1896.

FIRST PRIZE.

On the best method of making humus; growing second crops, &c.

If I were asked to give the shortest essay on this subject, I would use three words: grow grass roots. I am aware that in some countries, the second crop system succeeds very well. But in this Province, the seasons are so short, allowing such a short time for the growth of plants, that that system does not succeed, that is, "It does not pay." And to grow a crop, and then plough it in, is a loss in comparison to feeding that crop, and applying the manure from it, and also considering the improvement of the stock towards expenses. And my object in this short paper, is to lay down a method by which a large amount of humus can be made, and at the same time, the general system of farming suitable to the Province can be carried on, and the full income received.

When I say, grow grass roots. I mean, sow a good seeding of clover and grass seeds in the spring, at the same time as sowing the regular crop. Harrow, and roll. Or, sow the grass seeds early in the fall, and clover early in the following spring. Harrowing in the fall, and roll after sowing the clover in the spring. (Do not sow clover after July). In this way, the regular crop will be obtained, and in three years there will be more humus contained in the grass roots turned over to rot, than by any other method in the same time, without loss of profit from the field or of labour in cultivation. Those who have not observed, would be surprised, after heavy rains on a newly ploughed meadow field, to see the furrows white with grass roots, and which in rich open soil, reach far below the furrows.

I have read of the benefits of sowing many different kinds of seeds for a second crop after the hay was cut, and the credit for the improvement unstintingly given to the second crop, when the credit ought to have been given to the grass sod. Let any one doubting this theory, cut the second crop from a

sod a foot square, and dig a sod of the same size from a meadow field, shake and wash out the soil, and having dried both, the difference in favor of the sod, and also considering its superiority, will be so evident, that only one experiment is necessary to determine, whether it is the humus of the crop or of the sod from which the following crops derive the benefit. Also the preparation of the land for the second crop occurs in haying time. That, in this part of the world is very inconvenient, and is not at all practicable with any paying amount of success in the lower part of the Province, hay cut in there being in the month of August, and frost generally occurring in the first days of September, and after all in any part of the Province, is only applicable on a small scale. And strange it is, that some writers advise having the second crop growing while the other crop is still on the ground. While others and happily the majority, commend keeping the ground clean of weeds for the purpose of perfecting the crop. In this case, a second crop is weeds, and the amount of damage to the first crop must be estimated. But says an opponent, the crop is extracted from the atmosphere and the roots are extracted from the soil, consequently only that is retained that was there before. This is a common error, and yet is so palpable that it is not worthy of attention.

I do not enter at length into the consideration of ploughing in a crop of the season for humus, for I consider the feeding of it to cattle and other stock without waste, applying it in the form of manure much preferable, more practicable, and will continue to be more popular in the Province of Quebec.

A volume might be written in methods of making humus, second crop etc., by means of artificial manures, extra labour etc., applicable by men of money made outside of Agriculture, and for the purpose of beautifying a field. But, confining myself to the question as applicable to the general farmer of the Province of Quebec, who must make the farm pay its own expenses, I say: Plough up the meadows often, and Grow Grass Roots.

JAMES DICKSON,
Trenholmville, Quebec.

THE VALUE OF COAL ASHES.

Do ashes of hard or soft coal have any fertilizing value for garden use? asks W. H. C., in the "Country Gentleman." That excellent paper thus replies:

Coal from different beds varies widely as to the quantity of fertilizing material it contains, but in any case the quantity is so small as to result in ashes that carry but a small fraction of a per cent. of nitrogen or phosphoric acid. The ashes of cannel and soft coal contain about 0.4 per cent. of potash and 0.3 per cent. of phosphoric acid. The ashes of anthracite coal usually contain about half these quantities. A ton of ashes of the former would then contain eight pounds of potash and six pounds of phosphoric acid—quantities so small that it would hardly justify transportation to the fields, provided the application of coal ashes resulted in no benefit except that due to the plant food it carried. The fertilizing constituents in the ashes most likely are combined with some base which renders them insoluble or largely unavailable. But when coal ashes are applied to grass lands where the plants persist in not fully covering the land, the beneficial effect of a mulch of ashes may be considerable. A piece

of gravelly light land, which failed to produce excellent plants, was liberally treated with anthracite coal ashes. The plants present tillered and multiplied rapidly from root stalks and soon a beautiful sod was formed. Coal ashes may also serve to conserve moisture, the one thing that is most likely to be deficient in the soil during midsummer. When intimately mixed with clay soils, they tend to make the land more friable they tend to make the land more friable. (1)

RESULTS FROM FRESH vs. ROTTED DUNG

For several years experiments have been conducted under the direction of Prof. Wm. Saunders at the Central Dominion Experimental Farm, with a view to ascertain the relative values of fresh and rotted farm-yard manures. The results are disturbing to some old notions on this subject. With oats grown for seven years, the plots treated with fresh manure gave an average yield per acre of 44 bushels 2 pounds, as against 37 bushels 29 pounds from plots treated to the same weight of rotted manure, which is an average of 6 bushels and 7 pounds in favor of the fresh manure. Barley in the same course of time gave an average of 1 bushel and 26 pounds in favor of the fresh manure. With wheat the rotted manure gave 10 pounds per acre of a better average than did the fresh manure treated plots in eight years' tests. With Indian corn one series of crops gave an average of 2 tons 1,181 pounds per acre in favor of the fresh manure, while another series gave 926 pounds per acre in favor of the rotted manure. These are the averages of eight years' tests. Mangels gave a slightly larger crop from rotted manure, while turnips, carrots, and potatoes gave decidedly better yields from fresh, unrotted manure.

While the above shows a decided advantage in applying farm-yard manure direct from the stables to the land, the superiority of it over rotted manure cannot be thoroughly appreciated without a knowledge of facts regarding the rate at which manure loses weight when allowed to rot in the heap.

On March 7th, 1894, 4,000 pounds each of fresh horse and cattle manure were placed in a shed on tight boards. It was turned and weighed once a month, and the pile carefully watched to see that proper conditions of moisture were preserved. The following is the result of the several weighings:

March 7th.....	4,000 pounds.
April 6th.....	3,530 "
May 7th.....	4,278 "
June 7th.....	3,947 "
July 6th.....	3,480 "

At this time the manure was in what has usually been considered first-class condition, having that pasty character which would admit of its being cut easily with a spade and mixed readily with the soil. The turning and weighing was continued each month until December 7th, when the former 3,000 pounds of fresh manure had lost weight until it weighed 2,600 pounds—a loss of more than two-thirds of the original weight. When we remember that fresh manure gave better results with most crops than did rotted manure, pound for pound, we must see that thousands of dollars are being allowed to waste in

(Very useful as a mulch, in spring for goose-berrles: to prevent mildew.—Ed.)

almost every county every year from allowing the farm-yard manure to rot down into that supposed best condition. There is no doubt but fresh strawy manure will yield better relative results on heavy soils, or those lacking in humus, than upon those already having a good condition of texture, but there can be no soil, except in a garden, that will give as profitable returns from applying manure that has lain in piles heating and rotting for months at a time as when it is applied directly from the stable to the soil. As years go by more farmers are finding this out and are hauling the manure as it is made all through the winter and spreading it upon the fields to be plowed in as soon as possible in the spring. (1)

Correspondence.

Distribution of samples from the Central Experimental Farm, at Ottawa.

To the Editor of the "Journal of Agriculture," Montreal.

During the past nine years, samples of those varieties of grain which have succeeded best on the Experimental Farms have been distributed on application in 3 lb. bags to farmers in all parts of the Dominion, free through the mail. The object in view in this distribution has been to add to the productiveness and improve the quality of these important agricultural products throughout the country by placing within reach of every farmer pure seed of the most vigorous and productive sorts. This work has met with much appreciation and a considerable degree of success.

Instructions have been given by the Hon. Minister of Agriculture to make a similar distribution this season. Owing to the very large number of applications now received it is not practicable to send more than one sample to each applicant, but with this limitation it is hoped that the stock available will be sufficient to permit of every farmer who so desires sharing in the benefits of this useful branch of the work of the Experimental Farms.

The distribution now in progress consists of some of the most promising sorts of Oats, Barley, Spring Wheat, Pease, Field Corn and Potatoes. Requests for samples may be sent to the Central Experimental Farm, Ottawa, at any time before the 1st of March, but after that date the lists will be closed so that the applications then on hand may be filled before seeding begins. All communications can be sent free of postage. It is desirable that each applicant should name the variety which he desires to test, also one or two alternative sorts in case the stock of the sort chosen should be exhausted, while no promise can be made that the variety asked for will be sent, the wishes of correspondents will be attended to as far as practicable. The samples of grain will be sent early, but potatoes cannot be distributed until the danger of injury in transit by frost is over.

Wm. SAUNDERS,
Director, Experimental Farms.
Ottawa, January 5th, 1897.

(1) And the weeds afterwards? Ed.

Outremont, 14th January, 1897.
G. A. Gigault, Esq.

Asst.-Commissioner of Agriculture,
Quebec.

COLD-STORAGE

DEAR SIR,

In reply to your letter of 30th ult. I beg to state that the cold storage warehouses referred to in my report are kept at a low temperature by the evaporation of liquid ammoniac. There is nothing special in the construction of the buildings only they must be frost proof. The temperature in different chambers of a building can be regulated very much in the same way as in heating by steam or hot water. It is considered that a temperature as near freezing point as possible is the most favourable for keeping apples. As machinery and steam power is involved in a cold storage warehouse of this kind this means is seldom employed except where the quantity of fruit to be stored is very large, say, 20 to 30,000 barrels. There are several of these warehouses in operation in Montreal and large quantities of apples are in store. The usual price charged is 25 cts per barrel. At a temperature of 32 Fahr. apples may be kept for months beyond their ordinary season, but when removed from this temperature they decay very rapidly and cannot be transported any great distance. With regard to keeping apples in cellars I do not think there is any especial advantage in a cellar only that we can construct a frost proof apartment cheaper under ground than above, the chief points in keeping apples are first to have them in a temperature as near freezing as possible, second to pick them carefully and before too ripe.

I enclose a circular of refrigerating machines and will be glad to give you any further information that you may require.

(Signed) W. W. DUNLOP.

Secretary Treasury of the Pomological and Fruit Growing Society of the Province of Quebec.

ABOLITION OF QUARANTINE.—Dr McEachran, the Chief Veterinary Inspector of the Dominion, informs us that, in future, there will be no quarantine between this country and the United States. Surely this is a great advance on the road to some measure of reciprocity.

POTATO STARCH IN GERMANY.

In reply to a Department dispatch regarding the process of manufacturing potato starch in Germany, I have the honor to submit the following, viz:

I have written to the principal manufacturers of potato starch in Germany, requesting them to describe the process of manufacture to me, but in vain. They all inform me it is a secret of their own and do not wish to disclose it. Inclosed are two letters explaining the foregoing.

The only information I was able to gain on this process I have taken from a book called Fabrication of Potato Starch, Dextrin, and Starch Sugar, from which the following is a translation of an article contained therein, headed "Fabrication of starch from potatoes."

"There are two principal methods for the production of starch from bulbs in general. The one method, which finds almost general application and is designated under the name of the 'ancient' method, consists in reducing the

bulbs on grate cylinders and so on apparatus, if possible, completely, or rubbing them to a fine pulp, washing or brushing them on sieves by means of a flow of water, and then separating the starch flour from the milky fluid running therefrom. The starch flour obtained in this simple manner is then cleaned either by washing or by a centrifugal machine, dried in a drying room with a heightened temperature and the mass is then pressed between rollers.

The second method; Voelcker's method; consists, above all, in the cells of the bulbs being chemically opened. For this purpose, the potatoes are cut in slices, steeped some time in lukewarm water, then stored up in heaps several feet high and left to themselves for about eight days, whereby the temperature mounts to about 40o Celsius. Through the heat developed by the rotting of the potato mass, chemical changes take place in the cells of the bulbs, which have not been studied exactly until now, but which certainly tend to form substances which not only dissolve the intercellular substance of the starchy web, but also have influence on the cell walls and partially dissolve them, so that the cells are opened in this manner, and, as it has been proved, much more completely than by the former-described method. Organic acidities are probably principally formed hereby, which dissolve the intercellular substance composed of pectine corpuscles. But whatever chemical workings the dissolving of the cellular walls produce has been a complete enigma. The process of thus obtaining starch has not been studied properly. The rotting having now advanced sufficiently, and the fibers having so far lost their connection that the potato substance is changed into a soft dough-like mass, a complete separation of the starch flour can easily be accomplished in a mechanical way. To attain this, the mass, which contains starch-flour, fiber-stuff, and peel, in a pappy-like mixture, is steeped in water and passed through a sieve with large holes, whereby the coarser parts remain behind. The separating of the coarser parts takes place, then, by means of hair or wire sieves, of which the meshes are so fine that only the starch flour and very fine fibrous parts pass through. The separating of the starch grains from the fibrous parts is then ultimately obtained by means of highly ingeniously constructed clay apparatus.

(Signed) T. W. KICKBUSH,

Consul.

The Flock.

SHEEP GOING INTO WINTER QUARTERS.

(By Richard Gibson)

Selection of Ram—Change to winter food—Rape and cabbage.

Probably, this is the most critical time that the flockmaster passes, except during the brief lambing period. There is the selection of the breeding flock, the discarding of the aged, those that breed or raise their lambs badly, have lost a portion of the udder, etc. We all know that as much skill is required in drafting the flock as in filing up. No wise man sells his best females unless for good and sufficient cause, but it is one thing to select the breeding ewe and another the show ewe.

The latter, according to the whim of the judge, may be the very ones the breeder wants to discard—big, loose, opened-coated, saw-backed, ones that fill the eye, while the smaller, thicker, better backed ones are passed. These, however, are the sort the breeder wants to select. Go for quality every time, no matter what the breed, and let judges and buyers go for size if they wish. They are only taking what you ought to spare. Keep on the even tenor of your way and in the end you will come out all right. The medium sized ones of all breeds are the average ones, and they will be found to produce the most pounds of meat at less cost than either the big or the little ones of their respective breeds.

After deciding upon the breeding flock, select your ram. Buy the best you can and let him be as near perfect as possible. This zigzag, teeter-teeter business advocated by most writers is, in my humble opinion, all bosh. Animal life is not like a sculptor's model, on which a chunk of clay will stick and may be trimmed off if necessary; but with the live creature these chunks of fat, it may be, on the rumps remain for generation after generation. A breeder realizing that his last ram left his offspring, it may be, weak in the leg, he is persuaded to buy one abnormally large there, which simply means he is not symmetrical—a freak, as it were. If his ram is as successful as he anticipates, the next year he will seek for a freak in the other direction, with a large fore end—and so scosawing backwards and forwards, never coming to any decided method or making a reputation. Take my advice: aim to breed each year to the evenest, smoothest, best backed, thickest fleshed ram to be found of the type you have chosen, and don't go for the big ones of the breed. If you are breeding Shropshires, don't go for the very largest or for the smallest. If size is what you are after, buy a Hampshire or Oxford at once, but don't turn up your nose because every breeder is not sacrificing type and quality.

"The Change to Winter Food" must be gradual. Grain, except to the lambs, ought not to be necessary, and the flock that requires it is not the sort for any farmer to keep and make money. Buildings may be of the most superficial kind, and I always expect to find an ordinary flock on a rich man's place (1). An architect's building is, as a rule, anomination, as far as the comfort and wellbeing of the flock is concerned. Architecturally, it may fill out a picture in the landscape and be an addition to the view from the residence, but the poor animals coughing and running at the nose, coats out of condition, with a sickly, delicate, anemic appearance, are to be pitied. The best building is a big, deep, open shed, tar papered and sealed, three feet high on three sides of building, and open to the south, with big yards or paddocks attached to go in or out at pleasure. Any amount of cold will be suffered with impunity, but drafts are abhorrent and wet positively injurious, so govern thyself accordingly (2) No one need hesitate to buy a few sheep because he has not a good pen; the cheapest is generally the best. As to feed, yearly I think more and more of cabbage. It is not only safer than rape, but no feed is equal to it of this season for putting on flesh.

A friend wrote me the other day,

(1) So do we. Ed.

(2) Exactly what we have been preaching for years. Ed.

saying: "By your advice, I grew cabbage in the root mold and treated them in the same manner. I have an immense crop." (3).

They may be kept in piles of any length by pulling and placing them heads down (roots left on) four wide, then in spaces 3, next tier 2, with one for apex. (4) Cover with straw and light sprinkling of soil, or, better, turnip-tops. They will stand as much frost as a swede. "Farmer's Advocate."

FARMERS' SYNDICATE

of the

PROVINCE OF QUEBEC.

Office: 23 St. Louis St., Quebec.

President: His Grace Mgr. L. N. Bégin.

General Secretary: Ferd. Audet, N.P.
Treasurer: P. G. Lafrance, Cashier of the National Bank.

Farmers, Agricultural Clubs and Societies can be supplied with every thing they want, viz:

Pigs: Chester, Berkshire, Yorkshire, &c., &c.

Cattle: Canadian, Ayrshire, Jersey, Durham, &c., &c.

Sheep: Shropshire, Lincoln, Oxford, Cotswold, South-down, &c., &c.

Fertilizers and agricultural implements of every kind. Send in your order at once for feed-cutters. Farm products of all kind sold for our members. Information of all kind given to members.

HAMPSHIRE-DOWNS.—As most of our readers know, we have always claimed the greatest precocity for this breed of sheep, and we still adhere to our pets, not without reason, as the markets and fat-stock shows continue to prove. At the late exhibition of the Smithfield Club M. Alfred de Mornay, of Col d'Abres, Wallingford, Berkshire, Eng., showed a pen of three Hampshire-down lambs, 147 days old, that weighed, alive, 125 lbs. each. Now, to reach that weight in the above number of days, their daily gain of live weight must have been 0.85 lb. As Hampshire-down ewes generally lamb very early in the year, one naturally asks how comes it that the dams of these lambs were so late as the 20th July before they lambed? Well, the answer is simply this; they had brought forth other offspring in the month of January of the same year, 1896! And more; they had taken the ram again, and are due to lamb down again during the present month of January, 1897; so that it is by no means impossible that some at least of these ewes may have lambed three times within a twelve month. Even the "Dorset-horned" ewes would be puzzled to beat this marvellous fecundity!

Last year, M. de Mornay had lambs that weighed 138 lbs. at the age of 147 days, a daily increase of 0.94 lbs. a day—almost a pound a day.—Now, the proportion of weight of carcass to live-weight at this year's show was, for the best sheep, about 68 per cent; so these babies—only five months old—gave to the consumer a carcass of mutton weighing 93 pounds!! We have known of lots of Hampshire-down lambs weighing over ten stone (80 lbs.) of carcass at Weyhill Fair, in September, but the wonderful precocity and rapid

(3) We can safely say that 10 tons of cabbages—2 feet by one foot—is by no means a difficult crop to grow on an acre of land. Ed.

(4) Mr. Gibson has evidently been reading the Journal. Ed.

laying on of flesh of these lambs of M. de Mornay's exceed everything we even heard of in a very long experience of the breed.

MUTTON-PRICES at the Queen's sale of stock, Windsor, seem to have been pretty high. Hampshire lambs of the year—probably ten months old—sold up to 77s. 6d. (\$19.00), wethers of the same breed up to \$32.00; South-down lambs made \$15.00 and the wethers only a dollar more, per head in all cases.

Swine.

The health of Swine.

Prices—Clover for hogs—Corn—Shelter—Ringing.

PROPER FEEDING AND CARE.

BDS. COUNTRY GENTLEMAN.—In the sections of the country where mixed farming is followed, swine growing is regarded as an important feature; and just now with corn growing farmers they are looked on as the most profitable medium through which these can market their corn and other products that the swine consume.

The farmer knows that he is losing money at a rapid rate when he hauls corn to market at 17c. per bushel, while, if made into pork, he can drive it to market at \$3.35 per hundred pounds. These are the prices that now rule in the market of the writer. The general average quantity of pork made from a bushel of corn, is usually put at ten pounds. A bushel of corn hauled to market brings 17c. Driven to market in the shape of pork, 33½c. When the farmer grasps the full import of the figures, he must admit that there is profit in pig growing.

But granting this, scores and scores have abandoned swine growing on account of disease. In many cases I am satisfied that if the farmers would give the pigs rational treatment they could grow them with light losses, and in many cases escape loss entirely from the most dangerous types of disease. When corn is 50c. per bushel, and hogs \$5 to \$6 per hundred, farmers make an unusual effort to produce pork on account of the large amount of money it brings; yet the rate of profit is much higher now. A correspondingly stronger effort should therefore be made to keep the swine on the farm healthy.

Of course no hog is cholera proof; still there are good grounds for the belief that with proper treatment there is little—if any—danger of disease breaking out in one's own herd unless it has been exposed to outside sources of infection. If sanitary treatment and feeding has had proper attention, the danger from these sources is barred against, to a great extent. We hear men say that they give their hogs the best possible treatment, and still they die. But such men may not have comfortable shelter in their feeding fields. Or if they have shelter, probably it has been occupied for years without a thorough cleansing. This fall we have no shelter on the feeding grounds. The hogs have their corn on the sward of a clover field, and have the choice of sleeping in the field or coming to the barn sheds. The doors of the sheds are left open, and the door-ways barred against other live-stock, that the hogs may go to the sheds when they wish. When the nights and days are pleasant, they remain out of doors, but when

rain or storming they go to the sheds. If the hogs have the opportunity, they invariably seek shelter against a raw stinging wind. Most farmers do not consider such shelter necessary. We grow hogs in the belief that they need protection against storms. This year there have been most serious losses in some sections from disease. The weather this fall has been changeable, and the unprotected herds have been much exposed, as I know from observation that few farmers have adequate protection for their feeding hogs. Some effort is made at farrowing time to protect and shelter the young things against storm, but very seldom is this extended to the feeders.

If we would have hogs thrive, they must be fed. I believe there is too much feeding done, or rather, much feed could be saved if better care was given in other directions. It is believed by many that if hogs were allowed to root and never were ringed, their health would be better; or if they were fed with a ration so complete that they would have no desire to root, that there would be little disease. At present our feeding hogs are fed on a clover sod. There is an excellent growth of clover for them to feed on. They have corn and pumpkins, what they will eat, and salt and ashes are kept in a self-feeding box, where they have free access to it. There are 40 of them, and no rooting is done in the clover sod, but some is done along the fences, turning the blue-grass sod. They also have the run of a permanent pasture. Here in the blue-grass and timothy sod they do considerable rooting. Yet I prefer to let them root rather than ring them. (1)

The clover sod field in which they are fed contains 12 acres. The permanent pasture, where they go to the brook for water, contains 19 acres, and on account of the pure spring water they get from the brook, we allow them the range of this field. With this exercise they keep in excellent health; the exercise gives them better appetites. Experiments made in this direction show that while they consume more, they make a greater gain for food eaten. If they have this great range, there is always plenty of grass for them to eat as they range about, and we know that with this grass ration, taken in connection with the corn, the corn is much better digested.

While corn is the main dependence to fatten we do not at any time depend entirely upon it. If there is no grass for the hogs, we give a light feed of middlings each day. This they relish, and we know it adds greatly to their thrift. We have had farmers make light of us for purchasing these by-products to feed our hogs, saying that they were equally successful without them. Yet we notice that they do not escape cholera, and have no faith in a preventive line of feeding. In 25 years' experience in hog growing, we have never lost from cholera but once, and I attributed that to my own mismanagement. Then we lost 20 out of 40 hogs, and one aged sow. Had we been corn feeders and ignored a variety ration, the probabilities are that the disease would have destroyed all.

Some farmers go on the principle that if they cannot grow hogs on corn, they will not grow them at all. While they

(1) Why not cut the cartilaginous and ligamentous prolongations by which the supplementary bone is separated from the proper nasals? Once done, when the pigs are young, it is done for ever. Ed.

etleek at it they often fall. There is profit often in studying the wants of the pig, and many times in drawing away from old lines of feeding.

"Ross County, Ohio."

JOHN M. JAMISON.

PLEURO-PNEUMONIA, in South-Africa, has been ravaging the herds of both natives and Europeans till in some districts almost every head of cattle has disappeared. A well known resident on the Tanganyika Plateau, Mr. McCulloch, had a large herd of horned stock at the Fife station when the disease was rampant there and cattle and game were dying in all directions. He adopted a singular remedy. As soon as any of his cattle were attacked, he administered enormous doses of quinine, and, according to his statement, very few of his beasts died, a large number of them recovering.

This is very wonderful, because, we believe, quinine, or bark, is not generally considered a medicine for diseases affecting the lungs. But still more wonderful is a case that we ourselves were present at, in 1856. Mr. James Webb, of Calcut, near Reading, Eng., had just bought a small herd of Short-horns from a breeder in Kent—Mr. Loney we think—Three days after their arrival, five out of the six cows were down with pleuro-pneumonia, and in a bad way. The usual remedies were tried without success by the Reading veterinary surgeons, and the patients were given up.

It happened that a friend of Miss Webb, Miss Madeline Dickson by name, was staying at Calcut at the time. She was the daughter of Dr. Dickson, a London practitioner, author of "The Chronothermal Theory of Medicine," whose character is so well described by Charles Reade in his novel "Hard Cash," under the pseudonym of Dr. Sampson. Miss Dickson, a very lovely blonde, by the bye, though that is neither here nor there—begged to be allowed to try one of her father's favourite remedies for "pleurisy" on one of the cows. Leave was given to her, she administered a heavy dose of hydrocyanic acid (prussic acid), and in a week's time the cow was feeding heartily and eventually made a complete recovery! Now, prussic acid is one of the most virulent poisons in the pharmacopoeia; so, there is no telling but what quinine (Chincona bark) may turn out to be a specific for the terrible scourge, pleuro-pneumonia.

HORN-DISEASE.—We were surprised to hear, from a Glengarry damsel, that she, as we thought, long-exploded idea of a complaint called "horn-disease" was still rampant in the country round Lancaster. Is this the old "hollow horn?" (1) Of course, there is no such thing in existence, any more than the tall-evil, but we think a lecturer sent to the Glengarry country might do some good by way of eradicating these superstitions. (2) The treatment seems to be to bore a hole in the horn and pour in spirits of turpentine.

(1) All horns are hollow.—Ed.
(2) Among others, "The worm in the tail."—Ed.

Special Notices.

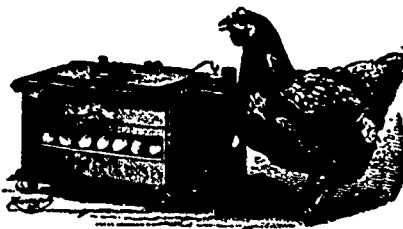
CONSUMPTION CURED.

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and all Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe, in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper, W. A. NORRIS, 330 Powers' Block, Rochester, N. Y.

The G. H. Grimm Mfg. Co., manufacturers of the Champion Evaporator for Maple Syrup, etc., who always lead in introducing improved methods in Maple sugar making, are selling agents for the Record double tin Sap Spouts. The Spouts have a patent trap preventing the air from reaching and drying the pores of the tree, so that as long as circulation continues the sap will run. They report a good demand for Evaporators and anticipate a good sugar season.

"The Wooden Hen."

The little illustration shown herewith is small only in size, but really large in magnitude, when we consider that the "Wooden Hen" is not larger than a live hen, yet has double the capacity. It weighs only 15 pounds, has a capacity of 28 eggs, and while not a toy, is just as amusing, besides being instructive as well.



We doubt if a more acceptable or more valuable present could be made to the farmer boy or girl, and we suggest that every one of them who read the *Journal of Agriculture*, write Mr. Geo. H. Stahl, Quincy, Ill., and ask him for a copy of his handsome little booklet describing the "Wooden Hen," also his large catalogue of the Model Excelsior Incubator. Tell him you write at the suggestion of the *Journal of Agriculture*.

There is no excuse for any man to appear in society with a grizzly beard since the introduction of Buckingham's Dye, which colors natural brown or black.

"For the land of uncle Sam."

Messrs. Shurly & Dietrich, Galt, Ont., proprietors of the Maple Leaf Saw Works, have been very busy lately shipping Maple Leaf Lance-tooth Cross cut saws to the United States. They are the only firm in the world who export saws to the United States in large quantities. This trade is not induced by low prices but on the contrary, the goods when landed in the U. S. and duties paid, cost very much more than the highest grade of American goods. The reason of their commanding a higher price is their superior quality, especially in temper. As manufacturers of hand saws, cross-cut saws and band saws, they no doubt excel any firm in the world.

In magnitude of output and size of works the Maple Leaf Saw Works, of Galt, are the largest in Canada, and one of the largest in the world, while the R. H. Smith Co., Ltd. St. Catharines, are a close second.

Canada leads the world in the manufacture of high class saws. Every true Canadian should feel proud of this fact.

One reason for this is that Canada, as a producer of lumber, is very much larger per capita than any other nation, and the manufacturer comes more immediately in contact with the lumber manufacturer, thereby giving him better opportunities to study his requirements and make the necessary improvements in mechanical construction and quality. The R. H. Smith Co., Ltd., is the oldest establishment of the kind in Canada. They were established by the celebrated J. Flint, one of the oldest, largest and best makers of high grade saws in the United States and Canada. Messrs. Shurly and Dietrich were both associated at Rochester, N. Y., as partners in business, with R. H. Smith, president of the R. H. Smith Co., Ltd., St. Catharines. The association of the above gentlemen with the late J. Flint, no doubt, has contributed considerably to their great success.—From Galt Daily Reporter.

"Potash in Agriculture"

Is the title of a pamphlet, published by the German Kali Works, No. 93 Nassau Street, New York, N. Y. This book is known to many of our readers from its first edition, published a few years ago. The second edition contains many valuable improvements.

The contents embody a collection of results obtained with fertilizers at our Experiment Stations. It would appear from these conclusions that many brands of fertilizers now on the market do not contain as much potash as they should for the production of the best results. It would certainly pay every farmer to write for a copy of this book, which we understand is sent free.

As will be seen by their announcement in the advertising columns, Messrs. Wm. Ewing & Co. have their Annual Seed Catalogue now ready. During the 28 years they have been in the business each year has been a progressive one, and they acknowledge, with pardonable pride, a greater patronage in the past year than ever before—due to the appreciation of their keeping faith to their standard of superiority—Messrs. Ewing & Co's patrons may rely upon the seeds sent out by them, having been fully tested; or if otherwise the fact is honestly stated in their catalogue, with useful hints concerning the same. The firm's aim being to make their annual catalogue a practical condensed epitome of the various lines, useful to the amateur with a small garden as well as to the farmer.

All interested should send their address to Messrs Ewing & Co. when a copy will be mailed free.

It is a fact worth knowing that, as a household remedy, for children and adults, Ayer's Pills are invaluable.

The Seed is the Vital Thing.

Planting must be begun right, else no amount of cultivation or fertilizer can prevent the crop being a failure. The first step is the selection of the seed. Do not take any risks here. Get seeds that you can depend upon—seeds that are fresh, that have a reputation behind them. The most reliable seeds grown in this country are Ferry's Seeds. Wherever seeds are sown the name of D. M. Ferry & Co., of Windsor, Ont., is a guarantee of quality and freshness. The greatest care and strictest caution are exercised in the growing, selection, packing and distribution of their seeds. Not only must they be fresh, but they must be true to name.

On a par with the quality of the seeds is Ferry's Seed Annual for 1897, the most comprehensive and valuable book of the kind ever printed. Every planter, large and small, should get, read and digest this book before planting a single seed. It is free to all who address the firm as above.

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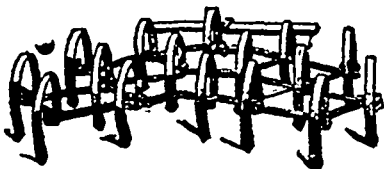
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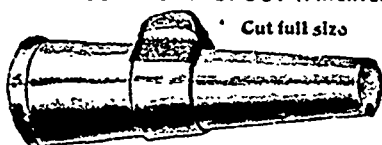
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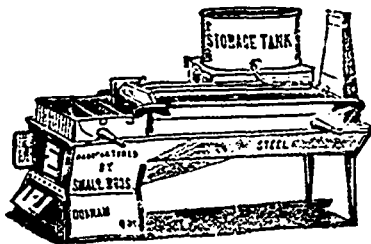
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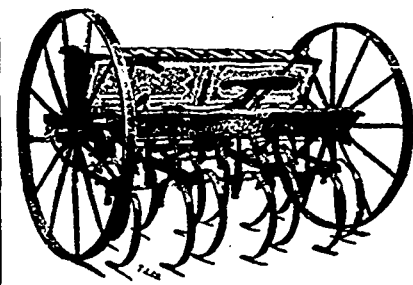
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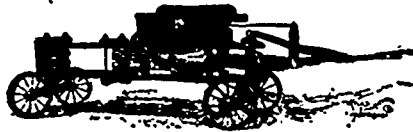
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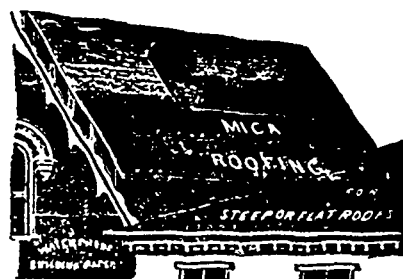
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