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THE ILLUSTRATED Journal of Agriculture

Montreal, August 1, 1896.

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STATE OF THE CROPS.

Hay—Weeds—Clover—Grain—Pease
—Grasshoppers—Siloes—Potatoes
—Fruit—The dairy.

HAY.—The crop of hay is not nearly up to last year's, although there is a fair crop, it is pretty generally of good quality. The Daisy crop has not suffered much, it looks as if in some sections there was very little else, the yellow buttercup is very plentiful too, while in some sections the wild mustard is an exceedingly good crop. Come, negligent farmers, get a gait on you and instead of growing such good crops of daly, buttercup and wild mustard, grow clover instead, the cows thrive much better on it. Clover.—This crop is not very plentiful this year, whether it was winter killed or not I cannot say or whether it was owing to the cold dry spring, that prevented it from making a good start, at all events there is rather an ordinary crop of clover.

WHEAT.—Wheat is looking very well, not a great acreage sown this year but the appearance of a good crop.

OATS.—are doing well; some fields are already headed out, all early grain is very good.

BAILEY.—Some odd fields are too heavy the recent rains and wind storms have caused some to lodge, but all in all a good crop.

PEASE.—They seem to be a much better crop than last year, or even for some years back, should mildew not make its appearance pease should be a fair average.

RYE.—A few fields in Joliette and Berthier counties have been sown last fall, but the grasshoppers are making sad havoc in it, they are even making quite a sweep with all kinds of grain and grass in that locality.

CORN.—A good deal of this crop raised this year, the most of it for the silo. The silo has come to stay although some are not in favor of it, those who have tried good ensilage are well pleased with the results, like most other things there is good and bad. When a silo is properly constructed the corn in right order and a little attention paid to the filling, ensilage is the cheapest food yet grown.

POTATOES.—Are looking first class, the Colorado beetles or bugs are not quite so numerous as former years, new potatoes are in market now of a good size and from accounts are of good quality.

Other vegetables, turnips, mangels and carrots are doing well, and have the appearance of a vigorous growth.

SMALL FRUITS.—A good crop, not quite up to last year, but a good average.

APPLES.—The trees were loaded with blossoms, in fact the young apples were too plentiful, many dropping off with the high winds, and now the crop is doing well and should be much larger than last year. In coming from home yesterday quite a lot of apples were shipped by boat to Montreal, it seems strange that people would buy half grown apples, but the highest price for the whole season usually is the first lots.

BUTTER.—Has been ruling low for the whole season, there is much more made this year than ever before in Canada. The shipments are very much greater than last year.

CHEESE.—This commodity has been lower all the season until now than for many years, there will not be so much made in Canada this year as usual, many

of the small factories will be closed soon (no great loss).

PASTURES.—Are not quite as luxuriant this year, owing to the cold dry weather early in the year, and now on the north shore of the St. Lawrence the grass-hoppers having appeared in great numbers (I also see by the papers they are bad in some parts of Ontario) has had serious effects on the pastures.

Taken all in all we have great reason to be thankful: hay a fair crop, grain good, pastures fair, fruits and vegetables good; the only drawback is the low prices for beef, pork, grain, butter and cheese, but we shall have an abundance for both man and beast.

PETER MACFARLANE. Chateauguay, July 10th 1896.

COLD STORAGE.

Advantage of to producers and consumer—Purity of atmosphere as necessary as refrigeration—Chemical and mechanical action employed to produce the best results.

The advantage of a perfect system of cold storage, both to producers and consumers cannot be overestimated. It is all important to place all easily perishable products on the market in the best possible condition as to freshness and purity. This remark alludes especially to dairy products and to butter still more particularly. Not only should it be kept in a low temperature, but in an atmosphere perfectly sweet, pure, and entirely free from all germs which might have the effect of deteriorating its flavour or quality.

Nothing will so readily absorb, and assimilate foreign odours, or flavours as butter; hence, the absolute necessity of storing it where there is no possibility of their presence.

How to accomplish this has been a problem which has taken years of scientific research and experiment to solve. Methods, which depended for refrigeration upon storing away large quantities of common ice in connection with the storage, did not prove satisfactory, because the continual melting of the ice was productive of a certain degree of moisture, and it is an established fact that the bacteria, which produce decomposition, are only generated in damp places.

Dryness then is a prime necessity to the successful preservation of so delicate and perishable an article as butter, and all products of a like nature.

Perfect refrigeration of store houses in which to keep these goods for any length of time must be accomplished, without loss of oxygen, and so a current of excessively cold and pure air must be introduced and kept acting regularly and uniformly.

A visit to the "Fraser Cold Storage", Wellington Street, Montreal, revealed to me the fact that here these conditions have been carried out to the letter. In the storehouses, no pipes are used from which any evaporation of moisture can take place, but cold air, purified by chemical action, is introduced by means of wooden boxes, or troughs, running on the ceiling the whole length of the building. On one side is another trough or box, from which the air has been exhausted by means of a rapidly revolving fan, placed where all the troughs, used in the various rooms, centre. By this means, all the surplus of warm or impure air is absorbed and carried off, and a perfect and uniform

circulation is maintained. The effect produced upon the visitor is similar to that experienced on a bright, clear, zero day in this climate, in midwinter, and is most pleasant and exhilarating. It could not fail to impress the most sceptical with the fact, that it is the very place in which all perishable dairy, farm, and orchard products can be kept in a perfect state of preservation, until a favourable time has come to place them on the market.

Now, let us glance, for a moment, at the good the use of cold storage is capable for the Dairyman, Farmer, and Fruit-grower.

And, perhaps, the easiest way to arrive at a correct estimate thereof is to contrast the old methods with the new.

As to butter, for instance, the buyer would go into a locality, inspect a lot of butter, purchase it at the price for first quality, but, alas when he received it he found it was not up to the standard, caused probably by having been stored in some warm, damp, unwholesome shed or cellar during the interval which had elapsed between its purchase and delivery; where it had lost its flavour or perhaps acquired a bad one. A chance was also given to a tricky dealer to find fault after he had the goods in his premises (I don't say this ever occurs, but it might.) By this means, the vendor is liable to trouble, loss, and delay.

On the other hand, suppose a farmer, or dairyman is making butter, he can ship it to the cold storage immediately it is made, and as soon as he has a lot worth while can invite competition amongst buyers, sell his lot for cash, as it stands, pocket his money, and go home rejoicing without any fear of trouble or impending lawsuit to keep him awake all night, as the Storage Company may act as his agents, and probably make a better sale than he could himself.

I have mentioned butter chiefly, as being the most easily damaged by improper handling before it is consumed; but the same argument will apply in the case of all perishable goods. The trade for fruit for export can be greatly increased and rendered profitable by the adoption of cold storage. Fameuse apples are great favorites in the English market, when they are in good condition, but if packed as usual, in barrels, and exposed to the action of air and heat, if they are not entirely destroyed, they lose their peculiarly delicate flavor, and are no more like the "fameuses" they were when they left here than "chalk is like cheese." Now if these were packed in shallow boxes, placed immediately they are gathered (which should not be until thoroughly ripe) in cold storage, say 33o F. to 34o F., shipped in vessels, refrigerated also, and then placed on the Covent Garden Market as choice Montreal fameuse apples they would command a price which would be more than a compensation for the extra cost of careful handling, packing, and shipping.

A movement is now on foot to encourage the exportation of ripe tomatoes, and there is no doubt that if the instructions lately published by Professor Craig are faithfully carried out, the industry may be rendered a highly profitable one, but I am in favour of allowing them to ripen well before they are packed, then resort to cold storage, and they will arrive in better condition than if gathered in a partially ripe state as the flavour will be finer, and if properly selected and packed, there will be no danger of decay.

Finally, I believe that if we take advantage of the means now offered to

dispose of our products; if we aim at complete excellence in their production, and at careful management afterwards until they are disposed of; a new era of prosperity and success is dawning upon the painstaking, thoughtful, and industrious Canadian Farmer.

GEO. MOORE.

### EVAPORATED FRUIT.

The prospect is excellent for an abundant fruit crop of all kinds, and as is usual in prolific fruit seasons large quantities of fruit are wasted because of lack of a ready market for the green fruit during the season in which it will keep. This is particularly the case with "Seconds" or fruit of slightly inferior quality. Let us take apples for example. The best, if properly sorted and packed, always command a fair price, but the culls or seconds are difficult to dispose of at any price and much valuable fruit goes to waste, is fed to the swine, or at best sold for a song to be made into cider.

It is at this time that an evaporator is needed, one that is practical and economical, which will dry this surplus fruit and thus preserve it until such time as the green fruit has been exhausted, when it will sell for good prices. No one is so favorably situated for evaporating fruit as the fruit grower himself. The cost of a good evaporator is small and the work will be found congenial by young ladies or other members of the household. From 25 to 200 lbs. of evaporated apples can be made per day, the capacity depending on the size of the evaporator used. A bushel of green apples will make about seven pounds of evaporated apples. At the lowest figure at which first class evaporated apples have ever been sold, viz. 5½ cts a lb., a bushel of apples would bring about 38½ cts. when evaporated: about as much as is often realized at the orchard for first class fruit.

What has been said of apples is true of other kinds of fruit, as a good evaporator will dry all kinds of fruits and vegetables. Such evaporated fruits as Apples, Peaches, Pears, Plums etc. meet with ready sale everywhere, and Cherries, Berries and small fruits in general are also in demand wherever they have been introduced.

It is important to have a good evaporator, and such machines are now manufactured and sold in our own country on terms which make it easy for any farmer to own one. When such a machine is used and proper care taken Evaporated Fruit is most delicious. Common dried fruits must not be compared with evaporated fruits, and it is owing to the inferior quality of dried fruits that they demand no price and "go-a-begging" for buyers at almost any figure.

In the United States and some portions of Ontario the evaporating of fruits is carried on extensively and with great success. Quebec farmers and fruit growers should take hold of this matter and utilize a large amount of fruit this fall, which will otherwise go to waste, or if dried in the ordinary way become a drug on the market scarcely realizing enough to pay for transportation.

W. H. BARBER, Montreal.

### MARKETING APPLES.

**PACKING AND PACKAGES.**—A prime requisite towards attaining ultimate success in marketing orchard products is that the layer of fruit shown on

the top layer or upper specimens should be thoroughly and exactly representative of the quality of each package, whether this be basket, box or barrel. This "is honest packing", and when carried into practice, having with it the packer's brand and name, with the name of the variety, will soon win for itself a favourable reputation in the market, to which it is consigned. The question of honest packing receives every year, at the meetings of the different fruit growers' organizations of the Dominion, a good deal of consideration, but owing to the system in vogue, of selling to the dealer, and the difficulty of inspecting the stock when packed, the whole matter is yet in an undesirable and unsatisfactory condition. It is hoped that such a system of inspection will be devised and carried into operation as will result in guaranteeing that the quality of each barrel of apples shall be exactly represented by the brand and grade, which appears upon the end of the barrel—with regard to the kind of package. Soft and early apples should be put up in small packages. I would recommend the use of 10 and 20 lb. baskets as well as bushel boxes for marketing the finer grades of summer and autumn apples.

In packing apples it is always desirable to make at least three grades. The best should consist of sound, well-coloured specimens without blemish, uniformly of good size; the second grade should consist of sound specimens, smaller in size, less handsomely coloured, and possibly with slight blemishes. The third grade should consist of the small wormy, spotted or ill-formed specimens which could not properly be included in either of the preceding grades. This work is done more advantageously in the packing house than in the orchard. These houses are provided with sorting tables covered with carpeting or matting to prevent injury to the apples. The sorting tables, being provided with shallow slides and being inclined towards the sorter, who stands at one end, offer a convenient method of rapidly separating the fruit into the three grades as above outlined. The first and second grades should be carefully placed by hand into separate baskets, while the third and remaining grade may be swept into a receptacle at the end of the table. In packing or filling barrels, the end which is to be opened is placed downwards. It should be lined with a sheet of paper. On this a row of apples is placed with stems turned down. If another layer is ranged over this, so much the better. This is called "facing" the barrel and is an important part of the packing of a barrel of apples. Inasmuch as the layer exposed to view after the head is removed should fairly represent the contents of the barrel throughout. The remainder of the barrel is filled by gently emptying into it the baskets as filled on the grading table. During this process the apples should be settled down firmly by cautiously shaking the barrel once or twice. The last layer of apples should come slightly above the heading groove, so that when pressed down every apple is held firmly in place, but without being crushed. There is a move being made towards the introduction of a smaller package for winter apples than the barrel. This is a wooden box holding about a bushel of apples, neatly made of light and strong wood. These boxes are more easily handled than barrels, take up less space on board ship and may be "headed" without bruising the fruit. They also admit of the grower's name, with grade and name of fruit

being neatly printed upon the end. While to the writer this box appears to be a most desirable kind of package for the English and other foreign markets, yet the reports of commission merchants received this autumn discourage their use. These reports may be coloured by the lack of desire on the part of the Liverpool commission houses to introduce innovations which call for changes in their present methods of doing business. It is my opinion that there is a future for this kind of package.

For marketing early varieties of apples strong, lino covered baskets holding about 20 pounds of fruit, are undoubtedly the most suitable and profitable packages. This class of apples is bought in small quantities from the retailer and also requires quick handling. There is each year much loss resulting from the use of barrels in transporting early apples which might be greatly reduced by the use of smaller packages.

### PROMISE OF GOOD CROPS IN THE CANADIAN NORTH-WEST.

In respect to inquiries made by the Director of Experimental Farms, as to the present condition of the crops in the North-West, the following particulars have been obtained:

#### MANITOBA

Mr. S. A. Bedford, Superintendent of the Experimental Farm at Brandon, under date of July 4th, says:

"All grain crops on the Farm are about one week later than usual. The wheat is just coming into head; in height it is above the average; the growth is rank and of a good dark colour; I have never seen it more promising. Six-rowed barley is just coming into head and promises to be a large crop; the two-rowed varieties are later. The oats are not in head yet, but they are quite rank and a good colour. Pease are thinner than usual but are quite promising, and the earlier varieties are in bloom. The growth of flax is excellent."

"Grasses of all kinds are much better than usual; this applies to the grasses sown this year as well as to the older fields. Mangels and carrots are in excellent condition, they have been thinned and are growing well. The turnip crop is not quite so promising, for the reason that the first leaves were attacked by a fungus."

"Garden vegetables are better than usual, and quite as early. Potatoes are coming into bloom and promise a large crop. From some unknown cause, red currants have dropped about 1-4th of the fruit from the ends of the branches; but they are still well loaded with large fruit, which is yet green. Raspberries and gooseberries are heavily laden with fruit. With the exception of Saskatoon berries, all wild fruits will be plentiful."

"Trees, shrubs and flowers have all made unusual growth; and blossom, and seed is exceptionally abundant."

"I have driven over the district south of this for forty miles, and the crops are very promising, fully equal to those on the Experimental Farm; and I am informed that the crops are also promising on every side of Brandon."

"In some parts of the Red River Valley the crops are not so good, for the reason that it has been too wet; the grain is thinner, and where drainage is insufficient, it is more or less yellow in colour."

### NORTH-WEST TERRITORIES

Mr. A. MacKay, Superintendent of the Experimental Farm at Indian Head under date of July 3rd, writes as follows:

"The crops on the Experimental Farm are very promising, indeed. At this time of the year we have never had better prospects for a large yield of wheat, barley, oats, pease, flax, hay, corn, brome-grass and root crops of all sorts."

"Trees and shrubs are doing extra well. The box elders have already made more growth than they have in some previous years for the entire season; and never before were the lilacs, caraganas, honeysuckles, spiraeas, etc., so covered with bloom and now loaded with seeds. The currant trees and raspberry bushes are breaking down under the weight of fruit; and gooseberries and strawberries are also heavily laden. Native fruits are very abundant all over the country."

"The crops in the Indian Head district are all looking well, although grain in some places, late sown, is short in growth and may not escape autumn frosts. As far as I have been able to learn, the crops in Assiniboia promise well everywhere, also in Saskatchewan, but are said to be not so good in some parts of Alberta. Early sown wheat and six-rowed barleys are now coming out in head."

### The Poultry-Yard.

**A Retrospect—The month of August—Sitting hens and lice—A case of Gapes and the cure suggested—Quick treatment required.**

(A. G. Gilbert.)

In recent numbers of this paper the different methods of treatment of the sitting hen and the proper care and management of the newly hatched and growing chickens have been discussed at length. The importance of keeping the mother hen and brood, as well as the older and rapidly developing chicks free from lice has been urged and the best means of so doing given in detail. All are subjects of importance.

The month of August is now upon us, and if the poultry house has not been thoroughly cleaned and treated to a liberal coat of whitewash it should receive immediate attention. A small quantity of carbolic liquid mixed in the whitewash, will have a good effect. All the old straw in the nests should be removed and burned and the latter liberally sprinkled with coal oil. Indeed, when time permits, the nests for the layers should be cleaned out every month and coal oiled, so as to prevent the lodgment of lice. The complaint is sometimes made that the hens do not like to lay in the nests but prefer other places. The cause may be that the nests are lice infected and no hen will resort to such a nest if she can get to outside quarters. Nor will a sitting hen sit contentedly or successfully on a nest in which vermin have made their habitation. On the occasion of a recent excursion, one of a party of several farmers asked me, "Why it was that his breeding hens did not set quietly on their nests, but were continually standing up on their feet and frequently left their eggs?" I replied, "that the trouble was lice", and I explained that the hens stuck to their nests as long as they could, but that the lice had become so numerous

and active as to make it impossible for the unfortunate sifter to faithfully carry out the natural instinct. Then came the query, "And how do you rid the nests of lice?" And almost discouraged I go over the old ground once more and conclude by advising the reading of a good agricultural paper, with a live poultry department, or a first class poultry journal and by all means the Experimental Farm reports.

#### SOME OTHER QUESTIONS ANSWERED

"A propos" of the subject of the proper treatment, cure, and housing of the young chicks, here is a letter that should be carefully read.

Blouvaie Ont., 5th July, 1896.

Manager Poultry Dept.,  
Experimental Farm,  
Ottawa.

DEAR SIR,

I have had several chickens and young turkeys die from a disease the symptoms of which are as follows: They begin to gasp when I feed them. Any exertion seems to make them gasp more. They grow worse, are hardly able to swallow any food and die in two or three days. I feed the chickens boiled wheat and the turkeys bread and scraps. They are out all day. Oblige me by telling what is the ailment and what to give to cure them?"

The foregoing is a very intelligent description of a case of "gapes" or the lodgment of the gape worm in the throat of the chickens and turkeys. The worm fastens itself firmly on the sides of the windpipe, increases in number, and if not removed finally chokes the victim to death. The chick gasps frequently in its effort to breathe, hence the name "gapes." What is the cure? One way is to remove the worm or worms by a piece of horse hair with a loop on the end so that the worm may be caught in it and jerked on of the throat. But that requires more than ordinary skill. Another and easier way is to strip a small stiff feather, leaving a small piece of feather at the tip. Dip the end of the feather in sweet oil and gently—put it down the throat of the chicken and by a quick turn and jerk remove the worm or worms. But that will be tedious in the case of a number of alling ones.

Another plan and which on one occasion was successfully operated in the case of three Hamburgs, by the writer, was as follows. Place a box full of small holes in the bottom on the top of another box without any cover. Put a hot brick in the lower box and pour a few drops of carbolic liquid on it. Place two or three chicks in the top box and fit it closely on top of the box with the hot brick in it. The object is to allow the fumes of the carbolic liquid to get to the chicks in the top box. As the fumes reach the chicks they will gasp and cough and sneeze violently and in so doing both inhale the fumes and expel the worm or worms. At any rate the fumes will soon make short work of the gapes and worms. (1)

Care must be taken that the chickens do not get too much of the fumes or they will be choked to death. A small glass in the top or in one of the sides of the top box will permit of the chicks being watched during the operation. The foregoing may be a crude but it is an inexpensive way. Of course it can be improved on.

(1) With tobacco-smoke, blown into a box like the above, the editor saved 10 out of 11 chickens that were suffering terribly from this fell disease.

Extract of Spigolla or Pink Root in the proportion of a teaspoonful to a quart of drink water has been recommended.

In the case of gapes immediate action is necessary on the first symptom being noticed. It spreads rapidly and is fatal in a short time.

The exact cause or causes of the gape worm has not been decided but it is more frequently met with where the same ground has been used for many years, dirt and dirty premises. Where the ground is limited, air slaked lime should be sprinkled on the ground and houses. The earth should be ploughed occasionally.

It was my intention to have answered one or two more queries but my letter has already reached its limit.

DEAR SIR,

You have an immense quantity of hay observed the visitor at the Clover Meadow Farm. Ya-as, said farmer Redneck "but there is a dang thing to feed it to but bicycles" (C. Gent.) July 26th.

For the last couple of years, breeders of horses of any kind, have had to listen, in patience, to the dire prognostications of the man who wanted to buy a horse cheap, (not a cheap horse,) as to the consequences of electric trams, and bicycles, in their relation to the use and value of horses, in the very immediate future. It is quite certain that by going to the sales at Fosters in Montreal, this summer, a farmer could get a very fair horse for work on the farm, for about \$30 or \$40. I myself saw a very nice bay gelding, 16 hands, 6 years old, apparently perfectly sound, and certainly well-broken, as he was twisted in and out of the crowd, ridden on the curb only, by a boy, who did not look like an artist of the first water, sold for the sum of \$71. I noticed that he was picked up by a dealer, buying horses to ship to England. He will certainly fetch 30 or 40 pounds there; a good many horses are going to England, and have already been shipped, this summer, from Montreal.

The annoying thing about having to listen to the arguments of the man who wants to buy the good horse cheap, is that he knows quite as well as you, that high class carriage horses, were never used on trams, and that the people who have been accustomed to ride good hacks, do not give them up for bicycles. As for hunters I have not yet met the man with cheek enough to assert, that we shall soon be crossing country on automatic "gees." I read things in the papers that would seem to indicate that the arguments of the man who wants the breeder to give his horses away, are getting rather played out.

If the bicycle would only bring us good roads, I should hail its advent with unmitigated delight. It would do more to encourage the breeding of high class horses than anything else.

It is said that there is a marked decrease in horse-breeding, and estimates are made, which may not be reliable, that 300,000 are canned annually (why not if young enough, horseflesh is most palatable?) that the annual death rate of the worn-out is, 1,000,000 and that with the large export added, a large deficit is already evident. It is quite certain, however, that there will be a paying demand at fair prices for really good horses suitable for road and draught purposes, and for cavalry horses to go to Europe. (Country-G.)

There is an interesting article on the horse industry, in the Star of July 11th, which I must quote at considerable

length "Vous pouvez en prendre et en laisser." It is from an American source of course. "A year ago, those farmers and there were thousands of them who had been making most of their money raising common or railway horses—were about the bluest class of men in the United States. Now they are beginning to go into business again, their pastures and paddocks are once more being brought into use and these are satisfied that the outlook is full of promise.

This most desirable change in the status of a great industry, has been brought about so gradually that few persons not directly engaged in the horse business know anything about it. Its cause, according to Mr. Wm F. Doerr, one of the best known horse dealers in the United States, has been the appreciation,—somewhat tardily shown to be sure,—by the English, of the facts with regard to the horse-market in the United States.

It was some time last year "said Mr. Doerr, that our friends on the other side began to send their buyers over here. They had never done so to any extent before. Possibly this was in some degree because they did not favour American horses, but chiefly for the excellent reason that American horses could never before be bought nearly so cheaply as those of foreign breeding. The first English agent went at his buying, perhaps with some hesitation. But he soon became confident, for he found not only that the prices at which he could buy here were much below the current prices abroad, but also that the American horses were hardier, more enduring, and, grade for grade, better looking than the English animals. The first shipment of consequence was sent over rather early last year, and, as soon as the horses were seen and tested, then a rush of English buyers to the States began. Ever since then the shipments have been constantly increasing.

A good many horses, have been sent from Montreal, over 5,000 up to date, this year, and I know of one French Canadian dealer in the East End of Montreal, who has now a partner residing in England, who receives and sells the horses, as they are sent over.

Most of these horses, the American ones, are shipped from Boston. It costs \$17.50 to send a horse across the water on a steamship.

Many of the English buyers are at present making Chicago their headquarters and are much in evidence at the big daily horse sales there. The scenes at these sales are full of interest, and the various contrasts afforded by the mixing together of western horse-breeders, and their men, Chicago selling agents and cockney horse buyers, produce crowds not entirely without value to the discriminating observer of types."

Although the breeders of horses have begun again in earnest; continues Mr. Doerr, "it will take four years at least before the effect will be much felt on the market here. In the mean-time, prices will go up, they will be higher in my opinion than they ever have been. I do not mean that railway horses will bring much higher prices for reasons which you already understand. In fact in a few years there will be no railway horses to speak of for sale here, since the new horse breeding era is to be conducted along other lines. American breeders are at last finding out what fine horses are. They have been learning from the horse shows, whose influence has been exceedingly far-reaching. They have been learning, too, from bitter experience. When the trolley came,

and with it the bicycle, and, with them both the slumps in prices of the cheaper grades of horses, the prices of first class horses never wavered. In fact, handsome, sound carriage and coach horses were never so high as now in this country. They are almost impossible to get. This is because the folks who have money to spend use horses now just as much as they ever did. They may have their wheels all right, for fun, but they want their horses and carriages for solid show all the same, and they want better ones than they ever wanted before. Why, there are plenty of beasts now going abroad to haul cars that would have been thought elegant carriage horses ten years ago. Good coach horses range now from \$800 to \$2500 the pair. Those that can be bought for the lower of these figures are not considered of much account, either, and there is no lack of buyers for any that may be offered at more than the highest rate named. Five thousand dollars carriage teams are snapped up without delay wherever they are offered; the trouble is that there are so few that are really of this grade to be offered.

In spite of the high prices commanded by coach-horses I can hardly say that it is a surely profitable business as yet. It often happens that the colt is bred and reared with the greatest care only to turn out practically worthless as a coach horse, to the great disappointment and damage of the breeder.

Mr. Caspari said that while the English might not be buying coach horses in America at the present time the Parisians are purchasing such horses quite freely, and that about the lowest prices paid by buyers is \$1000 a pair the highest figure being about \$2500 a pair on this side, to which of course must be added the various expenses of getting them across. This increases their price materially in Paris."

Much might be done for the improvement of the breeds of horses in the Province of Quebec, and I venture to submit that it is a matter of sufficient importance, to be entitled to recognition in the scheme of general agricultural improvement. Among one or two suggestions that might be made, could not our High Commissioner in London draw the attention of the authorities in England to the exceeding excellence, and low price of the Quorn ranche, and any other ranche horses if equally good, as remounts. No better troop horses could be got anywhere. Want of handling and breaking, is the only thing against them. They would get all they want of that, at the depots.

We are going to have an agricultural Exhibition in the autumn, as usual. More prizes I think, should be given to farmers, who have not the time to handle their horses much, and prizes given to classes judged on conformation alone and more especially in the young classes, as in England. One would think, that the object of an agricultural Exhibition is to encourage farmers and breeders rather than dealers and livery stable keepers. The farmer has often to bring his exhibit from a long distance, while the dealer and livery stable keeper, is put to little or no expense in this matter. Living in the city, he has only to send his men, with the horses, from a few blocks.

Other things being equal, I have not seen so much difference in the housing and feeding of horses, as I had expected to find, between Ontario and Quebec, and while in Quebec, I regret to say, there are a good many farmers, for whom the best sort of horses is the \$30 horse, bought at an auction sale in Montreal, there are plenty of farmers

who can well afford to buy and work a high class horse. The French Canadian farmer, as a rule, treats his horse kindly, and would breed good ones if he knew how. A certain type of coach horse, makes a horse fit for all farm work, and is I think, the most generally profitable and useful horse for the farmer to breed in this Province.

Yours truly,  
C. F. BOUTHILLIER.

## PRACTICAL FARMING.

### OATS AS FORAGE; CURING, AND STACKING

(by James Dickson)

(In July No. re Grass Seed, read "round log" in place of "round box.")

Present appearances indicate a heavy oat crop, and the hay crop in general being somewhat short, this, in connection with the low price of coarse grains, will induce many farmers to cut larger quantities than usual of their oat crop for feed. And when we consider that ripe oats are not all digested even when fed in the straw; and again, the waste to cut grain when ripe if intended for feed, then thresh and feed at a cost of about a quarter of the crop; it don't pay. The thrashing and grinding cost as much now as it did when farmers could sell the oats at double the price to pay with. There is another advantage: a farmer can get along with less extra help if he cuts some of his oats for feed, as the best time to cut, is any time after the straw is yellow at the root. (1) At this stage, the connection between the seed and the soil, is broken, and all the aliment to be obtained is in the stem and seed. There is also another advantage in cutting oats early. If the ground is dry it can be cut with a mowing machine, and raked with a horse, by following the course of the machine, and travelling in the space between the cuts, each round taking two cuts of mowing. But to get the full benefit of the crop, it must be cured in the cock. Aim to preserve the colour. Just here, I am reminded that a short time ago, an opinion was given in a Montreal Journal, that colour was of little account in hay, as the writer had seen animals leave green hay, to eat what was discoloured. Wonders will never cease! But all the same, aim to keep the colour in fodder up to the time it is presented to the animal. It can be lost by exposure, and also by overfermentation in the mow. In the one case it is bleached out, and in the other it is burnt out. Discussion on this point is superfluous. It is nofad of mind. It is definitely settled in the mind of every experienced feeder. If the colour is there, the juices are there, and these, it is our aim to preserve. To do this is must be

#### CURED IN THE COCK.

Some science is required to do this properly, and as illustrated by the small percentage of the men I have had who can make one properly, without taking much extra time, it may not be lost space to describe what is supposed to be the simple operation of making a cock to stand the weather. The object aimed at, is to shed the rain, and allow the air to permeate. This cannot be done by the usual method of making a large roll, and piling a smaller one on top. First, make a bunch about the

size of a 2 or 3 bushel basket, then, fork on to it, lifting high enough to double in the tangle ends, by this method the sides will hang down over the foundation. If there is wind, work mostly from the windward side, and to finish, with the fork handle and left fore arm, smooth and press from the top downwards, and by drawing the fork around the bottom inwards, the cock will be shaped like two-thirds of an egg, and if wilted when put up, it will be found in good condition after a couple of weeks of dull, even rainy weather. If not well wilted, the cocks may require making over in a couple of days. To those who understand these matters, this may seem like uselessly occupying space. And the suggestion is lost to those who prefer losing as much extra time in opening out, or pitching the cocks, as the extra required to make them properly.

#### STACKING

In this Province, lumber being plentiful, stacking is not so common as in some countries, but where barn room is scarce, where it requires 3 or 4 hands to pack in the roof of a barn, or when the field is some distance from the home, and as there is no need of there being 50 lbs of waste, it is often preferable to stack hay or feed-oats.

We will suppose then that your experience in stacking has not been favourable, or, that you have had no experience at all. Also that you have 9 or 10 loads of fodder to stack. That there are three men, and having prepared a pole 4 to 6 inches in diameter at the larger end, and 25 or more feet in length, a dozen or more large rails, a spade, a crowbar (if the subsoil is hard), a ladder, and a few forkfuls of fresh-cut blue joint, rushes, or oats, and these unloaded at the place chosen for the stack. A hole is dug, about the length of the spade handle, and the pole firmly planted. Four rails are laid, two on each side of the pole, the outside ones 10 feet apart. The rails are laid across these to make a scaffold 12 feet square, and on this foundation the cocks near enough to carry are placed, commencing at the centre, the object being to keep that two feet or so higher than the edge, and this continued to the top, and building round towards the outside to a diameter of 12 feet. While the hole was being dug a load was being made up. For regularity of building, and economy of labour, it is better to drive the waggon round the stack while unloading. The tangle ends of the outside must be lipped under, and, with the fork firmly planted for a hold, it must be firmly and evenly tramped to the very edge. While the second load is being made up, the stacks punches in the tangle ends round the sides, and particularly at the bottom, to prevent waste, and to allow free access of air underneath. It is well to be particular at the first to build just 6 feet round from the pole to the edge of the stack, and build plumb to a height of 12 feet, and then regularly decrease in diameter to a point at a height of about another 12 feet, the ladder being placed upon the waggon rack, for the convenience of the pitcher. It should be raked down very lightly, with the object of straightening the loose ends of straws to carry down the rain. If the weather is good, it is a good plan to let it settle a couple of days, before finally topping it up with the green stuff, which, in this state will remain in place.

I am supposing that there will be two men on the stack while unloading, to continually tramp, and the stack

kept continually higher in the centre, and filled up regularly to the outside. The irregularities in the filling or unfilling, will be found after settling, in the hollows where the water rests.

I am aware of the objection sometimes made to the use of a pole. There is no valid objection, and a novice can, with one, build a stack, but not without. With it a stacker has more confidence, and less danger, and the necessity of roping down the top is avoided. Making a stack is like making a cock, and every other work in a farm. There is one workmanlike and profitable way of doing it, and many ways of doing it at a loss.

## Correspondence.

Moore's Station P.Q., July 4th 1896.  
DEAR SIR,

Your letter of June 17th received, and beg to say that I would have answered it long ago, but have been very busy, and mislaid it.

As to writing on sheep.

For some years before my father died, I was away a large part of the time, and since then we have let our farm, till this last year, and in that way the sheep have run down from what they used to be, so that I am not in a position to write about them now. But will try and send you an article on them this autumn, and also if you wish on the results of the green meat crops which you recommended. I am feeding the oats, peas and vetches now. The oats, etc., give very good returns, the rape is coming on nicely.

Yes, as you said, I found the South-downs too small and that they were running out, did not shear a good fleece, although my father changed rams every two years. I have, now, some cross bred sheep between a Leicester and South-down, but am using a Shropshire ram now

I remain, dear Sir,

Yours very truly  
PHILIP H. MOORE.

Ottawa, July, 10th., 1896.

Editor, "Journal of Agriculture,"

Montreal, Que.

DEAR SIR:—

You will doubtless have seen an account of the disastrous fire that destroyed our laboratories on the 6th. inst. Perhaps you would be good enough to state in your columns that, though much of the apparatus is destroyed, we hope to be able to resume chemical work in the course of a few weeks, temporary accommodation for that purpose now being fitted up. It will be well for all correspondents who have lately sent in samples for examination, to write to Mr. Shutt, the Chemist, since many of the recent samples and records relating to them were lost in the fire.

Yours faithfully,

FRANK T. SHUTT  
Chemist, Expl. Farms.

Lachute, July, 18th 1896.

DEAR SIR.

I don't know whether this will be in time for your next issue, but as you asked me, I send you a little report of the crops in this locality as far as I have ascertained.

The hay crop is, as a rule, light, but on newly cultivated land timothy and clover are a fair crop. This is a season when good cultivation tells. Oats

are in full ear, and are a splendid crop, but, alas, in some places are attacked by grasshoppers! which are playing sad havoc. Potatoes and root crops look remarkably well, as does forage corn of which a considerable quantity is planted. I noticed, too, a good many mixed forage crops, pease, and oats seem to be the favourite. Cattle on the pastures are of good useful breeds and look well.

I had a most attentive and enthusiastic meeting at "East Settlement" and imagine from what I have seen so far that the farmers here are progressive and prospering accordingly.

Yours truly,  
GEO. MOORE.

To the Editor "Illustrated Journal of Agriculture."

The schools — Farms — Convents — Dairy at Roberval — Manufactures.

DEAR SIR.

The Asst. Commissioner of Agriculture, M. G. A. Gigault, and I, have just completed our visit to all the Agric. Colleges in the Province of Quebec, at Oka, L'Assomption, Ste Anne de la Pocatière and Compton, and the farms of the Grey Nuns at Beauport and the Ursuline sisters at Roberval, Lake St. John. We were pleased to note at Oka the rapid progress made in practical farming, tile draining, levelling, subsoiling, etc., all on as economical a scale as possible so that it is in the reach of all the pupils to put it into practice. They have on hand a large stock of horses, cattle and swine, all well cared for, setting a good example to the pupils. At the time of our visit these numbered 23, and we examined them in both the theoretical and practical parts of their education, and found great progress had been made since last year, reflecting great credit on their teacher.

At L'Assomption the same can be said as of Oka, in regard to farming. They are certainly working on a higher and more improved scale than in the past. This year they are growing 8 or 10 acres of roots for cattle feed, which is very commendable, as they are a most economical and profitable feed for cattle. They also keep a large stock, cared for by the most improved methods. Prof. Marsan has under his care 25 pupils, who made a very creditable showing at their examination.

At Ste. Anne de la Pocatière they are also improving very much in their ways of farming. Their land, consisting more of clay than the others, does not give them the advantage of growing so many roots; but yet they have some and in the future purpose to grow more as their cattle have done so well on them. They grow a great quantity of hay and grain, also a large stock of cattle, principally Ayrshires. There were 15 pupils under the direction of Prof. Schmutz.

The College at Compton having been only a short time opened, their time has been taken up with building barns, stables, butter-factory and at present a College building to be completed about July 15, when Prof. LeMoyné will open the classes for pupils. The farming which has been done is in a very creditable manner. We have no doubt but that the farm will prove of great benefit to its neighborhood.

We next visited the farm of the Gray Nuns at Beauport. They have a splendid farm and are working it to good advantage, seeming disposed to

adopt every modern method, and keeping quite a large stock in proportion to the number of acres.

We had a very pleasing and satisfactory visit to the farm of the Ursuline Sisters at Roberval. The farm and the garden in connection with the convent are very well kept. The most striking part of our visit was to the Convent, which was ably managed by the nuns. There were at the time of our visit over 200 young lady pupils, who not only receive the rudiments of education but also a thorough training in different branches of industry.

We first went to the dairy, where four of the pupils were making butter, which was afterwards served to us for breakfast and proved to be of a quality which would have done credit to any expert.

Then to the kitchen, where 6 or 8 were engaged in making the breakfast and seemed to perform their duties with great skill. Next we came to a large hall, where different kinds of work were going on, such as knitting, mending, sewing, and making all kinds of ladies' wear. Also spinning, weaving of rag carpet, stair-carpet with flowers, etc. Some of the work we examined was so well done that we expressed a doubt that it was the work of the pupils, but on seeing them at work they proved beyond a doubt that it was their own. In my estimation it is impossible to calculate the great amount of good the institution will do through the country and especially in Lake St. John and Chicoutimi. I think the Government has never expended money to better advantage than in encouraging this institution.

GEO. BUCHANAN.

Cote St. Michel, June 18th, 1895.

### MONTEAL PROVINCIAL EXHIBITION.

The work connected with the Provincial Exhibition to be held next September is making satisfactory progress.

The prize list has been remodelled and will be issued very shortly. The various committees are busy arranging the details of their respective departments and there is every prospect of the forthcoming Exhibition being an assured success.

The management are much pleased to record the increased interest taken in the Exhibition as evidenced by the offer of a larger number of special prizes this year. The following list has already been received:

#### HORSE DEPARTMENT.

1. Gold Medal, by E. J. Dunham of the Balmoral Hotel, for the best Gentleman's Road Turn-out.
2. Gold Medal, by Robert Wiseman of the Mile-End Hotel for the best Roadster Horse or Mare.
3. Gold Medal, by the Canadian Produce Co. of Montreal for the best Percheron Stallion.
4. Silver Medal, by the Canadian Produce Co. of Montreal for the best jumper in the High-jumping contest.
5. Two Silver Medals, for Hackneys by the Hackney Horse Society of London, England.

#### CATTLE DEPARTMENT.

6. Fifty Dollars; by the Canadian Holstein Friesian Association for the Montreal Ex. Co. for a Milk Test.
7. Twenty five dollars in two prizes for the best Holstein Cow.
8. Gold Medal, by W. Chouinard, Hardware Merchant of Mile-End for the best 5 beef animals for export.

9. Gold Medal, by L. Villeneuve and Co., Lumber merchants of Mile-End for the best exhibitors Herd of Canadian cattle.

10. Silver Medal, by V. Vallières of the Mount-Royal Hotel as a second prize for the Breeders Young Herd of Canadian cattle.

#### SHEEP DEPARTMENT.

11. Seventy five dollars, by the American Oxford Down sheep Record Association for Oxford Down sheep.

12. One volume on "Diseases of sheep" by the Cooper sheep-dip Co., of Galveston Texas to each prize winner in the sheep department.

#### SWINE DEPARTMENT.

13. Twenty dollars, by the Laiting, Packing and Provision Co. of Montreal for the bunch of Hogs, suitable for the export bacon trade.

14. A handsome Silver cup, by Messrs Bruceau Currie and Co. for the winner of the highest number of prizes in the Live stock Departments, exclusive of Poultry.

All information to be obtained from the manager S. C. Stevenson, Montreal.

### AGRICULTURAL DEPARTMENT.

#### PRIZE ESSAYS

Sec.

1. On the best methods of improving meadows.
2. On the best methods for the improvement of pastures and especially of permanent pastures.
3. On the best methods for destroying weeds.
4. On growing second-crops—green manuring—and the best methods of producing humus or vegetable mould.

These ESSAYS must be written by FARMERS who exhibit at the Montreal Exhibition. A prize of \$10 will be awarded by the "Montreal Exhibition Co." to the successful competitor in each section.

### EXPERIMENT-FIELDS.

#### Special Competitions for Farmer's Clubs and Agricultural Societies.

#### GENERAL CONDITIONS FOR THE COMPETITORS.

As our readers probably remember, the Hon. the Commissioner of Agriculture and Colonisation commenced granting, last year, to a first series of Farmers' Clubs (one club in each county) a special sum intended for the establishment of competitions in crops organised in accordance with the instructions of the department.

We are happy to announce that this year a grant of \$15.00 will be made, for the same purpose, to one club, selected in each county of the province and under the following conditions:

1.—The grant of \$15.00 shall be solely employed as prizes in a special competition (concours du département), the subject of which shall be chosen by the club, with the approbation of the department, out of the subjoined programme.

Only two prizes shall be given in this departmental competition: the first of \$10.00, and the second of \$5.00.

2.—In addition to these prizes, the club must engage to contribute from its own funds a sum of at least \$15.00 to

open at the same time a second competition (concours du cercle), the subjects of which are to be selected, as before, from the following programme:

The prizes for the second competition to be adjudicated by the club.

3. As to the selection of the clubs which are to benefit by the grant, the department will give the preference to those which, in each county, shall offer the highest amount for the second competition just mentioned.

The Farmers' Clubs will select from the different subjects of experiments in agriculture spoken of above those they think the best suited to them. They are at liberty to complete or modify the details according to the conditions of their respective localities, provided that these additions or modifications be recorded in their programme and approved by the department.

The object of these competitions being to encourage, in every county, the establishment of such experiment-fields as are most likely to arouse the attention of the farmers of the neighbourhood, and to display the good effects produced by the various manures, liming, and other excellent farm-practices, it is desirable that these experiment-fields be divided into at least two parts or plots, each of which is to carry the same sort of crop, but one of which, to be called the "comparison plot" (parcelle témoin), is not to receive the same manure or amendments (1) given to the other, or, perhaps in some cases, not to receive any at all. Thus, the effects of such a manure or of such amendment can, by comparing one plot with another be easily determined.

IMPORTANT NOTE.—Not only are the experiment-fields to be examined by the judges appointed by the club, but prize-winners in the "departmental competitions" must make a report in detail of the system of cultivation pursued, of the quantity and the mode of application of the manures used, as well as of the results and the yields of each plot. This report must be approved by the judges and sent in to the department before the prizes can be received.

#### PROGRAMME OF THE SPECIAL COMPETITION.

##### 1st COMPETITION.

Cultivation of wheat, barley, or other cereals with chemical manures alone.

The competitors must enter for competition an arpent of land, well prepared, cleaned and drained, and sown with grain, half of which, i. e., a-half arpent, has received, before being sown, the following chemical manures:

Superphosphate of lime  
(plain) Capelton make... 100 to 200 lbs.  
Sulphate of ammonia.... 25 to 50 lbs.

Cost, about \$1.50 to \$3.00.

The land to be of average productivity, rather heavy than light, as heavy land, generally speaking, does not require potash.

Mix the two manures with two or three times their bulk of dry mould, and spread the mixture on the lightly harrowed furrow very equally; after which harrow thoroughly; then, sow the seed.

2. If "No. 1 superphosphate" is used, which is richer than the "Capelton," less will serve.

3. Sulphate of ammonia may be advantageously replaced by nitrate of soda, but the quantity of the latter

(1) "Amendement" in French, and "mendment" in English, both mean such applications to the land as lime, chalk, burned clay, etc., etc.—Ed.

must be increased in the proportion of 10:20.25 per cent; but in this case the superphosphate is to be worked in, as above, and the nitrate of soda used on the wheat, etc., as a top-dressing. It is best to sow the nitrate of soda at twice, with an interval of ten to fifteen days between the sowings.

4. If it is probable that the land is poor in potash, 25 to 50 lbs. of chloride of potash may be added to the above manures. Indeed, in such a case, the "complete manure, Rolland's," might be used, at the rate of from 5 to 400 lbs. to the half arpent.

Each competitor is to send to the club-secretary a report showing:

1. The kind of land sown with grain;
2. The manures used and the mode of application;
3. The difference in the results obtained from the "comparison-plot" which received no manure, and from the chemically manured plot.

##### 2nd COMPETITION.

"Cultivation of wheat, barley, and other cereals, with chemical manures and farmyard dung, on worn-out land."

The competitors to enter in the competition an arpent of worn-out land; but it must be well worked, and manured in the fall with 5 tons of farmyard dung, ploughed in with a shallow furrow.

The following spring, this arpent is to be divided into two equal parts; on one part, 200 lbs. of "Capelton" plain superphosphate is to be spread and harrowed in, on the other, none at all; both are then to be sown. The differences are to be noted that present themselves not only at harvest, but also during the growth of the grain, and the prizes will be given to those competitors who shall "the most forcibly demonstrate" the useful effect of phosphoric acid as the complement of dung in grain-growing.

##### 3rd COMPETITION.

Cultivation of wheat, barley, and other cereals after a dressing of lime in the fall.

The competitors are to enter for competition a piece of land, in moderate condition, of an arpent in extent, divided into two equal plots; one of them to be limed in the fall with 10 bushels, if heavy land, with 5 bushels, if light land, following the instructions on liming which will be found further on; the other plot, not limed, is to be the "comparison plot," but, apart from the liming, it is to receive exactly the same treatment. In the following spring, the two plots are to be sown in the same manner, with the same sort and quality of grain, and with the same preparation of the land.

At harvest, the produce of each plot is to be housed and threshed separately, and the difference between the results to be ascertained.

The competitors must transmit to the club-secretary a report showing, accurately, the following points:

- 1.—The nature of the land on which the experiment was tried;
- 2.—The details of the liming;
- 3.—The cost and quantity of the lime used;
- 4.—The depth of the fall- or spring-furrow;
- 5.—The way in which the land was drained.
- 6.—The system of cultivation pursued on the land during the three previous years.

##### 4th COMPETITION.

"Cultivation of mangels or carrots, with dung and artificials, to show the effect of the latter."

Competitors are to enter an experiment-field of one arpent. This arpent, divided into two equal plots, is to be manured throughout with from 12 to 15 tons of dung.

One of the two plots ( $\frac{1}{2}$  arpent) is to receive in addition the following chemical manures:

1. In the fall, at the time the dung is applied, 25 to 50 lbs of chloride of potassium (muriate of potash.) The chloride of potassium may be replaced by 3 to six bushels—200 to 400 lbs. of unlixivated wood-ashes.

2. In spring, before sowing, the following fertilizers are to be spread and intimately mixed with the soil by means of a thorough ploughing, followed by the grubber, viz.:

Superphosphate (plain)... 100 lbs  
Plaster... 100 lbs

3. After sowing, the plot is to receive, as a top-dressing, at once or better at twice, 100 lbs. of nitrate of soda.

Nitrate of soda now costs in Montreal less than \$3.00 per 100 lbs. While the carrots and mangels are growing, the farmer will carefully note the appearance of the two plots; he will watch their development and mark, at harvest, the difference, both in quantity and quality, in the yield of the crops.

The prizes will be given to those competitors who shall best display the effect of the artificial manures on these root-crops.

#### 5th COMPETITION.

Cultivation of the potato with both dung and chemical fertilizers.—Effect of wood-ashes and superphosphate of lime.

The experiment-field is to be one arpent in superficial measurement, divided into two equal plots, No. 1 and No. 2.

The field is to be ploughed deep, and, if possible, subsoiled, so as to work the land thoroughly to at least a foot in depth. Ten tons of dung are to be applied to the arpent, beside which, plot No. 1 ( $\frac{1}{2}$  arpent) shall receive an addition, in the fall, of from 400 to 800 lbs—5 to 10 bushels—of good unlixivated ashes, according to the quality of the land, light or heavy.

In spring, before planting the sets, sow and mix with the grubber or the spring-tooth harrow, on both plots, 200 to 300 lbs. of plain "Capelton" superphosphate.

Thus, the two plots will have received an equal dose of dung and superphosphate; but plot No. 1 will have had in addition a dose of wood-ashes.

The difference in the results found during the growth of the crop and at its harvesting will show clearly the effect of the ashes, and the prizes will be assigned to those of the competitors that shall the most accurately demonstrate that effect.

#### 6th COMPETITION

Cultivation of leguminous plants: pease, beans, lentils, clover, etc., with chemical manures alone.

Competitors must enter for competition at least an arpent of land to be sown with legumens and divided into two equal plots.

Before seeding, one plot, No. 1, shall receive the following chemical manures (on the  $\frac{1}{2}$  arpent):

"Capelton" plain superphosphate... 200 lbs  
Muriate of potash... 50 lbs  
Cost, about \$3.00.

When possible, the competitors ought to be obliged to plough in the potash in the previous fall, which is the best way of treating it. But, if it be too late for

that, it may be worked in during the spring with good effect.

The two above manures, then, are to be mixed with dry earth or plaster, and to be worked in with careful harrowing, or grubbing, on plot No. 1; plot No. 2 receives no manure.

The two plots are then to be sown as uniformly as possible with the same kind of seed.

The 50 lbs., of muriate of potash may be advantageously replaced by 400 lbs. (about 5 bushels) of unlixivated wood-ashes, provided they be applied in the previous autumn, and ploughed in after being well mixed, for they must not be applied at the same time as the superphosphate of lime, in spring, especially on account of their injurious effect on the superphosphate.

Whatever sort of legumen and of potassic manure be chosen, by the club, for the competition, the competitors are to show in their report, which must be verified by the judges of the competition before being sent to the Department, the following points:

The nature of the soil of the experiment-field; the kind or kinds of the legumens cultivated; the manures used; the time and method of their application; and the results obtained on both the plots, No. 1 and the comparison-plot, No. 2.

#### 7th COMPETITION

Improvement of an old pasture

Effect of liming

The experiment field consist of one arpent of old pasture, more or less exhausted, fairly rich in humus, and divided into two equal plots.

One plot ( $\frac{1}{2}$  arpent) is to be limed in the fall with 5 bushels of quick-lime.

When the lime is slaked in a heap, by the side of the pasture, those precautions mentioned further on (see "Liming") being observed, it is to be mixed with 3 to 5 times its bulk of earth, spread on the plot and harrowed in.

The spring arrived, the two plots (an arpent) are to be sown with a few pounds of white, or other clovers, mixed with pasture-grass seed.

The seed may be sown on the last of the snow.

The mixture of grass-seeds for the acre may be the following:

White clover... 3 lbs  
Alsike clover... 2 lbs  
Orchard grass... 4 lbs  
Meadow fescue... 4 lbs

The club is at liberty to select other mixtures, but always with a basis of white-clover, better suited to the conditions of the locality, and the competitors must get these seeds and sow them in the proportions fixed upon by the club.

If the grass-seeds are not sown before the snow goes, the pasture is to be harrowed, with a sharp toothed harrow, after seeding, and then rolled.

The report of the competitors, verified by the judges, shall show in detail the nature of the soil and the state of the pasture before its improvement, as well as the differences observed during the growth of the grass between the limed and the unlimed plots. The experiment-field, in its entirety is also to be compared with the surrounding pastures. The prizes will be accorded to those competitors who shall have best demonstrated the effects of the liming.

#### 8th COMPETITION

A newly laid down meadow, in which it is especially desired to promote the growth of the grasses, timothy etc.—Effect of phosphoric acid and of nitrogen.

The experiment-field is to be a-half arpent; the rest of the meadow may serve as the "comparison-plot."

As soon as vegetation begins in spring, the following chemical manures are to be sown on the experiment-plot:

"Capelton" plain superphosphate... 100 lbs  
Nitrate of soda... 50 lbs

The superphosphate is to be mixed with twice its bulk of dry mould, sand, etc., and the nitrate of soda thoroughly blended with the whole, which is then to be opened as a top-dressing on the  $\frac{1}{2}$  arpent of meadow as soon as vegetation starts; harrowing and rolling complete the work.

After the first crop of hay is off, 50 lbs more nitrate of soda, mixed with its own bulk of dry mould or sand, is to be spread on the  $\frac{1}{2}$  arpent. Careful notice is to be taken of the variations between the plot thus treated and the rest of the meadow. The prizes will be given to those competitors who shall have best displayed the effect of these manures on the hay-crop, and after-math.

#### 9th COMPETITION.

A meadow, in which it is specially desired to encourage the growth of the clovers.—Effect of wood-ashes and superphosphate of lime on leguminous plants.

The experiment-field is to comprise an arpent of meadow, divided into two equal plots, Nos. 1 and 2; the rest of the meadow may serve as a "comparison-plot."

On the whole piece (1 arpent) is to be applied in the fall, after the last hay is cut, 500 lbs. (about 6 bushels) of unlixivated wood ashes, and, if possible, the land is to be harrowed.

As soon as vegetation starts in spring, 200 lbs. of plain superphosphate—"Capelton"—, after being mixed with its own bulk of dry mould, or plaster, is to be spread on plot No. 1: both plots are then to be harrowed.

In this experiment, plot No. 2 is intended to show the effect of wood-ashes used alone, while No. 2 will show the effect of the addition to the ashes of phosphoric acid.

#### 10th COMPETITION.

Catch-crop, for fodder.

Competitors are to enter for competition a-half arpent of land that has grown an early crop of potatoes, or any other early crop, which shall be selected by the club in accordance with the conditions of the locality.

After the severance of the early crop, the land shall be worked with the grubber or rather with the plough, and on the half arpent shall be spread and worked in with harrow or grubber, 200 lbs of Capelton complete manure, "Victor": turnips to be immediately sown. Or, in place of turnips, rape may be sown, var. "Dwarf-Essex," at the rate of 3 lbs. to the half arpent; or Hungarian grass ( $\frac{1}{2}$  a bushel), harrowed and rolled in.

In their report, to be verified by the judges, the competitors must state:

1. The nature of the land, the date of the sowing of the main crop, the manures used, and when that crop was harvested.

2. What plant was selected for the catch-crop; details of its growth; the date of harvesting it; its yield, and every other interesting piece of information connected with it.

#### 11th COMPETITION.

Catch-crop for green-manure.

The experiment-field shall be an arpent in extent, divided into two equal plots, Nos. 1 and 2.

The chief crop must be of grain: wheat, barley or oats, cultivated in precisely the same way on each plot.

After harvest, the stubble is to be cleaned and ploughed on both plots, and, on plot No. 1, shall be sown tares or vetches, pease, beans, horse-beans, or any other leguminous plant chosen beforehand by the club. Oats or buck-wheat may be added to the aforesaid pulse to hold up the tares, etc. To be harrowed and rolled.

This catch-crop is to be allowed to stand as late as possible, but when there is danger of frost, or as soon as the plants are in flower, it is to be ploughed-in.

In the following spring, plots 1 and 2 are to be worked precisely alike, and sown with roots or with maize, either for silage or grain. No manure of any kind is to be used on either plot, but their treatment is to be exactly the same.

Competitors are to state in their reports any interesting features apparent in the experiment. They will point out, among other things, the nature of the soil, the kind of plants grown, in the chief crop, in the catch-crop, as well as what sort of crop followed the ploughing in of the green-manure, and the final yield of each plot.

### THE LIMING OF LAND.

Lime in its caustic state (quick or slaked) has a great tendency to enter into combination with the carbonic acid gas of the air to return to the state of carbonate of lime, in which it existed before being burnt; and in this state, of carbonate, it can no longer produce in the soil all the good-effects it produces in the caustic state. The secret of successful liming is to slake lime away from the air and then to spread and plough it in as soon as possible.

Lime should be used as soon as it is burnt, or else it will become more or less carbonated, and consequently less active.

The quantity to be used should be enough to last for 4 or 5 years, and varies with the nature of the soil and the style of farming pursued. Heavy land requires a larger dose than light land, particularly if the latter is not rich in humus.

From ten to twenty bushels of lime to the arpent may be advantageously used on heavy land; on light land, pretty rich in humus, from five to ten bushels to the arpent may suffice; but on the latter soils, and on meadows, it is better to use lime in the form of compost, when the lime will lose part of its causticity, and become associated with organic compounds; still, on meadows, lime, mixed with a sufficient quantity of earth, may be used.

Lay down the lime, as it comes from the kiln, in small heaps of from 3 to 5 bushels, on the land; place the heaps at regular intervals, and cover them carefully with a layer of earth of several inches in thickness. The heaps must be watched for several days, and any cracks that may show through the covering of earth must be stopped. The lime sown becomes a hydrate, that is, it absorbs moisture from the air and falls to powder.

In eight or ten days, but it sometimes takes several weeks, according to the season, it becomes slaked. In droughts, the slaking may be hastened by watering the heaps. This being done, the earthen covering is mixed up with the lime, and the hard, unslaked lumps are to be gathered and slaked before spreading.

The spreading is done with a shovel, in a dry, still time, and as uniformly as possible. Never spread lime on the land when it is wet. Then, it is worked into the soil as quickly as possible, or else it becomes carbonated in the air, and much more rapidly than in the soil. The lime is worked in by harrowing, by two or three cross-grubbing, or better, by a furrow 4 or 5 inches deep; for, as we saw, it is important to get the lime out of the reach of the air.

When the land to be limed is in grass, or is bearing a crop, it is obligatory to make up the lime into a long heap in the corner of the field or close by it. It should be covered as before to slake, until the teams are ready to draw it out.

Lime applied to green manure, (1) is very effective, for it neutralises the acidity and facilitates its decomposition, but lime and dung must never be applied at the same time, as the dung would lose its nitrogen in the form of ammonia and weaken the activity of the lime in the land.

Neither are lime and sulphate of ammonia to be used simultaneously, nor superphosphate of lime and lime. The two applications should be separated by an interval sufficiently long, for instance: lime the stubble of a grain-crop in September, and only cart on the dung just before winter, of better still, not till the spring.

From the French.

**PROVINCIAL COMPETITION OF DAIRY-PRODUCTS.**

**General faults—Advantages of analysis—Opinions of the Judges on these competitions.**

The competition of Dairy-Products, under the direction of the Department of Agriculture, announced in one of our preceding issues, took place on Thursday, June 25th, for butter, at Quebec, and, for cheese, on June 27th, at the Dairy-School, at St. Hyacinthe.

Forty-four boxes or tubs of butter, and forty-five cheeses were examined with the greatest care, by MM. A. A. Ayer and J. A. Vaillancourt for the butter, and MM. McKergow, McLagan, and J. A. Vaillancourt, for the cheese. These three judges were selected from among the principal Montreal exporters, and perfectly well informed as to the sort of cheese preferred by consumers, they found that some of the boxes or tubs of butter were good, and some of the cheeses were almost perfect. As regards both butter and cheese, the external appearance and the packing were not nearly what is required.

The analysis of these butters and cheeses will be made by the Director of the Official Laboratory, M. Pabbc Ch. jette, and, with the remarks of the judges and of M. Leclair, instructor in butter-making, and M. Bourbeau, instructor in cheese-making, at the Dairy-School at St. Hyacinthe, will serve to enlighten each maker as to the defects of his butter or cheese, and the remedies to be applied for their correction. Besides, these analysis will make known the cause of certain bad flavours that deteriorate some of the butter and cheese,—which, nevertheless were made according to rule. The judges, men of great experience, hold that these competitions are infinitely preferable to Exhibitions of Dairy-products,

(1) i. e. a crop to be ploughed in green.—Ed.

and that they are destined to be of very great service to our dairy-trade.

The following is a list of the competitors who won prizes and the number of marks assigned to each.

**CHEESE**

**1st CLASS**

**SILVER-MEDALS**

- 1.—J. A. Janelle, of Saint-Cyrille of Wendover, Drummond.... 98 marks
- 2.—S. J. Rose, of Huntingdon, Hillside Factory... 97½ marks

**BRONZE MEDALS**

- 3.—Arthur Critenden, West Brome, "Brome"... 97 marks
- 4.—H. J. Wales, Sutton Junction, "Brome" .... 97 marks
- 5.—J. Ferdinand Huneault, Montebello, "Ottawa"... 96 marks

**2nd CLASS**

**MONEY PRIZES**

- 6.—Arthur Marsan, Saint-Valérian, "Shefford" 95½ marks \$20.00
- 7.—Louis J. Primeau, Sainte-Martine, "Chateauguay" 95½ marks \$20.00.
- 8.—Joseph Archambault, Marieville, "Rouville" 95 marks, \$16.00.
- 9.—Joseph Lemonde, Saint-Liboire, "Bagot." 91 marks \$12.00.
- 10.—Osias Archambault, Sainte-Bligitte, d'Herbyville, 94 marks \$12.00.
- 11.—J. O. Hébert, Sacré-Coeur de Marie, "Megantic," 94 marks \$11.00.
- 12.—Evaniste Saint-Laurent, Lyster Sta. "Megantic" 94 marks \$12.00.
- 13.—A. Gérin, Coaticooke, "Stanstead" 93 marks.
- 14.—Adolphe Parenteau, Asbestos Mines, Danville, "Richmond." 93 marks.
- 15.—Callixte Dion, Stanfold, "Arthabaska" 93 marks.
- 16.—Joseph Grate, Kiverfield, Howick, "Chateauguay" 93 marks.
- 17.—Chas H. Harvey, Venice, "Missisquoi" 92 marks.
- 18.—Achille Albert Jacques, Carthby Station, "Wolfe" 92 marks.
- 19.—A. C. Carter, Cowansville, "Missisquoi" 91 marks.
- 20.—Edeas Larocque, Roxton-Falls, "Shefford" 91 marks.
- 21.—Zéphirin Daubigny, "Champlain" 91 marks.
- 22.—David Cloutier, Sainte-Marguerite de Dorchester, 91 marks.

**BUTTER**

**1st CLASS**

**BRONZE-MEDALS**

- 1.—Leonard Dénault, Saint-Norbert, "Arthabaska. 96 marks.
- 2.—J. A. Courchesne, Lanoleville, "Richelieu, 96 marks.
- 3.—Francis Roger, Saint-Agapit, "Lotbinière" 96 marks.
- 4.—Télesphore Rhéaume, Château-Richer, "Montmorency" 96 marks.
- 5.—Préfontaine et Frères, L'Isle Verte, "Témiscouata" 96 marks.
- 6.—Edmond Brosseau, Saint-Laurent des Monts, "Terrebonne" 96 marks.

**2nd CLASS**

**MONEY-PRIZES**

- 7.—J. Arthur Talbot, Saint-Aubert, "L'Islet" 94 marks \$20.00.
- 8.—David H. L. Francoeur, Tr.-Pistoles, "Témiscouata" 92 marks \$16.00.
- 9.—Amédée Gaudreault, Tr.-Saumons, "L'Islet" 92 marks \$16.00.
- 10.—Onésime Mercier, Saint-Charles, "Bellechasse" 91 marks \$12.00.

**THE MAKING OF CHEDDAR CHEESE.**

**Pastures—Milk—Making cheese—Cutting curd—Test by hot iron—Pressing.**

Before entering upon the subject of this paper I deem it necessary to say a few words in regard to cows, pastures, milking and care of milk to fit it properly for the manufacture of finest cheese.

**COWS.**—Every cow must be in perfect health if her milk is to be used for cheese making.

**PASTURES.**—Pastures should be composed of mixed grasses with a good proportion of clover (white) and should be free from all carrion, pools of stagnant water and all bad smells, and places should be provided where cows can drink while standing on good firm ground and not in several inches of mud. This can be done by placing a trough a few feet below the source of the water and placing a spout or pipe from source of water to trough; this will give the cows good fresh, running, clean water to drink. Cows should be given all the salt they will consume every day, this will cause them to give better and more milk, and when being taken to or from pasture should be driven very quietly and never worried by a dog.

**MILKING.**—Our cows are now ready to give us perfect milk and in order to not injure its quality the cows should be milked at regular hours by the same person with clean dry hands, being sure to have the cow udders perfectly clean before commencing.

**CARE OF MILK.**—Strain as soon as milked through a clean cloth strainer, into a clean bright aerator placed over a clean, bright can and allow it to be exposed to the air while finding its way to the can very slowly. The can should be placed in fresh pure air while the straining and airing is being done and should be kept in such till its removal to the factory, the night's and morning's milk should not be mixed but in case of necessity the morning's milk should be cooled after straining and airing to the temperature of the night's milk before mixing and the night's milk should be stirred a few times after airing at intervals so as to allow of it cooling evenly and keep the cream from rising, and by all means do not cover the cans with the can covers, but allow at least several inches of space above the cans opening so as to allow all vapor and odours to escape.

It is not necessary to cool milk by means of water, that is placing cans in cold water during the night. Now our milk is ready for delivering at factory, place bright clean covers upon cans, put cans into clean wagons and deliver to the factory not later than eight o'clock in the morning.

**FACTORY AND MACHINERY.**—As we are about to receive perfect milk we must not injure its quality; and to avoid doing this I would make a tour of inspection of the utensils which I am to use commencing with the weighing can, conductor, strainer, vat, knives, rake, agitator, covers, mill and hoops, and so see that everything is perfectly clean and bright, before receiving any milk. We should have a factory well ventilated, well drained and so constructed that we can control the temperature.

**PROCESS OF MANUFACTURE.**—In order to produce finest cheese from

the milk cared for as above described, I would proceed in the following manner.

I would heat the milk by means of steam inserted round the vat to 96o, and in order to determine its ripeness I would make a test with rennet called the rennet test, this is done by taking 8 oz. milk from the vat and I draw off rennets and mix them together by stirring and noting the number of seconds it takes to coagulate; this will denote its advancement or ripeness; this will vary in different places and according to the strength of your rennet but in all cases it should be just at such a number of seconds that the curd would remain in the whey one hour after the heating has been finished before a sufficient amount of acid has developed for the removal of the whey.

If at first test I found milk was not advanced enough, I would prefer using a starter, that is milk slightly sour, rather than let it ripen by standing.

As soon as I found milk ripe enough to commence working, I would use enough rennet to thicken ready for cutting in 15 to 45 minutes according to the season of the year; 15 in April increasing gradually to 45, in the fall less rennet will be required as the season advances. The rennet should be diluted with cold water before mixing with the milk and there should be about 1 gal. of this diluted rennet mixture used for one vat of milk, the mixing of the rennet must be done very thoroughly, and stirring should be kept up for about 5 minutes, after which the vat should be covered and be left perfectly quiet till ready to cut.

The way I determine when curd is ready to cut is to insert the front finger in the curd and press forward and upward, and if curd breaks clean over the finger it is ready.

Commence the cutting with the horizontal knife; first, lengthwise of the vat, being very careful when putting knife in and taking it out of the curd do so in an inclined position causing the blades of the knife to cut the curd and not break it, turn the knife at each end of the vat instead of lifting it out of the curd; let curd stand after first cutting till the whey begins to show on top of it, which will be in about 10 minutes; take the perpendicular knife now and cut once crosswise and once lengthwise. Stirring should be commenced with the agitator now very carefully and two or three turns of the vat made, when the perpendicular knife should be taken and cutting continued alternately crosswise and lengthwise, once, twice or three times according to the mesh of the knives, the larger the mesh the more times you will have to cut.

Stirring should be commenced at once, very gradually, and continued for about 10 minutes when all curd which adheres to the sides of the vat should be removed with the hands and heating commenced; very slowly at first gradually increasing to the finish, which should take about 30 minutes from commencement, stirring must be done with the agitator during the whole of the heating and should be so done as to let no portion of the curd rest quiet on the bottom of the vat.

The exact degree to heat to varies from 98o to 100o, this is in different places and at different seasons of the year if cooking to 98o does not give you a curd firm enough, then cook to 100o if this does not give it firm enough I would prefer cutting a little finer rather than cooking higher as cooking to over 100o will cause a loss of butter fat.

As soon as the heating is finished take a hand hay-rake and stir the curd all



the time till the whey is removed. I prefer removing part of the whey as soon as I detect any acid.

The exact time to remove the last of the whey can only be determined by experience and what is known as the "Hot Iron test."

This test is made by taking a portion of curd from vat and press in the hand till it becomes well matted and quite dry, press this against an iron just hot enough to brown the curd and cause it to stick to the iron, remove the curd slowly and there will draw fine threads like strings between the iron and the curd in your hand, by the thickness and length of these strings the time to remove the whey is determined, this is called show of acid, and as it is the most particular part of the whole process of cheese making, it is absolutely necessary that it be done right, the threads will vary in length in different places and at different seasons of the year varying from 1-16 to 1/4 of an inch in the spring to 1/2 inch in the fall.

The temperature of curd should be always kept the same as when finished cooking or heating, until the whey is removed.

As soon as the whey is removed, the curd should be stirred with the hands till it is dry enough to mat, when it should be packed on each side of the vat four or five inches thick extending about one third of the way across the bottom, this hand stirring should be done just enough to give the cheese a good firm elastic body and will require to be left a trifle more moist in the spring than in summer or fall.

The temperature of curd should be now at 97o or 98o, and should be kept between this and 95o till within a short time before grinding when it should be cooled down to 90o or 92o; never grind curd warmer than 92o.

As soon as curd is put into pack, it should be covered with a cotton cover, and also the vat covered; when it is matted sufficiently to turn over without breaking; usually 20 to 25 minutes; cut it into blocks about five inches wide and turn over on bottom, of vat cover curd and vat, and let it remain in this position for about 15 minutes when it should be turned again and placed two blocks high in the center of vat, let it remain the same time and piled three high, it should be packed or turned every 12 to 15 minutes till it becomes silky and will split showing strings, when it is ready to grind if the temperature is at 90o to 92o this usually takes from two to three hours from the time curd is packed.

I find it hard to leave curd in block this year 1895 more than two to two and one quarter hours without causing butter sacks in cheese, although in previous years I never was troubled with such.

During all the turnings of the curd in block it should be so done as to keep all parts at the same temperature in order to have it all alike and the curd and vat should be covered at all times when not working at curd.

When grinding is finished curd should be stirred thoroughly and spread evenly in the upper part of the vat, vat covered; let stand for about 20 to 25 minutes, stirred again, left in the same position a second time; in about one hour after grinding the whey will usually start and as soon as it does, curd should be thoroughly stirred and salted at the rate of one and one half pounds of salt in the early spring to three pounds in the fall; if milk is very rich in butter fat it will require a little more salt perhaps 3 1/2 lbs per one thousand pounds of milk. Never salt curd till the

whey begins to start out of it, salt must be stirred well into the curd and evenly, and left in a pile in the upper part of the vat for ten minutes when it should be stirred again and let stand about the same time, when if the salt is melted it should be stirred a third time and put to press at a temperature of 55o or 86o.

Sufficient curd should be put into hoops to make a cheese when cured that will weigh 72 lbs.

Begin the pressure very gently at first gradually increasing each time the press is tightened, which should be very often till cheese are bandaged, which can be done in about 1 hour. After putting to press the bandages should be nicely turned down upon each end not over 1 inch past the corner, a round of bandage should be placed on each end of cheese, cheese put into press again, pressure applied not too hard at first, gradually increasing till at about 3 1/2 to 4 hours from beginning, the full force of the press must be applied and be kept very tight for about 20 hours when cheese should be taken out of hoops and turned over, put back into hoops and pressed again for about one hour just hard enough to give them a nice square appearance, remove them now to the curing room where the tables are bright and clean and the temperature is kept at 70o, turn them every day on the tables till they are 12 to 15 days old, when they are ready to weigh and box. Always handle cheese with cloth on and clean hands.

Be sure and give good weight, put into well made tight fitting boxes, stencil the weight on each box also the factory brand, cut the boxes down so that the cover will rest on surface of cheese, put at least two scale boards to each cheese, send to station in clean wagons and see that the car into which they are to be put is clean and free from all bad smells.

I feel confident that the cheese maker who follows the above method will succeed if he has milk cared for as above described. If he accept milk which is too far advanced he must put in more rennet, cut finer, heat a little faster and a little higher, do everything to overtake the acid before the removal of the whey.

Gasy milk had better be returned than taken as it is hard to make a first class cheese from it, but in case it has to be worked it will have to remain in block longer in order to kill the gas with the acid. If I make this any longer it will have no chance of escaping the waste paper basket.

I submit cheerfully to your decision.

CLAS W. ILKING,  
Mansenville Station,  
Quebec.

FARMERS' SYNDICATE  
OF THE  
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#### LONDON MARKETS.

Mark Lane: Prices current; June 8th	
Wheat, per 504 lbs.; British.	s. s.
White .....	27 28
Red .....	26 27
London flour per 280 lbs. ....	25 --
Barley (grinding) .....	13 22
Oats, English per 8 bushels ..	15 20
White pease .....	32 30

#### FOREIGN

Wheat—Manitoba .....	27 27
Canadian white pease.....	27 --

Milk-cows, per head, £21.

#### BEASTS.

Scotch .....	4 6
Herefords per stone of 8 lbs....	4 4
Welsh (runts) per stone of 8 lbs..	4 2
Shorthorns (runts) per tons of 8 lbs .....	4 2
Fat cows .....	3 8

#### SHEEP.

(Shorn.)

Small Downs per stone of 8 lbs....	5 2
Half-breds and Scotch per stone of 8 lbs.....	5 2
Lambs per stone of 8 lbs.....	6 8
Calves per stone of 8 lbs.....	4 8
Pigs per stone of 8 lbs.....	3 4

#### BUTTER.

Fresh, (Finest factory) per doz. lbs .....	11 1'
English Dairy-butter fresh.....	10 1
Irish (creamery) .....	8 0
Danish .....	9 6

#### BACON.

Irish ... ..	50 60
Canadian .....	35 44
American .....	48 50
Irish, small (hams).....	80 84
Hay, per load of 2016 lbs.....	84 90
Prime meadow .....	90 90
Straw, per load 1200 lbs.....	32 30
Best .....	40
Hops from 20s. to 70s. per 112 lbs.	

#### THE ARMY-WORM.

The Department of Agriculture of the State of Pennsylvania has sent out the following as the best method of dealing with the army worm, the paper being prepared by State Zoologist Warren:

"The fully developed worm is a little over one inch long, of a gray or dingy black color. With black stripes and narrow lines of white on black. The under surface is of a more or less greenish color. The head is smooth and yellowish, with two black lines running from top to mouth. It has sixteen legs, and those from the middle of the body are each marked with a shining black or blackish band. The worms, when disturbed, curl themselves up like cut-worms and drop to the ground. They complete their growth in about one month, at the end of which period they burrow into the ground and each caterpillar changes to a brown pupa, from which, in two or three weeks the moth emerges. The female moth is said to lay about 750 eggs, and these hatch in about six days.

"To prevent their spread, the best authorities recommend the mowing of a wide swath around the invaded field, then plough a deep furrow with straight side toward the part to be protected, and at intervals of a few

feet make holes with a crowbar or dig small pits into which the worms entrapped in the ditch will fall. Where the number of worms is very great, and the ditch becomes partly filled, plough a second furrow, throwing the earth over into the first furrow, thus covering up the worms and providing a second line of defence.

"Some authorities recommend the use of kerosene sprinkled over the worms entrapped in the ditch, and thereby destroy them. Others use a slight covering of straw, which is set on fire, and accomplishes the same result. It is also recommended that ordinary fence boards be set upon edge, end to end, across their path, and then apply a coating of tar or kerosene to this wooden barrier, which checks their progress. Some entomologists recommend spraying of the grass ahead of the worms with poison, thus poisoning the forage on which they exist. For this purpose one pound of poison to 150 or 200 gallons of water is a proper proportion.

"The most effective method seems to be the constructing of a ditch with the plough as stated, cutting the side next to be part to be protected perpendicular and then attending to the destruction of the worm as they are entrapped in the ditch."

#### ON THE CULTIVATION OF MANGEL WURZEL.

##### PRIZE ESSAY

#### Fall-cleaning—Dunging—Sowing—Hoeing.

To grow mangels successfully you require to have a rich loamy soil well manured and ploughed deep. Take stubble land and plough crossways as soon as the crop is off. Give it a shallow furrow say four inches deep and nine inches wide that will cover in all kinds of seed that may be in the land and cause them to germinate and grow up, then give it a good cultivating and harrowing both ways. In the fall give a liberal coat of barn yard manure and plough it in deep.

I prefer leaving the manure covered in all winter to drilling up in the fall as some do, for it brings a large quantity of the dung to the surface. Plough it over in the spring as soon as it is fit to work, then harrow it fine and drill it up about 28 inches wide, put well rotted manure in the drills them split your drills to cover the manure. If you are short of dung after the land is ashes and sow broadcast 3 or 4 sacks ashes and sow board cast 3 or 4 sacks of common salt to the acre, harrow it in, then draw your drills, pass the roller over them or what is better, if the land is a little damp, harrow them with a saddle harrow with a good round on it so as to keep the drill in shape. Sow the same day or as soon as possible after it is drilled. Don't be in a hurry to get them in too early on account of frosts; about the first days of May is a good time. I sow between 5 or 6 lbs of seed to the acre, it is easier to pull out some than to transplant. A good thing is to try your seed in a box or pot before the time of sowing and then sow accordingly. After the plants are up so as you can see the rows along to the end, start the cultivator. Keep it a little narrow at first, so as not to go too near the rows; you can go a little nearer next time the keep at that. After the plants are about 2 or 3 inches high I hoe close to the

plants then weed and thin out leaving them 2 or 3 inches apart for if you let them grow in bunches they get spindly and it takes them a while to get over it. Keep the cultivator going as often as there is any sign of weeds and to keep the soil mellow. But when the leaves fill up the drills and interfere with the cultivator it is time to stop. When the plant is 4 or 5 inches long hoe a second time and single out, leaving them 9 to 12 inches apart and for prize roots a few inches more is no harm. After the mangels grow a little large and the bottom leaves begin to wither and droop, I keep breaking off the lower leaves. (1) The principal rules to grow good mangels after your land is well manured are to keep the soil mellow; keep away the weeds and give them plenty of room, by this way I have grown some very large crops of mangels. I have also been very successful in growing prize roots for Exhibitions. I have won in the last 3 years 55 prizes at the leading shows, Montreal, Quebec, Ottawa and at our own country show including 2 first prizes for the best collection of roots, one in Montreal and one at Quebec in a large competition. If the soil is deep, the long varieties especially the long reds will grow the largest crop; but if shallow the globe or intermediate varieties will do better. When I take up the roots in the fall, after the earth and leaves are cleaned of them, I gather them in small heaps and cover them with the leaves if there is any danger of frost, leaving them out a day or two as they don't break half so much in handling and drawing them to the cellar where I store them up in bins for winter feed.

WM. GREER, Grand Frenière,  
Quebec.

Sept. 2nd 1895.

### FARM-WORK FOR AUGUST.

If you have, as you ought to have, a silo, put your second-cut clover into it. With all our skill in hay making, in England, it is rare to see there, even in the London district, a stock of perfect second-cut clover. Even in this climate, the heavy morning dews and the early-falling evening dews, shut up the hay-making hours into a remarkably small compass; and the farmer, by this time pretty weary of his long days' work during the grain-harvest, is apt to be in a hurry to get the last of it over; mouldy hay is probably the cause of more broken-winded horses than anything else, and second-cut clover-hay is too frequently mouldy.

Keep the later root-crops well stirred, and the drier the weather, the deeper should the hoe go.

If every farmer would dress his potatoes with Paris-green or London purple when the last hatch of the beetle is out, the plague would soon be done with for ever. You may see them in scores at the bottom of the stem, where the last sap remains and the rest of the haulm is dead. Then, when the tubers are dry, they take refuge in the earth, to rise again in spring when this food is ready for them.

As soon as the grain, in which no grass-seeds were sown in the spring, is carried, break up the land you intend for the hood-crops of 1897, with the grubber, if you have one that will work, or with the plough. If the plough is used, the furrow can hardly be too shallow. Harrow and work out the couch and, if the sun of August does

(1) Wrong.—Ed.

not kill it, burn it. Young pigs ought to do well on clover with some grain in addition.

As for cows, they ought to have plenty of green-ment ready for them at this season. Their milk is getting richer every day, and it is good business to see that they have food enough to make them yield well. Nothing like oats, pease, and tares, as Mr. Philip Moore writes in page 26.

Gastrate your male lambs, if you have not done so yet; those intended for the butcher, of course, we mean. Try for some early lamb by putting a few ewes to the ram at once, say about August 15th, to lamb down about New Year's tide. (1) Choose ewes in good condition, and if you put a "teaser" with them, about four or five days before the Sultan himself is admitted to his harlem, the oddsquies will permit his embraces all the more readily. All that is needed to make a "teaser" is a piece of sacking and a ram-lamb. The sacking to be fastened to the wool on each side of the breast. Cruelly tantalizing for the poor beast, mais que faire?

### FALL-STORING OF CORN-FODDER AND ROOT-CROPS.

Storing corn-stalks—Getting up the root crop—Potatoes—Topping and tailing roots—The tops—The root-cellar—Ventilation—Successive consumption of roots.

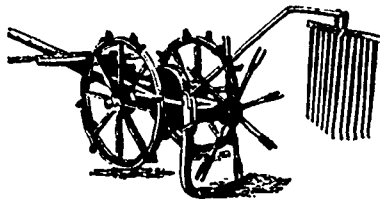
Storing the fodder-crops, that are to be the subsidiary support of our stock during the long winter months, may be considered as the winding up of the harvest of the year; and by no means the least important part of the harvest. We have but a few words to say about the storing of the corn-stalks, for we never had any to store, and most people prefer the silo to any other receptacle for corn in general. But where corn is grown for the grain, the best treatment, as practised for years by some of the leading farmers of our acquaintance, is to pile the stalks in a bay of the barn, or in an adjacent shed, in alternate layers with straw of the cereal crops. Leaving the stalks standing in the field, to be brought in as required daily throughout the winter does not seem a very wise proceeding. The alternate freezing and thawing they are subjected to with the additional scourge of heavy drenchings from occasional rain-storms, must deprive them of much of their nutrimental contents, and they are not too well provided with succulent matter as it is. At any rate, if they must be left in the field; though it would be far more profitable to move them off in order than the whole field where they grow could be ploughed; pains should be taken to place the clumps in such a position that they cannot be blown down. The tops should be inclined together at a proper slope, and tied firmly with old binder-twine or tarred string, so as to prevent the lodgement of snow in the centre of the clump.

HARVESTING POTATOES.—Every one should know how to find out when the potato is ripe. In our younger days, before the onslaught of the disease, we have often shot both partridges and pheasants in potato-fields in October, and yet the tops were as green as they now are in August. So it is clear that the state of the haulm is no guide to

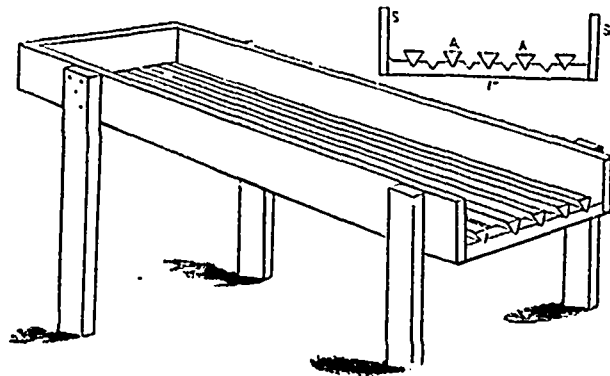
(1) Twenty-one weeks.—Ed.

the ripeness of the tubers. The only sign to be depended on is the firm adherence of the outer skin to the potato's interior, and the moment this is found to be perfect, the crop ought to be got up, for we find, from innumerable quarters, that the longer the tubers remain in the ground after ripening, the greater is the proportion of diseased potatoes in the yield.

On all well cleared land, the double-mould-board plough is of course used to extract the crop from the ground. No one would use the hoe except in strong land. There are several kinds of useful "potato-diggers" in the market, but they are expensive, and the plough just mentioned answers fairly well for the purpose. The haulm is usually so scanty nowadays, that it will not interfere greatly with the operation, but if there is much of it, remove it before the plough is set to work.



As for gathering, there is no need to expatiate on the necessity of careful work in that part of the business. No use in sorting the potatoes in the field; the accompanying sketch of a simple machine for the purpose will show you a better plan.



DEVICE FOR ASSORTING POTATOES.

It would not be wise to store away the potatoes in the root cellar at once; and for two reasons: 1. they might sweat and heat, thereby incurring untold injuries; 2. if the rot infects any of them, the diseased ones might be more easily detected after a time and separated from the sound ones. The best plan is, to pile them up in largish heaps, cover them with a good thickness of straw, laying a little earth round the bottom to keep the straw in its place, and to leave them alone for a week or ten days before cellaring them.

In places like Sorel, where there are 7 or 8 feet of dry sand at the river side, "caveaux" are made to hold the tubers, and they come out of these cellars quite fresh in the spring. The temperature seems to be nearly constant in them, for there is no sign of growth in the potatoes kept in these receptacles even as late as the middle or end of May.

But, as a rule, potatoes are kept either in a root-house or in a cellar under the farm house. However, in whatever place they pass the winter, it should be frost-proof, capable of being easily ventilated, and provided with bins, each bin to hold not more than, say, 80 bushels of tubers, and in no case should the sides be more than four feet high. If, in the middle of each bin, a bundle of rough brushwood, a faggot in fact, be placed, extending above the potatoes,

built round it, it will serve as a means of ventilation, of which there cannot be too much.

We strongly recommend the sorting of the potatoes, by means of the implement shown above, as they are brought into the cellar. The "chais," as we call the small ones in England, can be then set aside for the pigs; the "middlgs" and any green ones, reserved for seed, put into a bin by themselves; and the "ware," or bigger ones kept apart from the rest for sale or house-use.

But this, though the nicest way of arranging the crop for the winter, can only be done where a good many hands are employed. Generally speaking, the crop must be roughly sorted in the field, and take their chance of more close selection where wanted for consumption.

If any one of our readers who has built a root-house that answers its purpose would kindly send us a description of the mode in which it is constructed, we, and our other subscribers, would be highly gratified.

STORING MANGELS.—Somewhere about the 15th October, in this part of the province, the mangel-crop should be attacked. A mangel touched by the frost, is sure to rot, and in its rotting infects its neighbours. A delicate root is the mangel, and should never be trimmed with the knife, but the leaves wrung off with an easily learnt wrench of the wrist, and the rootlets left on; if a little dirt adheres to them it will not do any harm in the store. Mind you do not break off the under ground part

of the "long-red" mangel, in pulling the crop it will bleed itself well nigh to death if you do.

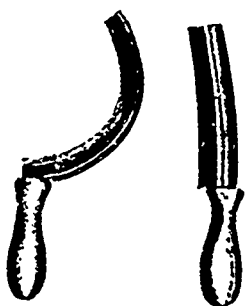
CARROTS, the white Belgian, especially, can be treated like the mangel, and are easily managed. As they stand well out of the ground, working is easier than pulling them, their bushy tops affording good purchase to the puller. After the mangels are safe, the carrot-crop should be the next attacked, as they are less hardy than swedes and parsnips.

THE SWEDE, a frost-resisting root, is the last to need storing, for the parsnip may remain uninjured in the ground all the winter; though we do not recommend the practice, on account of the messing about the land gets when digging the roots up in the spring. All roots should be stored away in time to allow of the land receiving its fall-furrow, and if part of the land appropriated to the root-crop is cleared and part left occupied, the result is a mud-die. Why, indeed, grow parsnips at all? They are not much richer in nutriment than carrots, they take a long time to come up, thereby making the weeds that come up with them more difficult to eradicate, the seed is very costly and a great deal of it must be sown, and, last, though far from least, their entirely underground habit of growth ma-

kes the digging of them very hard and troublesome work.

**PULLING ROOTS.**—Our practice has always been, in pulling roots, to send a man into the field an hour or two in advance of the rest, to start the work. He goes up between two rows, pulls the mangels, carrots, etc., and throws them behind him in the track he is walking in. When the others get to work, they follow the puller, and, wrenching off the tops of the mangels or carrots, (1) throw the roots into heaps at convenient distances apart, in straight lines, to allow the carts to gather them up as conveniently as possible. All these heaps should be covered with plenty of the leaves before night, as a protection against frost.

The swede and the turnip must be treated differently as to their tops, as they cannot be wrenched off. A very simple instrument answers this purpose, a cut of which we give below. A piece of an old scythe, like fig. 2, does well for this job, the point being broken off, and the back riveted into the handle and protected by a ferule.



Instrument for topping and tailing turnips.

Another instrument for the same purpose.



MODE OF TOPPING AND TAILING TURNIPS.

Lightness is no virtue in these tools, as a heavyish one removes the top more easily than a lighter one. The following cut will show the best way of handling the turnip in removing the roots, a slight turn of the hand reverses the bulb and presents the top in a proper position for decapitation.

Due care should be taken not to cut the bulb when removing the tops and tails. Some lazy boys are fond of striking the tool into the bulb to draw the turnip towards them; but this should never be done, as the juice exuding through the incision will impoverish the root.

Dry weather should be chosen for the pulling of turnips, not merely for the sake of keeping the turnips clean, but for that of the land, which ought not to be cut up and poached by the cart-wheels and horses' feet; for the rats form receptacles for water, not soon emptied; let the land be ever so well drained, its nature cannot be entirely changed—clay will always have a tendency to retain water on its surface, and soil every thing that touches it, and deep loam and black mould will

(1) The tops of red-carrots must be cut off, but the tops of the Belgians come away with a good wrench.—Ed.

still be penetrated by horses' hoofs, and rise in large masses, with the wheels, immediately after rain. No turnips should therefore be led off fields during, or immediately after severe rain; nor should they be pulled at all until the ground has again become consolidated; and as they cannot be pulled in frost, and if they are urgently required from the field in any of these states of weather, a want of foresight is evidently manifested by the farmer.

**THE LEAVES,** or tops, though abundant enough in quantity, are not good for much as food for young or old cattle. They always cause looseness of the bowels, and are therefore weakening. Sheep are not so easily injured by their consumption as cattle, for sheep are, naturally, more costive. We advise that the tops be spread equally over the ground and ploughed in for green-manure."

**SUCCESSIVE CONSUMPTION OF ROOTS.**—In storing roots in the cellar, or roothouse, it should be observed that it is not a matter of indifference as to what part of the building they occupy. Roots are not all equally nutritious at the same season of the year. We should class them thus: carrots from November to the end of December; swedes from January to March; mangels from April to 1st of June, when the grass will be ready. If a good store of mangels remains up to that date, the cattle can be kept off the pasture till there is a really good bite for them, and the benefit of that abstraction will be seen throughout the whole of the summer.

Carrots for the table, of which the best kinds are the Nantes and some of the stump-rooted, should be covered with sand in the cellar. This will keep them from becoming shrivelled.

The advice concerning the cellaring of potatoes will answer for all kinds of roots.

**CABBAGES:**—We are kept cabbages in perfect condition up to May by the following treatment:

Let the cabbages stand until signs of the ground freezing hard are apparent; then, draw them, and place them, roots in the air, in a bed about four or five feet wide, leaving all the leaves on. Next, place another range, rather narrower, of cabbages on the top of the first, letting the second range cover the interstices between the cabbages of the first range. Again, lay another range still narrower on the top of the second range, as before, and a single row of cabbages to top up with. Throw up earth against the four sides as high as the bottom of the second range, and put a little against the last single row on the top, so as to close the space round them. Do not use any straw, as it would very likely cause the heads to rot. We have always found the great wide-leaved Savoy-cabbage the best keeper.

#### QUEBEC PROVINCE

The following extract, from the address of Mr. Hague to his constituents of the Merchants' Bank has been sent us for publication:

In our own Province, reports are generally very satisfactory.

I referred to the development of agriculture in the Province of Quebec last year, and all that has transpired since has confirmed me in the belief that its farming interests are undergoing a silent revolution in methods, all tending to a larger production of a better class of articles, realizing larger returns to the farmer, and diffusing a constantly increasing prosperity.

The improved appearance of the villages and towns of our Province, the new areas that are opened up to cultivation; the great improvement in our live stock and in our method of dairying must all strike an observer.

#### Notes by the Way.

**DANISH DAIRYING.**—An old Gloucestershire friend has been making a tour of inspection through the dairy-districts in Denmark. At one of the farms he visited, the average yield of the cows was 6,000 lbs of milk in the year, 24 lbs of which would make 1 lb. of butter. In an examination of butter—6,000 samples—it was found that the average amount of water per cent. was 14½, whereas in Irish butter it is 19 per cent. Wages are not much lower in Denmark than they are in the East of England. In two important matters, the Danish government has afforded great protection to agriculture against fraud: 1. Enormous fines, sometimes as much as \$5,000, are inflicted even for the adulteration of seed, and, in the case of *magarine*, its sale for butter is punished, on a third conviction, with imprisonment, without option of a fine. 2. The execution of this law is not left to the Town Council, but is carried out rigorously by government inspectors.

**LUCERNE.**—Mr. Elford, of Huron county, Ont., seems to have succeeded well with this plant. According to the "Farmer's Advocate," he began to cut his crop for cows and horses on the 6th May. On the 30th of that month, only 2 acres had been used, out of 4 acres sown, and the first cut being nearly ready to be cut again, the remaining 2 acres was about to be cut for hay. The soil and subsoil are gravelly loam. This lucerne was sown in the spring of 1895 in hood-crops in 1894. Fifteen pounds of seed were sown at the same time as the barley.

Mr. Elford gives his cows all the lucerne they will eat twice each day, and is well satisfied with results. He intends to stable his cows all the summer during the day. His stable is a model of sweetness and cleanliness. With a clean stable, soiling crops, and housing during the day in hot weather, Mr. Elford is on the way to sound success in dairying. He needs a Babcock milk tester yet, to grade and weed his herd, and he intends to have one soon. Mr. Elford and family are most hospitable and genial, and will be pleased to show strangers what they are doing.

#### SUPERPHOSPHATE FOR SWEDES.

We have always contended that, if from 3 to 4 cwt.—336 to 444 lbs. of superphosphate of ordinary quality will not make a crop of swedes, a thousand pounds will not. And this receives confirmation in an experiment made by the Agricultural Department of University College of North-Wales.

The average results of different manures for swedes at ten centres show that 6 cwt. of superphosphate and 2 cwt. of kainit did best, giving a yield of 19 tons 4 cwt. 44 lb., or 8 tons more than the average of the unmanured plots, at a cost of £1 5s. 8d per acre. But 4 cwt. of superphosphate and 2 cwt. of kainit, costing only 17s. 5d., gave within 7 cwt. of the more expensive dressing. Where 6 cwt. of basic slag was substituted for the superphosphate

(with the kainit) the yield was half-a-ton less. The effects of different quantities of superphosphate were well shown in the trials, for when the quantity was reduced to 2 cwt., with the same quantity of kainit as in the other cases, the yield of swedes fell to 16 tons 18 cwt. 26 lbs. The cost in this case was 11s. 2d. per acre, or 6s. 3d. less than where double the quantity of superphosphate was used, while the yield was reduced by nearly two tons. The medium quantity gave the most economical result. The cost per ton of increase in roots was the same (2s. 8d.) with superphosphate as with basic slag.

**PRICES OF PROVISIONS IN LONDON, ENG.—BACON AND HAM.**—LONDON, Friday.—Bacon ruled steady for Irish. Most of the Danish had been sold "to arrive" at easier rates, and the market was taken by surprise when, well on in the day, an "official" advance of 3s. to 4s. was declared, leaving agents unsettled, but asking fully 2s. advance on the open market. Irish.—Lean sizeable, 54s. to 59s.; stout sizeable, 53s. to 58s. Danish.—Lean, No. 1, 48s. to 52s. No. 2, 47s. to 52s. Canadian.—Lean sizeable, 30s. to 44s.; fat, 35s. to 38s. Hams.—Irish are in good request at 78s. to 84s. for light, and 70s. to 74s. for heavy to medium. American ruled slow, but were steady, in sympathy with bacon, at last prices.

#### BUTTER AND CHEESE.—LONDON.

Friday.—The usual fluctuations have occurred in Cork butter, firsts (free on board) ranging from 80s. to 89s., seconds at 73s. to 77s., thirds at 65s. to 67s., and fourths at 55s. to 57s. Creameries command full rates, anything really choice up to 86s. and 90s. Danish has ruled quiet, at 94s. to 96s., with secondary 90s. to 94s., and supplies are increasing. Australian had a disappointing trade, choice ranging from 90s. to 94s., with fine 82s. to 86s., and good 76s. to 78s. Normandy was quiet and unchanged, with Paris baskets 100s. for fresh, 96s. for salted; ordinary baskets, firsts, 88s.; seconds, 82s.; but Saumur lost 4s., at 82s. to 70s.; fresh rolls, 12s. 6d. to 9s. 6d.; Italian rolls, 11s., 10s., 9s. 6d. Dutch was dull, with quality in some instances indifferent. Dairies, 78s. to 82s.; factories, 84s. to 88s. Pinnish was in good demand, at 84s. to 90s. Russian quoted 76s. to 81s., and Irish creameries steady at 92s. to 94s. For cheese a very firm tone has prevailed, with prices rather higher than otherwise, and Canadian and American cheese have realised extreme rates. Nearly all descriptions are now within a narrow compass, and orders for such classes are difficult of execution. There is likewise a scarcity of low priced English; little else but Cheddar is obtainable, and this ranges in value from 40s. to 46s. for the lowest, to 60s. and 70s. for the finer makes.

**LUCERNE AGAIN.**—A well known land owner, Mr. Corbett, of Worcestershire, Eng., speaking of this fodder-crop, says that he always sows lucerne with his mixture of grass and clover seed. The mixture is sown with the spring-grain, harrowed and rolled. Some of his land has been down with Pacey's rye-grass, orchard-grass, cow-grass (trifolium pratense perenne) or perennial red-clover, and lucerne, and although some of it has been down for 27 or 28 years, there is still a considerable proportion of lucerne in it.

In France and Switzerland, lucerne is often used in laying down permanent pastures. In the latter country, large numbers of plants of lucerne can often be noticed in long-standing pastures; and in dry seasons, when other herbage is burnt up, their luxuriant growth is very striking. The lucerne-stray, on the Seminary-farm in Sherbrooke street, Montreal, has been allowed to go to waste; the small quantity sown not being considered worth cutting we suppose; but, at all events, it was a good test of the value of the plant, as, in spite of this dry spring, it was quite fit for consumption on the 15th May, being then 20½ inches high, under very unfavourable circumstances (1)

**PRICES OF ARTIFICIAL MANURES.**—In England, the prices of artificial manures have fallen greatly in the last ten years. Sulphate of ammonia has fallen 18 p. c., superphosphate, 25 p. c., and nitrate of soda about 12 p. c. The only article of the kind that has risen in price, as far as we know, is kainite, but, then, there are no wood ashes, to speak of, to be had in England.

This being the case, of course all calculations concerning the value of manurial constituents in feeding stuffs must be altered, and the tables published by Lawes and Gilbert can no longer be quoted as a guide. As we have often contended, only about half the manurial constituents of food consumed by the stock of the farm is available for crops, and the leading agricultural Chemists of England, notably, Alfred Warington are obliged nowadays to admit this to be the true state of the case.

**BUTTER AND FOOD.**—The county of Dorset is largely a dairy country the "Wessex" of those delightful novels of Hardy.—Large herds of milch-cows have been kept there for ages, and the farmers are all either dairymen themselves, or let their cows to men who take the whole herd at so much a head for the season; so the opinion of one of the most important among them is worth something:

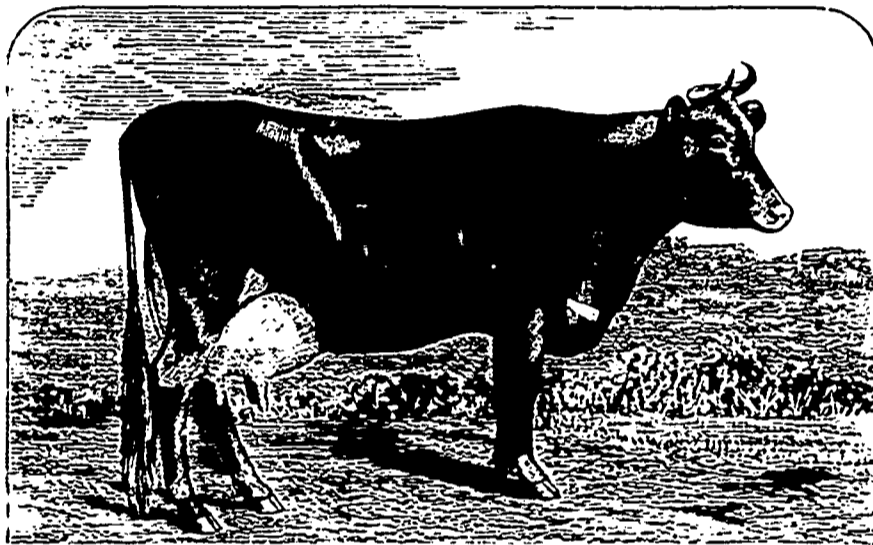
**A FALLACY.**—The foolishness of the assertion made by theorists that food does not influence the quality of the milk has been often referred to in this column, and it is therefore satisfactory to find a leading dairy authority say that the new school of chemists are at last coming to their senses in this matter. Nothing of late years, he says, has brought theoretical chemistry into greater disrepute with practical farmers than the repeated statements, said to be made after trials, that the quality of milk is not subject to the influence of food eaten by the cows from whom the milk is taken. A well-known Scottish farmer has been frequently cited as a declared ally of the chemists who maintained that the quantity of milk only, and not its quality, was affected by food. But the Scottish farmer in question has just published the result of his more recent experiments, which, he acknowledges, clearly show that food does influence the quality of milk. The wonder is that any farmer who has made cheese or butter could ever lend himself to give countenance to a delusion which is plainly condemned by all our old-world experience in curd or cream. We may hope now that the fallacy will not

(1) It was cut, at last, about July 1st, after having been well trampled down by the horses at plough.—Ed.

be any longer persisted in, and that the views of practical men will prevail.

**WEEDS.**—A correspondent of the "Farmer's Advocate" offers "A good word for weeds." He has noticed "that seedlings, such as carrots, turnips, etc., flourish in weeds when very small." Very likely; they are drawn up by the weeds, and if a dripping time follows, the singlers of the crop are not to be envied.

**A GUERNSEY COW.**—The cut taken from the "Country-Gentlemen" accompanying this note is a portrait of the Guernsey that won the sweepstakes at the New-York Show last winter. A more perfect representative of the breed it would be hard to find. We have passed a winter in their own Island; imported and bred them in England; and believe them to be one of the most profitable kinds of milch-cows a farmer can keep.



THE SWEEPSTAKES GUERNSEY COW AT THE NEW-YORK SHOW.

**THE LONDON DAIRY SHOW.**—At the recent show of the London, Eng., Dairy Association, all the best prizes went to Shorthorn crosses. A 7 year-old Shorthorn-Ayrshire, shown by John Holm, a Scotch breeder now farming in Essex, won first in the cross class for both points and milking, the Lord Mayor's Cup and a £50 Challenge Cup open to any cow irrespective of breed. She made over 65 lbs. of milk a day on a two days' trial. The first prize pure Shorthorn made 71½ lbs. milk but it was poorer in fat than the cross cow. Nine cows were placed before any Jersey got in. The best Shorthorn cow made 2 lb. 7½ oz. butter, the best Jersey 2 lbs. 1¼ oz. Taken by points the awards were: 1st, a Shorthorn-Ayrshire, 139.8; 2nd, a cross, 137.82; 3rd, the first prize Ayrshire made 108.22 points and there were two Jerseys above her. In butter-making the user of the Disc Churn was champion, and won the same honors in 1893. One of the most interesting novelties at the show was the Thistle milking machine which drew large crowds of onlookers and was pronounced by the judges to be a real success. Another new implement worthy of special mention is thus described by the London Live Stock Journal:—This remarkable machine which has been awarded a silver medal by the Association, makes butter direct from sterilized milk in about a minute. The milk is heated to 160 degrees to sterilize it, and passes from the sterilizer into the separator, and thence immediately into the little churn immediately over the separator, and encased with it. While in the separator the milk

is cooled down to 60 degrees by means of tiny coolers through which ice water is continually circulating. As soon as the cream is separated, it passes into a tube perforated in the upper part with extremely small holes, through which it is forced at an almost incalculable speed in hair-like streams upon the rest of the revolving cream, converting it into butter by the concussion. The butter thus formed is softer than that which comes out of an ordinary churn, as it contains more buttermilk. It falls into a tub, and, when churning is finished, it is stirred for two or three minutes by moving a wooden dash up and down in it gently. Then the butter granules are skimmed away from the buttermilk, and worked on a butter-worker, which takes out the rest of the buttermilk, or most of it. The butter is then placed on ice for two hours, after which it is finished and made up. The large machine used is capable of dealing with about 180 gallons of milk in an hour, and there is a smaller one to deal with about 40 gallons in the

same time. Both are driven by steam power. The Radiator can be used as a separator only, if desirable.

**BREWERS' GRAINS.**—Brewers' grains are the material left after the sugar, etc., are extracted. They contain nearly all the albuminoids and fats, and part of the carbohydrates of the barley; and because the starch has been largely converted into sugar, and removed in the "wort," or extract, they are proportionately much more nitrogenous than the original malt, a cheap food, decidedly.

**LIVE AND DEAD WEIGHT.** English, we might say, British farmers, do not take kindly to selling cattle by live-weight and if they are in general as good judges as the Silurian farmers who guessed the weight of ox and sheep, as mentioned below, we cannot blame them. The animals were slaughtered as usual, and the judgment was pronounced as follows:

THE OX

Mr. Elliott . . . . .	770 lbs
" Oakley . . . . .	765 lbs
" Moore . . . . .	772 lbs
" Reeve (butcher) . . . . .	760 lbs

the real weight of the four quarters was . . . . . 768 lbs

THE SHEEP

Mr. Kedwaad . . . . .	99 lbs
" Lewis . . . . .	101 lbs
" Cate . . . . .	95½ lbs
" Probyn . . . . .	98 lbs

the real weight of the four quarters was . . . . . 100 lbs

We used to be a pretty fair judge of the weight of our own bullocks and pigs, but we must confess that the sheep in the wool always puzzled us.

**RIPE OR UNRIPE GRAIN.**—We take the following from the "Farmer's Advocate". It is full of sound sense if we may be allowed to say so, considering it agrees with the advice we have given hundreds of times in this Journal.

**CUTTING GRAIN.**—Millers like wheat cut before it is dead ripe, because the skin is thinner than when it has stood longer, and it is said that the proportion of gluten is greater. On the other hand, it stands to reason that seed-grain should be fully ripened, so that the germ will be well developed, and the starch upon which it will feed also. It appears reasonable to suppose that the development of the germ takes something from the flour-yielding quantity of the grain, and that this is one reason why millers like wheat cut before it is dead ripe. There is a great lack of exact knowledge upon this point and a capital opportunity for investigation. Barley, cut when not quite ripe is of a better color and realises more money than when left till it is dead ripe, but for malting, a mature, healthy germ is important. By cutting grain, and especially oats, before it is dead ripe, farmers secure themselves against the risk of heavy loss from shelling. If they do not begin to cut when the grain is a little under ripe they cannot flush before some of it is over ripe, and then the chances are that they will lose a great deal of grain. Except for malting barley, then, the advantages are greatly in favor of cutting a little too soon rather than too late. Any experienced farmers will say that while he has rarely had reason to regret having been too quick in cutting a wheat or oat crop, he has often suffered from being too slow. Especially is this true with oats when the straw is so largely used as fodder.

**CANADIAN MUTTON.**—A Canadian who recently visited New-York City was impressed with the apparent appreciation of the products of his country, which was shown by prominent signs in many of the best butcher shops—"Canadian Mutton." The same quotation was also noticed on the bill of fare of the best restaurants. Upon indulging in some of the home-grown meat, the question arose mentally, Why do we not get such mutton at home? (1) Probably the smaller Canadian markets are too often supplied with the scrub stuff that is not fit to ship, and, indeed, which the shipping buyer does not care to handle. If our local butchers, as well as our local cheese dealers, would handle only first-class goods, the quality offered would do a great deal toward increasing the consumption and therefore the demand of these two nutritious articles of diet. The stringy, dry, so-called lamb so generally put upon the hotel table causes the consumer to vow that he will not again ask for even "spring lamb."—"Farmer's Advocate." The mutton we get, here in Montreal, is not much to boast of, particularly that sold in the early spring. Six months' old uncastrated male lambs are not likely to yield meat with any good flavour in it, and their "legs of mutton" are absolutely devoid of fat.

(1) Just for the same reason that we cannot get good butter or cheese in Montreal—it all goes to Europe.—Ed.

**ROADS.**—Don't we remember the fall and spring-roads between Chambly and St. Johns, in the sixties, when we had the old Chambly Brewery? The horses that drew the waggons used to lose flesh, in traversing those twelve miles, at the rate of pounds a day. Wherefore, we are glad to see that the exertions of Mr. Camiraud have borne fruit, and that, under the patronage of the Minister of Agriculture at Quebec, lectures are to be given, by Mr. Camiraud, accompanied by practical demonstrations with a road-machine, acquired by the Department of Agriculture. Any municipality applying for the use of the same to the department at Quebec can have it during eight days on the condition of furnishing the working-men and horses. The department will supply a foreman to direct the works. All applications addressed to the department will be granted according to the order of their reception.

Our good friend Mr. Ness, of Clydes' celebrity, spoke highly in favour of this machine at the Dairy-men's Convention, at Waterloo, last winter. All the parishes of Mr. Ness' county have one, and from two to three miles a day of road are easily overtaken.

M. Plamondon, at the same meeting, agreed with Mr. Ness, and said that, in Mr. Ness' village, he saw four miles of the best roads he ever met with; it was more like a plank road than anything else.

The machine makes splendid ditches, too, cutting the sides perfectly, and leaving them in such a form that, on M. Camiraud's farm, a ditch, extending from one end to the other of the estate, is easily crossed by mower or horse-rake. If this plan is thoroughly carried out, the horses, harness, carriages and limbs, of those who use our country-roads will last a great deal longer: accidents involving serious injuries are far too common in the roads of this province.

**CUTTING SEED-POTATOES.**—Far better leave them uncut, and plant only whole potatoes of middling size. The "ash-leaf-kidney," the mainstay of the early potato growers in England, will never yield a full crop here because people will cut the sets.

**CUTTING SEED POTATOES.**—The best way to cut seed potatoes is a problem upon which no two farmers agree and concerning which numberless experiments have been tried by farmers generally, as well as by experiment stations. Results at all the stations have been carefully studied by J. F. Duggar, who concludes (Farmers' Bulletin No. 25, United States Department of Agriculture) that it is more "important to cut the tuber into compact pieces of nearly uniform size than to so shape the pieces as to have a definite number of eyes on each set. No piece should be entirely devoid of eyes, and the majority of the seed pieces should be large enough to support at least two eyes, and better, three or more." The yield from planting the seed or bud end is larger than from the stem or butt end of the tuber, the eyes on the seed end being the first to germinate and hence of especial importance when an early crop is desired. The total yield increases with every increase in the size of the seed pieces from the single eye to the whole potato; this increase occurs both in the large and in the small potatoes, but chiefly in the latter. The net yield of salable potatoes increases with every increase in the size of seed piece from one eye to the half potato. "The half potato affords a larger net salable crop than the whole potato, on account of

the excessive amount of seed required in planting entire tubers. Taking the average of many experiments it was found that for every 100 bushels of net salable crop grown from single eyes, there were 114 bushels from two-eye pieces, 131 bushels from quarters, and 139 bushels from halves, but only 129 bushels from planting whole potatoes. These results favor the use of halves as seed pieces if seed potatoes and crops are assumed to be of equal value per bushel, but when seed potatoes command a very high price quarters may be used to advantage. It is better to place in one hill one large piece than several very small ones of the same aggregate weight. Small potatoes can sometimes be used for seed with profit, in which case they should be planted whole. Leading growers are careful to select for seed medium to large tubers of good shape, and their example should be followed."—*American Agriculturist.*

**SIZES OF POTATO SETS.**—Although many experiments have been made from time to time in relation to this question, it seems as if nothing were definitely settled. No doubt the common belief is the larger the set the greater produce from a potato plant. That may be so under exceptional cultural conditions, as, for instance, when large tubers are planted singly in hills three feet apart, and, having ample room, are earthed up accordingly. We have yet to determine thoroughly which may be, relative to quantity or weight of seed, the best plan to adopt—whether to plant half-pound tubers on single hills, or to plant sets of half the weight, say 3 oz. to 4 oz., in rows 2½ ft. apart and 16 in. apart in the rows; or to plant from 1 oz. to 2 oz. sets in rows 24 in. apart and some 13 in. apart in rows. In any experiments that may be made with a view to settle this matter we must not lose sight of the fact that in planting ½ lb. tubers we are planting those of good table size and edible use. Tubers from 3 to 4 oz. in weight make what is called fine seed, and by most persons are regarded as the very best. Still we may point out that tubers even of that weight when largely planted signify great bulk of seed. But the tubers of from 1 to 2 oz. in weight, though relatively small, are on the whole the least useful, and, therefore, may be the most profitably employed for planting. Some very interesting experiments conducted for the Sursey County Council last year at Bookham by Mr. Goff, of Eastwicke Park Gardens, throw considerable light on the question at issue. Mr. Goff, on a piece of open land used as a trial ground, planted in the spring of 1895 three rows each of four varieties of potatoes, namely, Magnum Bonum, Renown, Reading Russet, and Crawley Prize-taker. All the varieties had been grown on the ground the previous year, and the tubers selected on lifting for this special trial. In each case one row was planted with 1 oz. sets, a second with 2 oz. sets, and a third with 3 oz. sets; the numbers in each row were the same, and the general treatment was identical. When all were lifted in September the exact results were: Magnum Bonum, 125 lb. from 1 oz. sets, 149 lb. from 2 oz. sets, and 110 lb. from 3 oz. sets; Renown gave in the same way 113 lb., 131 lb., and 90 lb.; Reading Russet, 84 lb., 137 lb., and 95 lb.; and Crawley Prize-taker, 81 lb., 125 lb., and 101 lb. Thus, in each case, the produce was distinctly in favour of the 2 oz. sets.—*The Gardeners' Magazine; Eng.*

**TURNIP SEED** "may be sown among the potatoes at hilling or last cultivation, and a very large quantity of cattle food be grown almost without cost. I know a prosperous farmer who used to grow hundreds of bushels every year in this way, also in his corn field, and he considered them profitable cow feed. He used to make over 300 pounds of butter per cow, and I never heard of any complaint from dealer or consumer, that the turnips injured the quality of the butter." Very likely hundreds of bushels of turnips were grown in the above fashion, but what sort of state was the land in the following spring? Far better to harvest the potatoes, grub and afterwards plough the land, and let it lie till barley seed-time. The passion for growing two crops at the same time is marvellously dear to the thoughtless farmer. We have even known barley and carrots sown together in Belgium, and, only the other day, we saw, in an American exchange, a proposal to sow oats and rape at the same time on the same piece.

**THE NODULE-FORMING MICROBE.**—What does the following mean? Has the "bubble of the microbe, etc.," really burst? We have seen no account of the theory having been proved to be ill-founded. The extract is from the "Country-Gentleman":

"Fortunately for animal life, oxygen and nitrogen, of which the air is composed, have but a slight chemical attraction for each other. Hence nitric acid is sparingly formed in the air, yet in abundance to supply the small percentage of nitrogen in the albumen, gluten and casein that enters animal life, none of which is found in starch, sugar and cellulose, composing the bulk of vegetable matter. When it is known to science that every fall of rain washes from the air ammonia, nitric acid and carbonic acid, I do not wonder that the bubble of the microbe oxidizing nitrogen through the nodules of certain plants, like many others, has burst."

**CALVES.**—We think that the treatment of calves pursued by Mr. Tremain (evidently a Cornish woman by her name, is excellent, except that we do not approve of rubbing the calf dry," as all rubbing of the wet coat of the calf tends to agglutinate the hair. A far better plan is to put the calf on a thick layer of soft straw and, covering it up with plenty of the same, leave it alone till it is dry. Twelve hours after birth is not too long to wait before feeding. Crushed linseed and skim-milk will do as well as full-milk for everything but a calf intended for the butcher. Nothing but the cow's milk unskimmed will make white veal for the London or Paris market: 96s is worth enough for the milk.

#### RAISING CALVES AT HILL VIEW FARM.

Mrs. Jennie Snyder, butter-maker for Mrs. Tremain at Hill View Farm, Lake George, writes in the Jersey Bulletin: Mrs. Tremain wishes me to inform you of her method of rearing calves up to twelve months. At birth the calf is taken from the cow; she seldom sees it. The calf is at once rubbed perfectly dry, and in winter it is wrapped in clean blankets with warm bricks or water bags put around it. We find that care of the calf from the first moment is of the greatest importance. After four or six hours we feed the calf

the dam's milk from two to four quarts depending upon the condition of the calf and how well it drinks. We never have any trouble in teaching the youngsters to drink, because our motto is patience and kindness. The calf is fed six times daily during the first week, from eight to twelve quarts a day, according to its capacity. (And the Hill View Farm calves generally have plenty of that.)

About the eighth day they are fed four times and this is continued, still giving the whole milk, if we possibly can, for a month. The fifth week we give only three meals; and the skim-milk, then thickened just a little with fine wheat middlings, well cooked. We also give at five weeks, and from then on, a pint of whole oats and a half pint of oil meal each day, divided into morning and evening mess, of wheat bran and a little cut hay, or cured fodder corn—that which has been cut several days at least. We always give a little salt from the calf's first week. Also give long hay or fodder corn leaves from about the second week, and after a few tastes this food is much relished.

One thing we are very careful about: Always feed the milk very warm. And another point of importance: Always have a clean and dry bed for the calf. Then, too, we comb and brush all calves every day. (1) Mrs. Tremain thinks this necessary. She insists that their little coats ought to shine. We separate the helpers from the little bulls at four months always.

The helpers are bred at from twelve to fifteen months, depending upon their condition at the time. When our helpers drop their first calves, we find them nearly always just like old cows at milking, because Mrs. Tremain has them handled and milked from the time they are born. Our helpers at their first milking in make from 10 lb. 8 oz. to 14 lb. 4 oz. of butter, and milk from 23 to 40 lb.—*"Country-Gentleman."*

#### ROTHAMSTED.

##### FEEDING OF ANIMALS

(Continued)

Thus, as compared with either oxen or sheep, the pig offers many advantages as a subject for the consideration of the relations of food and increase, and consequently for that of the source in the food of the fat which he yields. He has a less proportion of alimentary organs and contents, he consumes more food in proportion to his weight, he yields a larger proportion both of total increase and of fat; and finally, much less of his food is effete and voided. The general result is, that changes in his live weight are in a much less proportion influenced by variations in the contents of the alimentary organs, and are, therefore, much truer indications of change in the substance of the body; and hence the range of error in calculating the amount and composition of his increase, in relation to the amount and composition of the food consumed, is much less.

##### THE EXPERIMENTS AT ROTHAMSTED WITH PIGS

In the selection of the experiments with pigs for calculating whether more fat was stored up than could possibly have been derived from the ready-formed fat and the nitrogenous sub-

(1) Their tongues answer the purpose, if they are loose.—Ed.

tance of the food, some have been taken in which the proportion of the nitrogenous to the nonnitrogenous constituents of the food was abnormally high, and others in which it was fairly normal, or even low. In all cases the experiments were conducted for periods of not less than eight or ten weeks, and the amounts, both of total increase and of fat stored up, were so large in proportion both to the original weight of the animal and to the amount of food consumed that the data obtained may safely be relied upon for the settlement of the question at issue.

In the upper portion of Table 70 are recorded some particulars of the nine experiments selected for calculation, namely: The description of the food, the number of animals experimented upon, the duration of the experiment, the original and final live weights, the increase per head and on 100 original weight, the percentage of carcass in fasted live weight, and the amount of crude nonnitrogenous to 1 of crude nitrogenous substance in the food.

The middle division of the table shows for 100 increase in live weight the amount of nitrogenous substance consumed in the food, the amount of it estimated to be stored up in the increase, and the quantity remaining and therefore possibly available for the formation of fat. Next, there is given the estimated amount of fat in the increase, the amount ready formed in the food, and the difference, that is, the amount newly formed. There are then given the amounts of carbon in the estimated newly-formed fat, the amounts in the available nitrogenous substance minus that in the urea formed, supposing the whole of the nitrogen not stored up in increase to contribute to such formation; and lastly, the difference, that is, the amount of carbon available from the nitrogenous substance for the formation of fat more or less than that required for the amount of fat produced.

Then, in the bottom division of the table are shown for 100 of carbon in the estimated produced fat the amount available from the nitrogenous substance, and the amount not available from that source, in each experiment; the amount not so available representing, of course, the proportion required from other sources.

It is hardly necessary to point out that, according to the above mode of illustration, the figures show not only the utmost proportion of the stored-up fat which could possibly have had its source in the nitrogenous substance of the food, but notably more than could possibly have been so derived. Thus, to say nothing of other considerations, it has been assumed, for simplicity of illustration, and for the sake of argument, that the whole of the nitrogenous substance of the food not stored up as increase would be perfectly digested and be available for fat formation, and that, in the breaking up of the nitrogenous substance for the formation of fat, no other carbon compounds than fat and urea would be produced; and, lastly, that the whole of the ready-formed fatty matter of the food has contributed to the fat stored up. It is obvious, however, that these assumptions are in part improbable and in part quite inadmissible, while the tendency of the error is, in each case, to show too large a proportion of the stored-up fat to have been possibly derived from the ready-formed fat and the nitrogenous constituents of the food.

It is obvious, therefore, that where

TABLE 70.—Relation of the total fat in the increase to the ready-formed fatty matter in the food, and of the carbon in the fat produced within the body to that in the nitrogenous substance consumed, in experiments with fattening pigs.

Experiments.....	1.	2.	3.	4.	5.	6.	7.	8.	9.
	Bean meal, lentil meal, and bran, each 1 part; barley meal, 3 parts.	Bean meal, lentil meal, bran, and maize meal, each, ad libitum.	Mixture (equal parts) bran and lentil meal, ad libitum.	Maize meal ad libitum.	Barley meal, ad libitum.	3 pounds 3 ounces lentil meal and 9 ounces bran per head per day, and—			Lentil meal, bran, sugar and starch, each ad libitum.
<i>Conditions and actual results of experiments.</i>						Sugar ad libitum.	Starch, ad libitum.	Sugar and starch, each ad libitum.	
Number of animals.....	1	3	3	3	3	3	3	3	3
Duration of experiment, weeks.....	10	8	8	8	8	10	10	10	10
Original live weight per head..... pounds.	103	143	147	144	149	95	95	94	97
Final live weight per head, pounds.....	191	228	248	217	246	178	178	181	201
Increase in live weight per head..... pounds.	88	85	101	73	97	83	83	90	104
Increase on 100 original weight.....	85.4	59.7	68.9	51.3	64.9	86.4	87	96.8	106.8
Per cent carcass in live weight.....	82.8	83.9	81.9	85.4	.....	83.1	80.1	81.7	80.8
Nonnitrogenous substance to 1 of nitrogenous substance in food (crude)...	3.6	3.3	2	6.6	6	4.1	4.1	4.7	3.9
<i>Per 100 increase in live weight.</i>									
Nitrogenous substance:									
In food.....	100	107	138	57	61	81	81	74	82
In increase.....	7.8	6.1	6.7	5.3	6.5	7.4	7.6	8	8.2
Available for fat formation.	92.2	100.9	131.3	51.7	57.5	73.5	73.4	66	73.8
Fat:									
In increase.....	63.1	73.9	69.6	79	71.2	61.1	63.9	61	59.9
In food.....	15.1	20.4	11.2	26.3	12.4	7.9	7.5	7.3	6.6
Newly formed.....	47.5	53.5	58.4	52.7	58.8	56.2	56	54.7	53.3
Carbon:									
In newly-formed fat...	36.6	41.2	45	40.6	45.3	43.3	43.1	42.1	41
In available nitrogenous substance minus urea.	44	48.1	65.6	24.7	27.4	35.1	35	31.5	35.2
More (+) or less (-) in nitrogenous substance than required.....	+7.4	+6.9	+17.6	-15.9	-17.9	-8.2	-8.1	-10.6	-5.8
<i>Per 100 carbon in estimated newly formed fat.</i>									
Carbon:									
In available nitrogenous substance minus urea.....	120.2	116.7	139.1	60.5	60.5	81.1	81.1	74.8	85.9
Not available from nitrogenous substance.....	.....	.....	.....	39.2	39.5	18.9	18.8	25.2	14.1

the figures show an excess of carbon available from nitrogenous substance over that which would be required if the produced fat had been formed from it, the excess is over estimated, and, on the other hand, that where they show a deficiency of nitrogenous substance for such formation, the deficiency is under-estimated; so that, in fact, the amount of fat required to be derived from other sources would be greater than the figures indicate. Indeed, according to the mode of calculation adopted, 100 of nitrogenous substance would yield 62 parts of fat, but it has been fully admitted in subsequent discussions that at most 51.4 parts of fat could possibly be derived from 100 parts of proteid substance, and more recently a much lower figure has been adopted.

After these general remarks we may now turn to the consideration of the results of the different experiments.

In experiment 1, two pigs of the same litter, of almost exactly equal weight,

and, as far as could be judged, of similar character, were selected. One was killed at once, and the amount of total dry or solid matter of nitrogenous substance, of fat, and of mineral matter, determined in it. The other was then fed for a period of ten weeks on a mixture consisting of bean meal, lentil meal, and bran, each 1 part, and barley meal 3 parts, given ad libitum. It was then weighed, killed, and its composition determined as in the case of the other animal. In fact, the object of the experiment was to determine the composition of a "store" and of a "fat" pig, and to estimate the composition of its increase while fattening; and the data thus provided have formed the basis of the estimate of the fat in the increase, not only in the case of experiment 1, to which they directly apply, but in that of each of the other eight experiments, the results relating to which are recorded in the table. On this point it may be observed that, taking into consideration

the weight and condition of the animals at the commencement, the character of the foods, the length of the fattening period, the proportion of increase upon the original live weight, and the final condition of the animals, it may perhaps be concluded that the tendency of error in the calculations would be to give the proportion of fat in the increase somewhat too high in experiments 2 and 3, and somewhat too low in experiments 6, 7, 8, and 9. In experiments 4 and 5, however, the animals were the fattest in the series; and it will be seen further on that the high estimates of fat in the increase in their case are probably not too high—indeed, in experiment 5, even somewhat too low.

It might be supposed that—at any rate in the case of experiment 1—the results would be admirably adapted for our present purpose. But that experiment was made in 1850. That is nearly forty-five years ago, and before we had acquired sufficient evidence against the view then prevailing, namely, that the increase of the fattening animal was largely dependant on the richness of the food in nitrogenous constituents, and everybody having experience in the fattening of pigs will admit that in this case the food was much more highly nitrogenous than is recognized as most favorable for the fattening of the animal. In fact, it is seen that the proportion of the crude nonnitrogenous to 1 of crude nitrogenous substance in the food was only 3.6 instead of about 6 as in barley meal. There was, therefore, an excess of nitrogenous substance consumed.

Referring to the middle division of the table, the calculated results show that, for 100 increase in live weight 100 of nitrogenous substance was consumed in the food. Of this it is estimated that only 7.8 parts were stored up in the increase, leaving 92.2 parts available for the possible formation of fat.

It is next seen that the 100 of increase was estimated to contain 63.1 parts of fat, while the food supplied only 15.6 parts, leaving, therefore, at least 47.5 parts to be produced within the body. The figures show that this would require 36.6 parts of carbon, while 44 parts are estimated to have been available from the nitrogenous substance of the food; leaving, therefore, according to the mode of calculation adopted, 7.4 parts more carbon available than were required for the formation of the fat, for 100 carbon in the estimated newly-formed fat, 120.2 parts were available from the nitrogenous substance consumed in the food.

(To be continued)

Orchard and Garden.

HORTICULTURE at the CENTRAL EXPERIMENTAL FARM,

Orchards—Raspberries—Pears—Apples—Protected plants.

The Report of the Horticulturist of the Central Farm, Mr. John Craig, has been received. This is included in the Annual Report of the Farms, but a limited number of copies are struck off separately for the special use of the author.

The Report makes an interesting illustrated pamphlet of 60 pages. All the subjects treated and experiments tried are of practical importance to

farmers and fruit growers. A leading article is devoted to apple culture. The following remarks upon the care of the orchard might be advantageously considered at the present time.

**CARE OF THE ORCHARD.**—The orchard should be cultivated continuously at least six or eight years after planting the trees. The practice of sowing grain in the young orchard is an injurious one. All cereals draw heavily upon the moisture of the soil at the same time as the trees are making their annual growth, and consequently act as a serious check upon the latter. When apple trees are planted, they should be regarded as the crop, and they alone ought to have possession of the soil which they occupy. When, owing to pressure of circumstances, it is found necessary to grow grain crops in the orchard—as has been the case at the Central Farm—strips, five or six feet wide, should be left on each side of the tree-rows for the passage of the cultivator. This is a good plan to follow at all times without reference to the crop cultivated, whether it be roots or cereals. The best crop is one which needs cultivation during the early part of the season, and is removed about the middle of July or the first of August. Early potatoes will be found to fill these requirements, but other hoed crops, such as corn, beans or early vegetables, may also be grown satisfactorily. Clean culture is at all times desirable and will always pay. Weeds and rubbish attract and afford shelter for mice and insects. Cultivation should be clean and thorough each year, but should not be continued throughout the summer. In this vicinity, the annual growth takes place previous to July first. After that period, the function of the leaves is to elaborate the nourishment drawn from the soil and the air. This material is stored in the buds and young wood tissue, and the process goes on to, or approaching the period of the fall of the leaves. Everything that the cultivator can do to facilitate this process should be done. Cultivation of the soil tends to render available, for the use of plants, the food stored up in it. This is why stirring the soil frequently, so materially assists the growth of such plants as corn and cabbage. Cultivation, therefore, promotes and encourages growth. In order for trees in cold climates to successfully withstand the frost, the wood must be in a well-ripened condition, that is, the liquids or partial liquids must have changed to solids, such as starch and its allied forms, in order to assist growth the following spring. The best rule, therefore, is to cease cultivating about the middle of July or the first of August. If the orchard is then seeded with Mammoth clover, Lucerne or some other legume, a fair growth will be obtained the same season, which will act as a cover to the soil in addition to keeping down weeds. This may be ploughed under early the following spring. Buckwheat is occasionally sown, but is rather objectionable on account of the seed resting in the ground (1) After six or seven years of cultivation it may be found convenient, and it is also a good plan, to seed down to clover. Some pear growers follow the practice of allowing the clover to lie on the ground after cutting it. This acts as a manurial mulch and saves to the soil all the extracted plant food in addition to the nitrogen collected by the clover roots (see chapters on

soil in the Chemist's report for 1893-4 5). The practice which many farmers follow of taking a crop of hay from the orchard land each year is not a good one, and should not be encouraged. In every instance, as before stated, it should be remembered that the trees are a sufficient crop and that any other crop that may be grown should be especially provided for by extra manuring. Manuring and cultivation will always pay. Early mistakes in the management of an orchard are not easily remedied.

**YIELD OF RASPBERRIES AT OTTAWA, 1895.**

Some interesting results were obtained from the treatment of the rows in different ways during the year. Of the following 17 varieties of red raspberries, each is made up of two rows of plants 165 feet in length. As soon as the fruit was harvested in 1894, one row which had previously been cut back or summer pruned, had the old wood taken out in addition to some top pruning which took place at the same time. The other row was untouched. In the autumn, half of each row was laid on the ground, having only sufficient soil laid upon the ends of the canes to hold them down. Records are submitted of the yield obtained from each row together with the relative amount of injury sustained during winter. It will be seen that the estimated yield per acre for these varieties averages higher than those in the next table, not so treated.

	Length of row in feet.	Protected.		Un-protected.		Date of first picking.	Date of last picking.	Yield of pruned row.	Yield of unpruned row.	Total yield in boxes.	Estimated yield in boxes per acre.
		Pruned scale of injury.	Unpruned scale of injury.	Pruned scale of injury.	Unpruned scale of injury.						
		1-10	1-10	1-10	1-10						
Heebner.....	330	10	10	7	7	July 8	Aug 5	90 1/2	96 1/2	187	3,527
Springfield ..	330	10	10	8	8	June 26	do	132 1/2	49 1/2	83 1/2	1,550
Royal Church.....	330	9	9	7	7	July 8	do	83 1/2	37 1/2	69 1/2	1,262
Carman.....	330	10	10	9	9	June 26	do	82 1/2	5 1/2	67 1/2	1,268
Thompson's E'y Prolific ..	330	10	10	8	9	do	26	29 3/4	68 1/2	10 1/2	1,975
Herstine.....	330	10	10	8	8	July 8	Aug. 8	83 1/2	49 1/2	82	1,546
Parnell.....	330	10	10	7	7	do	4	132 1/2	37 1/2	70 1/2	1,329
Golden Queen.....	330	9	9	6	6	do	6	81 1/2	59 1/2	100 1/2	1,889
Reeder.....	330	10	10	5	5	do	8	81 1/2	16 1/2	36	679
Brandywine.....	330	10	10	7	7	do	4	84 1/2	61	107 1/2	2,022
Niagara.....	330	9	10	7	8	do	2	82 1/2	46 1/2	78 1/2	1,480
Marlboro.....	330	10	10	6	7	do	2	29 3/4	27	56 1/2	917
Hansell.....	330	9	9	7	7	June 26	do	23 1/2	57	78 1/2	1,380
Clark.....	330	8	9	7	8	July 4	do	29 20 1/2	37 1/2	58	1,093
Cuthbert.....	330	10	9	6	8	do	13	83 1/2	70 1/2	105 1/2	1,989
Turaer.....	330	8	9	6	8	do	2	123 1/2	50 1/2	73 1/2	1,390
Caroline.....	330	10	10	7	7	do	8	87 1/2	61 1/2	111 1/2	2,108

It will be seen (1) that the protected plants came through the winter in nearly every instance without injury 10 representing immunity; the descending scale indicating increased injury; (2) the yields from the pruned and unpruned rows show a balance in favour of the latter in almost every instance. This may seem contrary to what might have been expected, but is exactly in accordance with the actual returns.

Report of Horticulturist, Central Experimental Farm, Ottawa, 1895

**Household-Matters.**

**BICYCLING.**—Just at present, bicycling seems to have taken hold of every-body, and to lookers on it does seem a very pleasant way of spending a spare hour.

Undoubtedly this exercise taken in moderation might prove very beneficial to some, I have heard lately of its doing much good to a sufferer from indigestion. If it does this what a boon it will be to these sufferers who count by hundreds in these days.

It cannot be that all ride because it is the fashion, there must be some people who cycle for the exhilarating exercise or that it really does them good.

A person in low spirits must soon forget the same, for every attention must be given to the careful guidance of the machine to keep out of harm's way. To feel oneself flying through the streets and lanes with so little trouble, the thrill of delight at the freedom of doing so, must raise the spirits and make them say, at least for the time being, begone dull care.

So I think one might fairly hope that the bicycle will prove a help to the workers, and a health giving exercise to many a weary and overtaxed mind.

**REST SOMETIMES.**—There are so many overworked women in the world who if told they must rest say, I have no time for it and so go on till they work themselves into a state of nervous debility, when they are obliged to give up entirely to what nature demands and take a forced rest.

It is unfortunately too often the case that many women cannot rest in their own homes. Their brains are always thinking about what should be going on; always fretting and working because things do not run smoothly.

to do this every effort must be made to induce it.

There is no doubt, every person ought to have a bed to themselves, for why should a good sleeper be disturbed by a restless spirit who cannot.

Especially is this the case with children, one sleeps well, but is constantly being disturbed by the other.

A little girl told me she could not rest well at night, owing to the restlessness of her sister, these children ought decidedly to sleep separately.

To insure good rest, children should be made to take a good wash, not forgetting the feet, and never go to bed hungry or thirsty, after this mothers might get what they need, a good undisturbed night's rest for themselves.

**MILK DIET IN TYPHOID.**—Dr Costa thinks the exclusive milk diet is a source of mischief rather than good, and recommends three parts of milk, alternated with one of both. He, however, evidently does not recognize the fact that the latter has scarcely any value, the little extract of meat it contains acting solely as a stimulant, and, moreover, with a great tendency to cause flatulence. It has on several occasions been pointed out that whenever curd can be seen in the motions, too much milk is being given, and it may indicate that it is not being digested at all. It is best replaced by white of egg beaten up, and largely diluted with water; in this way can be introduced any requisite amount of real food, and in the blandest and most readily digestible form; it leaves no solid residue and can cause neither diarrhoea nor gaseous distention.

**QUINCE JELLY.**—Take the parings and hard parts round the cores, of half a peck of orange quinces, after cutting the best portions, cover them with cold water and boil slowly several hours; add more water, if needed to keep them covered. Turn into a flannel bag, and let them drip all night. In the morning, boil the juice 20 minutes, and skim well, then strain it again through a very fine flannel. Measure the juice, and add to it three-fourths as much granulated sugar; put it on to boil again, and boil until it jellies on the edge, or when turned on to a cold plate. Then skim again and turn into glasses.

**TOMATO FRITTERS.**—One quart can tomatoes, 1 tablespoon butter, 1 tablespoon flour, 1 teaspoon salt, 1 teaspoon sugar, 1 teaspoon pepper, 2 eggs, 1 pint sifted crumbs.. Cook the tomatoes 10 minutes, add the sugar, make a sauce of butter, flour, salt and pepper. Beat the eggs and stir in, but do not cook. Strain into a nappy. (1) Cut 8 slices of bread 1/2 inch thick and lay on a platter with half the sauce in it first and pour the other half on. Soak a half hour, cover the slices with crumbs and fry in a wire basket.—"Cooking School."

**CREAM OF BARLEY.**—Wash 1/2 lb barley in successive waters, rubbing it between the hands until the water runs off clear. Par-boil and drain and put in to a saucepan with a quart of weak veal broth; simmer four hours; return to a saucepan and add one quart of boiling milk and a tablespoonful of butter, with seasonings to taste. This soup is delightfully changed by the addition of

(1) And the shed seed, too, keeps coming up and spoils the sample of succeeding grain-crops.—Ed.

(1) Alas! We can barely get six hours sleep 1—Ed.

any cooked vegetables cut in dice or several kinds in equal proportions.

**BROILED OYSTERS.**—Broiled oysters on toast are a luxury. Drain three dozen oysters on cloth; season with salt and pepper and drop in hot melted butter in a large, flat frying pan; take out after a moment; range on a hot, buttered, double gridiron, and broil lightly on both sides over a moderate fire; lay them on thin toast and pour the butter from the frying pan over them.

**TAKE CARE OF THE EYES; FOREIGN PARTICLES IN THE EYE.**—As the summer is the season of travel, and accidents to the eye are apt to occur from dust and cinders, a simple remedy for removing foreign particles from the eye will be found useful. Ger- lists are not always procurable in small places, so it is well for the tourist to provide against accidents. A small package of flaxseed will be found useful. If cinders or dust render the eye painful, place a flaxseed under the lip of the eye and close it; the mucus which exudes from the seed alleviates the irritation, and the objectionable particle is apt to attach itself to the gelatinous seed, so that when it is removed the cinder or particles of dust are also removed.

**WORTH REMEMBERING, FISHBONES IN THE THROAT.**—With children in the house it is especially necessary to know how to remove fishbones or anything else that has lodged in the throat. The white of an egg will do this.

**EGG SCISSORS.**—Egg scissors have come. They take off the top of the breakfast soft-boiled egg with neatness and dispatch, making the rest of it easy of access with the small egg-spoon.

**HARD FOODS ARE HEALTHFUL.**—Habitually eating soft foods, even soft bread, to the exclusion of everything that is hard or crusty, is not only weakening to the digestive organs, but it leads to rapid decay of the teeth. When these foods are not used in the mastication of harder foods the teeth become covered with tartar, and sometimes loosen in their sockets, or the gums will bleed.

**VIRTUES OF THE APPLE.**—The apple is such a common fruit that very few persons are familiar with its remarkably efficacious medicinal properties. Everybody ought to know that the very best thing they can do is to eat apples just before retiring for the night. Persons uninitiated in the mysteries of the fruit are liable to throw up their hands in horror at the vision of dyspepsia which such a suggestion may summon up; but no harm can come to even a delicate system by the eating of ripe and juicy apples just before going to bed. The apple is excellent brain food, because it has more phosphoric acid in easily digested shape than other fruits. It excites the action of the liver, promotes sound and healthy sleep, and thoroughly disinfects the mouth. This is not all. The apple helps the kidney secretions and prevents calculus growths, while it obviates indigestion and is one of the best-known preventives of disease of

the throat. Everybody should be familiar with such knowledge.—Dr. G. R. Searles in Detroit Bulletin of Pharmacy.

### INTENSIVE CULTIVATION.

(Part of this appeared in the April No.)

In these days of rush and eagerness to make things pay, it would not be out of place to give a few figures of what was produced on 1 acre of land in 1895. This land was bought in 1875, there were a few trees (fruit) on it when bought, 1 St. Lawrence and 6 or 7 fumeuses, these are still bearing well, there were over 4 brls of apples on each of them last year, of choice fruit. The whole piece of land was set out with apple trees about 18 feet apart (this is rather near together) mostly of two varieties wealthy and fameuses. Some old ones have had to be replaced occasionally. They are now bearing well for we gathered 80 brls of apples which sold on an average at \$2.50 per brl \$200.00; \$53 worth of gooseberries, \$9 raspberries, besides 300 lbs of grapes, over 20 gals of currants, (red and black) these are worth 40cts per gal, 50 small baskets of strawberries, 40 bush. of mangel wurtzel, 25 bush. potatoes, over 1 ton of hay, 1 ton corn fodder, besides, beets, onions, melons, cucumbers, parsley, celery, and other vegetables for the house. Many people will hardly credit the above statement when they are informed that this is only an ordinary crop. Some years much better results have been obtained in some of the crops. There has not been one dollar's worth of barn-yard manure or other fertilizer bought, except perhaps a few bags of land plaster during the 20 years. How is the fertility of the soil kept up? We have one cow all the time and a pig perhaps during about 7 months per year.

The cow is kept in the stable at night during the summer, bedded with cut straw, and a little ashes or land plaster dusted on the floor. In the morning there is a good barrowful of manure, this is applied to one tree with the chamber lye from a family of ten. During the summer, our apple-trees are all manured about once a week. The pig is also cleaned out and this manure too is applied to the trees. The manure made from the cow during winter is used for the vegetables and small fruits. We have also about 20 hens whose manure is saved. The coal ashes are always put under the hens, where the droppings fall, and cleaned out every day, the chamber lye is always put on the manure during the winter. In summer, the water that is used in washing, the soap suds, is always applied. We have a compost heap where all weeds that grow to any size are kept with wood ashes and a little lime. In this way there is no manurial matter lost. It is attention to the little things that counts. Once, it was noticed in an "Agricultural Journal" where sun flowers were recommended as a preventative for grasshoppers and potato beetle, a row was planted all around the acre about 15 inches apart, and such sunflowers as they were. The seeds were fed to the hens, while the stalks were used as kindling wood. The manure is kept under cover, not allowed to waste. I suppose the greatest waste in the farms is in the manure pile.

I may state the apples trees were sprayed 4 times.

PETER MACFARLANE.  
Chateaugay, 10 Feb. 1896.

### The Horse.

#### SHOEING HORSES PROPERLY.

In view of recent discussions of this subject in the "Country Gentleman," readers may be interested in the following summary of a pamphlet just issued by Lieut.-Gen. Sir F. Fitzwygram, and reviewed by the London Farmer:

##### FIRST PREPARATIONS

1. Before removing the old shoe, each clench should be carefully and fully rasped.
2. The crust or wall is not to be rasped.
3. The sole is not to be pared out.
4. The frog, if healthy, is not to be pared, or even trimmed.
5. The bars are not to be cut away.
6. The seat of corn is not to be pared out.
7. The crust or wall is to be lowered as much as may represent what would be worn away if the feet were not shod. Remember that there is a greater growth of horn at the toe than in other parts of the foot. Therefore more will require to be taken off at the toe than elsewhere. Therefore shorten the toe. Especial care must also be taken that the feet are made the same length.

##### RASPING THE SURFACE LEVEL

8. When the crust has been lowered all round, then make the ground surface quite level all round with the rasp.
9. To ascertain whether the surface is level, the shoe may be applied sufficiently warm to mark any inequalities, but not hotter than is necessary for this purpose.
10. When the surface has been made level, take off the sharp edge of the crust with the rasp—in other words, blunt it. This is necessary to prevent its splitting.
11. All shoes should be flat to the sole, not seated-out.

For riding and light draft horses, make a shoe to fit the foot, neither longer nor smaller, nor larger than the crust, except at the heels, where it may be not more than one-eighth inch wider than the crust.

For heavy draft horses in towns where the streets are paved, it is found necessary to make the shoes wider and longer at the heels than the crust. Unless this assistance is given, the horse cannot get a firm hold, and therefore he will be liable to slip and roll, and soon become lame.

For heavy draft horses, employed on farms, &c., it is necessary to shoe at the heels according to the nature of the ground and the work to be done. On deep plowed lands it is found advantageous to make the shoes longer and wider at the heels, in order to prevent the feet from sinking deep into the ground.

##### "DUMPING"

12. It is the common practice of incompetent and careless shoers to put on a shoe smaller than the crust, and then in order to make an apparent fit, to rasp the outside of the crust. This hurtful practice produces two evils—First, the outer and strongest horn fibres are destroyed, and, second, the gluey superficial layer which covers the outside of the crust is destroyed, and then the natural moisture of the horn, which is essential to toughness escapes, and the horn itself becomes brittle and unsound. This and "dump-

ing" are the very greatest causes of brittle and broken feet.

13. The width of the shoe should vary according to the breed of the horse. For light horses,  $\frac{3}{4}$ -inch is sufficient if the shoe really fits and the crust is sound. One inch is the width in common use. For heavy horses the width must be increased to  $1\frac{1}{2}$  or 2 inches. Flat feet require wider shoes, "i. e.," more cover than natural and upright feet.

##### WEIGHT OF SHOES

14. For light horses, 14 to 16 oz. will, in general, be sufficient. But some horses wear their shoes more than others; and, again, the material used on the roads makes a difference, often a great difference, and much will also depend on the amount of work. For heavy horses,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  lb., or even more, is common.

15. "Duration of shoes".—One month is a fair average time, but the amount of work, and material used on the roads, affect the wear.

16. "Removal of Shoes".—Whether shoes are worn out or not worn out, they should be removed at the end of a month and refitted. The growth of the horn renders this necessary.

17. Countersunk shoes are better than fullered, as they are stronger, and the nails get a better hold.

18. Countersunk nails should be used. They get a better hold than rose-headed nails. Nail-heads should not project below the shoe, as friction with the ground will soon wear off the heads, and then the nails lose their holding power.

##### NAILING

19. For nag and carriage horses, with fairly good feet, the nails should be brought out about one inch on the crust. If the feet are all flat, they should be brought out somewhat lower. For cart horses, whose feet are larger and generally flatter than in better bred horses, one inch would be a fair average height. But regard must be had to the state of the feet. Nails get a better hold when high, but as serious evils result from too high nailing, it is safe to err on the side of too low rather than too high.

20. Five or six nails are sufficient for light horses. Seven or eight, and sometimes more, are used for heavy horses.

21. The front nail on each side should be in the anterior portion of the quarter, and the remaining nails should evenly divide the distance to the heels. Nails at the toe are not of much use, as the leverage at the toe often breaks them, and, further, the wear at the toe wears off their heads, and they become useless.

##### CALKINS FOR HEAVY DRAFT HORSES

22. In London calkins are not generally used. In Manchester, Liverpool, Dublin, and many other large towns, where the streets are paved with granite blocks calkins are used both on the inside and outside heel; and in some towns toe pieces also are in use.

If one calkin only is used on the outside heel, the inside heel of the shoe should be raised to the same height. This is necessary in order to give a level bearing to the tread. Calkins have the disadvantage of raising the frog above the ground, and thereby preventing its development. The frog if large and sound, is nature's stay against slipping.

23. Clenches should not be rasped after being turned down. They should be carefully flattened by the hammer.



Any filling lessens their power of holding.

24. If the crust is sound, and if the fitting of the shoe is accurate, and the nailing is good, toe clips on the fore feet are not absolutely necessary. If clips are used, the crust should not be pared out more than the depth of one-eighth of an inch to receive the clip.

On the hind feet, two clips, one on each side, are generally needed to strengthen the hold of the nails. Toe clips are commonly used on the feet of heavy horses; but in the case of riding or harness horses doing fast work, they would be apt to cause overreaches. For horses that kick against the stall posts, quarter clips are necessary.

**KEEP THEM GROWING**—Foals should be taught to eat oats and a few other nourishing foods at an early age. This will enable them to maintain their condition, and go on improving, when they lose their first natural nutriment—their dam's milk—at weaning time, later on in the year. Otherwise, a great falling off will be found at an important crisis in their life. A severe check of strength and growth at weaning time is seldom perfectly compensated by any amount of good treatment afterwards. It is essential that steady progress should be maintained from the day of birth until maturity to perfect a horse to the extent of his powers of development. The making of a horse greatly depends upon careful nursing in the earlier periods of his existence. Nutritious food and comfortable shelter from extremes of heat and of wet weather are essential to young foals.—London Live-Stock Journal.

### CANADIAN HORSES FOR THE BRITISH MARKET.

By the Secretary of the American Clydesdale Association.

Heavy draught-carriage horses—Runners—Colours—Hunters.

To the Editor "Farmer's Advocate":

SIR,—The continued and rapid growth of the export trade in horses during the last few years leads us to enquire what kinds are likely to pay the Canadian or American farmer best if he means to cater for a share of that foreign trade in future. A recent visit to the other side enabled the writer to make some personal enquiries on the subject, the general replies being: "Send us all the good horses you choose, either for draft or carriage or road purposes, with plenty bone, size, and quality, and the more action they have the better price you can always get for them. Your poorly-shaped horses, whether trotting-bred or otherwise, with fiddle heads, ewe necks, spindle shanks, or curby hocks, we don't want at all." I asked the various uses to which imported horses were being put, and was told that a few, but only a few, of the very heaviest are fitted for dray or lorry work in the large cities; the bulk of the Canadian draft horses are either used in light lorries or vans, and many are sent into the country, being well suited for light farm work. A good many so-called carriage horses, but really misfits, also become "vanners" when they land. Others find their way into busses, tramway carts, cabs, and hansoms, while an occasional pair is picked up for gentlemen's carriage horses, and command really good prices. It will thus be seen that Canadian and American horses, being of infinite variety, are put to all manner of uses, and the horses which bring the best

prices abroad are also the highest priced ones at home—the most difficult to produce, and therefore the scarcest. I refer to carriage horses and heavy drafters. Those two kinds—perfectly distinct from each other—are the only kinds that the average Canadian farmer can hope to realize a substantial profit from, and the misfits of both kinds will still sell at a fairly remunerative figure for ordinary purposes. As to carriage horses, there really seems no royal road to their production. They are occasionally bred in all manner of ways, and the most careful, intelligent and skillful breeders are often entirely at sea in their efforts to attain success in this line.

Many requisites are essential, but perhaps the chief ones in a 16-hand horse are style, quality, and action, while in the 15 to 15.2 horse it is like Demosthenes' three rules of oratory: "Action, action, action." Yes, strange as it may seem, lofty, straight, all-round action will count about 90 per cent. of the whole. Color used to cut a good deal of a figure, but not so much now, although chestnuts, bays, and browns are preferred generally, and if accompanied by attractive white stockings all the better. (1) The main criticisms lodged at our horses are lack of strength and stamina. Of course the British wagons and vehicles of all kinds are much heavier than with us, and consequently more strength is required in the horse so that the load may be drawn easily, without the straining and tugging incidental to a light horse struggling with a heavy load.

I was also surprised to learn, on the authority of Prof. McCall, of the Glasgow Veterinary College—than whom none is in a better position to judge—that the Canadian horses used in Glasgow do not, as a rule, hold out or wear as well as the Scotchbred horse of the same grade. Notwithstanding that the legs and feet of those Canadian horses when brought across are generally excellent, for some reason or other, unknown, they don't stand the tear and wear as they ought, but seem to "play out" altogether too soon. The only explanation I can offer for this, in addition to change of climate, is the fact that frequently young, green horses are taken across and put into heavy, constant work in the city right away. These horses cannot be acclimatized and are in no sense fitted for such work until they are at least a year in the country. The same rule applies to European horses brought to this country, and it is unfair to condemn American and Canadian horses as "soft," when they are not really getting a fair chance to show their mettle. It is needless to state that any green, unseasoned horse will give way when placed in heavy work alongside one whose bones and muscles are already hard and tough as whalebone. The increasing tendency of our farmers to market their stock "early," especially in hard times, has thrown a great many four-year-old horses on the market, many of them being passed off as a year older than they are, and all users of horses know by experience that at this age they are in no condition for hard work, either on farm or in the city.

In a country where sport has such a hold upon the people as it has always had in England, with the facilities for

(1) The old rhyme used to run: One white leg, keep to his end; Two white legs, sell him to a friend; Three white legs, sell him when you may; Four white legs, keep him not a day." Ed.

fox-hunting unequalled, it is not surprising that the demand and the price obtainable for good hunting horses should encourage farmers to use Thoroughbred sires freely. In recent years, however, Canadian-bred hunters have entered the field, and in many cases are able to hold their own alongside the best English or Irish productions, and there seems no reason why the export trade in hunters should not greatly increase in the near future. The great essential to the successful breeding of weight-carrying hunters is the use of only the most superior Thoroughbred sires, whose strength, stamina, and absolute soundness are beyond dispute. Given a supply of half and three-quarters bred mares of substance, such as I think there are in many parts of Canada, and if mated with large, sound Thoroughbred sires, I cannot see why the produce should not equal the British-bred hunter in every respect, and he can certainly be raised cheaper. The breeder of hunters must, above all things, avoid "weediness" and unsoundness in every form, however, and no greater mistake can be made than to sacrifice soundness, strength or stamina for excessive speed, or any or all of the other excellences combined. A hunting horse without wind or without the necessary strength to carry his rider day after day, if necessary, is scarcely worthy of the name; and if he belongs to the "weedy" order, is really of little use for any purpose whatever. On the other hand, if he happens to be somewhat short of quality or scarcely equal to his jumps, he will still fit in as a cavalry remount, at £40 or thereabout; while if he turns out a successful hunter, four or five times this price may eventually be got for him. True, there are many misfits, but by keeping up the weight those misfits are quite serviceable at remunerative if not extravagant figures. Although Ireland has always been in the forefront in hunter breeding, it is generally admitted that the Irish horses are by no means equal to what they were 30 years ago, and one noticeable feature at all the principal English and Irish shows is the enormous proportion of light or middle weight hunters to heavy weight-carriers—12 to 13 stone hunters being in far greater numbers and of less value than 15-stone horses. For this reason, if for no other, it is highly essential that size and strength be kept prominently in view by the Canadian hunter breeder. That both the demand from England and the price for the first-class finished article will keep up for many years to come there is no reasonable doubt whatever.

To the Canadian or American farmer who wishes to raise horses suitable for the foreign market, the same advice is applicable as for the home market. Try to raise them just as good as you possibly can; use the best sires you can find, almost regardless of service fee; feed your colts generously, but give plenty of exercise; handle and break them carefully but thoroughly; if for draft purposes, do not overlook the necessity of having them heavy; and for any purpose, try to raise only such as are absolutely sound in wind and limb.

ALEX. GALBRAITH.

### PROVINCIAL EXPOSITION MONTREAL.

Will open on date arranged. The buildings destroyed by the fire of July 20th will be replaced, and the management are confident of an Exhibition equal if not surpassing those of previous years.

### COMPOSITION OF ANIMALS.

Investigations at Rothamsted bring out the fact that the entire bodies, even of lean animals, may contain more fat than nitrogenous compounds, while those of fattened animals may contain several times as much. That of the fat ox contained more than twice as much, that of the moderately fat sheep nearly three times, of the very fat sheep more than four times, and of the moderately fattened pig about four times as much fat as nitrogenous substance.

Further calculations go to show that the increase in fattening oxen contains seldom more than 7 to 8 per cent. of nitrogenous substance, and seldom less than 60, and generally nearly 65 per cent. of fat. In the case of oxen fattened very young, the increase may contain about 10 per cent. nitrogenous substance and 50 per cent. fat. With sheep the increase usually contains less nitrogenous substance than with oxen, and about 70 per cent. of fat. The increase of pigs contains 6.5 to 7.5 per cent. of nitrogenous substance and 65 to 70 per cent. of fat. In the latter part of the period of fattening sheep and pigs the increase contains less nitrogen and more fat.—"Farming."

### SOURCES IN THE FOOD OF THE FAT PRODUCED IN THE ANIMAL BODY.

Experiments conducted at Rothamsted upon between four hundred and five hundred animals showed that much more fat was formed than could be accounted for by the fat in the food; and it was believed to be established beyond doubt that much, if not the whole, of the fat formed in the bodies of the herbivora fed for the production of meat was derived from the carbohydrates of the food.

In fact, the experimentally determined relation of the non-nitrogenous and of the nitrogenous constituents of the food, respectively, to the amount of increase produced; the composition of fattening increase generally; the relatively greater tendency to grow in frame and to form flesh with highly nitrogenous food; the greater tendency to form fat with food comparatively rich in non-nitrogenous substances, and especially in carbohydrates; and common experience in feeding—all pointed in the same direction."

"Farming."

### Special Notices.

The Toronto Industrial Exhibition, now known as CANADA'S GREAT FAIR, is an occurrence to which almost every Canadian looks forward with pleasurable anticipation, as it is made the occasion for their annual holiday outing. It is to be held this year from the 31st August to the 12th of September, and as the live stock exhibitors and various associations have agreed to have their stock on the grounds from Thursday, the 3rd September, till the close of the Fair, the first week will now be as good as the second. We have received a copy of the Prize List, which is unusually well gotten up. Any one desiring a copy can obtain one by dropping a post card to Mr. H. J. Hill, the Manager, Toronto. A great programme of interesting attractions is promised. Applications for space should be made early. The Prize Lists for our own Montreal Fair are also ready and prompt application should be made for copies, or to secure space. See advertisement, first page.

When the scalp is atrophied, or shiny-bald, no preparation will restore the hair; in all other cases, Hall's Hair Renewer will start a growth.

Ayer's Ague Cure is a vegetable product, and is a never failing remedy for all malarial diseases. Warranted.

**FOR SALE—AYRSHIRE CATTLE.**  
Two choice 1 year old Bulls. Young bulls and heifers, Yorkshire pigs and Cotswold sheep, for sale cheap.  
I guarantee full satisfaction.  
J. L. G. GIROUARD,  
St. Victoire, Richelieu Co.