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THE

JOURNAL OF AGRICULTURE

AND HORTICULTURE

VOL. 3. No. 10

This Journal replaces the former "Journal of Agriculture, and is delivered free to all members of Farmers' Clubs.

NOVEMBER 15th, 1899

THE
Journal of Agriculture and Horticulture

THE JOURNAL OF AGRICULTURE AND HORTICULTURE is the official organ of the Council of Agriculture of the Province of Quebec. It is issued bi-monthly and is designed to include not only in name, but in fact, anything concerned with Agriculture and Stock-Raising, Horticulture &c. All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jeaun Fusi, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

LA PATRIE PUBLISHING CO.,

77, 79 & 81 St. James St., Montreal

Subscription: \$1.00 per Annum payable in advance

The Farm.

NOTES BY THE WAY.

Prices of farm-products in England are, at last, becoming satisfactory to the tenants, whatever they may be to the consumers. Wheat has risen, since harvest, from 28s. to 34s. a quarter, a difference of 6s. (18 cts a bushel). (1) Now, as the average crop of wheat, this year, in England, is 32 bushels an acre, it follows that, even if no greater rise takes place, the rent of the land on which the wheat grew will be more than paid by the increased price, i.e., 24s. 6d., which is a good deal more than the average rent of land in England.

The price of barley has not risen so much as the price of wheat, 36s. a quarter being the highest quotation in mid-October; oats, too, remain at about the same figure as last year, though feeding-stuffs in general, particularly corn, have risen considerably in value. And the best of it is that, as very little grain has as yet been sold, the bulk of the crop of 1899 is still in the farmers' hands.

As for dairy-goods, Canadian butter has fallen 10s. a cwt. in value, and the trade in it is very slack for everything but the finest qualities of Irish creameries. In fact, the supply is, at present, more than adequate.

But cheese is in full demand, at good prices for the choicer lots. Finest new Cheddar is fetching 78s. a cwt. (112 lbs.); Double Glo'sters, 64s., while the following will give an idea of the value of what our family-tenants call *thin* cheese, i.e., a cheese made from milk the evening meal of

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(1) Since 1898 2s. 6d. Ed.

which is skimmed in the morning and added to the morning's meal. The letter quoted is from the writer's brother, whose tenants' farms are all on the banks of the Severn, in the Vale of Gloucester :

HILL COURT, Oct. 18th, 1899.

My Dear,— In reply to your question about the price of cheese during the months of August, September and October, none of my tenants make Cheddar, and there is usually little of it at Berkeley market. Of what they call *thin-cheese*, their usual make, the following were the prices in

August	September	October
£2.2	£2.16	£3.3 (2)

This has been a queer season. Though the hay-crop was plentiful, the after-grass came very short. The meadows at last look green, but more fit for sheep than cows. Several of my tenants have taken to selling milk in the towns of Thornbury and Berkeley, as they find it pays better than making cheese.

We have been pretty well off for apples, though some are small, and the high winds and the birds have knocked them about. As for vegetables, barring *scarlet-runners*, they have been a failure. Good luck to you all,

From your affectionate brother,

H. J.-F.

The land in question is of superb quality and the cheese is very good indeed, as it need be for "half-skims" to fetch the price quoted. The tenants are all large cider-makers, so the loss of the apple-crop will hurt them considerably, though with cheese at 63s., they can stand it. The rent, titles, and rates on such property come to something like \$'5.00 an acre, and the cows average nearly 500 lbs. of cheese each a season. All meadow-land and riverside pasture, except about 4% of arable land.

Bacon, we are glad to see, appears to be returning, in some slight degree, to its old terms, the difference between fair qualities of "lean sizable" and "fat stout" being only 3s. a cwt., equal to $\frac{3}{4}$ of a cent a pound. Was *lean* meat ever *tender* meat? If you must have lean bacon, you will surely have lean hams, and a lean ham is, an abomination.

(2) Best full-cream Cheddar was selling for 74s. a cwt. (112 lbs) in November. Ep.

The mangel-crop.—The swedes and early turnips being but poor crops, this season, in England, farmers are naturally anxious to make the best use possible of their mangels, which, as is natural in such a hot dry summer, have turned out well.

Now, we recollect well that it was always held in our English days that feeding stock on mangels in the early part of the season was likely to produce diarrhoea, commonly called, then, scouring. It seems, from experiments, lately conducted by Voelcker, the chemist to the R. Agr. Soc., that this effect is only to be feared when the root is given too copiously. The results are as follows :

(1) That well-ripened mangels, in moderate quantities, say, from 28 to 30 pounds a head, per diem, may take the place of swedes in the food of fattening beasts, if cotton-cake, bean meal, or plenty of long hay be also given. (2) That if the quantity of mangels given reaches 35 lbs. to 40 lbs., scouring will probably soon appear. (3) That, though the giving of long hay at that time will not check the scouring, the giving of undecorticated cotton-cake and bean-meal will soon stop it.

In September, 1855, we were looking over the stock of Mr. James Webb, of Calcot, near Reading, Berkshire, when we observed that Parry, his very intelligent farm-bailiff, afterwards in charge of the Prince Consort's farm at Windsor was giving two charming Devon steers, preparing for the great Xmas show of the Smithfield Club, a moderate ration of recently pulled long red mangels. We rather demurred to his assertion that he always found they did well on them even when in such an immature state; but, as the two steers both won a "Highly Commended" ticket at the show, we came to the conclusion that Parry was about right. The steers were eating plenty of bean-meal, but cotton cake was not in common use in those days, so we suppose linseed-cake was being used; at all events, if the beasts had scoured, Parry was shrewd enough to have stopped the mangels at once: he was one of the best farmers of heavy land we ever saw.

Sheep.—Mutton is growing daily more and more into favour in the States. If our farmers would only grow *rape*, what a lot of profit they would make by sending mutton to that country. Wool is very low in price, but mutton sells well, so Downs and Half-breds are the kinds to keep.

Killing fowls, turkeys, etc.—Always try to take poultry unawares when about to kill them. All animals keep better if they are killed when in a perfectly quiescent state. Hence, when the keepers in the deer-parks of England want to shoot a buck, one of them hides himself in a tree near the line followed by the herd at their evening grazing—they always pasture along the same route,—and puts a bullet through the heart of the buck selected: We always wring the necks of fowls, instead of messing them about with blood by sticking them. We see, by a paragraph in *Farming*, that cases are reported of turkeys arriving in England with their crops full of corn; they were so much decomposed as to be unfit for human food, and were, of course, a total loss.

By the bye, talking of deer, it may interest some of our readers to know that, in our larger English parks, where from 800 to 1,200 deer are kept, the produce is utilised in four forms. The first venison that appears on the London market is from the *Hevers*, i.e., castrated males of six years of age. These are taken in the fall in the following manner: two keepers, on horseback, having selected their victim, ride him out from the herd, and when separated from the rest of his friends, two rough-coated deer-hounds are slipped, and, strange to say, though the hunted buck may rejoin the herd and do his best to conceal himself among them, the dogs never leave him until they have pulled him down, when a net is thrown over him, his legs are tied securely—a kick from a buck is no trifle,—he is carried to the feeding-shed, castrated and set at liberty. The yard attached to the shed is surrounded with a strong oak paling 8 feet high. The hevers are fed, on horse-chestnuts, oats, and hay, till the following May, when they are sent to London, generally to one man who takes them every year, (1) and sold to the great City Companies for their "Founders' Feasts." The haunches, i.e., the leg and loin, usually fetch 5 guineas apiece.

Uncastrated males, 7-year-old bucks, are killed before "rutting-time," up to mid-September, after which time they are as 'rank' as a ram. Does, the old ones that is, are shot in November and December and are poorly flavoured meat.

The fawns, almost as soft in flesh as our *lepus*

(1) Rich, at the bottom of Ludgate Hill was the man in our day. Ed.

Canadensis, or rabbit, as it often erroneously called here, are the keeper's perquisite; a certain proportion of these are shot every summer when about six weeks old, and sold to any one who wants them at, say, 5 shillings each. Poor pasture makes good, well flavoured venison. A good buck weighs, dead, about 14 stone of 8 lbs., and, if well kept, is about the most delicious meat in the world. The "brown-muscle" and the "Alderman's walk," of the haunch, i.e., the layer of fat along the side of the loin, are the choicest morsels. A hot-water dish, with French-beans and red-currant jelly, are indispensable accompaniments; and when the haunch has been properly roasted before an open fire, in a *cradle-spit*, and wrapped in its case of stiff paste, the epicure who eats of it

"*** may safely say,

Fate cannot harm me, I have dined to-day."

Value of dung.—M. Ville, the great French agricultural chemist, makes the cost of farmyard dung 12s. a ton. The common English calculation is 5s. a ton. But, now, Mr. Geo. Prout, a well known practical farmer, will not hear of its being worth more than 1s. 6d! As he justly says: "The difference between that sum and 12s. is very great." The fact is, dung is a very variable commodity, its value depending greatly on the land it is applied to and the stuff eaten by the stock.

ON FALLOWING.

(BY THE EDITOR.)

The great Baron Liebig, in his "Chemistry applied to Agriculture," defines a fallow in these words: "Fallow in its most extended sense, means that period of culture during which a soil is exposed to the action of the weather for the purpose of enriching it in certain soluble ingredients. In a more confined sense, the time of fallow may be limited to the intervals in the cultivation of cereal plants; for a magazine of soluble silicates, and alkalies, is an essential condition to the existence of such plants. The cultivation of turnips, during the interval, will not impair the fertility of the land for the cereals which are to succeed, because the former plants do not require any of the silica necessary for the latter. It follows then

from the preceding observations, that the mechanical operations of the field are the simplest and most economical means of rendering accessible to plants the nutritious matters of the soil.”

Fallows are of three kinds.—Summer fallows; where the land enjoys at least a twelvemonth's rest, as when wheat is sown in autumn; or even 18 months rest, as when barley or oats are sown in spring.—Fallows for roots; in which case the land which bore the wheat crop in August is sown, after suitable preparation, with turnips &c., the following spring.—Bastard fallow; when land which has borne grass during the last years of the shift is ploughed, and otherwise cultivated, during the summer after the grass has been mown or fed off in preparation for wheat in the autumn; or barley, or oats, in the spring. In this country, we believe the bastard fallow has never been tried, but, we think, it would be, in many cases, an excellent plan on soils where the usual one-furrow system leaves the land too much consolidated in the sowing season.

The success of the *long*, or *summer fallow* depends greatly on the first ploughing. We must always remember that the object of making a fallow at all is threefold; first, to clean the land; secondly, to mix the soil; thirdly, to liberate, by exposure to the air, the rain, the heat and the frost, those substances, mineral chiefly in their nature, necessary to supply the food of the plants which exist in abundance in the land, but are bound up in inaccessible places, until the alternate action of plough and harrow, of grubber and roller, expose them to the action of the elements, and enable them to perform the duties which are the necessary sequel to their existence.

Immediately after the crop is carried home the work should be begun for the fallow. Autumn cleaning of stubbles is the foundation of all good, clean cultivation. In England we have often seen it practised before the grain is carted—the Ducie drag, or the Bentall's scarifier, worked between the rows of wheat shocks, the space where they stood being done afterwards. Then the implements cross the former work; the harrows quickly follow, and, dragging out all the root weeds, leave them exposed to the August sun to their intense mortification. But this cannot as a rule be done on the heavier class of soils; there, the plough must perform the work, and it is thus that our tougher soils will eventually be treated.

The first furrow, for a fallow of any sort which

is to be manured and sown ultimately with roots, should be as deep a one as the strength of the team employed on the farm can manage. (1)

There are various modes of securing this deep furrow. The plough in general use is, from its construction, but ill adapted to this part of the work, not being able to go deeper than, at the utmost, eight inches. For some years past a plough invented by the late Marquess of Tweeddale, of Yester Mains, Scotland, has been coming into notice. Formed by degrees, after long and patient experiments, and not founded on the theory of what a plough ought to be, the shape of the mould-board was attained by trial and error, and corrected and altered according to the suggestions of the ploughman who held the plough. At length, the implement cut its furrow-slice of the dimensions of 13 inches deep, by 12 inches broad, and, clearing its way as it went with perfect ease, was pronounced to have attained the contemplated end. (2)

In general, the plough packs the furrow-slice too tightly against its neighbour, but the Tweeddale plough leaves it loose and pulverised, permitting air, rain, and frost to enter and to their work freely during the open season; and, when spring arrives, the grubber passed across the ridges draws out the root weeds which the plough has eradicated, and renders their subsequent desiccation easy. This is a far better practice than cross-ploughing, which, cutting, as it does, the root weeds into lengths, renders them less facile of destruction.

As the Tweeddale plough requires three powerful horses to work it, we fear it will be some time before it is introduced into this country. The Scotch iron plough must then still be considered our best implement, though the two-wheeled ploughs of Howard, Busby, &c., are more perfect workers where there are no stones.

It is of no small importance that the land intended for fallow should lie in the right form all the winter. It should be as carefully ploughed, and the water furrowing as strictly attended to, as if it were intended to grow a crop. There is a difference of opinion as to the width of ridges.

(1) Except on land that has previously been always shallow-ploughed, in which case it would be dangerous to bring up too much raw subsoil at once. ED.

(2) No one proposes to plough deep furrows on clover-leys, or in any other position than in preparation for roots. ED.

Our own idea is emphatically this—on heavy land, with an impervious subsoil, nothing would tempt us to make the ridges of a greater width than eight feet, and we would have the harrows constructed to cover the whole ridge, and the horses yoked to the whipple trees in such a fashion that they should walk in the open furrows, (we speak of course of sowing time) and never set a foot on the ploughed land, except in turning at the headlands.

The position that the ridges should occupy is easily settled—up and down the greatest fall—except in the case of a very steep incline, when they should slant across the fall, both to ease the horses in their work, and to avoid the too rapid rush of water from the spring thaw and the subsequent rains. In ploughing the last furrows of ridges—*crumb*, or *hint-end* furrows—we cannot sufficiently recommend the practice of putting the horses *atrip*, or one before the other. This need not be done till the day's work is nearly at an end, and probably a boy will be wanted to drive the team, as it is of great importance that these furrows should be well laid up, and not, as is too often seen, allowed to lie loosely scattered in the open furrows.

There should, it is hardly necessary to add, be cross water-furrows drawn after the ploughing is finished, and they should be numerous, particularly in the hollow places, and on side hills.

FALL PLOUGHING.—PLOUGHING MATCHES.

To the Editor of the JOURNAL OF AGRICULTURE.

Dear Sir,—As we are nearing the close of the ploughing time, I thought a few notes would not be out of place. Some have already finished their fall ploughing, some would not be finished if it kept open all the month of November; not that they have so very much to do, but that slow half hearted way some people have of doing their work, always behind hand.

In one of my former letters to the JOURNAL, I was writing about ploughing, when a gentleman met me and asked why I did not tell people how to plough, of course I told him I was only reporting how much was done, and the way in which it was done, not the way to do it.

People usually are very apt critics, but all must know, whoever pretends to know anything, that

it is much easier to find fault, than it is to suggest a remedy.

Before beginning to say anything on ploughing, let me say that I was sorry to see so much splendid corn fodder wasted this year, not only among my neighbors, but on the island of Montreal. On the 15th of October lots of it not cut between Montreal and Montreal Junction, it seems to me to be a great waste, corn should be cut before the frost arrives, early in September if possible, otherwise there is a terrible loss. If there is no silo in which to store it, the corn should be made up into sheaves and tied, and put up in stooks until perfectly dry, when it may be stored in a mow or barn floor on end, never thrown down on its side, as it is so apt to mould and spoil it. If saved in this way it makes splendid fodder for cows and is very much relished by them when fed only once a day: this is perhaps enough on the corn question for this time.

The fall has been on the dry side for some who had very stiff clay, but the rain during the past three days will make it go well now. I am, Mr. Editor, of your opinion regarding shallow vs. deep ploughing, with the exception of ploughing in sod, I think deep ploughing much preferable. For turning in sod my idea is not over 6 inches deep, I think 5½ inches better, the second or third time an inch or so deeper each time, if the ground is of a clayey soil, if light sandy soil perhaps it would be just as well not too deep.

Farmers should try if possible and get as much as possible done in the fall, if they have any fields with bad weeds in them, plough early and get the seeds to sprout, and then if necessary plough again in the spring, it makes manure to plough in as much humus as possible—be sure and have all cross furrows cleaned, end ridges ploughed, and every avenue for the water to escape to be opened out—do not allow the water to lie on the ground if at all possible to prevent it.

With regard to ploughing matches there have been quite a few so far, and quite an interest taken in each one. I see reports from Compton, Beauharnois, Huntingdon, Chateauguay, Hochelaga, but no report from Deux Montagnes.

I visited the Hochelaga county match, held on the farm of Mr. James Fletcher, Longue Pointe, on the 25th inst.; there were twenty-two competitors in the several classes. I was very much surprised to see so many wooden ploughs, competing in the same class with iron ploughs, there were in all 9

iron and 13 wooden handled ploughs. I was also surprised to see such a high cut on the wooden ploughs, in fact the best ploughed ridge in the field was ploughed with a wooden handled plough. I picked out the first and second prize winners in each of the three classes. I only had one error out of the whole lot, and perhaps had I crossed the middle of the field I should have found out in what I was wrong.

Another thing; I was pleased to see so many of our French compatriots with their hand at the plough, out of the 22 competitors there were no less than 15 of them of French origin.

The Scotchmen will have to look well to their laurels, or they will have to yield the palm to them ere long. A very good rule, and one which was carried out to the letter, is that each ploughman had to finish at 3 o'clock, there was only one who had not finished when the signal was given.

The judge, directors and friends were given a sumptuous dinner by Mr. Fletcher. I might mention that the land if anything was rather too dry to make a fine job, but on the whole it was very well done.

Yours respectfully,
PETER MACFARLANE.

Chateaugay, 30th Oct. 1899.

FARMYARD MANURE.

Notwithstanding the cheapness of artificial manures and the quick return and large profits which they may yield when used with skill, farmyard dung still holds its place as the best of the fertilisers. It still stands as high in general estimation as when Arthur Young—I think—wrote in its praise nearly a century before most of the artificials were introduced. An old farmer once told me that for some time after entering his farm, twenty years before, he used farmyard manure on the green side viz. on the pastures, which at that time were poor, and artificials entirely on the turnips. The late Dr Vöelcker stated that he doubted the profit of applying artificials to pastures. Possibly that opinion might now be modified owing to the reduced prices of the manures. But however this may be, farmyard manures has a special value in the enrichment of new or poor pastures, especially on heavy land, and this is the case on account of its mechanical action. It

renders the surface friable, it encourages worms—which are invaluable agents of aeration and fertility in pastures. It assists the roots of the grasses in penetrating the soil; and it greatly expedites the formation of a good sod.

The making and management of dung therefore are still of the first importance to the farmer, and even such a gossip as farmers might indulge in, when strolling over the land may not prove to be unwelcome here. It is of course an old story that the best dung is made under cover; and in parts of the country where litter is used in the cattle sheds, the dung is too often turned out of the doors to be rained upon, and thus gets diluted. It is important to bear in mind the methods by which the washing of the ingredients of farmyard manure can be prevented. Roofs may be—and are in some places—put over the dung pits, and thus, according to the late Dr Vöelcker, the value of the manure is increased three fold. Dung lying exposed in open courts often loses two-thirds of the whole value of the heap by washing. It is clear that the extent of the washing must vary with the rain-fall. If nothing runs away nothing can be lost, and by making cattle yards cup shaped, and preventing water flowing into them from the roofs or elsewhere, the usual rain-fall will not do much damage, and the moisture will prevent fire fang. In a case which I once knew, stable manure was thrown out into a covered yard, where the manure accumulated all the winter, and it was much injured by fire fang. In subsequent years this mischief was prevented by spreading the dung evenly, and keeping cattle in the yard to consolidate the mixture, and pumping water over the surface occasionally. (1) Capital rotten manure fit to plough in was thus made.

A well-made dung heap is a conservative institution; and the fermentation which takes place in it does no harm, unless it be too rapid, because the gases that are generated in the centre of the heap become cool, and are fixed by the organic substance of the manure as they approach the outside. So the old practice of carting the manure to or heap over which horses and carts are driven is strictly scientific; the mass is consolidated and the air excluded sufficiently to prevent too rapid fermentation. Usually some earth

(1) But not as at the Seminary, in Sherbrooke street, Montreal, where a vast heap of dung has (or had) a constant flow of water running over it, carrying off its goodness into a stream that it would pay well to utilise for irrigation. Ep.

should be thrown over the rounded surface of the clump, for the further exclusion of air and water. The dung is now safe and it may be kept several months without water. Well rotted dung is preferred by "Dame Practice," who proved long ago that one load of such dung is worth two of fresh long dung.

Dr Vöelcker said that fresh dung (dry) contains 1.90 per cent of nitrogen and rotten dung (dry) 2.47 per cent. The soluble organic matter and the soluble mineral matters are also much greater in rotten than in fresh dung. The straw used as litter becomes, to a great extent, converted into humic and ulmic acids, and this largely assist in fixing the ammonia produced from the nitrogenous excrementitious matters. The loss of ammonia from fermenting dung heaps is much less considerable than it is generally assumed to be. With good management little or no waste need occur, even from dung in open yards.

I must quote the same chemist again to the effect that, "chemically considered, farmyard manure must be regarded as a perfect and universal manure," because it contains all the constituents which cultivated crops require. It contains without exception all the minerals that are found in the ashes of agricultural crops.

Artificial manures sometimes fail because some one particular element of plant food which they do not supply did not happen to exist in the soil. One may say of dung that it never fails, and therefore never disappoints the farmer.

Dung is the best manure for potatoes, a potash-loving plant, not only on account of its potash, but also for the excellent mechanical effect it produces. One cannot look on a plot dunged every year, without recognizing the advantage which "muck" possesses over artificial, irrespective of its direct fertilizing elements. Not a drop of rain escapes from that plot into the drains below, (1) owing to the power of dung of holding in absorption. So that dung is at once food and drainage. It promotes subdivision, too, in an eminent degree, as well as absorption of heat. I once knew a couple of acres of naturally cold clay land, which on account of the heavy dressings of horse manure it received, with soot and ashes, yielded forage crops for the owner's horses, three weeks earlier than his neighbour's land. No doubt some effect was produced by the organic remains

of the forage crops which were ploughed in every year. As neither fresh nor rotten dung contains much free ammonia, and active fermentation and evolution of free ammonia is stopped when it is spread on the field, very little waste of the fertilising substances in dung takes place, even if it is not immediately ploughed under. In applying dung to pastures or young clovers, of course it cannot be ploughed in, but the rain washes it in and no fear need be entertained that these methods of manuring are wasteful. (1) They are in fact advantageous, since the nearer the manure is to the surface, the more readily will it become decomposed and converted into plant food. It may be stated further in connection with dung that a skilful stock farmer may, perhaps, obtain it free of cost, while the vendors of artificials always charge for them, and sometime the cost is far too high.

W. R. GILBERT.

FIGHTING THE WIREWORM.

The loss to farmers incurred by the destruction of cereal and other crops by the wireworm must amount to an enormous sum annually. Cereals, root crops, hops, and market garden crops, all are subject to the ravages of this voracious insect. And not only is injury done in a direct way by the insects damaging the plants, but it must be remembered that it is largely owing to the presence of wireworms around the roots of young turnips and other plants that rooks are induced to pull up these plants wholesale in infested fields. How to combat the wireworm is certainly a problem that may well engage the close attention of agriculturists.

Until recently but little research work in this line has been attempted in this country, but last year the Agricultural Committee of the Cornwall County Council took the matter up, and commenced a comprehensive series of trials, which, it is to be hoped, will eventually lead to the discovery of some effectual mode of combating the pest. The results of some preliminary trials are recorded in detail in the recently-issued annual report of that committee.

The object of these preliminary experiments was to test the merits of a number of materials which had, up to the time of commencement of the trials, been generally recommended to farmers

(1) Except, of course, after abnormal rainfalls. Ed.

(1) Good. Ed.

as being either destructive to the wireworm, or capable of enticing the insect away from the crop. Two fields, one in the east and the other in the west of the county, which were very badly infested with wireworms, were selected for the trials. These were sown to oats, and in the most thickly infested part of each field thirteen plots were staked out and treated with the undernoted materials. Each plot was $\frac{1}{4}$ acre in extent, with the exception of 4 and 5, which were purposely limited to $\frac{1}{2}$ acre. The weights per acre of the various materials were as follows:—

- Plot 1. 6 cwt. ground rape cake, soaked in solution of 60 lb. arsenic.
- Plot 2. 6 cwt. ground rape cake, dusted with 60 lb. arsenic.
- Plot 3. 6 cwt. ground rape cake.
- Plot 4. 112 lb. arsenic.
- Plot 5. 224 lb. arsenic.
- Plot 6. 28 lb. arsenic.
- Plot 7. 56 lb. arsenic.
- Plot 8. 4 cwt. mustard dross.
- Plot 9. 2 cwt. mustard dross.
- Plot 10. 4 cwt. mustard cake.
- Plot 11. 2 cwt. mustard cake.
- Plot 12. 10 cwt. castor pomace.
- Plot 13. 5 cwt. castor pomace.

Parts of each field were left untreated for comparison.

Most of the above-named materials will be familiar to the majority of readers of the *Gazette*. Castor pomace, it may, however, be mentioned, is a bye-product in the manufacture of castor oil. It is a strong, irritant poison, and fatal to mammalian animals, even when taken in comparatively small quantities. It is also known as castor-oil seed-cake.

It was confidently expected that at least some of the applications would give a favourable account of themselves. Careful inspection of the plots at both farms at intervals during the season yielded, however, only negative results. In the case of the farm in the east of the county, the crop was uniformly good over the whole field, and, though some of the dressings (viz., rape cake, mustard dross, and mustard cake) yielded a slightly heavier crop on account of their containing manurial ingredients, there was no evidence to show that any, or all, of the dressings had done anything in the way of combating the worm.

On the western farm the results were equally unconvincing. Patches were cleared by the wire-

worms all over the field, and no particular plot seemed to be any better off than the others.

So far, therefore, as these preliminary field trials go, not any of the substances experimented with seems to be of much practical value for the purpose.

The results of a few pot experiments which were also made are, however, interesting and suggestive. One hundred wireworms were placed in each of three pots of earth, and fed with castor pomace, with rape cake, and with nothing, respectively. The pomace and cake were given in great abundance in both cases. At the end of three months the pots were turned out, when it was found that of the 100 worms which had no food in addition to the earth in which they lived, ninety-eight were alive, though their condition was very meagre. Of the 100 worms supplied with castor pomace ninety-three were alive and in good condition. Of the 100, however, that had been fed upon ground (1) rape cake *only six were alive*. "It would appear, therefore," to quote the words of the report, "that rape cake, when supplied in such superabundance as in this experiment, brought about a large destruction of worms, though it does by no means necessarily follow that it would do so when used on the small scale adopted in actual farming. On the other hand, it seems to be abundantly clear that castor oil seed cake, although it is virulently poisonous to higher animals, fails to exercise any poisonous effect upon wireworms, which are apparently indifferent to its acrid poison."

Further experiments on the subject are being carried out on rather different lines during the present year, and the results will be looked forward to with much interest.

J. F. McCREATH, F.C.S.

TRANSVAAL WAR AND THE HAY TRADE.

Prices for Export Hay Advancing in Montreal.

Should the Transvaal war continue for some time it would not be surprising if prices for Canadian hay ran up to a pretty good figure. Already the influences of the war are beginning to be felt, and late reports from Montreal indicate a much better demand for hay for export. This,

(1) Mr. Charnock's experiments were with rape cake in pieces as large as a hazel-nut, and very successful. *Es.*

together with a good local inquiry, as will be seen from this week's market review, has caused prices at Montreal to advance 50c. to \$1 per ton during the past few days. The reported partial failure of the British hay and root crop would no doubt have caused a better export demand later on for hay from Canada, but now that war is on prices have advanced earlier than expected owing to the extra demand for the Transvaal.

The great drawback just now in shipping hay to England is the high rates for ocean freights. But still the hay continues to go forward, and if the demand keeps up it will take more than excessive freight rates to prevent business being done. Producers on this side will have to be content with a little lower prices to make up for the extra cost of transportation; but if prices advance, as it is expected they will from present indications, enough extra will be paid to give our farmers good value for their hay over and above the extra freight charge.

It is estimated that the British Government will require at least 20,000 tons of hay for its military operations in Natal and the Transvaal, and it is altogether likely that Canada will be called upon to supply a large portion of this amount. A small cargo of Canadian hay has already been shipped to South Africa by way of Boston, and it is reported that vessels are on the way to Montreal to take out another cargo. While this is the position of affairs as regards the probable demand it will not do for our farmers to put too high a price on what they have to sell as it might tend to drive purchasers elsewhere. But with reasonable prices asked there is no reason why Canada should not supply a very large share of the fodder demand for the Transvaal war.—*Farming.*

The Grazier and Breeder.

THE GENERAL ASSOCIATION OF BREEDERS OF THE PROVINCE OF QUEBEC.

Annual meeting.

The members of this association held their general meeting on the 14th September on the Quebec Exhibition Ground.

M. N. Garneau, M.P.P., took the chair, and Dr. J. A. Couture acted as Secretary.

About 50 members were present, among whom we remarked Messrs. N. Garneau, M.P.P., Rev. F. P. Côté, J. C. Chapais, Arsène Denis, Théophile Trudel, Louis Thouin, Elie Girouard, Jos. Guy, Delphis Turenne, J. B. Lafrenière, Jos. Dugas, M. Fontaine, Michel Bourassa, etc., etc.

M. Garneau explained the causes that had led to the meeting not being held last year; and expressed his hope that such a thing would not occur again. It is, he said, of the greatest importance, that a meeting should be held at least once a year, and if the society cannot be suited at Quebec, Sherbrooke or Three-Rivers might supply what is needed.

Resolutions of sympathy were passed in connection with the death of Mr. E. A. Barnard, the first President of the Association, and of M. E. Casgrain, one of the Directors.

The Chairman, in a short speech, described the indebtedness of the Province to Mr. Barnard for the many reforms he had brought about, and the relative prosperity it was now enjoying.

The election of officers for the ensuing year was then proceeded with:

General President, Mr. Robert Ness; 1st general vice president, M. Garneau, M.P.P.; 2nd general vice-president, Mr. Thos. Drysdale; general secretary, Dr. J. A. Couture; general committee of management, Messrs. Arsène Denis, J. C. Chapais, Jos. Deland, D. Baxter, J. H. Lloyd.

The section of Canadian cattle reported that its board of management was named as follows:

Messrs. J. C. Chapais, president; Arsène Denis, Rev. F. P. Côté, Ls. Thouin, Théo. Trudel, Frs. Gagnon.

The section of Jersey-Canadians reported the election of the following as its board of management for the ensuing year:

Messrs. Arsène Denis, president; Paul Lavallée, the Rev. Trappist Fathers, L. R. Whitman, Paul Payette, Thos. Hunter.

The section of Canadian horses, had elected the following board:

Messrs. Jos. Deland, president; R. Ness, A. Denis, J. B. Deland, Elie Girouard, Z. Garceau, Emile Blanchard.

The following are the members of the board of management of the section of sheep:

Messrs. David Baxter, president; A. Denis, Guy Carr, Neil McCaig, James Cowan, Chas. Robinson, Delphis Turenne, R. W. Frank

For the pig-section, the board includes the following :

Messrs. J. H. Lloyd, president ; the Rev. Trappist Fathers, R. J. McNeil, Michel Bourassa, Louis Lavallée, Elie Girouard.

Proposed by M. A. Denis, seconded by M. J. B. Lafrenière, and carried : That the Society shall no longer give ear-tickets to registered swine.

Proposed by M. J. C. Chapais, seconded by M. M. Bourassa, and carried : That the Breeders' Association requests the Department and the Council of Agriculture of this province to require all Exhibition societies enjoying government grants to give to pure-bred stock more numerous and more valuable prizes than they give to cross-breds.

Proposed by M. A. Denis, seconded by M. Ls. Thouin, and carried : That the Society, having learnt that certain Exhibitions do not require certificates of registration for animals shown in pure-bred stock classes, draws the attention of the Department of Agriculture to this fact, that is in contravention of the law, and it prays that the law be applied rigorously and with impartiality.

Proposed by M. J. C. Chapais, seconded by M. A. Denis, that the annual subscription of members dates from January 1st, but that those who have paid up for the year 1898 99 continue their membership with any new payment up to January 1st, 1900.

Proposed by M. A. Denis, seconded by M. Ls. Thouin, and carried : That the Association arrange with the Exhibition companies that the diplomas and medals be replaced by money-prizes, and that herd-prizes be given in the sheep and pig classes, as they are in the cattle classes.

Proposed by M. M. Bourassa, seconded by M. A. Denis ; That the Association arrange with the Exhibition companies that, two classes be formed of animals of 12 months and under ; one class for animals of 6 months and under, and the other for those of from 6 to 12 months.

Messrs. Trudel and Chapais opposed this motion, proposing as an amendment that the age should date from January 1st. On a division, this amendment was lost, and the principal motion was carried.

Proposed by M. Denis, seconded by M. Thouin, that the Association request the Exhibition companies to arrange among themselves that the age of stock date from August 1st. As an amendment, it was proposed by Messrs. Chapais and

Trudel, that the words August 1st be erased, and January 1st be substituted for them.

The amendment was thrown out, and the principal motion was carried.

Proposed by M. Trudel, seconded by M. Bourassa and carried : That, in order to avoid the numerous abuses that occur every year, the breeders of thoroughbred stock request the Exhibition companies to require the owner of an animal on exhibition to make a solemn declaration that the said animal is such as it is represented to be, if one of the exhibitors in the same class shall ask for such a declaration.

Proposed by M. Frs. Gagnon, seconded by the Rev. F. P. Côté, and carried : That the Exhibition companies be requested to discontinue the giving of prizes to Jersey-Canadians.

Thanks were voted to the Exhibition company of Quebec for having granted the use of a tent to the members of this Society.

The Secretary handed over to the meeting the following statistics for the last four years :

Number of members of the Society :

In	1896	1897	1898	1899
	136	138	184	224

Number of animals registered since 1896 :

CANADIAN CATTLE.

		1897	1898	1899
Males		49	48	146
Females		132	138	59
Total		181	186	205

JERSEY-CANADIAN CATTLE.

		1897	1898	1899
Males		12	27	27
Females		47	61	34
Total		59	88	61

CANADIAN HORSES.

		1897	1898	1899
Males and females....		59	88	109

BREEDS OF SHEEP.

		1896	1897	1898	1899
Leicesters....	143	235	455	405	
Shropshires...	146	79	200	158	
Cotswolds....	99	47	238	140	
South Down...	12	6	15	18	
Oxfords.....	10	2	6	14	
Lincoln.....	13	13	3	14	
Total..	417	382	917	749	

BREEDS OF SWINE.

	1896	1897	1898	1899
Chesters.....	101	41	63	75
Berkshires....	117	102	153	113
Yorkshires...	225	173	257	265
Suffolk.....	} trifling.			
Poland China..				
Dinoc.....				
Total ..	443	316	473	473

The Chairman warmly congratulated the meeting on the vast amount of work done at this meeting, from which he augured again of much good for the Association. He also congratulated the Association on the progress it was making year by year. The meeting then separated.

J. A. COUTURE,
Secretary.

(Trans. by the Editor).

Swine.

LECTURE BY MR. D. M. MACPHERSON.

(THE BACON TRADE.)

This, as well as all the other lectures delivered in English, could not be stenographed, so we can only give an abstract of it.

If we have succeeded in establishing a reputation on the foreign markets for our bacon, without any special study or effort, it is because we have a suitable climate and conditions in our country, which enable us to produce pork of the finest quality.

Therefore, if we earnestly study this question, and give to it all the attention we devote to other business, we cannot fail to gain the highest reputation that we can desire for our country as regards the production of bacon.

The practical side to be considered in this trade, is the profits we make out of it. Now, the hog weighed alive is worth 4 cents a pound on the bacon market. Can we produce pork at 4 cents a pound live weight? The experiments I have made, under by no means favorable conditions, teach me that I can make pork for 2 cents a pound live-weight. I find that I can, on an acre of land, produce 6,000 lbs. of pork, which, at 2 cts. a lb., give me a return of 100 dollars an acre. (1)

(1) 6,000 lbs. an acre are equal to 5,077 lbs. an arpent, nearly. A. R. J. F.

Moreover, the acre of land on which I fed my pigs has received the best possible manuring for the subsequent crops of the rotation.

Three years ago, I fed 50 pigs on two acres of land in clover. According to my experience, from 20 to 30 pigs can be grazed on an acre of clover. The pigs are turned in young, and get, in addition, a little grain daily, beginning with half a pound a day, and increasing by degrees till the dole reaches 3 lbs. ; the rest of their food they get from the clover. I feed them thus till they weigh about 150 lbs. Pigs fed thus grow muscle (lean meat), and get their fat from the grain ; and in this way we make the best possible pork for the market.

Twelve pounds of clover is the proper seeding for an acre. It should be sown as soon as the snow goes ; the nightly frost and morning thaw cover the seed, and it has only to wait for the warm weather to start into growth ; and when started it grows rapidly, so that, when three or four inches high, it is ready for the pigs.

There ought not to be more than 70 to 80 pigs in an enclosure, i.e., the fields for grazing pigs should not be larger than 2 or 3 acres.

Treated thus, the pigs will weigh 200 lbs. at 7 months old, and then is the time to slaughter them.

The best pigs for the purpose are a cross between Berkshires and Yorkshires ; cross-bred pigs are always the most easily fattened.

The pigs are weaned at 7 weeks from birth : they are then kept in the house for 3 or 4 weeks before being turned out : this is the treatment I have found answers best in my experiments.

When the pigs are out in the field, they need a shelter to sleep under, and straw for litter.

To make pigs pay, they must be fed cheaply ; so pigs should only be kept 7 or 8 months in the year, the months in which they can be grazed as before said.

Fatten young pigs by preference ; we shall thus avoid winter feeding, a season in which they are subject to diseases, such as rheumatism, etc. Keep plenty of sows but few pigs in winter, so as to have lots of pigs in the spring, to be fattened in the summer. For if we can during the summer fatten pigs for 2 cts. a lb., they would cost us 4 or 5 cents in winter, and there would be no profit.

The English market takes 555 million lbs. of pork a year, and we Canadians are sure of a good market and rich returns therefrom, for no people

can fatten hogs under more favorable conditions than we can.

Let those who intend to go into this business begin on a small scale, with, at first, only one sow, and go on by degrees. If they find it pays, they can increase their stock by degrees; but do not launch out at once into great speculations; you will succeed best by proceeding slowly and carefully.

When sows are due to farrow, they must be carefully fed, kept dry and lightly fed, with neither barley nor other grain.

Obs. The above, as well as Mr. Grant's address on cheese, are both translations from French versions of English addresses. Ed.

SOME FALLACIES IN PIG FEEDING.

Sanders Spencer, in the Transactions of the Highland and Agricultural Society of Scotland, emphasizes the use of common sense in pig-feeding. Because for young pigs the best single food is shorts, and for pigs in the fattening stage, barley-meal, the belief exists that no combination of foods is more profitable than this. He points out that with the pig, as with human beings, a variety of food is not only appreciated by, but is also beneficial to it. The question of a mixture of foods is of, perhaps, the most importance to those pig-keepers who have at their disposal dairy offal. As is well known, skim-milk is a valuable food for both young and fattening pigs. Some pig-feeders, therefore, argue that it is not possible to give pigs too much skim-milk. It has, however, been demonstrated that a far greater return can be obtained from a comparatively small quantity of skim milk when mixed with other foods than if fed alone, or even if it forms the major portion of the pig's food. This limited amount of benefit derived from feeding skim-milk in large quantities to pigs has led some to express the opinion that its value has been greatly overrated, when put at 1½d. per gallon. Mr. Spencer, in contradiction of this opinion, quotes the experiments carried on at the Wisconsin Experiment Station by Prof. Henry, which showed the great difference in the value of separated milk when used skilfully or otherwise in combination with other foods.

These experiments clearly proved that skim-milk, in varying proportions of from 1 to 3 lbs. to 1 lb. of cornmeal, was of nearly twice the value of

the separated milk when mixed with one-eighth of its weight of corn-meal; or, in other words, that by using an undue proportion of milk to corn you reduced the feeding value of the separated milk by one half. This explains the great divergence of views of different persons as to the feeding value of skim-milk.

As regards the question of separated milk being of less value for pigs than skim-milk, Mr. Spencer points out that in the latter there would be more butter-fat, owing to the fact that the separator extracts it more completely than hand-skimming, but he also states, what should need no demonstration, that butter-fat is too expensive a food to be fed to pigs. If fat is needed, other and cheaper kinds can easily be added to the milk.

PIG FEEDING EXPERIMENTS.

Experiments have been conducted at the Midland Dairy Institute Farm, Kingston, Eng., into the much-investigated question of the relative value of separated milk and whey, respectively when fed to pigs along with corn-meal; whether it is more profitable to sell the whey and separated milk at the dairy, at prices of ½d. per gallon for whey, and 1d. per gallon for separated milk, or to use these products for fattening pigs; and which of the following rations are most profitable for feeding pigs: Corn-meal and water, corn-meal and whey, or corn-meal and separated milk, when the same money value of the three mixtures were used?

The rations given at first per head per day were for lot 1, 5½ lbs. of corn-meal and water; for lot 2, 3½ lbs. of corn-meal, 1 gal. of separated milk, and water as much as required; for lot 3, 4 lbs. of corn-meal, 2 gals. of whey, and all the water necessary. The corn in all cases was scalded and allowed to soak for a few hours before it was fed to the pigs with the liquids. After twenty days the quantities of corn-meal were increased by 1 lb. per head per day, bringing the cost of ration per pig per day up to 3 1-6d.

The profits per head were as follows: Lot 1, 12s. 9d.; lot 2, 15s. 3d.; lot 3, 19s. 9d. The cost per lb. of increase of carcass weight per day for the several lots were: Lot 1, 3.12d.; lot 2, 2.84d.; lot 3, 2.48d. The carcasses of the pigs fed on corn alone were too thick and fat on the back and thin on the belly and too big in the leaf; the flesh, too, was soft and did not set well. There was very little difference between the carcasses of

the pigs given corn and separated milk and of those fed on corn and whey, both lots showing less leaf and more thickness on the belly, with a good proportion of lean. If anything, the corn and whey lot were firmer in flesh.

The experiments showed that 1 gallon of separated milk equalled in feeding value a little less than 2 gallons of whey; that it is much more profitable to turn the skim-milk and whey into pork than to sell them at the prices named above; that where separated milk and whey can be purchased at those prices and used in conjunction with the same value of corn, the quantity and quality of pork will be greatly increased, without any increase in the cost price. As seen above, in feeding value, corn and whey stood first, followed by corn and skim-milk, with corn alone far behind.

In another experiment to ascertain the relative values of barley-meal and corn-meal when fed in equal weights, together with equal quantities of whey, the flesh of the barley-fed pigs was leaner and set better than that of those fed on corn-meal. The latter, however, was of good quality and sold equally well. Corn-meal, moreover, proved a more profitable food and produced a greater weight of increase than barley-meal. No better prices were paid for the barley-fed pigs than those fed on corn-meal, although the former were pronounced better for the "curing-trade." So long as this is done, there is no encouragement for the feeder to feed the dearer feed—barley.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

GIVING PRESENTS.

It seems quite a matter for doubt, as to who is the happier person, the giver or receiver of presents.

The giver has the happy anticipation of the gift for many a day in which happy hours have been spent in devising and executing all sorts of nice things to be distributed amongst dear friends on the coming festivities.

The working out, and watching the exquisite little articles as it were grow.

Especially is this the case where the work done is by one well skilled in the art of carrying out the beautiful designs of fruit, or flowers, on linen

or bolting-cloth with the lovely washing silks used for this exquisite work.

It may be a centre-piece for the dinner table, strawberries or cherries worked so as to stand out in bold relief and look as if they had been carelessly thrown there; this, with a bowl of real fruit, tastefully manipulated, to mix with the other designs, will go far to make a dinner more appetising.

To come down to a lower standard, where there is a desire to give a home-made present, a way will soon be found and a loving token of how best to show in the working out of the gift every effort to please.

Children have odd ways of doing this; I have watched with pleasure the furnishing of a house on paper. It is started by pasting a piece of coloured paper on the blank leaf of an old copy book; the furnishing is done by means of chairs, tables, stoves, and any other articles wanted, cut out of papers, advertisements or some old magazine. When any article was wanted, diligent search was made for it till found.

The last time I saw it, it had got as far as the library, and really the taste shown in furnishing some of the rooms might be copied, and would certainly show people that a child's idea was not only chairs, and tables, but many little fancy things were thrown about to make the rooms look nicer and more home-like.

It struck me as a simple and novel idea, carried out by a child during a time of sickness, and not only brought out her best efforts, but also served to wile away the tedium of a sick room. I hear it is to be given to the children's sick-ward at the hospital, where it will serve to help them to forget their pains for a time.

I do not envy the person who has only to go into a store and choose many nice things, to give to friend and relatives; it is only a matter of so many dollars, and the gift is bought.

But one has to think of the thousands of persons employed in the manufacture of these things of art, and to feel thankful that there are rich people to buy what their poorer brethren have toiled to make and glad to sell for the necessaries of life. And thus the world wags on; each one helping the other.

WARM CLOTHING FOR THE LITTLE ONES.

Chilly winds and wet days are of frequent concurrence at this season of the year, and it behoves the careful mother to see that her little flock is clothed warmly enough to enable them to avoid the colds and coughs, which, if contracted now, will very likely last the whole of the winter. It is a good thing, if possible, to provide children's outfit in advance for the colder weather, because it often come on suddenly before we have their warmer clothing ready for wear. There is another advantage also to be gained, for in this case the garments may be made at home, when, if they are left to the last minute, we have often to buy at a disadvantage.

Boots are a very important matter, and are the most expensive articles. They should be of stout leather, well cut in a straight line and wide across, so as to accommodate the great toe. The heel should be low and under the natural heel, and the child should be able to curl its toes freely. Boots should be high so as to protect the ankles from driving rain and splashing water. Damp trousers and stockings are most frequent causes of cold, and sometimes lay the foundation of future rheumatic disease. For boys who wear knickerbockers, and girls whose skirts are short, gaiters are highly desirable to be worn in wet weather. The gaiters are, however, much better made in waterproofed cloth than in mackintosh, as the mackintosh impedes the action of the skin.

A SAVOURY BEEFSTEAK.

If you wish to have a savoury and at the same time a tender beefsteak, you should cook it in the following manner. Procure a nice "aitch bone" steak, which must not be less than an inch and a half thick, lay it on a dish, rub it over with salad oil on both sides, sprinkle with pepper, and let it remain in this marinade for two hours before cooking. If a frying-pan must be used and grilling is impossible, make the pan hot on the stove, put the steak in without any dripping, and fry quickly so as to form a coating to keep in the juices. (1) Turn with steak tongs, or by the fat, and when done sufficiently dish up on a hot dish and pour the gravy round. On the steak place some little lumps of green butter. Green butter is made

(1) The use of a fork, stuck into the lean as usual, lets out the gravy. Ed.

by mixing a lump of butter with a teaspoonful of finely chopped pars'ey, and a dash of lemon juice; it gives a delicious flavour to the meat.

TO WARM UP A JOINT.

Sometimes it happens, even with the best of cooks, that a joint when cut at table proves to be underdone, and before it can be used again something has to be done with it, and hashing it is an unprofitable method with a large quantity of meat. Many people object to re-warming a joint on the score of its being wasteful, the joint when rewarmed in the oven becoming dry and hard. Have you tried wrapping an underdone joint in a thickly buttered paper, so that it is completely enveloped in it? By this method the steam will prevent the meat from becoming hard and dry, and the joint will warm through in half the time. In warming up meat it is a good plan to make a little fresh gravy to serve with the joint.

MUSHROOM KETCHUP.

To make mushroom ketchup, break 10 lbs. of mushrooms into a large earthenware vessel, and sprinkle them with $\frac{1}{2}$ lb. of salt, letting stand in the same for a day and night. Put the vessel and mushrooms into a cool oven for about twelve hours. Then strain and measure the juice and boil for a quarter of an hour. Add for each quart of liquor $\frac{1}{4}$ oz. of allspice, $\frac{1}{2}$ oz. of ginger, two blades of mace, and 1 oz. of pepper. Let all boil quickly for half an hour. Do not bottle till cold. Cork and seal well.

THINGS YOUNG WIVES SHOULD KNOW.

Turpentine will remove ink from white wood work.

If your oven is too hot when baking place a small dish of cold water in it.

To clean a kettle fill it with potato parings, and boil them fast till clean.

Nothing made with sugar, eggs and milk should reach the boiling point.

To make labels stick to tin add a little honey to common flour paste.

Egg-shells will clean vinegar bottles as well as shot.

To remove a rusty screw apply a red-hot iron to the head for a short time, the screw-driver being used immediately afterwards while the screw is still hot.

A smoking lamp is an exceedingly unpleasant thing, and is very often caused by the wick not being in proper order. It is a good plan to soak new wicks in vinegar, and allow them to dry thoroughly before being used.

The best way of watering plants, especially ferns, is to stand the pots in a pail of water, and leave them there until all bubbling ceases, which shows that the water has well soaked through the mould. This should be done about twice a week in winter, and when it is cold weather lukewarm water should be used. To keep plants healthy and green, their leaves should be sponged over at least once a week.

LINSEED TEA FOR THROAT TROUBLES.

The value of linseed tea in cases of catarrh, and in throat affections, is due to its demulcent and soothing effect on the inflamed surface of the mucous membrane. Put an ounce of linseed into a quart of water, and boil it gently to a pint. Strain, and add lemon syrup to taste, or half an ounce of licorice-root may be boiled with the linseed. The remedy may be taken repeatedly.

Earache is very painful. A dust of ground black pepper, put into a dry thin piece of cotton and tied, inserted in the ear, sometimes gives relief.

For constipation, drink a glass of hot water with a spoonful of wheat bran stirred in it every morning.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

RURAL IMPROVEMENTS.

It is gratifying to note that there is a growing disposition on the part of men of means to lay out their money in improving and beautifying their estates. The object is a praiseworthy one, inasmuch as it gives employment to labouring men and at same time increases the value of the place. We recently paid a hurried visit to the estate of Mr. Portious, on the Island of Orleans, near Quebec, and found that gentleman had a number

of men at work turning the wilderness into a beautiful pleasure ground.

The site is all that can be desired for such a purpose, situated on the south side of the Island on the bank of the St. Lawrence, but at a considerable elevation above the water level, it affords many commanding views of the mighty river. In it, too, are rocky ravines and shady glens, and just enough of wood to give ample opportunity for making bowery walks and drives overshadowed by the monarchs of the forest.

Of course, these changes cannot be made without a considerable outlay, but this does not trouble Mr. Portious, who went to work in the right direction by securing the services of the most eminent landscape gardener, Mr. Olmstead, of New York, to furnish him with plans, which are being carried out under the supervision of Mr. Thomas Brown, gardener, of Quebec and a large corps of assistants.

The place when finished will be one of the most extensive and beautiful pleasure parks in the vicinity of Quebec if not in the whole Province.

The public spirit of the proprietors is to be commended for the reasons given above; we have the pleasure of congratulating him upon it, and venture the hope that he will live long to enjoy the fruits of his enterprise, and that many others gentlemen of capital will be induced to go and do likewise, and spread their money and the taste for rural beauty at the same time thus conferring benefits upon their fellowmen.

GEO. MOORE.

BOGS AND PONDS.

In a recent issue I showed how the waste places in a pleasure ground can be embellish by planting the different varieties of hardy ferns, and in like manner bogs and swampy places can be rendered beautiful by the use of some aquatic or semi-aquatic plants.

Wherever there is a running brook, a pond, or a piece of moist ground, these plants may be cultivated; but if the water is quite stagnant the experiment is hopeless, and the plants that are suitable to the purpose are many of these favorites familiar to many: our *Lilium Canadense*, Scarlet Lobelia or Cardinal flower; *Eulalia Japonica*, or Japanese grass with its peculiar variegation of horizontal alternated bands of green and gold;

Lythrum virgatum, or loose-strife, with its long spikes of beautiful rosy purple; *Myosotis palustris*, or the Forget me not, the name of which was acquired by the following romantic legend: "A young couple were walking by a river side and the young man fell in and was drowned, he grasped a *Myosotis* flower which was within his reach and throwing it to the girl exclaimed with his last breath "Forget me not." Then we have the curious *Sagittaria*, named from its foliage resembling an arrow-head; the Marsh Marigold with brightest golden yellow flowers; the different species of flags and *Iris*; *Callas palustris*, whose beauty is found into its bright scarlet fruit; *Nymphaea odorata*, the sweet scented water Lily; the common yellow water Lily, and many others.

Little care is necessary after once planting except to check the intrusion of weeds, such as sedges and rushes, and seeing that the water is not motionless for any length of time. The first specimens of the great water-lily of the Amazon that were brought to England, did not thrive until the gardeners, who studied the natural conditions under which the plant grew, discovered that in their native waters there was a continuous ripple; they then introduced a little mechanical contrivance to produce the same on the surface of water in the tanks in which the lilies were grown, and their cultivation was then a perfect success.

GEO. MOORE.

A HARDY PERENNIAL.

Bocconia cordata.

This noble plant belongs to the natural order, *papavaraceae*, although its flowers are borne in plumes, and it is therefore commonly called the *plume poppy*.

It is well adapted to any soil, but it is not suited to the flower border, as it grows too large and spreading, attaining a height of six to eight feet; but planted on the lawn or shrubbery, single specimens are very effective. The foliage is very handsome, deeply cut, resembling the poppy, and its peculiar glaucous hue harmonises admirably with the tall, feathery plumes of creamy white rising above it. The blossoms last throughout the months of August and September. It is a native of China and Japan and is quite hardy.



Bocconia cordata.

THE HABITS, FOOD, AND ECONOMIC VALUE OF THE AMERICAN TOAD.

The Natch experiment station of the Massachusetts College of Agriculture has been, for some time investigating the character and probable usefulness of the toad, and the pamphlet, from which the following brief extracts are taken, is full of interest. For many years the value of the toad as a destroyer of noxious insects has been recognized, and it was common for gardeners to keep one in their melon pits and cucumber frames.

Unlike frogs, toads are, in a measure, domesticated, and make their homes near the abodes of men, and on a summer's evening, after a shower, it is no uncommon thing to see them in numbers, hopping about the garden walks, not at all afraid of visitors, but seeming to claim a right to protection on account of the good they are doing. This peculiarity renders it easy for men of science to study their habits, and what their food consists of; although to the casual observer, this may not appear to be of much importance, the investigations that have been made in Massachusetts prove that it is much more so than may be supposed, and that the economical value of the toad, as an insect destroyer, is far greater than could have been suspected.

A great deal of interest was taken in the toad by

the ancients, but chiefly of a superstitious or ludicrously fanciful nature. They attributed to him good qualities which he did not possess and accused him of evils of which he was not guilty; as, for instance, medicinal and curative properties, and poisonous and venomous influences. They also had a legend to the effect that he carried a jewel in his head; but his real value as a help to successful agriculture was never mentioned, and it remained for a more scientific generation to demonstrate this fact.

The superstitious beliefs connected with toads are very curious, and it is still more so that they should exist in the minds of many even at the present day, and that to many people the toad is an object of loathing and disgust. Some of the strange fancies are, that touching a toad will produce warts on the hands, and, therefore, few persons like to touch a toad; another idea is that killing toads will produce bloody milk in cows; that a toad in a well will insure a constant supply of water, and one placed in a newly made cellar will bring prosperity to the household.

Toads however have now been discovered to possess useful qualities apart from all superstitious theories and beliefs; and in view of the legion of insect foes that beset their crops, the farmer and gardener will do well to follow up the studies of the scientists and see whether it will be worth their while to encourage the increase of a race of creatures which can do him no harm but, on the contrary, may prove a valuable ally in the warfare which must be actively prosecuted against the enemies which destroy his crops and render his efforts abortive.

We are apt to think that toads are scarce, and that the few we see cannot do much good. This may be accounted for by their not being gregarious; but the question is, are they not more plentiful than we imagine? The writer of the pamphlet alluded to states that he removed from a single female of average size 1279 ova, and, as she had commenced laying, this figure did not represent the total number of eggs.

Authentic records are in existence as to the longevity of the toad. One instance is given in which a toad lived thirty-six years and was then accidentally killed, and another was proved to have been twenty-three years in the same yard. There are numerous cases in which the same toads have been known to live for from eight to fifteen years.

There may be some basis for the belief that the toad is venomous, for under excitement, it ejects a colorless fluid from the skin, and it has been remarked that when dogs and cats have bitten a toad, they have afterwards manifested signs of considerable distress.

Toads although not gregarious hibernate in groups, and although cold benumbs, it does not kill them, and after they are apparently frozen they will revive when brought into a warm place. There is a difference between the hibernation of warm blooded animals; as for example, the bear, where the life functions are lowered yet still in action, and that of the amphibious reptiles and insects where these functions are entirely suspended.

But it is more to our purpose as affecting the economic value of the toad to notice his feeding habits, what his food consists of, and how he secures it. Toads do not take any dead or motionless object, only preying upon living and moving insects, snails or worms; the importance of this peculiarity is to be noticed as showing how valuable are his services.

The toad's tongue is his only organ for seizing his prey, and is admirably adapted for the purpose, it is capable of extension and is covered with a glutinous substance which adheres firmly to the object seized.

Toads seem to have a strong sense of locality, and have regular beats in which they search for food. On cool evenings, about sunset, the same fellows can be seen slowly hopping (1) about the garden walks, grass plots, road sides, or cultivated fields, seeking what they may devour.

In cities and suburban villages, their favourite haunts are the garden walls, and spots beneath electric lights. The writer, from whom we are quoting, states that he noticed on many occasions eight large toads seated under an arc light, watching for the insects to fall, which had been deprived of their wings and actively devouring them, until the electric current was turned off when they would retire to their hiding places.

The quantity of insects a single toad will consume is enormous. It has been verified, by examination, that in twenty-four hours, he has emptied and refilled his stomach four times, the food consumed being equal in bulk to four times

(1) We should say: frogs hop; toads crawl. Ed.

the stomach's capacity. These studies have been made by confining toads in cages and carefully noting their proceedings.

To establish the economic status of insectivorous animals, it is necessary to watch their feeding habits and examine the contents of their stomachs and these must be secured for careful observation and study. It may seem cruel to kill the creatures which are so useful but investigations cannot be carried on without some victims.

In one hundred and forty nine stomachs examined, vegetable matter formed less than one per cent, which appeared, from its character, to have been taken by accident, but these vegetable substances were always associated with a large number of ants and insects which creep upon the ground. One per cent of mineral material was also found, no doubt taken in with the food and perhaps necessary to its digestion, as gravel is in poultry.

But the important fact bearing upon the usefulness of the toad is, that the remaining ninety-eight per cent of the stomach's contents was animal, and when they were subdivided, it was found that insects formed by far the greater percentage.

And this forms the most interesting phase of the whole question. Insects are the principal food of the toad and are the great enemies of the agriculturist. Roaches, grasshoppers, ants, cut-worms, chafers, beetles, curculio, canker-worms, etc., etc., are food for our sombre-coated friend, the toad. The evidence as to his value is greatly in his favor, although he kills a few insects of a beneficial character as lady-birds, spiders and carrion-beetles. Eleven per cent of the toad's food is composed of insects and spiders directly or indirectly helpful to man; eighty per cent of insects and animals directly injurious to cultivated crops. Further comment is unnecessary as to the valuable services of the toad. An estimate is made thus. A toad will destroy (*in a year?*) of cut worms 1988, and if the damage caused by these cut worms is valued at one per cent, it is found that in one season a toad might destroy as many cut worms as would damage the crop to the extent of \$19.88.

Gardeners have a better chance to take advantage of the usefulness of the toad than farmers; every gardener should aim to keep a colony of toads in his growing crops, greenhouses, (1) and forcing pits, collecting them as opportunity offers

(1) Our common practice in England. They were always to be found near the top for filling the watering-pits. Ep.

and transferring them to his garden; they will soon be at home in it and their sense of locality will induce them to remain where there is a sufficient supply of food available. Artificial shelters should be provided for them, a little hole dug in the ground and covered with a bit of board or flat stone; under this they will remain during the day, as they cannot bear heat or a dry atmosphere, and will sally forth in search of food early in the morning or at evening.

Toads should have public sentiment excited in their favour and no wanton destruction allowed of this humble servant of mankind.

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

WARM POULTRY HOUSES.

When I speak of warm poultry houses, I do not mean warm in the sense that a dwelling house is warm. A poultry house in which water does not freeze during the coldest weather is amply warm enough for a flock of hens. As a matter of fact, it does not matter much if the temperature gets down five or six degrees below freezing point, for even the large-comb varieties will run out of doors and appear to be perfectly comfortable when the temperature is down to ten degrees above zero if the wind does not blow.

It should be remembered that the lower animals are not so susceptible to changes in temperature as more highly organized human beings. Turkeys, duck, and geese, show no sign of suffering when allowed to run at large during the most severe weather, and there is reason to think that they sleep in perfect comfort at all times in the year even when unprotected. Hens will sleep out of doors through the winter without discomfort, except that their combs and wattles freeze. The idea of building warm poultry houses is to stimulate the hens to lay during the cold months.

If they are kept warm, egg production goes on during the winter; while, if left out of doors or in a cold house, the food they eat goes to keep their bodies comfortable, and nothing is left for the production of eggs. Keeping this fact in mind, it is not a difficult matter to make a poultry house warm. A single rank of boards, lined with

tarred paper or other material of similar kind, is protection enough, if the house is not unnecessarily large. The sleeping room should be partitioned off so as to confine the animal heat to a certain extent, which will keep the heat up. The natural heat of a hen's body is 103 degrees, while that of man is 98°, a difference of five degrees in favor of the hen, and these five degrees makes just that much difference in keeping a room warm by animal heat.

Large glass windows allow the heat to escape and should be covered with curtains at night. Glass allows the heat-rays of the sun to pass without obstruction, and a room with a large glass window in it, through which the sun can shine, will allow the sun to warm a room even in the coldest days. Very often, the effect of the heat-rays may be felt when the sun is behind thin clouds. As soon as the sun goes down, these heat-rays pass out as readily as they come in, unless stopped by obstructing material. For this purpose a muslin curtain answers very well. If the window is covered by such a curtain at night, the heat which came in by day will be kept confined and the room will not be entirely darkened, as it is not necessary to open it as early in the morning, as would be best if an opaque curtain were used.

Fowls should be fed very early in the morning, and a good plan is to put the morning feed in the poultry house in the evening after dark, where it can be found and eaten in the morning as soon as daylight comes. This saves a great deal of trouble, and gives the birds a chance to fill their crops as soon they leave the perches.

Do not keep a hen during the winter unless there is a fair prospect that she will pay her way at least. Stunted chickens should be sold or eaten, and only the largest and most vigorous should be kept after cold weather begins.

Let the hen sit if she wants to. Give her some porcelain eggs, and by the time she has sat a week or two she will wear off fat and be ready for laying sooner than otherwise. It costs no more to feed a full blood than it does to feed a mongrel, and they are far more profitable, as a rule.

Watch the moulting hens, and keep those that begin to moult earliest; they are the ones that will lay during the winter, and if of sitting breeds, sit earliest in the spring.

The best way to make owls profitable is to keep them busy all the time. Feed them grain where

the grass is high, or throw it among straw, so they must hunt it out. S. J. ANDRES.

RATIONS FOR HENS.

Any kind of food for the hens is too expensive if it does not make them good layers; but no food that will produce this result is too high. In the summer, grain may be reduced to a small ration, but in the winter, the hens require it to impart heat to the body and sustain life. Corn is the fuel which keeps the hen warm. Both in winter and summer, fresh lean meat and green bone are necessary for the laying hen if she is to be kept laying. The bone is better if it has meat adhering to it. Warm sweet milk is a good winter drink. These things the farmer can afford, because he gets back the cost, with a profit added, when he gathers and sells the eggs which the feed has enabled the hens to produce. S. J. ANDRES.

USEFUL HINTS.

A diet of grain alone will not stimulate egg production. With it must be given other foods, such as milk, meat-scrap, crushed bone, green-cut-bone, if it can be had, ground shells, and plenty of such food in the shape of grass or other green-stuff in the summer, and raw chopped vegetables in the winter.

Keep the young chicks growing; do not allow them to become stunted. Rapid growth produces the finest show birds, as well as the most profitable market chicks. So the advice to keep the chicks growing is found whether you are breeding for exhibition or the market.

The feeding of brooder-chicks may be summed up in a few necessary principles. Supply strong nourishing food. Feed only when they are hungry. Give plenty of grit and green food and above all compel to exercise constantly. Give them as much fresh air as they would get with their natural mother.

Recent statistics show that the most popular fowl in America to-day is the Plymouth Rock. Next comes the Leghorn, famous as the best producer; then the Wyandotte, Cochin,

Brahma, Langshan, Minorca, Game, Hamburg, Java, Polish, Bantam, and oddities, such as Japanese Silkies; then Guineas, Dorkings, Dominiques, White Wonders, Argonauts, Aztics, Samatras, Anconas, Pea fowls and Pheasants. After these rank turkeys, ducks and geese. At least eighty percent of the breeders of poultry keep the Plymouth, about seventy-five, the Leghorn, and so down to the last varieties named.

A superior quality of poultry wanted.—How to get it.—The proper breeds and how to fatten, kill and dress them.—The British and Home markets.

(By A. G. Gilbert).

In a recent number of THE JOURNAL OF AGRICULTURE, I promised to give particulars as to the proper fattening, killing and dressing of poultry for the British market, which is almost an unlimited one for a superior quality of poultry. It has already been shown that our climatic conditions are favorable; that grain is plentiful and cheap and that we have more than one breed of fowls, which make large and early market chickens. All these are prime factors in the production of the superior quality, so necessary. It remains for our farmers to take advantage of their opportunities and produce the quality of poultry flesh, which will certainly bring many millions of dollars into their pockets. Surely such a result is worth striving for.

The proper breeds.

It has already been shown in these columns, that the proper breeds to have, in order to obtain the large and quick growing chickens, are Plymouth Rocks, Wyandottes, Brahmans and Cochins, with preference for the first named two breeds, for the reason that they are more rapid in making weight than the two latter. Only last week a farmer at Domemenville, near this city, sent me four Barred Plymouth Rock cockerels, apparently May hat hed, which weighed respectively 6.13½ : 6.12 : 6.11½ : 6.9. All being, with the exception of the last, within a few ounces of 7 lbs. each. And this was the farmer's first experience in rearing and fattening Plymouth Rocks! Could anything be more satisfactory? He writes "that he would not be bothered in future with breeding mongrels." His testimony—from a farmer's standpoint—is simply invaluable.

How to fatten.

Having carefully fed and housed the chicks from time of hatching, to the age of 3½ to 4½ months, the chickens should be penned up and fattened for three weeks, on the following ration:

Finely ground oatmeal.....	2 parts.
“ barley meal....	1 “
“ cornmeal.....	1 “

or, finely ground shorts may take the place of the barley meal. During the last week a little tallow added to the food will very much improve the quality of the flesh. (1) Water and grit should be supplied. The birds may have a limited run, or, be penned up in coops with slatted bottoms, to permit of the droppings falling through—and with a V shaped trough in front, to hold the food. Feed regularly, morning, noon, and evening, all the birds will eat. Leave no food to sour and feed none that is the least sour. The above plan will give a very superior quality of flesh, and, perhaps, less fat than if the cramming process had been resorted to. Thoroughbred chickens, of the breeds named, fatten quickly and it will be hardly necessary to resort to the forced method of feeding, which is certainly necessary and successful in the case of non-descript, or, half-bred chicks. It is not my intention to disparage the cramming method, but to strongly advocate the farmers breeding such thoroughbreds, as will give the best results in the shortest time and at the same expense, perhaps a trifle less. The farmer who sent me the chickens referred to above, said it cost him 5½ cents per pound to fatten his Plymouth Rocks and I paid him 10 cents per pound, live weight, for them. Such chickens, as he sent me would be worth in Liverpool, wholesale, sixteen (16) cents per lb., the chicks of course being dead and plucked, but with blood and entrails intact.

How to kill.

Birds for the British market should be killed by dislocating the neck. (2) Pluck the feathers while the bird is warm, taking great care in so doing, that the flesh is not torn or bruised. The bird should be held, so that the head will hang downwards and the blood allowed to flow to and coagulate in the neck. It is imperative that all poultry should be fasted for 24, or, 36 hours before

(1) And a dash of sugar will not hurt it! Ed.

(2) Far better and quicker than the knife process. Ed.

being killed. The crop will thus be entirely empty of food, which if left in the crop will decompose and ruin the carcass. If thought necessary, after plucking, the birds may be placed, on their breasts, in a V shaped pressing trough and gently pressed. This will give a compact shape to the carcass. Feathers should be left on the neck for about 3 inches from the head, and a few feathers on the wing-tips.

Some things to avoid.

Avoid having the flesh torn, bruised, or, marked with blood. Avoid having the birds look anything but clean, plump and inviting in appearance.

On no account should the birds be dipped into hot water to facilitate plucking.

For the Home-market.

For the home market, the birds may be killed with a knife with a long, narrow blade sharpened on both sides. The bird with its legs tied together is laid upon its back, its mouth is opened by the left hand and the point of the blade is inserted into the slit in the roof of the mouth, a firm cut is made into the brain, cutting it along its entire length. Allow the bird to hang until the blood has drained out. The plucking should be done while the body of the fowl is yet warm. It is so much easier if done at once. The wings should be twisted under the back and the legs tucked up.

What the aim should be.

The aim of our farmers should be to have the very best quality of poultry, not only for export, but for our home markets. With improved quality, the home market figures will doubtless become greater. The field is a very large one and we have the assurance of the Minister of Agriculture for the Dominion "that no branch of Agriculture offers better remuneration, at present, than the shipment of dressed poultry of a superior quality to the British market." It is quite evident to the readers of this paper, that the farmers must first produce the superior chickens before they can be shipped. Will they do so?

Experimental Farm,

Ottawa, 7 Nov. 1899.

The Dairy.

TUBERCLE BACILLI IN MILK.

There is no doubt that, of those diseases that are communicable from the animal to man by means of the milk, tuberculosis is by far the most common. The importance of this disease with reference to public health and successful cattle breeding is so great that as full a consideration of the subject should be given as is possible. Tuberculosis, or consumption, is the term now used to indicate a number of apparently different maladies that affect warm blooded animals, and is caused by the growth of the tubercle bacillus. In this connection, I will but refer to the bovine type of the disease and the relation that this bears in milk and dairy products to the human race. It is now quite generally accepted that the disease is caused by the same germ whether it be present in the human being or the lower animal, and the danger of infection exists in the direct transmission of the virus from one to the other. The tubercle germ, *bacillus tuberculosis*, was discovered by Robert Koch in 1882. Many years previous to this the infectious nature of consumption had been recognized. Indeed experiments were made in 1868 which showed that tuberculous material was capable of reproducing the disease in a healthy animal if it was properly transplanted.

Koch isolated the specific germ able to cause this disease, and finally succeeded after many failures in cultivating it in artificial media. In this way the peculiarities of the species could be ascertained. This organism is remarkable for the narrow temperature limits within which growth will take place; the minimum being 86° F., while the maximum is 104° F. This is important, because there is then no danger of multiplication, if a few germs should accidentally gain access to a milk supply. This organism can withstand drying easily, in fact, by virtue of this property it is most widely distributed. In the later stages of consumption, tubercular material is thrown out of the living body. This dries quickly and is mixed with the dust; in this way the germs are easily blown about and gain an entrance into a new host. Dried material of this sort will often retain its infectious properties for several months. Putrefaction and decomposition, even, are said not to quickly destroy its vitality. Sunlight is,



however, an efficacious agent in killing the germs that are exposed to the direct solar rays; and, even when subjected to a diffused light, the bacilli are destroyed in a few days.

The main danger to mankind from bovine tuberculosis is due to the possibility of the transmission of bacteria in quantities from a diseased animal by means of the milk or meat.

Tuberculosis is a common disease in almost all our domesticated animals, particularly with cattle. Unfortunately this disease is more prevalent with dairy stock than any other. This is largely due to the unhealthy conditions under which this class of animals is often kept. Close confinement in badly ventilated stables, immature and continuous breeding, prolonged periods of lactation, do not of themselves cause the disease, but each of these factors exerts a depressing influence upon the animal that hastens the progress of the malady if the disease once gains a foothold. It is practically impossible to estimate, at present, the prevalence of this disease in dairy herds in this country. The recent introduction of the tuberculin of Koch, as an aid in the diagnosis of the disease in cattle, has shown the trouble to be more widely spread than was at first believed, but sufficient data have not yet been collected to enable an accurate estimate to be made.

The tuberculin test, while evidently not always an infallible guide to a correct diagnosis, has proved itself so far superior to the ordinary physical methods of examination, that the results obtained by its use are held to be a more correct condition of the actual state of the disease than has heretofore been known. Its use in some of the finer bred herds that have been subject to much change by continual sale and purchase, has often revealed an alarming prevalence of the disease; but the supposition that the great bulk of dairy cattle are as badly affected as these herds is entirely unwarranted.

In a great many cases in cattle, the disease assumes a chronic form that is not recognizable by a purely physical examination. This chronic type may some times pass into a more acute phase, if the vitality of the animal body be severely taxed, as in calving.

While the lungs are the organs that are most frequently attacked, the other organs of the body are by no means exempt. Often the disease develops in the udder, causing an enlarged, indurated condition of that gland. When this organ is

affected, the milk is unfit for food purposes, as the bacilli of this disease are usually present. *Woodhead* found, in fourteen out of nineteen cases, that the milk, or the sediment from it, contained bacilli numerous enough to produce the disease in guinea pigs inoculated with small quantities of it.

Often, the udder may contain tubercle bacilli and still not show any external symptoms of the disease. *Prof. Bang*, of Denmark, and others, have shown that in quite a percentage of animals with apparently healthy udders the milk possesses infectious properties. The disease may sometimes be more or less generalized in the system and the disease germs be found in the milk, while it is apparently normal to the eye. For this reason, the greatest caution should be exercised in using milk from cows that may have the disease even in the most incipient stages.

The possible danger from tubercle bacilli in milk may be greatly diminished, if not entirely eliminated, in two ways: by dilution and by the use of heat (Pasteurization).

The milk of a cow that is so infectious that a few cc. of it will kill a rabbit, will be rendered comparatively harmless, if it is diluted with several times its volume of healthy milk. This dilution reduces the number of germs absorbed in equal volumes so much that they fail to establish themselves in the intestinal tract, and consequently the disease does not gain a foothold.

H. WESTON PARRY.

Oct. 28th, 1899.

Cheese.

Remarks by Mr. A. W. Grant.

In reply to the invitation of your President, I beg leave to say a few words on the necessity of keeping everything in the dairy clean, and also about the quality of our products. It is quite useless to repeat here that without cleanliness, it is perfectly impossible to attain to quality, at least to the finest quality. There is plenty of room at the top of the scale; but it is only the finest qualities of butter and cheese that ever reach it. It is a twice-told tale, I know: but it cannot be too often impressed on the patrons, that in the milking of the cows and in the subsequent care of the milk, it is impossible to be too regardful of cleanliness; that cows too often eat pretty nearly

every kind of food, and that the water they drink is chiefly to be found in stagnant, muddy pools. Unless the cow eats nothing but good food, and drinks no water that is not pure, the milk cannot be what it ought to be.

Travelling a few years ago through the Cheddar Valley, in the County of Somerset, England, I was forcibly struck with the care and attention paid by the farmers to their pastures. I asked one of my friends what it was that a man we saw in the meadows was gathering, for I could see nothing in the field but green grass: a genuine lawn it was. "The man," replied my friend, "is pulling up weeds." "There is no wonder that you can get 15 cents a pound for your cheese, wholesale, with such careful work as that," said I. "True," replied my friend, "for if the cows were to eat these weeds it would injure the quality of the cheese and affect its price." It is in that district that the famous English Cheddar is made, that sells so high, and it will be easily understood that the land there lets for a good rent.

As to the treatment of the milk that is intended to yield a cheese of the best quality, not only is a skilled maker needed, as well as a well-mounted factory, but also and before all a good ripening-room, where the temperature can be kept at between 65° and 70° F., and to ensure that, it must be thoroughly isolated, furnished with an underground drain, and a heating apparatus: steam or hot water. No fewer than 600,000 to 800,000 cheeses are spoiled every season in Canada in the ripening-rooms, the greater number by the heat of summer, the remainder by the cold of spring and fall. This is not only a direct loss of \$200,000 to \$300,000 to the farmer, but an indirect loss of much greater consequence, since these cheeses must be sold, badly ripened and decayed as they are, and when they are worked off on the English consumer it has the effect of lessening the consumption by at least 25%, in my opinion; the prices, too, suffer, for in thus cramming an inferior article into the consumers, there is, as I said, a double loss.

Now, let us examine the question from another point of view: suppose these 600,000 or 800,000 cheeses had not suffered in the ripening room, would not the question be reversed? Instead of the consumption being reduced by 25%, and the price lowered, should we not have an increased consumption by, perhaps, 50%, and two or three cents higher prices than those paid in during the

last few years. In my opinion, and I have no doubt about it, such would be the case.

There is no place in the market nowadays for inferior goods of any sort; and we must thoroughly understand, the sooner the better, that it is not the different qualities of cheeses that compete the one with the other; but that the cheese production enters into competition with all the rest of food products, and reciprocally. Although cheese is the most condensed and the most nutritious of food-products, if there were not a pound of cheese made, the population could manage to do without it; it is not the same with butter, bread, or, most likely, with beef. Thus, cheese is, at least in a certain sense, an article of luxury, more or less, and it will become so in a positive sense, unless we manufacture it of that superior quality I have just described.

As to butter, I am a convinced partisan of the necessity of pasteurising the milk or the cream, and of using the commercial ferments. The English market wants butter, salted at the rate of about 3%, pale in colour, not containing more than 9 or 10 per cent. of water, soft and silky in grain, and with a delicate aroma. I have a special demand for a butter with at the most 2 per cent of salt, for which I can pay a little more than the ordinary price; but in so fresh a butter the quality must be strictly "A 1.," for in such butter there is not salt enough to conceal the defects.

Butter should be sent away from the creamery every week, or as soon as possible; it should be kept in the lowest possible temperature. Ten degrees above zero of Fahrenheit's scale is about the best temperature for the butter-store. All butter freshly made that remains a week in a refrigerator at a temperature above 32 F., is gradually losing its pink of condition, and at the end of that period is no longer of the very finest quality, in spite of its being generally classified as "very fine."

Mr. D. Macpherson—Spoke in English. The following is an abstract of his address:

He was happy to see so many farmers attending the convention to learn all about dairying. The people here are beginning to understand the importance of cleanliness in the dairy. No man alive can make good butter or cheese with inferior milk.

There is one essential point to be considered by all who want to succeed in dairying; it is to produce the raw material in abundance and at the

least possible cost. If milk is to be produced at a cheap rate, the land must be well manured. But how can the land be properly treated if you allow your dung to lose itself in the snow and flow off into the brook in a thaw? Farmers ought to take the greatest possible care of their dung, both liquid and solid, and expend it in the enrichment of the soil.

The soil thus enriched will yield more hay; with more hay there will be more milk; then the milk will cost less, and yet the profits will be greater.

The only way of getting at cheap milk, is to make your land yield as much hay as possible. But it is not alone necessary to make your land yield its full quota of hay, it must be given to your stock: a farmer should never sell a single bundle of hay.

**MONTREAL BUTTER AND CHEESE
ASSOCIATION**

Of The Montreal Board of Trade.

MONTREAL, October 28th, 1899.

To the Cheese Manufacturers of Canada.

Gentlemen,—In previous years this Association has issued circulars to the Dairymen of Canada strongly advising them in their own interests, as well as of the Cheese trade generally, to discontinue the manufacture of fodder cheese, knowing that the manufacture of these cheese tended to lower in a serious manner the price as well as the high standard of the Canadian Product in the British markets. The result of factorymen following the advice then given has unquestionably proved beneficial and resulted in factorymen obtaining better prices for their fall make.

The Association again desires to call the attention of the Canadian cheese manufacturers to the desirability of discontinuing the manufacture of cheese at the end of October. Should any large quantity of November and December cheese be made, it would react in an equally unfavourable manner on the market, as that produced by the manufacture of April or fodder cheese. The members of the Association believe that it is strongly to the interest of the producers to only make cheese during those months most suitable for the production of the highest grade, and have

no doubt that the net returns will be larger, and the character of our goods stand higher, if the advice of the Association is followed in this matter, and are confident that the factorymen will thereby obtain much higher prices for their product next season if this recommendation is adopted.

The Association notes with pleasure the large increase in the exports of butter, the result of improvement in quality and means of transportation, and would urge our factorymen wherever practicable to make creamery butter during November and balance of season, packing it into boxes, which is now the favourite package for export, or in tubs if intended for local use. There is also a fair demand for 70 lb. tubs for export.

I am, Gentlemen,
Yours truly,
J. STANLEY COOK,
Secretary.

CENTRAL EXPERIMENTAL FARM.

OTTAWA, Nov. 6th., 1899.

ARTHUR R. JENNER FUST, Esq., Montreal.

Dear Sir,—Your favour of the 1st inst. with a slip enclosed from an anonymous correspondent to hand. I beg to say that the facts therein stated are correct. I may say, however, that the separator in question was not compared with any other separator, so no credit is deserved on the score of a comparative test.

Yours very truly,
J. H. GRIDDALE,
Agriculturist.

At the Experimental Farm Dairy at Ottawa, a new small sized "Alexandra" Cream Separator, supplied by the makers R. A. Lister & Co., Ltd., of 579 to 581 St. Paul St., Montreal, has been running for the past three months. It has given so much satisfaction that the Department have decided to purchase some. The principal advantage in the style of driving is that the steam engine and belts are dispensed with.

The preceding letter and the following paragraph will explain themselves. Ed.

