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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

Vol. 3. No. 16

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

FEBRUARY 15th, 1900

- THE -

Journal of Agriculture and Horticulture

The Farm.

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 etc. All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jeanner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisement, etc., address the Publishers

NOTES BY THE WAY.

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Bacon-hogs.—A pretty puzzling thing it seems to be, to get the right sort of hog for converting into bacon, and, having got him, how to feed him, for how long a time, and to what weight, seem to be only adding difficulty to difficulty.

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We gave in our last the opinion of one of the large packing farms on the "b'ock-test" at the London, Ont., fat-stock show; now, we may note what Mr. J. B. Reynolds, one of the professors at Guelph, says on the same subject.

Many of the hogs seem to have been fed too long: many were of the wrong type. Mr. Andrew Elliott, of Galt, showed two Tamworths of the same litter, both had been fed exactly in the same way, yet, one was fat and chubby, the other a typical bacon-hog! How on earth is the farmer to manage? Must he feed the chubby one for barrel pork, and the other for bacon?

Another man, Mr. Brethour, of Barford, had just over-kept a hog, that a fortnight before the show was the best he had, but from that time lost quality from over maturing. It was good meat, but not exactly what the bacon-curers want.

Of breeds.—There were good bacon-hogs shown of all breeds, and, equally of all breeds, there were some inferior. The Essex pigs, that in the editor's time were emphatically *roasters*, are now, it seems converted into long, light hogs, well suited to the bacon-trade.

Test of sheep-carcases.—Reports of the breeds of sheep.

Breeds	Number killed	Average live weight	Shrinkage p. c.
Southdown	8	167	38
Shropshire	5	153	44
Cotswold	4	173	45
Suffolk	3	195	46
Dorset	2	139	48
Lincoln	2	194	43
Leicester	1	159	41
Oxford	1	181	47

So it seems that the carcass of the Southdown only weighed 22 lbs. less than the carcass of the gigantic Lincoln! What then were ages of each? There must be some reason for so slight a difference.

Says the reviewer: "The number of sheep slaughtered was 26. Many were too fat. In the Shropshire class, a little thin lamb, dressing 52 pounds, was awarded first prize on the ground that it had a much better proportion of fat and lean through the back and ribs." Were, then, lambs and older sheep shown together in this block-test?

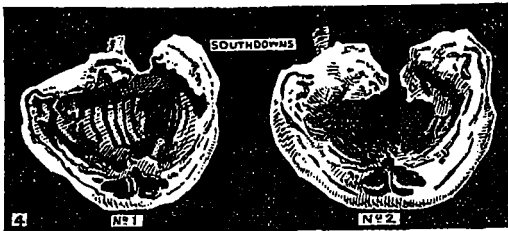


Fig. 4.

In many cases, the decisions of the live-stock Judges were reversed in the block-test. Here are two outs of Southdowns (fig. 4), No. 1 the above mentioned lamb; No. 2, one which was considered to be much too fat for anything.

In this engraving are shown two Cotswolds, No. 1, the first prize, and No. 2. No. 1 has a very superior "leg of mutton"—observe the grand swell of the bulge, just below the tail, as compared with the almost straight line of the leg of No. 2, which gained no prize. Also the cut across the ribs of No. 1 shows more lean and less fat at the back. We are indebted for the above engravings to *Farming*.



Fig. 5.

Rainfall in England.—The average rainfall, at London, for the last forty years, ending in 1899, was 25.29 inches; and the fall for the last ten years has been: 21.23, 28.15, 22.60, 19.80, 27.94, 21.47, 23.52, 22.86, 17.69, and 22.54. The wettest season had 28.15 inches of rain, and the driest, only 17.69. If any one desires to know what it is that has gained for England is evil reputation as a wet country, he must visit the North-Western counties of Lancashire, Cumberland, and Westmoreland.

Whole-wheat-flour.—We hear a good deal of nonsense talked about the superiority of whole-wheat-flour for bread; that it is more fortifying and digestible than the finer qualities. From experiments made by the German War-Office, to test the relative values of bread made from different qualities of flour from both wheat and rye, we find that the coarser breads were put out of court; that bran was of no use; and that the finer the flour is dressed, the more digestible is the bread made from it. This ought to set the question at rest for ever—only it won't.

Rape and Lucerne.—It is worth while looking over the 72nd Bulletin issued by the Ontario

Department of Agriculture, were it only to see the general opinion of that province as regards rape and lucerne. Many farmers there seem to have tried the two crops, and, except where the drought of last summer affected them, their success seems to have been general, as, for instance:

Nichol, Wellington: Rape is becoming a very common fodder-crop here. Lambs, sheep and cattle do well on it.

Gainsborough, Lincoln: Rape is coming slowly to the front in this district as a rapid finisher of lambs, beeves and pigs. Lucerne, when farmers succeed in getting a catch, is giving splendid satisfaction.

Grantham, Lincoln: Lucerne is coming into use; mostly as hay; a few only use it as green fodder.

South: Lucerne is better known now than heretofore; it will, before long, be more extensively planted than it has been.

Beverly, Wentworth: I consider rape a fine pasture for lambs in the fall.

Norwich N., Oxford: Having grown lucerne with most astonishing success during the last ten or twelve years, I am at a loss to know why it is not more universally grown and appreciated. I have never experienced anything approaching a failure in getting a most vigorous catch, tenacity of life and productiveness. This plant being even richer in carbohydrates than red clover, enormously productive and very much relished by stock of all kinds (if cut before it becomes woody) has sufficient merit to revolutionize, at least to some extent, the present system of stock and fodder growing, including dairying.

Halton: Rape is grown pretty extensively.

And so on. But, if lucerne is properly prepared for, and sown on suitable land, drought ought to have but little effect upon it. The best soil for lucerne is a rich sandy loam, with a good deep subsoil, not affected by water. The great value of the plant, indeed, is that, owing to the immense penetrative power of its tap-root, it can dive hither and thither into the subsoil—16 to 20 feet—and thus reach depths into which drought can never make its way.

A pretty sharp reproof is administered to the agricultural population in the same Bulletin:

Williamsburg, Dundas: There are too many shows, agricultural and others, for the good of farmers—they and their wives gadding from Dan

to Beersheba during the fine weather to the neglect of fall work and then plowing in the mud in the late fall.

Poor things! Are the farmers and their wives to have no fun at all?

As to the *dairy*, we were pleased to see, in the same Bulletin, that "The Durham-grades are by far the most profitable in our locality" (Kent county). At Lobo, Middlesex, "they have tried Jerseys, but a great many have given them up and bought Durham-grades (i. e." Dairy-Short-horns).

A marvellous falling off in the cultivation of tobacco in Ontario:

1898—ten million pounds.

1899—two million and a quarter pounds.

In the county of Essex, 5,086 acres were planted with tobacco in 1898, but in 1899, only 1,411 acres!

There were 5,000 fewer *horses* in Ontario than in 1895; 3,000 fewer *working-ones* in 1899 than in 1895; 250,000 fewer *sheep* in 1899 than in 1899; and 672,000 *more hogs* in 1899 than in 1895.

Labour seems to be getting scarce in Ontario, many young men having gone to the North West. Domestic servants—on the farm—are, as usual, hard to find.

Straw.—As hay, clover-hay particularly, is likely to be dear this back-end of winter, it would be well for farmers to consider how to make the best use of their straw.

The best thing to do with straw, in our opinion, is to cut it into chaff—not too short for *cattle*—and scatter over it a soup made of crushed flax-seed, molasses, and a little salt. A half-pound each of flax-seed and molasses, in enough water—hot or cold—to thoroughly dampen the straw-chaff, will be found sufficient for each full-grown head of *cattle*, and proportionately less for *horses*, *sheep*, and young *cattle*. This mixture will be found to be very appetising, and by no means costly.

GRASS-SEEDS.

To the Editor:

Dear Sir,—I should like your advice, through the columns of the JOURNAL, upon the following questions.

What kind of seed and how much per acre shall I stock down with to make the best sheep pasture? I am sowing oats and want to turn sheep into field after harvest.

To get the best hay for milch-cows, shall I sow red clover, alfalfa, or sorghum? "Land is in good state, and high and dry." How much seed per acre? If sorghum, how shall I harvest it?

Thanking you in advance,

I am Sir, yours truly,

E. P. REMICK.

Barnston, Que.

Reply.—The best pasture-seeds for an imperial acre of the general run of land in the province are the following :

Sheep pasture.

Orchard-grass	14 lbs.
Meadow-fescue	6 "
Perennial red-clover	6 "
Alsike clover	2 "
White-clover	2 "
	30 lbs.

Observe, please, that the only way to keep pastures permanently productive is to feed them down regularly; not to let one plant throw up its seed-culms. This does not mean that the cattle or sheep should be allowed to gnaw the very roots of the grasses, but that they should be shifted from field to field as occasion serves, keeping the pastures fairly level all over.

For hay we recommend, on general terms, as we do not know the soil at Barnston :

To the imperial acre.

Alsike-clover	3 lbs.
Common red-clover (<i>t. pratense</i>) ..	7 "
Timothy	6 "
Orchard-grass	14 "
	30 lbs.

Alfalfa—preferably lucerne—is the most difficult of all the clovers to make into hay. Its proper place on the farm is as a fodder-crop to be cut green. Sow from 15 to 18 pounds to the imperial acre with the barley or other grain-crop in the spring.

Wherever orchard-grass is sown, the crop must be fed-off or mown, as the case may be, before it gets woody.

As to the "perennial red-clover," (*t. pratense*

perenne), if the Montreal seedsmen do not keep it, we advise Mr. Rennick to import a few pounds from England. The Suttons, of Reading, Berkshire, or Carter & Co., Holborn, London, can be depended upon to supply the genuine quality.

We are sadly afraid that this extraordinary month's weather will play the very mischief with the clover-plant.

AGRICULTURAL ASSOCIATIONS.

An address delivered at the meeting of the Dairymen's Association of the Province of Quebec at St-Jérôme.

(By M. G. A. Gigault).

(Concluded).

Erratum. — By a singular oversight, we erroneously translated, in our last No., a passage in the negative, that should have been in the affirmative: see p. 357, col. 2, line 3. Instead of "Some societies there are that do not trouble themselves about exhibitions," read: "Some societies there are that only interest themselves in the holding of exhibitions." ED.

To insure success to a farmer, it is clear that his farm must be well cultivated, and the competitions favouring such a result, must evidently be the best means of securing the interests of agriculture.

Experiments.—There is another means of improving our system of farming, namely, experiments in the growth of crops. This is what was instituted by the first agricultural society established in the province; for it stated in its earliest report, published in 1789, that its intention was, above all things, to promulgate in its annual publications the results of experiments made by its members, or by others, with a view to the improvement of farming in this country.

In the same report, you will find information on the cultivation of wheat, buckwheat, on the use of plaster as a manure, and on divers other subjects.

In Ontario, many experiments are being carried on by the farmers; experiments productive of the best results, if we are to trust the reports published by the department of agriculture of that province.

In Britain, and especially in Scotland, many societies are having experiments made by farmers

on the growing of potatoes, on the improvement of meadows and pastures, and on other crops.

The *Agricultural Gazette* and the *Farmer's Gazette*, both papers published in the United-Kingdom, constantly bring these experiments before their readers. These experiments are, emphatically, practical experiments, their teachings cannot possibly be deceptive, and great importance seems to be attached to them.

The farmers of this province, too, have been making many experiments, of late, under the supervision of the Clubs. The reports we receive of them are, almost all of them, interesting. For instance: A report by M. Cléophas Gagné, a competitor in the experiments organised by the Farmer's Club of Cap St. Ignace, Montmagny, for the encouragement of the improvement of meadows:

"For the improvement of an *arpent* of three-year-old meadow on heavy land, well-ditched and water furrowed, I began by cross harrowing it; I gave it 22 bushels of ashes (*probably leached*), and a barrel of plaster, which dressing I spread by a stroke of the harrows lengthwise, and this harrowing so pulverised the land, that I thought it would answer to sow a mixture of clover and timothy over it.

After sowing the seed, I rolled it, the roller weighing about 500 lbs. The work was finished by the end of April. The crop of timothy was clean and abundant, while that of the neighbour-plots yielded one-third less, their hay being full of weeds, such as fox-tail, (1) wild mustard, (charlock), etc.

So well pleased am I with the success of this experiment, that I intend to renew this practice in future on my other meadows."

Cap St-Ignace, Oct. 6th, 1896.

(Signed) CLÉOPHAS GAGNÉ.

This report is confirmed by the Judges, who assigned the first prize to M. Gagné.

The second prize fell to the lot of M. Olivier Bernier, who, at the end of his report, says, like M. Gagné, "I am so pleased with the results, that I mean, next spring, to put as much of my meadow land as I can manage through the same treatment."

Such examples set by farmers must have great influence on the improvement of the meadows of the district in which they live.

(1) This cannot mean the grass so called. Ed.

Since the Department has instituted these experiments in the use of wood-ashes, and the results have been published in the *JOURNAL D'AGRICULTURE*, farmers seem to have paid more attention to the preservation and purchase of that manure; they appreciate its effects more highly, and its use tends to become more general. In my opinion, these trials are one of the best means to insure the adoption of the best systems of cultivation, and they cannot, I am convinced, be too earnestly encouraged by prizes offered by the agricultural societies. No more judicious use of their funds can be suggested.

Competition of milch-cows.—Another competition that ought to be especially encouraged by the agricultural societies is that of milch-cows, the same that was organised last year by the Hon. the Commissioner of Agriculture. In these, not only should the quantity of milk be reckoned, but, if possible, its richness as well.

It is with pleasure I observe that the Dairy-men's Association highly approves of these competitions. In an article it has just published in the *JOURNAL D'AGRICULTURE* it prays that greater extension be given to this organisation, since it points out the best cows, from whom heifers should be raised, to keep up the herd in its original profitable state, a practice indispensable to the success of dairying in general.

One of ~~the~~ st bulletins from Belgium tells us that, ~~in~~ country, too, the greatest pains are taken to find out the best milkers. Syndicates are organised there for the improvement of cattle. This is what the bulletin says on the subject:

"The movement in favour of the improvement of our cattle by means of selection is only of recent date. Almost all the societies mentioned in the following list were got together in 1897 and 1898. The number, relatively great, of societies created in such a short time, and the number, already so considerable, of animals entered into their herds-books, testify to the confidence placed by breeders in this plan so highly to be recommended."

The number of syndicates in Belgium is 187, and 14,792 head of cattle are entered in their books. By means of competitions of milch-cows and of registers kept for that purpose, Farmer's Clubs, and Agricultural Societies can perform the same functions as well as these syndicates.

Competitions of standing-crops.—As useful, too, to farmers are the competitions of standing-crops, as are also those for green-fodder and roots to

dairymen. Other like competitions fitted to encourage improvements as much needed as those above mentioned might be opened.

Pastures.—It is frequently stated, in your meetings, that good pastures are indispensable to successful dairying. The importance of having superior pastures was demonstrated by Mr. James Fletcher, in a lecture given by him at Montreal, in 1894, and M. J. C. Chapais expressed the same opinion, in an instructive address before the Agricultural Missioners at Oka, in 1896, describing, at the same time, the preparation of the land and the best mixtures of grass-seeds needed to secure the permanence of such pastures. The Societies and Clubs ought to take greater pains to cause the sound theories of these lecturers to be put in practice. Even if there are some good pastures, there are indisputably many bad ones, and dairying is suffering in consequence. In England, the agricultural papers pay a great deal of attention to this point, and almost every week articles appear in them recommending the best methods of improving pastures.

The most prosperous agricultural countries are those that keep the most numerous herds of cattle. After Ireland, Denmark feeds the greatest number of head to the square mile.

Plenty of stock, plenty of dung: those are the conditions on which profitable farming depends. To secure these, we must increase our fodder-crops and improve our pastures and meadows.

The effects of increasing our herds are already perceptible in this province. The cultivation of the wheat-crop was nearly given up, on account of the trifling yields obtained; but latterly, it is reviving, and the yields are greater because our land is being more highly manured.

If we keep on in this way, our farms will, like those of Denmark, become covered with abundant crops of grain, while the dairy industry will grow more and more prosperous, and this result we shall surely realise, provided all our societies combine in its pursuit.

Variety of products.—In all their operations, particularly in their programmes, the societies must be guided by the demands of the market and by the needs of agriculture in the localities whose interests they are charged with the duty of promoting. A variety of products being desirable, the societies should in consequence vary their programmes and operations. Should clover be the crop neglected in a certain parish, it should

be encouraged; in another parish, perhaps, it may be pastures and meadows that need stimulation; here, the growth of roots and green fodder-crops; there, the improvement of the breed of hogs or of cattle, want encouragement. Everywhere, those methods and crops that tend to keep up the productiveness of the land should be encouraged.

In the days where our farmers grew nothing but grain-crops, they were not nearly so prosperous as they are to-day. By varying his products, by producing more butter and cheese, the Canadian farmer has succeeded in making his land pay better; and a great share of this progress may fairly be attributed to the Dairymen's Association.

It will not be long, perhaps, before it will be advisable to vary our dairy-products, if there is a prospect of a super-abundance of butter and Cheddar-cheese.

In the States, dairymen are beginning to make divers kinds of cheese, which find ready sale on the local market at good prices.

The necessity of varying farm-products is well described in the report of a show of the French Pomological Association, held at Alençon, this year. The writer lays stress on the necessity of having fruit and ciders of different qualities for the supply of the market both local and foreign. He aims at preventing England and Germany from occupying the place of France in the market for these goods.

Included in this show were several samples of cider prepared for exportation; and a lecture was given on the best way of making champagne cider.

A rule was observed at this show that might be usefully followed here.

It was determined that, attached to the fruit exhibited, there should be a statement of the qualities of the fruit shown, as well as of the tree that produced it.

The Association organised a commission to examine the fruit, in order to establish a list of the varieties whose merits are the best recognised. At Alençon, this commission presented the work of its investigation on a score of varieties.

One feels intuitively that a genuine public spirit reigns over this association, and that it neglects nothing that can conduce to the greater development of all the industries that are connected with fruit-growing.

Let it be our endeavour to instil the same publi

spirit into all our agricultural societies. You, Gentlemen, who are assembled here, can do much in this way; you belong to the higher rank of the farming class, and, through the great influence you exercise on your neighbours, you are in a position to do much towards obtaining the improvements and facilitating the progress to the advancement of which our attention is now devoted.

In conclusion, I would earnestly pray you to interest yourselves earnestly in the dexterous working of the societies of which you are members, in order to ensure their effecting the greatest amount of good. By acting thus, you will be doing a great service both to agriculture and to the province.

(Translated by the Editor).

CHARLOCK.

Charlock belongs to the class of annual weeds. It is tap rooted, like most of the cruciferae, and as it develops it secures a firm hold of the ground. It is easily recognised by its seedling leaves, which are very similar to those of the turnip, but are purple on the lower side. It is easily destroyed by harrowing in this stage, and effective methods of getting rid of it are based upon this fact. The principal point is to get the seed to germinate with a view to its destruction. Stubbles should be harrowed immediately after harvest, and the seedlings will be destroyed by the first severe frost if not previously eaten by sheep. Similarly, in the spring it is advised to well harrow the surface and induce the charlock to strike before drilling the spring grain. Simple as these operations are, they are beset with various difficulties, especially as regards the spring. Charlock requires mild weather for its germination, and it sometimes happens that the seed continues to lie dormant until the season arrives in which the grain must be sown. When this is the case it may be found practical to harrow the young grain, and to destroy the myriads of young charlock, without injuring the crop. Some judgment is required to catch the crop at the proper stage, for spring grain is not like wheat, and will not so well withstand rough usage.

PREVIOUS CULTIVATION.

An experienced farmer informs me that, if the and is ploughed and dragged instead of harrowed,

the tilth is not sufficiently fine for charlock, although it is fine enough for grain; and in this way he succeeds in preventing its germination. The spring tooth cultivator has been observed to produce a similar effect. The ploughing ought to be shallow, and every means should be taken either to prevent the germination as above suggested, or to produce germination with a view to destroying the weed. No doubt, much may be done by various methods which experience has shown to be successful, and there are farmers who profess to be able to battle with the evil, and to in some way another keep it down.

CROPPING.

A field much given to charlock should be especially cropped with a view to repeated hoeing. I remember many years ago a field which was put through a course of cropping, expressly designed to clear it of charlock. It was first put into turnips, and the next year into potatoes. The third year it was peas drilled and hoed, and it was then intended to bring it into turnips again.

It is always a relief to get a charlock field down to sainfoin or temporary pasture, but the evil is there all the same, ready to exhibit itself as soon as the land is ploughed.

Wheat is always free from charlock, as also are vetches and all autumn sown crops. As the three cereals are now fairly equal in value, especially when the straw is taken into account, there appears to be a good reason for preferring wheat, winter oats, winter beans, vetches, &c., to spring barley and oats. Barley is now often sown extremely early, even before the New Year, and, reasoning from analogy, it is highly probable that such corn would remain free from charlock simply because it will be very liable to be destroyed by late frosts occurring in March. All depends upon the germination of the charlock being early, in which case the first frost would sweep off the entire brood.

EARLY AND LATE SOWING OF GRAIN.

A question of a very practical kind is whether it is better, as a general rule, to wait for the germination of charlock before sowing spring grain, or to sow the grain as early as possible, and endeavour to give it a lead, so as to place it well above the seedlings of charlock. Both methods may be backed by arguments of the kind already advanced, but the practical point is, which of the two methods is the better. It is a point of prac-

tice upon which the opinion of practical men would be of the utmost value at the present time. I am inclined to the latter view, unless the season is sufficiently mild to stimulate the early germination of the charlock. To wait for this event in a wintry February or March, when land is lying ready for the seed, is certainly vexatious.

The consequence, too often, is that dry weather sets in, and the corn is caught by the drought, instead of rapidly growing and shading the ground. Early sown spring grain will also be better able to stand harrowing, supposing the charlock to spring up among it.

SPRAYING.

Last year the subject of spraying came up a little late for successful trial. Judging from the numerous reports published, it appears that the system was fairly successful. It ought to be carried out when the charlock is young, and we should all be prepared to conduct further trials. Mr. Strawson deserves thanks for the enterprising manner in which he has carried out experiments, often in the face of many difficulties and some disappointments. It seems as if the best results have been secured by the use of hand distributors, while the extensive system of spraying over wide areas with horse labour has been known to be patchy or uneven in its effects. We must, however, hope that the methods for attacking charlock in big fields will be speedily perfected. It is something to know that sulphate of copper solutions will kill charlock, and not hurt the grain. This is, in fact, the thing which was doubted, but it appears that the upright and smooth blades of the corn do not retain the solution, while the rougher and horizontal charlock leaves retain it to their destruction. This is a great discovery, and it only needs to be developed in order to be adopted.

A further practical difficulty lies in the distance from water in the case of high-lying tracts of corn. Water carts, each with two horses, and perhaps three in number, would be a tax upon the resources of most farms during a busy season of the year, if required day after day. The questions are: How many acres might be successfully completed in a day? How often should the spraying be repeated—that is, once or twice? If 30 or 40 acres could be covered in a day, the inconvenience would be slight; but if it required to be repeated, and if only 10 or 20 acres could

be properly done, the game might appear to some large farmers not worth the candle. Fifty pounds is so soon lost by delays in sowing roots, or in securing hay, that the question requires to be mentally balanced before deciding upon adopting an heroic method even to destroy charlock.

If charlock could be treated by methods within the routine of ordinary management it would be best, but, unfortunately, up to now we have scarcely been able to cope with the pest in a reliable manner. The spraying of charlock ought now to be brought forward as a practical alternative, worthy of the deepest consideration. Mr. Strawson, last season, showed a most admirable patience and sincere desire to arrive at the truth; and it is to be hoped that in a few weeks we shall again hear of him and his excellent distributors. One thing more is worth attention—namely, that when the sprayer has distributed the solution the grain has been noticed to show a deeper green, thereby indicating that, so far from being injured, it seemed to look better after the treatment.

JOHN WRIGTONSON.

CLOVER AND PHOSPHATE.

To the Editor of FARMING:

IN *FARMING* for January 16th Mr. T. C. Wallace, writing on clover and phosphates, assumes that clover exhausts the soil of its phosphates. This error pervades not only this letter but nearly all that Mr. Wallace writes, and I am surprised that this mistake is not more frequently pointed out in the agricultural press.

He appreciates the value of clover as a source of nitrogen and humus, and he cannot surely deny that it also renders available large quantities of phosphates and potash that would otherwise remain unavailable, so that for all practical purposes clover may be said to add to the soil not only nitrogen and humus but also phosphates and potash. I venture to say further that the practice of the best farmers as well as the teachings of the Experiment Stations recognize it as the cheapest source of these plant foods, and in fact the only economical source for the growing of coarse grains and fodders, always assuming that these are fed on the farm and the whole of the manure returned to the soil.

In Ontario, where the glacial clays cover the bed rock to the depth of from 2 to 200 feet, ever

farmer has this depth of material rich in plant food, a portion of which can be rendered available year by year by means of clover and proper culture. This storehouse is practically inexhaustable, though the quantity rendered available each year is limited, yet quite sufficient for twice the average crop.

It might not be out of place to point out that agents of potash salts and nitrate of soda are quite sure that their respective fertilizers supply exactly the material most needed by the soil.

A. MCNEILL.

Walkerville, Ont., January 20th, 1900.

CANADIAN FARM PRODUCTS FOR THE PARIS EXPOSITION

To the Editor of FARMING :

In response to the request contained in your note of the 15th inst, I gladly give you a brief report on the character of the agricultural and horticultural exhibits which have been sent from all sections of the Dominion for display at the Paris Exposition.

Beginning with the extreme east of the Dominion, Prince Edward Island has sent three cases containing different sorts of grain in the straw, as well as samples of threshed grain, among which are some very good representative specimens of the production of the island. About twenty five cases of fresh fruit have also been sent to cold storage in Montreal, the product of Prince Edward Island; these will be forwarded sufficiently early in the year to be shown at the opening of the Exposition.

Nova Scotia has forwarded five cases containing good, representative samples of wheat, oats and barley, collected from different parts of that province, consisting partly of grain in the straw and partly of threshed grain. Of fresh fruit, eighty cases of very fine apples and several cases of pears have been carefully packed and forwarded to cold storage in Montreal, to represent the fruit-growing industry of this province. These specimens have been collected chiefly in the Annapolis and Cornwallis valleys, and include some magnificent examples, which will do credit to this great fruit-growing section of Canada.

New Brunswick has also sent five cases of cereal products, including samples of wheat, oats, barley, rye and buckwheat, and fifty cases of fresh fruit, including some very fine examples.

Quebec will be well represented. Fourteen cases of agricultural products have been forwarded from this province, including samples of all the principal cereals, both in the straw and threshed, gathered from different parts of Quebec. A good exhibit of tobacco has also been sent by the Government, and a selection of grasses.

As regards cereals, the display from the Province of Ontario will be comparatively small. Only four cases of these have been forwarded, one of which came from the Agricultural College and Experimental Farm at Guelph, one from the Agricultural Society of Sault Ste. Marie, and the remaining two contain samples of cleaned grain sent in by individual farmers from different parts of the province.

Ontario will, however, be well represented as regards fruit. A very large collection consisting of more than six hundred bottles of fruit put up in preserving fluids, has been prepared, under the direction of the Provincial Government, by Prof. H. L. Hutt, Horticulturist of the Agricultural College at Guelph. This will make a very fine display. A good, representative collection of fresh fruit has also been brought together from the Province of Ontario, numbering, in all, about one hundred cases.

The Government of Manitoba has prepared and forwarded a large and excellent display of cereals of the province, consisting of grain, both threshed and in the straw. Thirty-one cases have been received through this source and, as the season there has been very favorable for getting grain of high quality, this exhibit will do great credit to the prairie Province.

The Government of the Northwest Territories has got together and shipped a very fine series of examples of threshed grain from all the more important grain producing sections of the territories. These have been secured by offering prizes for the best specimens at the different agricultural fairs during the autumn, and selecting the prize samples.

British Columbia has forwarded sixteen cases in all, comprising a very excellent collection of the cereal and other agricultural products of different parts of that large province. This collection includes fine samples of wheat, barley, and oats; also some excellent examples of tobacco and manufactured cigars from the Kelowna district in the interior of British Columbia.

A large number of samples of fruit—about five

hundred in all—have been put up in bottles containing preserving fluids, from the Province of Quebec. Similar collections, but somewhat smaller, have been prepared at the Central Experimental Farm, Ottawa, and at the branch Experimental Farm at Agassiz, B.C.

At each of the five Experimental Farms a large display of agricultural products has been prepared, embracing many varieties which will no doubt prove of great interest to visitors at the Paris Exposition. The Central Experimental Farm at Ottawa has sent twenty two cases; the Experimental Farm at Nappan, N.S., seven cases; the Brandon Farm, eighteen cases; Indian Head Farm, thirteen cases; and the Experimental Farm at Agassiz, five cases. These are all filled with grain in the straw and threshed grain, and other agricultural productions.

A number of cases of fresh fruit have also been collected at the branch Experimental Farm at Nappan, N.S., to show the products of that part of Nova Scotia; and a large consignment has gone into cold storage representing many different sorts of fine fruits grown on the Agassiz Experimental Farm.

This grand exhibit, when brought together at the Paris Exposition, will be suitably displayed in the space allotted for these exhibits. The horticultural contributions will be tastefully arranged in one of the main buildings which has been set apart for horticulture, and this will give an opportunity of placing our Canadian fruit so that it may be compared with that from other countries.

The agricultural products will be shown in the Canadian Building. A grand central trophy will be erected near the middle of the building on the ground floor, which will be seen from all parts of the structure. A large space has been reserved on the second story for a series of trophies, in which representative products from each of the provinces will be shown. Some of the best of the exhibits will be shown in provincial groups. There will also be a special trophy on which tobaccos in the leaf, as well as in different manufactured forms, will be displayed. There will also be a good exhibit of hops, flax, fibre, and wool.

WM. SAUNDERS,
Director.

Central Experimental Farm,
Ottawa, January 18th, 1900.



Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

ILL-MANNERED CHILDREN.

If one stops to think of the very juvenile parents of some children, one can no longer wonder at it.

Many of them are the offspring of big children, for what claim has 18 or 19 years to any other title.

There are some who, even at this age, undoubtedly have a better claim than their neighbours in the matter of looking after a family and house-keeping.

At a very early age, a girl might have been called upon to take charge of a family, owing to the death of her mother, and thus she has to learn many things by experience, which often is the very best school to learn in, as self-teaching and watching others will always bring forth the best results, where there is a will to learn. A step-mother might be brought into the house after a time, and where once she was in full command she now finds herself second, this she bitterly resents and the first chance she finds of getting out of this by the only road she has learnt, she takes advantage of it, and certainly has a claim to it by her own teaching and of a certainty does not go into it blindfold.

It is the silly, almost school-girl who knows absolutely nothing about the mother and cares less; she goes into it thinking what fun it will be to keep house and be absolute in it, till, after a time, she finds there is much responsibility in the matter.

It must surely have been one of these poor little mothers who asked a celebrated Doctor at what age to begin to train a baby; after mentioning various ages, when she got to one day, she surely thought she had reached the end. Not so did the Doctor; but looking up with a good natured smile, he delivered himself of the following words: Train the mother first! Poor little mother! could any speech be more crushing?

A baby can be got into bad habits as soon as it is born, if no training is given; sleep and food after bathing are about all that is needed for the first week or two, after which comes the trying time; but a mother who has the strength of mind to put off the desire to fondle and play with baby at this age will reap the benefit in the future; no

rocking or singing if possible ; it will turn into a three-fold blessing some day when there is a great rush of work, and all that will be needed for baby, after careful attention to its wants, will be to put it into its cot where it will sleep well and leave the mother free to attend to her many pressing duties.

If there is a tendency to restlessness on the part of baby, examine the clothing to see if there is any cause in a knot or band being too tight, and thus causing pressure on any part ; give freedom, and if the food has been all right, no danger but baby will sleep well.

Keep regularly to the same hours for its eating and sleeping, and you will live to be thankful that you had such strength of mind in the early part of the child's existence.

And if the good training is carried on through childhood there will be no dread of ill manners.

People are apt to laugh at the smart ways and sayings of children ; but this often causes a great sense of shame on the part of these good people.

What must the feelings of the child's father have been who, on the imp making a disturbance in his office, told him he should be obliged to turn him out if he could not be quieter ; the child looked him boldly in the face and said : Learn to spell able first ! (1)

And there are numbers of children who would be all the happier if in the first stage of life they had been taught and made to be obedient ; they would as a matter of fact have been well-mannered.

FROST BITTEN FEET.

Apply turpentine and sweet oil in equal parts at once with a bit of cotton-battling ; wrap up the feet in a little more bandage to keep this in place with a strip of anything handy. Do this once or twice a day, and keep still for a few days till the tenderness wears off ; after which, wear very loose boots and take care not to get them feet frozen a second time, as they are very liable to be, for then the cure will not be quite so easy and quick.

LANCASHIRE BUNS.

After the bread dough has risen well in the usual way, take two pounds of it to make these buns, $\frac{1}{2}$ lb. stoned and cut raisins, $\frac{1}{4}$ lb. of currants washed and dried, 6 oz. of butter or lard $\frac{1}{4}$ lb. of moist sugar, candied peel and spice to

taste. The dough must have well risen, turn the two pounds into a basin, and work in the butter which should be slightly melted, now add the rest of the ingredients.

Well mix the whole and turn into a greased tin, let it stand in a warm place to rise for one hour, then bake for one hour and a quarter

Should the dough be very stiff, add a little warm milk.

LEMON CAKES.

Cakes, always in demand where there are young people, are in greater demand than ever at this festive season of the year, and, although choice cakes can now be purchased at any confectioner's shop, there is always a demand for the cakes made at home. Here are some nice little cakes suited for afternoon tea, etc. One-quarter pound butter, six ozs. of flour, one-quarter pound sifted sugar, the grated peel of a lemon, the yolks of two eggs. Mix all together, and bake in cake-tins, which have been previously buttered, for ten minutes.

A BREAKFAST DISH

A toothsome dish is cream toast, which is prepared in the following manner.—Heat a pint of milk to boiling and add a piece of butter the size of an egg ; stir a tablespoonful of flour in a cup of rich cream and add some of the boiling milk to this ; heat it gradually and prevent the flour from lumping ; then stir into the boiling milk and let cook a few minutes ; salt to taste. After taking from the stove stir in two well-beaten eggs. Strain the mixture over light buttered toast.

ORANGES IN JELLY

Oranges in jelly make another dainty dish. Make a lemon jelly by soaking a half-box of gelatine an hour in a scant cup of cold water, adding to it then one cupful of granulated sugar, the juice of three lemons and the grated peel of one, and pouring upon all two cups of boiling water. If the gelatine does not dissolve readily, put all over the fire long enough to bring to a boil. Strain the jelly and let it cool. When it is cold enough to begin to form, arrange sections of peeled and seeded oranges around the inside of a cylindrical mould, and pour the jelly carefully over them. Should the pieces seem inclined to float, wait until the first jelly put in is firm before adding the rest.

(1) We knew both child and father well. Ed.

PRETTY DESSERT DISH

Here, again, is a pretty-looking dish for dessert, one likely to be useful at a children's party. Cut from a large sponge-cake 6 pieces or more, the size of a small sponge cake; scoop out a hole in the side of each piece, and fill the space with whipped cream, nicely flavoured; pour over then some liquid jelly to screen the cakes. Whip a little more cream, and cover the cakes. Ornament with coloured sugar, dried cherries, or pretty comfits. Serve in a glass dish placed side by side.

CHESTNUT STUFFING FOR TURKEYS.

The stuffing of poultry, as commonly practised, does not tend to bring out the best flavour of a bird. The thick mass of bread mixed with herbs absorbs the juices and destroys the natural taste of the meat, without adding in any way to its quality. It makes a coarse dish of one which would otherwise be very delicate. One of the best French methods of stuffing a turkey is with truffles. Unfortunately in this country truffles are not to be had except preserved, and, like mushrooms, they lose their flavour in the process; therefore the use of truffles here is, so to speak, prohibited. Nearest to the truffles is the chestnut. It adds to the sweetness of the meat without injuring its flavour, and is consequently a fair substitute for the truffles. A turkey weighing ten pounds requires two pounds of large Italian chestnuts. Put them in boiling water, and let them cook until tender—that is, about one hour. Strain them, and while still warm shell them. Chop them fine; add salt, pepper, and about a half-cup of butter. Pound and mix the butter in with a potato-masher.

SLEEP.

One of the chief preventives against wrinkles, is a sufficiently of healthful sleep. And after all there is a world of truth in the old-fashioned term of beauty sleep. The sound sleep obtainable before midnight always seems to do one more good than any afterwards.

Busy matrons and housewives should try for "forty winks" in the day-time. They are a wonderful brain and nerve tonic, and make one feel brighter, happier, and more capable of finishing the day's duties. Look upon the "forty winks" as a positive duty to your husband and family.

When he returns home you will feel in much better form for donning a pretty blouse, and taking an interest in his work. Many an undignified "squabble" and nerve explosion would never have happened had the house-mother indulged in "forty winks."

The Dairy.

LLOYD ON CHEDDAR-CHEESE MAKING.

(Continued).

Determination of Acidity.

Practical cheese-makers have known for years that both in the manufacture and ripening of cheese, the acidity produced, which is known to the chemist as "lactic acid," materially influences the results obtained but no method had up to the time of the commencement of these observations, been introduced for the accurate and easy estimation of acidity, either in milk or in whey.

Hot-Iron Test.—The only test that had been applied and practised was that known as the hot iron test. This was used to determine the acidity of the curd, or, perhaps, it would be more correct to say the condition of the curd when in the whey after the scald, and also to determine the acidity of the curd before grinding. This test has been very fully described on p. 14, under the Canadian or Factory system of cheese-making. The test appears never to have been thoroughly studied. The length of the threads so obtained is used by the cheese-maker as a guide to the acidity of the curd, but how far it actually depends upon the acidity, or how far it may be influenced by the moisture or fat in the curd, does not appear to have been accurately determined. The greatest drawback of all to the hot-iron test is the uncertainty of the heat of the iron itself. It is evidently impossible by the use of any uncertain standard to determine with accuracy, either the acidity or any other condition of curd.

The Soda Test.—I therefore adopted for the estimation of acidity a method which has been practised in analytical laboratories for years past, namely, the use of a standard solution of an alkali (soda), and of a substance termed an "indicator," which changes colour according to whether a solution is acid or alkaline.

The Indicator.—After making the necessary experiments, a substance termed “phenol-phthalein” was adopted as the indicator. This substance is produced from carbolic acid, it dissolves in alcohol, and produces a colourless solution. If a minute portion of washing soda is added to this solution, it immediately turns a bright crimson colour, but if subsequently some sour whey is added, the crimson colour will gradually disappear until a point is reached when the liquid has just lost its colour, and yet has scarcely become white. This would indicate that the liquid was neither alkaline from the presence of soda, nor acid from the presence of whey, but in a condition which, being neither acid nor alkaline, is termed by chemists “neutral.”

Therefore the solution of phenol-phthalein is called an “indicator,” for if the liquid is turned crimson, it indicates the presence of an alkaline substance, like ammonia or soda; if white, it indicates the presence of an acid, such as lactic acid.

Experiments have shown that the solution of phenol-phthalein must have a definite strength, and the one which was finally adopted contained 0·2 grammes of solid phenol-phthalein dissolved in 100 c.c. of a mixture of equal parts of water and alcohol. This solution must be kept slightly pink by adding to it from time to time one or two drops of the soda solution to be now referred to.

The Standard Solution of Soda.—If a solution of soda be so made that one cubic centimetre will exactly neutralise a definite quantity of lactic acid, such a solution is termed a standard solution. In my investigations, as is usual with chemists of the present day, the French system was adopted. A standard solution of caustic soda was employed, one cubic centimetre of which would exactly neutralise one-hundredth of a gramme (·01) of lactic acid. In all estimations ten cubic centimetres of milk or whey were taken for the test. If, therefore, this ten cubic centimetres took two cubic centimetres of soda to neutralise it, then it contained two-hundredths of a gramme of lactic acid, and there would therefore, be two-tenths of a gramme in one hundred cubic centimetres; in other words, two-tenths per cent (·20) of lactic acid. Therefore, using ten cubic centimetres of the liquid to be tested, and a solution of caustic soda of this strength, each cubic centimetre of soda used represents ·1 per cent. of lactic acid,

and each division of the c.c. represents one one-hundredth (·01) per cent. of lactic acid.

Precautions Necessary.—The standard solution of soda undergoes change if exposed to the air, and loses its strength. It is therefore necessary that the stoppers of the bottles in which the solution is kept should be well vaselined, and only a small bottle of standard solution should be kept for daily use.

Using the Test.—The method of estimating the acidity was as follows:—10 c.c. (cubic centimetres) of milk, whey, or other liquid in which it is desired to estimate the acidity, are accurately measured out by means of a small instrument termed a “pipette,” and placed in a one-ounce glass phial or in a porcelain dish. It is desirable for the sake of comparison to put the same quantity of the liquid into another phial, so as to have a standard of colour when making the test. Two or three drops of the phenol indicator solution are added to one of the bottles. The standard solution of sodium hydrate, each cubic centimetre of which is capable of neutralising exactly ·01 gramme of lactic acid, is poured into a graduated glass vessel termed a “burette,” on the end of which is a piece of glass coming to a fine point, and on the indiarubber which connects this glass point to the burette is a pinch-cock, which when pressed opens and allows the liquid in the burette to gradually come from the fine point. The burette holds 20 c.c., and has upon it 200 divisions. The 10th division is marked “1,” the 20th “2,” and so on. These figures 1, 2, 3, &c., represent c.c. of liquid. Upon cautiously adding the standard solution from the graduated burette to the 10 c.c. of milk in the small phial, a tint is produced, which upon shaking the bottle will disappear; when by the addition of a few more drops of the soda solution, the colour will remain permanent, this will indicate that all the acid present in the milk or whey has been neutralised. It will now be necessary to read the quantity of standard solution which has been taken from the burette to neutralise the acidity. To facilitate this reading, the burette should contain a white float, having a black line upon it, which falls as the liquid in the burette is withdrawn. Suppose the substance being tested was milk, and that it required 20 divisions, i.e., down to the figure “2,” to neutralise it. Then the acidity of the milk would be 0·20%. If it took 22 divisions, the

acidity would be 0.22%. The burette must be kept well corked when not being used.

(To be continued)

**THE EIGHTEENTH MEETING OF THE
DAIRYMEN'S ASSOCIATION HELD
AT ST-JEROME.**

As our readers have already been informed, the meeting of the Dairymen's Association for 1899 was held at St-Jérôme, Terrebonne, and, were we to judge by the reports of the local papers, "the attendance was enormous, the hotels were literally full, so that it was impossible to get lodgings." But this is only the material side of the question; what is more interesting, is that the sessions were attended by crowds of earnest listeners, and great was the interest displayed in the putting of questions to the lecturers. Those who have never attended these conventions can have no idea of the pleasure and profit to be gained from them, for there may be found, taking a share in the proceedings, the very choicest specimens of our lecturers, our agronomes, and of our most skilful makers of butter and cheese.

Next year, the convention will be held at Rivière du Loup en bas (Fraserville). It will be the first time that the Association has met in that part of the country, where the business of dairying is already so prosperous, but where it prospers, so to say, in a lonely fashion; every one working for himself, and in his own way; no tie exists to ally the factories with one another, so as to stereotype the making, packing, etc., of the goods with something like uniformity.

This is a great pity, and very injurious to the farmers below Quebec, as well as to the makers themselves; wherefore, the Dairymen's Association eagerly seized on this opportunity of at last satisfying the prayer made to it, in the name of this region, by MM. J. C. Chapais, its vice-president, and MM. Chas. Préfontaine and Frs. Gagnon, its directors for the districts of Témiscouata and Kamouraska.

The little space accorded us in these columns at most permits of our skimming the surface of the programme, and we aim at doing more than that.

As soon as we receive the stenographic report of the work of the convention, we shall proceed with our "first skimming," a rapid performance, but

still one that will enable us to offer the "skim-mings" to our readers, trusting that this will act as an appetiser, and will incite them to become members of the Association, so that they may receive a copy of the report, which contains so many valuable hints, valuable not only to the makers of butter and cheese, but also to farmers in general. It would seem, however, that, for the last few years, farmers have been growing less interested in the work of the Association. Not that the meetings are less numerously attended than formerly; but, that, while the attendance of makers has increased, one fancies that the attendance of farmers is not so full as it used to be. It would be a great mistake on the part of these latter if they were to lose interest in these so instructive meetings; they should beware of thinking that, because they have learned a great deal about dairying in the last few years, there remain not much for them to learn. Such self-satisfied imbecility would do them more harm than ignorance itself.

LECTURE BY MR. SAMUEL LOWE.

The microbe and dairying.

After having discussed the improvements to be made in the herds of milch-cows, as well as in their winter-feeding and in the certain development of the factory-method of manufacture, let us talk a little of the milk itself and its treatment, from the point of view of its conversion into butter and cheese. Drawn from the clean udder of a perfectly healthy cow, into a sterilised vessel, without contact with the atmosphere, milk would keep perfectly sound for weeks, and, possibly, for months. Milked as it usually is, and allowed to remain at rest for a certain time, it undergoes physical and chemical changes, which may make it nauseating to the taste, and utterly unfit for human food; and, consequently, the butter and cheese made from it will be equally disgusting. Not only does it sour, but it frequently acquires a great variety of smells, known in dairying as *taints*. The reasons why, in the first case, it remains sound, and in the second sours, etc., are that, in the first case, it is protected from bacteria or microbes, and that, in the second, it is unceasingly exposed to their action. It is owing to the development of bacteria in the milk that these

changes take place. This word, *bacteria*, I know will give a bad impression to many, probably, because it is always associated in the mind with disease, such as cholera, typhoid fever, etc. This is a pity, for many bacteria are highly useful, and may be considered as friends, for it is they that, with the yeasts, to which they are nearly related, give us the aroma and bouquet of our wines, and the various flavours of our bread and beer, as well as the aroma and flavours of our butter and cheese. Many people fancy that these bacteria are little tiny animals, crawling, wriggling, fidgetting about. There is no greater mistake, for they are not animals at all, but plants. The difference between them and the plants we see with the naked eye, is that bacteria are plants composed of a single cell, and have no green colour; while the ordinary plant consists of an unlimited number of cells, and contains *chlorophyl*, the green-colouring matter which is absent in the microbe. Having no chlorophyl, the bacteria cannot derive their food directly from the air and soil, as common plants do, but feed upon substances like milk, which originate from green plants. Their form varies greatly; some are spherical, like bullets; others cylindrical, like small upright, short sticks, with round, pointed, or flattened ends; others again are like bent sticks; but the first and last of it all is, that they are all plants. The bacteria of milk may be, almost accurately, divided into three classes: those that produce lactic acid; those that produce no apparent changes in milk; and those that curdle milk by producing a substance analogous to rennet. These three classes feed chiefly on the sugar of milk, and decompose it into different products, e. g., lactic acid, that imparts to milk its acid and coagulating properties, etc. In each class, there are different varieties, and each variety exerts a different effect on milk.

I have told you what bacteria are, and how they live; now it is time to tell you whence they come and how they get into milk. Bacteria are to be found in every part of the world. The atmosphere is full of them, and the globe is covered with them. All vegetation is more or less overspread with them, and they swarm in lakes and bays. It is impossible to find a spot on the earth that is perfectly free from them. Those, however, that we are talking about this evening, are chiefly inhabitants of the air; they frequent hay and other cattle-food, stables and cowhouses, and delight in

the dust and filth of the fields and sheds. Three conditions are essential to their existence and multiplication: moisture, a suitable temperature, and food. Just as the plants of the arctic regions flourish in the cold, and tropical plants in hot latitudes, so some bacteria enjoy such or such a temperature, and others enjoy another. The temperature that is most favourable to their growth and multiplication, varies from 80° to 100° F. Some thrive even at the freezing point, and others in a temperature as high as 150° F. Some can stand temperatures far below zero, while the germs of others are not even destroyed when the point of boiling water is reached.

The sources whence bacteria fall into the milking-pail are principally these:

The milk that remains in the teat of the cow after milking;

The filth and the hair on the cow's udder when she is being milked;

The hands and dress of the milker;

The pail and other utensils, if they are not properly cleaned;

The atmosphere of the place in which the cow is milked, and when the milk is kept afterwards.

(To be Continued.)

DETECTION OF ADULTERATED MILK.

Now that the Babcock milk test is so universally used in creameries, and bids fair soon to be equally so in cheese factories, the patrons have no object whatever in tampering with their milk in any manner whatever. No creamery to my knowledge or cheese factory either which pays according to the test, has any set standard of fat content for the milk delivered by the Patrons. The Babcock is sufficient safeguard against fraud, so long as milk is valued and paid for according to the amount of butter-fat it contains.

However, in the city milk trade there is ample chance for fraud of various descriptions, and usually the public are protected by Provincial or Municipal laws, which fix and determine the limits for fat or solids, below which the milk offered for sale must not fall. Where no control-sample can be taken of a suspected sample of milk, calculations of the extent of the adulteration practised are made on basis of the legal standard adopted in that City, State, or Country. Whenever possible, a control-sample should be secured on the premises of the suspected party, and sub-

jected to analysis. If such control-sample contains appreciably less fat or solids not fat, than did the suspected sample, the latter must either have been skimmed or watered, or both skimmed and watered.

1. If a sample is skimmed, the following formula will give the number of pounds of fat abstracted from 100 lbs. of milk: Fat abstracted = x = legal standard for fat — 'f'..... (1) 'f' being the per cent of fat in suspected sample.

In this and following formulæ, the percentages found in the control-samples, if such are at hand, are always to be substituted for the legal standards.

The following formula will give the per cent of fat abstracted, calculated on the total quantity of fat originally found in the milk:

$$x = 100 - \frac{f \times 100}{\text{leg. stand for fat}} \dots\dots (II)$$

2. If a sample is watered, the calculations are most conveniently based on the percentage of solids not fat in the milk:

Per cent of extraneous water in milk

$$= x = 100 - \frac{s \times 100}{\text{leg. stand. for solids not fat}}, (III)$$

's' being the per cent of solids not fat in the suspected sample.

Example.—A sample contains 8.5 per cent of solids not fat; if the legal standard for solids not fat be 9 per cent,

$$100 - \frac{8.5 \times 100}{9} = 5.6, \text{ will give the}$$

per cent of extraneous water in the suspected sample of milk.

Watering of milk may also be expressed in per cent of water added to the original milk, by this formula:

Per cent water added to original milk

$$= x = \frac{100 \times \text{leg. stand. for solids not fat}}{s} - 100. (IV)$$

In the example given above, $100 \times 9 - 100 = 8.5$

5.9% of water was added to the original milk.

3. If a sample has been both watered and skimmed, the extent of watering is ascertained by means of formula III; and the fat abstracted found according to the following formula:

Per cent fat abstracted

$$= x = \text{leg. stand. for fat} \frac{\text{leg. stand. for solids not fat}}{s} \times f (V)$$

Example.—A sample of milk contains 2.4 per cent of fat and 8.1 per cent solids not fat; then extraneous water in milk =

$$100 - \frac{8.1 \times 100}{9} = 10 \text{ per cent};$$

$$\text{fat abstracted} = 3 - \frac{9 \times 2.4}{8.1} = 33 \text{ per cent.}$$

100 lbs. of the milk contained 10 lbs. of extraneous water and 33 lbs. of fat had been skimmed from it.

Naturally, the above formulæ prompt one to enquire how the total solids of milk and solids not fat are calculated. The relation existing between the various components of the milk is such as to make this possible when the fat-content and the specific gravity (lactometer reading) of the milk are known.

Dr. Babcock's formula is as follows:

$$\text{Solids not fat} = \left(\frac{100s - sf}{100 - 1.0753 sf} - 1 \right) \times (100 - f) 2.5$$

where s = specific gravity of the milk, and f = per cent of fat found. When s and f are known, the per cent of solids not fat in the milk may be calculated by means of this formula.

H. WESTON PARRY.

Jan. 26th, 1900.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

D A T E S.

Those whose eat dates may not be aware of the wonderful number of uses to which the tree which bears them is put.

In Africa the Date Palm Phoenix produces most of the necessaries and some of the luxuries of life.

The wood, which is very hard, is used for building, furniture and implements; the leaves having been macerated or softened by steeping in

water, become pliable, and are made into mats, hats and baskets; their foot-stalks afford strong fibre of which excellent cordage is made; the nuts are burnt, and from their ashes the Chinese make the Indian ink; palm-wine is made from the juice which runs freely from the trunk after the leaves are cut off; the young and tender shoots and the pith are eaten as vegetables or salad; dried palm leaves are sent to Europe and America and are used in a religious ceremony on Palm Sunday. In Persia, a very strong spirit is distilled from the fruit, and where the trees abound, the nuts are ground and the oil extracted from them, after which the pulp or paste remaining is excellent food for sheep and cattle.

This Date must not be confounded with the Date Plums, botanically Diospyrus or Indian and European Lotus, a partially evergreen tree, the fruit of which is eaten by the poor Hindoo people; another species of which grows in the Philippine Island and forms part of the food of the Philipinos.

Geo. Moore.

DECAY AND DECOMPOSITION.

When we speak of decomposition taking place in an organized body we are apt to call it decay, but in one sense this is not quite correct. Decay is a gradual and inevitable decline of the vital principle of the organism, be it plant or animal. In these the decay of the temporary parts is periodical and occurs independently of the general system. The child's first set of teeth, although not decomposed, are rendered useless by age and are replaced by a more substantial set. In like manner, the hair in course of time falls off, and other changes are effected. In the vegetables kingdom, the decay of these temporary parts is annual in some cases, biennial in some, and casual in others; the leaf, flowers, and fruit ripen (decay) naturally when they have accomplished the purpose for which they were intended; the branches of ligneous (woody) trees wither; the stem of perennial herbs die down to the earth, and life is retained only in the bulb, tuber or root-crown.

But the more permanent parts begin in time to be affected by age, and exhibit signs of approaching dissolution: the root only imbibes and feebly propels nourishment to the plant, the sap elaboration and assimilation is slow, irregular and difficult; the vital energy of the whole fabric declines,

until at last it is totally extinguished; this is the process of decay, and it is just as natural for an organized being to die as it is for it to be produced from a germ in the first instance.

Decomposition is the resolution of a compound organic body into its various elements, and is brought about in several different ways, such as detonation or explosion as in gunpowder, combustion either spontaneous or by ignition, effervescence, literally boiling either by means of heat or peculiar chemical combinations, and precipitation by which the solids are separated from the liquids, and gases, and sink rapidly, forming a sediment.

In this case the annihilation is only apparent. Promoting decomposition is for the purpose of forming new combinations of the elements of life, and is at the base of the whole business of operating upon manures, soils and plants.

Therefore, while decay conveys to the mind of the thoughtful the idea of the gradual and natural close of existence, decomposition means a sudden, rapid dissolution of parts from extraneous causes, and does not imply total destruction.

Over the former we have no control, except to keep the plants or animals in our care in a good healthy condition by careful management, or good cultivation, so that senility may not be premature. But, over the latter we may exercise some power. Decomposition we can, in a certain measure prevent, by taking care, that certain conditions of heat, moisture, or purity of atmosphere prevail, and by banishing all that will be likely to induce it. Or we may superinduce it by causing it to commence and continue until such new matter is formed by its escaping elements as will cause increase of growth and productiveness.

Decay we can only accept as a natural result which time will bring about, and we must learn to look upon it both as regard ourselves and our surroundings with complacency, but decomposition may become seriously injurious by our own neglect or turned to good account by study, proper management, and attention.

THE AZALEA.

The beautiful specimens of this elegant family of exotics which are displayed in the windows of our leading florists, and embellish the drawing room of many a household, may well claim our attention.

The species of Azaleas are not very numerous, but there is no family of ornamental shrubs which has given more marked results to the skillful manipulations of the scientific hybridist, and none which have better repaid carefully culture ; varieties have been multiplied with the rapidity of the kaleidoscope.

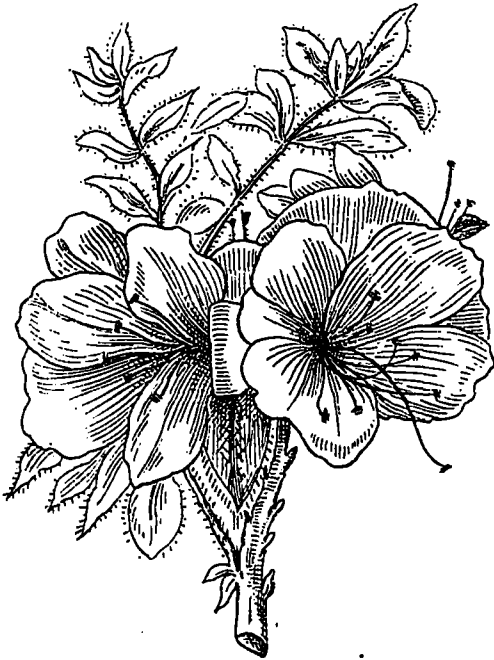
For the last half century the Azalea has been a fashionable flower, but the increasing beauty and rich or delicate colors and markings of the numerous varieties have tended to increase its popularity.

Azalea viscoca, *nudiflora*, and *calendulacea*, are North American varieties, and the two first can be found in abundance and beauty in most parts of New England and Canada. Another species from Asia, *A. Pontica* is very beautiful, producing flowers, not unlike the honeysuckle. Thence all Azalea are sometimes called the "swamp

the flowers being set off by the back ground of deep rich green foliage. One reason why Azaleas are well adapted to the house is because they love a dry place as their name implies ; it is derived from the Greek word *Azalea*, i. e., dry. At the same time when they are growing in pots they require a regular, although moderate supply of water. After they are out of flower, they should be kept in a dry, airy place to enable them to make their new growth slowly, and as soon as the weather permits they should be placed out of doors in a partially shaded place, so that they will ripen the new wood and form flower buds for the coming season. Azaleas thrive best in a mixture of peat and loam or sandy peat, well drained ; fresh manure is injurious and, if applied in too large quantity, fatal to them. Many of the hardy species are fragrant, while the Indians are not, but make up for this defect by their greater beauty and the longer duration of their blossoms.

The culture of the Azalea has become a business of great importance to European florists who grow them in large quantities for export, and considering the time it takes to produce a saleable plant they are sold at a moderate price.

GEO. MOORE.



Azalea Indica.

honeysuckle." These flowers, unlike the American species, which are pale pink or rose, are yellow, white and copper colored, these are hardy and have been multiplied, by crossing, to a great extent and form beautiful masses of bloom in the pleasure garden in the early summer. But those which are now in bloom and giving so much satisfaction are varieties of *A. Indica*, a native of China ; they have the advantage over the others of being evergreen and are the more beautiful for

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

POINTS ON TESTING EGGS.

To test eggs look at them through a strong light. See that they are perfectly clear, with not a dark spot through them. A good way to distinguish a fresh egg is by the air-bubble in the larger end. The smaller the air-bubble the fresher the egg. A fresh egg must be closely examined to see the air-bubble. Hold it up to an egg-tester, turn it round slowly, and look close near the top of the large end. If the bubble looks large, it should not be used. Get a fresh egg, newly laid, and make yourself familiar with the position and size of the air-bubble. You can then always distinguish a fresh egg, as the bubble becomes larger and larger every day. A fresh egg has a somewhat rough shell, while the shell of a stale egg is very smooth. When cooked, the contents of a fresh egg stick to the shell, and must be removed

with a spoon, but a stale egg, when boiled hard, permits the shell to be peeled off like the skin of an orange. It takes a longer time to boil a fresh egg than it does for a stale egg, and fresh eggs are more easily beaten to a froth than stale ones. You cannot, however, distinguish a fertile egg until after it has been under a hen a week, though experts can do so after the fourth day.

S. J. ANDRES.

WHAT TO SELL.

During this season, the room in the poultry house is worth something, and the inferior birds simply keep the others back. If there are many puny males, they might as well be sold now as any other time, for they will not be worth a cent more in the future. In fact, the larger a cockerel becomes the less it will be worth, for just as soon as the comb becomes developed it goes into the market as an "old rooster," and brings less than five cents a pound. Cull out the fat hens also, for they bring the best prices and will not lay, and if there are any young pullets that are behind in growth, let them go, too, and cull the flock down to "normal." It is not economical to feed two birds when only one is giving a profit.

S. J. ANDRES.

ABOUT ROOSTS.

The most approved roost is a 2 x 3-inch scantling, planed smooth and the edges rounded so as not to hurt the feet of the fowl. Round poles make very poor roosts: a fowl's feet become too cramped when obliged to cling to them during the whole night. On the flat (scantling) roosts, the fowl is enabled to spread its feet, giving a better rest. In placing roosts they should never be set over two feet above the ground, with a board platform placed under them to catch the droppings.

Putting roosts above one above the other or on an incline is a serious mistake. The birds will struggle to gain the topmost round and will be compelled to inhale all the foul odors from below.

S. J. ANDRES.

PREVENTING CHICKEN MITES.

Keep your chickens healthy and your success is assured.

Keep them free from mites and there is little

danger that they will not remain so. There are many remedies, all more or less successful, but the best remedy is prevention.

The first great problem is to keep the roosting places and the nests free from the pests. To do this is often a problem.

One farmer, an acquaintance of mine, had all his perches so arranged that they could all be removed easily. Every little while he would remove them and pass them slowly through a brisk fire.

Another treats the perches, nests, and inside of the coop with a mixture of coal-oil and water, with a force pump. Still another swabs off the perches with tar water. Another keeps a dust box for the fowls to dust or wallow in. The box contains a mixture of road dust sifted coal ashes and sulphur. I have already discussed this in a former number of the *JOURNAL*, *As the dust-bath*. The idea is to keep the mites away.

S. J. ANDRES.

HENS AND BROODS.

The hens will soon begin to become broody, and eggs will be given them in order to have them bring off early chicks. But how many of these chicks will be raised is another matter. Those who allow their hens to lose time at incubation should not be satisfied to have them raise only one-third of the chicks, as is usually the case.

The cause of the great loss among the little chicks (and not thirty per cent of them ever live beyond the first two weeks) is the dependence placed upon the hen.

A hen can raise chicks in May and the summer months when the weather is warm, but she cannot be as successful in March and April without assistance. She cannot hover her brood in a manner to prevent the chicks from being chilled, and it is only after the weaker ones have perished that she keeps the others alive.

It is the "survival of the fittest"; and that, too, under hardships and difficulties.

Provide a warm and sheltered place for the hens and broods, and look after them carefully.

It will pay to save the early chicks, as they bring the highest prices.

S. J. ANDRES.

SEASONABLE POULTRY NOTES.

The temperature of the poultry house is important, especially when eggs are to be produced. Under no circumstances should the temperature be allowed to fall below 40° degrees, and if the breeds kept are those with large combs and wattles, a higher temperature would be better. The house should be built in such a way that the temperature will remain at about as stated above, but should not be permitted to get too near the danger point. Better have the house a little too warm than a little too cold. Eggs intended for hatching should not be over one month old, and they should be kept in a room where the temperature will not vary much from 50 degrees. Turn them at least once in every two days. Do not set eggs from hens that are not full of life and vigor, or from hens that are diminutive specimens of their breed, or from those that lay but few eggs. The future profit in the egg industry depends upon the stock raised, and if a little care is taken the future egg-producers can have a record of 200 eggs a year quite as well as one of half that number. Bear in mind that it requires more than double the amount of time and labor to care for sick fowls than it does to keep them well, so that every hour spent in keeping the poultry houses clean, seeing that the water and food are sweet and clean, and that the hens are kept contented, is an hour well and profitably spent. Remember that nearly all, if not all the diseases that fowls are likely to have during the winter may be avoided by a little care, and that all of them are due to the following causes: over-crowding, damp and filthy houses, draughts, over-feeding, too close in and in breeding and neglected colds. All these causes may be easily removed or prevented entirely.

S. J. ANDRES.

CONCERNING THE DUST BATH.

To make hens pay, they must be treated appropriately, and one of the great things essential is the dust bath.

In fact, the dust bath to them is what the bathtub is to the human race; aye more! for it not only cleanses their bodies and gives them exercise, but it drives away vermin. Let a fowl be busily engaged in dusting itself, and it shows that the bird is happy and in good health.

No flock, therefore, can be so well depended on to prove compensative in winter, as one having this positive essential provided artificially for its thrift and comfort. According as the season in autumn advances into winter, the poulterer ought to look to it that a goodly supply of clean dry earth is stored away for that purpose; since, when once the ground is covered with snow and frozen hard, by no means is the procuring of it an easy matter. Now, road dust is most excellent, provided it is clean, but rather than always gathering this, and perhaps injuring the road, I suggest that the material be taken from some well cultivated field, just after the crops have been gathered. Usually, there comes a dry spell in fall; yes, several of them. When this occurs, simply scrape up a little of the surface soil here and there, where potatoes have been dug, or beets, turnips, carrots and the like have been plowed out; and if not sufficiently dry, spread the same in the sun on some boards or hard, smooth ground for a while. And if the soil is stony, it matters but little. All the large stones should be picked out, of course, but if the small ones are left it will afford the fowls a world of delight in winter to look them over.

Well, harvest enough earth in this manner to fill several barrels, though you may have only a small flock, and having mixed some sifted coal-ashes (not wood-ashes) with it, store the whole away in the cellar or some dry place, easy of access where it will be handy.

Never use wood-ashes. Why? because if fowls get their feet wet as they frequently do during the winter, not only will the caustic properties of the potash irritate the feet, but possibly injure them. Coal ashes moderately mixed with earth however will not do this.

S. J. ANDRES.

EXERCISE.

I have frequently had occasion to refer to the matter of exercise for hens, and at no season of the year it is more essential than in winter. It is then they need it, and it is then that we can best see the results. The laying hen certainly needs plenty of exercise. It benefits the nervous system, sends the blood faster through the veins, building up broken down tissues, and supplying the digestive organs with plenty of the vigor necessary to aid in the assimilation so essential to the laying

hen. This question has been thoroughly discussed many a time, and the conclusions are all in favor of judicious exercise for the hen.

Poultrymen are getting their eyes open to this essential point, and every where they regard it as an important requirement. The hen that sits about, or stands with legs drawn up in her feathers to keep them warm, or goes about in an aimless way, gobbling down large quantities of food without exhibiting any activity, will soon be incapacitated for laying: she gets too fat, and will not lay, except on the table as a table fowl. Just how to get the hen to take exercise is a great trouble to many; and yet it would seem to be plain enough what to do.

If you have a good poultry house, one that is made tight and warm with plenty of litter to make a hen take exercise, it is as natural for a hen to scratch as it is for a small boy at school when he has that well-known malady called by a similar name; she wants to scratch and will do it, if given the incentive and opportunity. Sometimes the hen has the incentive but not the opportunity; and, again, she may have an opportunity without the incentive. Cut straw, chaff, or leaves will afford splendid material for scratching and it fairly make the hens feet itch to see it placed a foot deep in her quarters. It matters not whether any feed is placed in this material when it is first put in, for the hen will scratch. She soon loses her disposition to do so, however, if she finds little to eat, but if given this incentive will retain her scratching proclivities. Scatter plenty of grain in the litter. Some morning, after the fowls have had about half a feed of some warm mash, scatter some screenings, or millet seed in the litter and see how eagerly the hens will scratch for it. They will scratch, jump about and busy themselves, and soon after sing a song, whose notes indicate a thorough circulation of the blood. They work so hard that at night they will be ready for a big supper which, if it is grain, should be fed early and in the same way. What they eat is easily digested, because of the natural tonic they have taken in the way of vigorous exercise. Following good digestion comes health, and, subsequently, a well filled egg basket. It is a wrong idea to furnish fowls exercise by allowing them to become lousy, scratching themselves, because when they scratch because of lice they will have but little desire for any other exercise or to do anything else. When feeding corn, I prefer using

the cracked instead of the whole corn, and throwing it in the litter and covering it up well in the litter, so they will have to get it in small pieces, thereby taking more time to fill up the crop and thus gaining exercise. G. S. ANDRES.

The Horse.

HORSE-BREEDING METHODS.

As announced in last week's market review, the outlook for horses the coming spring is very bright. If the department of Agriculture at Ottawa is successful in supplying the British war office with 1,000 cavalry horses, as they will likely be, it certainly will tend to improve the market for nearly all kinds of horses in Canada. The signs are not wanting to show that there is an exceptionally good demand for solid, blocky, well set horses and large heavy draft types, such as it will not be difficult for our farmers to breed if they give a little attention to it. No careless or slipshod method should be followed in horse-breeding, or in any other line of breeding for that matter. By putting skill, intelligence and care into his breeding methods it should not be difficult for the average farmer to produce the kind of horse in active demand in the European markets at the present time.

With the approach of the breeding season farmers should begin to give a little attention to the selection of stallions for breeding purposes. During the past year some valuable importations have been made and breeders will undoubtedly have a much better class to select from than was the case a year or two ago. This being the case farmers should be careful to choose only the very best, whether it be for heavy draft, carriage or other purposes. It never pays to breed a good mare to an inferior stallion, no matter what the cost of his service may be. Evidently too many farmers in the past have bred to the cheap, inferior class of stallions that have been only too common in many parts of the country. A difference of \$5 or \$10 in the price of the service fee between an inferior and a first-class stallion is neither here nor there as compared with the much larger price that the latter's offspring will command when offered for sale two or three years later. The difference in price to-day as between an inferior horse and one of a type that meets the

requirements of the market is from \$50 to \$100. It costs no more to rear a good horse than a poor one, and, therefore an expenditure of \$20 or \$25 for the service of a good stallion is a paying investment.

There is an agitation on in the United States to raise the price of the service fee for stallions. There is no doubt that the late depression in the horse business, both in that country and this, has been the means of greatly reducing the service fee for stallions. Owners have had to hustle around to get business, and have been forced to reduce the fee or allow their stallions to remain unproductive of a revenue. While a poor stallion is dear at any price, farmers should not begrudge paying a fair price for the service of a really good animal. Importers have had to pay larger prices the past year or two for the stallions they have brought over, and may, therefore, find it necessary to materially increase the price of the service fee. It is difficult sometimes for the ordinary farmer who has not given much attention to the subject to decide whether he is securing the services of the right stamp of animal. For this reason, and we have referred to it more than once, it would be decidedly in the interests of the horse-breeding industry of this country, if some system of inspection and licensing of stallions were put in force. It is done in Italy, France and other places, resulting in a vast improvement in the quality of the horses produced in these countries.

The practice generally followed in this country is for stallioners, or owners of stallions, to take their horses round from farm to farm. This plan is condemned by many, and it is claimed that owners should have more independence, and have farmers bring their mares to the stallion. While such a plan might work very well in more thickly-settled districts than is the case in Canada, the travelling method seems better adapted for this country. We do not, however, think the plan of calling at every farm advisable, but the owner could arrange for a stand at certain convenient points within easy reach of the farmers in the section. This, we think, is the most satisfactory method to follow, and one that should meet the needs of both the farmer and the owner of a first-class animal. Generally speaking, it is the fellow who has an inferior stallion who is inclined to call at every farm on his route. But be this as it may, the farmer who contemplates breeding mares should see to it that only the highest types of

stallions are used, and, to secure these, should make his selections early.—*Farming.*

The Flock

It is a curious fact that Vermont Merinoes are finding their way to the very highest places at the great Australian sheep shows. Their strong points are size and extra quality of fleece.

American farmers have done well with sheep this year. Everybody made money on their lambs, and the farmers of the Northwestern States are waking up to the fact that the sheep was pretty nearly made on purpose for them. Sheep talk is popular now, and when men hear anything about sheep, lambs or wool they listen.

The rise in price of Merino wool has set sheep breeders in the U. S. crazy after Merino sires. A few years ago the craze was for the coarse woolled mutton sheep and wise men then predicted that Merino wool would soon go up. The lesson is having made your choice of a breed of sheep, stay with it, and you will get all the good innings as well as the bad ones, while if constantly changing you are likely to get only the bad years.

A Mr. Ryrrie, from Utah, is reported to have brought into Southern Alberta 200 registered Rambouillet ewes. This is the French variety of the Merino breed, and once acclimated they may prove a valuable addition to the sheep stock of the west. The short, dense fleece of the Merino seems admirably adapted for the western range, and the extra size of the Rambouillet gives it an advantage for crossing with the other and better known breeds.

British Columbia as a market for mutton is opening up very rapidly and western sheep men are rejoicing over the good prospects before them. This year the markets in the mining centres took all the sheep there was to spare at good figures and even then it is said that the demand was so great that large quantities of Australian frozen mutton were brought in. In the future sheep will play a more important roll in the west than they have in the past.

In treating bloat in sheep, J. E. Wing, Ohio's well-known sheep man, says the trochar is not necessary. He says: 'We merely catch the sheep and hold its mouth open with a small stick and press with the knees sufficient to start the gas.' We have never tried anything but tapping and

pouring down saleratus water. A good teaspoonful of saleratus in a cup of water will soon start the sheep to belching wind and relief soon follows if the animal is not too far gone.—*N.-W. Farmer.*

REPORT ON THE SHEEP CARCASSES FROM THE PROVINCIAL WINTER FAIR.

The general report furnished by our beef buyer, who is responsible for the fresh meats handled at our various depots, is as follows :

Cotswold.—A good fleshy sheep ; does not carry too much suet, but fat on the back is too thick.

Leicester.—A little leaner sheep than the Cotswold ; suet about right ; reasonably fleshy.

Lincoln.—Fat too thick on the back ; too heavy in suet ; what flesh there is good.

Horned Dorset.—A nice retail lamb, but hard to sell to the retail butcher because it is heavier in the fore-quarters than the other lambs.

Shropshire.—Makes a nice sheep in all parts, but the flesh wants to be of a better quality.

Southdown.—Cuts very thick and fat ; an absence of flesh, but what there is is of exceedingly good quality ; altogether too much suet.

Suffolk.—Very full of flesh, but not of so good a quality as the Southdown ; does not carry too much suet.

THE FOREMEN'S REPORTS.

(1) " I might say in regard to the sheep purchased at the Provincial Fat Stock Show, that although the quality was A1, they would be very unprofitable for us to handle, being altogether too fat for our trade."

(2) " In reply to your letter asking for report on the prize mutton received. I would say that the public do not seem to appreciate it on account of the abundance of fat. The few who have tried it, speak in high praise of its quality.

" It is useless trying to sell it without trimming, fully 40 per cent. being fat. This brings the cost of the whole up to about 8c. a pound, buying price."

(3) " In regard to the show sheep received by us before Christmas, I beg to report that the quality was all that could be desired.

" We found, however, that it was hard to realize a reasonable price, and think that stock of this description would be unsuitable for this locality."

(4) " The sheep received by us, from London Fat Stock Show, we found much too fat to be of

any use for our local trade. The public simply refused to buy at any price. The only way I was able to dispose of it was by cutting it upon the counter, after trimming 45 per cent. of fat from it. The breast and flank were only fit for the fat box, and there was altogether too small a proportion of lean meat for it even to be of any use for our retail trade in Parkdale."—*DAVIES & Co.*

Swine.

HOG CHOLERA.

By J. A. Stephenson, V. S., Dominion Gov't Inspector, Carman, Man.

The growing importance of the swine industry in Manitoba and the Territories renders it necessary that those engaged in hog raising and those about to commence this profitable branch of live stock breeding should be informed of the nature of this fatal disease, and especially of the measures necessary for preventing its spread once it has broken out in a locality. The losses to swine owners in some parts of the United States and Canada are very large. It is estimated that in the State of Iowa alone in a single year the losses amounted to from \$12,000,000 to \$15,000,000. The recent outbreak in the Carman district in Southern Manitoba is believed to be the first outbreak of it in the province, and it supposed to be due to imported hogs from Western Ontario. The importance of a rigid inspection of all swine at the port of shipment should be enforced to guard against and affected animals coming into the province. However, I am glad to say, that the outbreak in this district is pretty well stamped out under the quarantine rules of the Department of Agriculture, which causes all farms where the disease has been to be thoroughly cleaned up and all diseased animals slaughtered and burned ; also animals that have been in contact with diseased ones.

The disease of hog cholera is extremely contagious and infectious—no other disease is more so. It can be conveyed to healthy swine in an endless number of ways, both by direct contact and intermediary agents. When this disease appears upon a neighboring farm, precautions should be adopted to prevent the introduction of the contagion. No one should go upon the fields or into the pens where sick animals are, and then go to another farm where the diseases has not appeared,

without first washing their boots and sprinkling their clothes with a 5 per cent. solution of carbolic acid and water and even then it is not advisable. Remember that a particle of manure or dirt the size of a mustard seed from an infected farm is sufficient to start an outbreak that will destroy a herd of swine. A particle that size may be carried upon the shoes of a visitor, upon the foot of a dog or any other animal, upon a wagon wheel, or in a multitude of other ways. Non intercourse at such time is therefore the safest rule.

Having had a large experience with the disease while government inspector in Western Ontario, I have found the following symptoms which farmers and swine breeders will do well to note and when found in their herd report immediately to the Department of Agriculture at Ottawa. The symptoms of disease in swine are not so characteristic as in the larger animals. In the most acute and most severe cases the animals die very suddenly, either before sickness has been observed or after they have been ill but a few hours. Such cases are seen most frequently when the disease first appears in a herd; in the greater number of cases the progress of the malady is slower and there is consequently a much better opportunity to observe the symptoms. There are first seen the signs of fever, shivering, unwillingness to move, more or less loss of appetite, elevation of temperature, which may reach 106 deg. to 107 deg. F. The animal appears stupid and dull and have a tendency to hide in the litter or bedding and remain covered by it. The bowels may be normal or constipated at the beginning of the attack, but later on there is generally a liquid and fetid diarrhoea, abundant and exhausting. The eyes are at first congested and watery, but later on the secretion becomes thickened and accumulates in the angles and has a tendency to gum the lids together. The breathing is more or less rapid and may be oppressed and labored. In the later stages there is cough, which, however, is not frequent, and is generally heard when the animals are driven from their bed; it may be a single dry cough, or it may be paroxysmal. The skin is often congested and red over the abdomen, inner surface of the limbs, under surface of the neck and on the ears. The color varies from a pinkish red to a dark red or purple. An eruption is sometimes seen, which leaves crusts or scabs of various sizes over the skin. There is a rapid loss of flesh and the animal grows weak, stands with arched back and the abdomen drawn up, and

walks with a tottery, uncertain gait. There is less and less inclination to move and the weakness and exhaustion increases until death results. The course of the disease varies from one or two days to two or three weeks.

The most characteristic lesions of hog cholera seen in post mortem examinations are:

(1) Hemorrhages, particularly in the subcutaneous, sub-mucous and sub-serous connection tissue, in the lymphatic glands and the porous organs of the body.

(2) Ulcerations of the large intestine, especially the cæcum and ilio-cæcal valve.

(3) Collapse of lung tissue and, less frequently, bronchial pneumonia.

The first question that occurs to the owner of swine when disease appears amongst his animals is, "What is the disease with which they are affected?" It is important to briefly consider the nature of the evidence upon which this question is to be answered. If several animals are affected with the symptoms already enumerated, and if the same disease has been affecting the hogs on neighboring farms, we may decide that the disease in question is present. The owner should immediately report to the Department of Agriculture, so that steps may be taken to have an investigation held and the proper precautions observed in stamping out the disease and in keeping it from spreading.—*N. W. Farmer.*

THE BREEDING SOW.

The starting point of success in the sow meant for ordinary pork raising is to see that she comes from a mother that is an easy feeder and a good nurse. Take care to see that she has not been stunted in the earliest stages of growth for want of enough to keep her in comfort. These are essential. What breed to work on will depend mainly on individual taste and judgment. She should not be bred so early as to injure her own growth or the vitality of her young. If her first litter is fairly numerous, say from seven to ten good pigs, and she nurses them well, that is a sow to retain as long as she is fit to breed. Such a sow, properly managed, will bear and nurse 20 pigs in a season, and pay her way with a good profit on all the skill and feed she gets. If she does not keep up to her heredity, is a poor breeder or a poor nurse, she may have another trial, and should that also prove unsatisfactory, she cannot too soon be made into pork. No matter how good she looks she has failed in the main purpose of her existence. Heredity and selection by a man who knows at the same time how to manage his stock are the foundation principles of the work of pork raising for profit. In a year or two by careful management a splendid breeding herd can be established and all the cheaper products of the farm can by this means be readily turned into good money.