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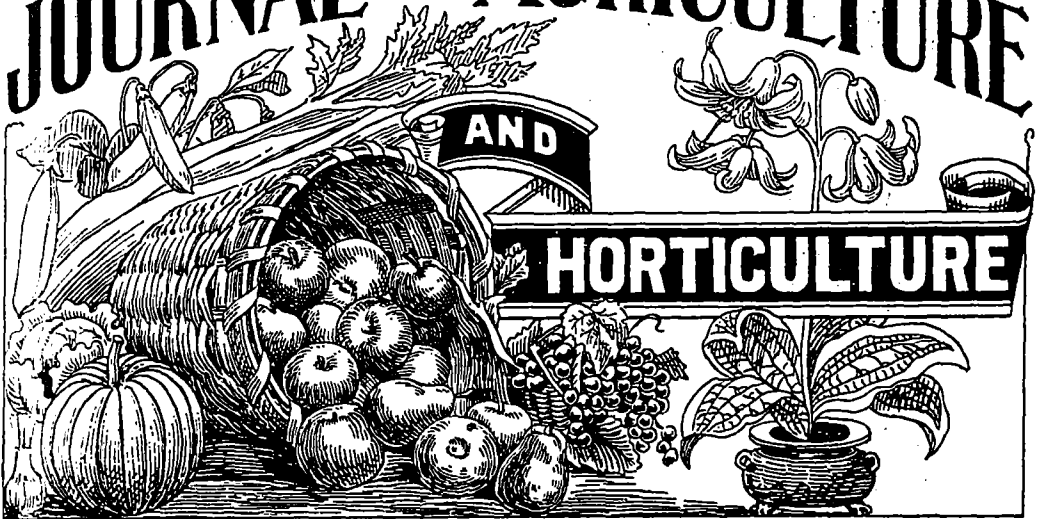
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THE JOURNAL OF AGRICULTURE



VOL. I. No. 6.

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

MARCH 15, 1898.

Competition of Agricultural Merit, 1897.

Visits to the Farms.

No 6: J. E. ROBERGE.

The farm of M. J. E. Roberge we visited on the 7th September. It is situated at St. Vital de Lambton.

The rotation is a good one:

1st year.—Hoed-crops;

2nd year—Wheat or barley, with timothy and plenty of clover;

3rd year—Meadow;

4th year—Meadow;

5th and 6th years—Pasture and fodder-crops.

Very little oats are sown, as the land is very heavily manured. As M. Roberge winters from 40 to 50 head of cattle and from 25 to 30 hogs, &c., he has as much dung as is needed for a good system of rotation, and for this he is indebted to an excellent silo. He is building another this season, as he sees its value. The farm is only 75 arpents in extent (64 acres).

All the buildings are in good order and perfectly suited to the occupation.

The accounts are fairly well kept, though not perfect, for want of a special set of books.

Permanent improvements are very considerable already; the stones from the land are utilized for wall-fences.

We accorded 11 marks out of 15 for the stock, which will very soon be thoroughly "graded up."

The crops, this year, are, as usual, very good indeed

Nothing can be better than the ditches, drainage and the water course.

We cannot but congratulate Mr Roberge on his love of agriculture, and he has the additional merit of setting an example to his neighbours of neat and seasonable farming.

We assign him 89.10 marks, and we trust that in 1902 he will be one of the fortunate competitors for the gold-medal.

No 7: J. F. DESCOTEAUX.

We inspected this farm on the 28th August, and can say with truth that M. Descoteaux is, this year, one of the best farmers of the district.

The system of rotation is good, and we gave him 13 50 marks out of 15 for his cattle which are, generally speaking, pure Ay-hires.

The management of the fields, which are perfectly divided, is capital.

Though the proper water furrowing of the land is but too often neglected by farmers, we are happy to say that M. Descoteaux attends carefully to this important business.

Too many people seem to forget ; if they ever knew ; that good ploughing is absolutely essential to the proper drying of the soil.

It will be seen, by looking at the large table, at p. 34 of this volume, that everything on this farm is suitably arranged ; and this is a proof that the work and management of it are carried on with regularity.

M. Descoteaux is a man who spreads around him a praiseworthy ambition to secure both the improvement of stock and the progress of agriculture in general. We gave him 87.90 marks, which entitles him to a silver-medal and a diploma of the highest merit.

Notes by the Way.

Linseed.—We are greatly in favour of every farmer, of suitable land, growing a couple of acres or so of flax, always provided the seed is consumed on the farm ; but to advocate the growing of this crop, to be sold entirely, seed and straw, off the land is by no means in accordance with our views. The soil is robbed quite enough already by the sale of hay, straw and grain. If dung were brought back in place of the exported produce, we should have nothing to say against the practice of turning the whole produce of the farm into money ; but as it is, we think there are robber-crops enough grown in the province already.

Potato-Crop in the U.-S.—The growers of potatoes in the States must either muddle their returns, or else some of them must grow infinitesimal crops. The average yield of the potato is given, for the year 1897, as 64 bushels to the acre ! Now, 64 bushels at 60 lbs., equal 1½ ton (gross) ; and as potatoes are, in the States, generally planted pretty widely apart, if we take the average distance between the sets as 3 x 1 feet, the product of each set will be, at 64 bushels to the acre, as nearly as possible 4½ ounces ! Not worth the trouble of digging. As we said before, there must be some mistake in the returns ; for, if the *average* is so low, what must the yield of the poorest acre be ?

Butter for England.—Mr. Reid, who seems to be an unprejudiced man, writes to "Hoard's Dairyman" on the question of the flavour most in vogue in England. He found, on his return from a visit to that country, that the American butter "tasted quite too rank." If the taste in butter preferred in the States does not suit the English palate, he, very sensibly, concludes that there is no use saying, that the English do not know good butter when they see it, but the wisest thing to do is to make the American

butter as like the English as possible, and that the way to do this is "simply by pasteurising. We thus make a butter milder in flavour, of a better keeping quality, and requiring, at the same time, less salt." Surely, this pasteurising is not very far removed from the good old plan of the Devonshire dairyman; the milk is strained into 2 gallon tin-pails; the cream is allowed to rise; when risen, the pails and their contents are placed in a water-vat (*bain marie*), the heat of which is *gradually* raised till the cream is crusted and slightly browned (about 170° F.), the circle on the bottom of the pail being distinctly marked on the surface of the cream; the whole is set away to cool, and when cool, skimmed and churned as usual, or, more generally, stirred with a wooden spatula. It only takes two or three minutes stirring to bring the butter in grains.

Clover.—"Hoard" says: In our section of the country, New Jersey, we have been trying clover so long that we can no longer get a ton an acre; and very frequently we cannot get a *catch* at all.

Average yield of wheat.—The official return of the Manitoba wheat-crop of 1897 gives the average as 14 bushels 2 gallons to the acre. If this is calculated on the 60 lbs. bushel, of course the 2 gallons vanish.

The average of the United-States, this year, is about 12 bushels, pretty much the same as usual.

It is worth while to compare these returns with the yield of the same cereal in England; and as the Board of Agriculture of that country has just furnished us with the details of the crop and its selling value for the last five years, we present them in full to our readers promising that, from recent reports, the thrashing machines are turning out more grain from the stacks than was expected.

Years.	Bushels per acre.	WHEAT.		Return per acre.
		Average price	£ s. d.	
1893	25.95	3 4½	.....	4 6 9
1894	30.69	2 7½	.....	3 19 11
1895	26.23	3 1½	.....	4 1 2
1896	33.68	4 0½	.....	6 15 0
1897	29.09	4 2½	.....	6 2 9

The average yield to the acre, during the last five years, is thus seen to be 29 1-10 bushels; not so great as usual, as there was two bad years in the five: '93 and '95. Still enough is shown to prove that those kind friends, who have been gloating over the "Decadence of British Agriculture," need not crow so loudly yet.

It will be observed that the money return to the acre has greatly risen during the last two years. Taking the average rental of farms in general, at 18 shillings an acre, the increased returns of '96, '97 over the three previous years are equal to **£2 6s. Od.** a year: a good deal more than will pay rent, tithe, and, probably, rates. So, this increased gain, of all but 60 per cent, must put the English farmer in clover.

We began by using the term *British Wheat Crop*, but we should have said *English*; for the truth is, the Scotch yield of wheat was, this past harvest, nearly nine bushels an acre greater than the yield in England. Somehow or other, they always beat us, probably because wheat is only sown in Scotland on selected land, oats following seeds as a rule; whereas with us, wheat takes its turn in the rotation everywhere as the fourth or fifth crop. There is as much wheat sown in one English county, Lincoln, as in the whole of Scotland. But we think the Scotch wheat crop is exaggerated. The number of acres grown in England and Wales was 1,784,296, and in Scotland, only 103,609.

Basic Slag.—Now, from all the reports we receive from thoroughly trustworthy sources in England, we are convinced that basic-slag is the true physic for all worn out clay-soils in this country: there are plenty of them. If nitrogen is to be used with the slag, it would be as well to use it in the form of nitrate of soda, as when sulphate of ammonia is mixed with it, there is a certainty of the free lime or carbonate of lime in the slag changing the sulphate of ammonia into the carbonate, whose volatile properties (smelling salts) will cause it to be lost in the air; though, if the two slag and sulphate of ammonia—be sown at intervals of a few days separately, not much loss can occur. We extract the following from the “English Agricultural Gazette:”

Despite the fact that basic slag seems to set some of the teachings of scientific experts at defiance, I am bound to bear my testimony to the marvellous results which have followed its use on many farms.

Having always been a believer in the theory that phosphorus was ineffective as a plant food, unless in conjunction with potash and nitrogen, I could not understand how a dressing of basic slag alone, which contains neither of the latter substances, could prove beneficial. Nor yet, holding the opinion that plants can only assimilate soluble elements, could I realise how the insoluble phosphates of the slag, rendered more insoluble by the presence of lime, could afford them nutrition. But an invitation to visit a number of farms where basic slag had been used completely upset my previous theories, and convinced me that both on arable and pasture lands the use of the genuine phosphate powder had been followed by really marvellous results.

It was upon the thin-skinned, naturally poor and harsh, almost unworkable clays where it had answered best, and in the course of two days' investigations over a large tract of country I saw throughout a marked difference in the barley and wheat crops where it had been used, and upon some of the poverty-stricken pasture lands, where the undressed portion would scarcely graze a goose, the portion dressed with slag was a luxurious bed of white clover, plenty of it fit for mowing, the difference in one large field from which the cattle had been drawn about a month between the dressed and undressed parts being almost incredible. It was much the same in almost every field I entered, and, as said before, it was the poor clays in every case that had benefited most, so that it appears as if the occupiers of such land had in basic slag a most valuable aid to prosperity. The cattle, too, evidenced their preference for the pasture dressed with it, so that, starting from home somewhat prejudiced against it. I returned thoroughly assured of its great value as a manurial agent, though I cannot recommend it to be used at the same time as sulphate of ammonia.

THE FLOCK

HAMPSHIRE DOWNS.—T. N.—In the Hampshire Down Flock Book the following note on the chief points of the breed are given:—A long, deep, and symmetrical carcase, with the rib well sprung; broad, straight back, flat loins, full dock wide rump, deep and heavily developed legs of mutton and breast, head and neck well placed on gradually sloping and close-fitting shoulders, the neck being particularly of a strong muscular growth, and not too long, the ears nicely set on, of fair length, and whole coloured; prominent, intelligent eye; the body as above described standing on strongly-jointed and powerful legs, with good feet presenting a smart and active appearance. The colour of the face, cheeks, ears, and legs should be of a rich dark brown, approaching to black, white specks or black bars between the ears being specially avoided. The wool is moderate in length, of close and fine texture, reaching well over the forehead, the skin being of a delicate tint; the average weight of the fleece is 4½ lb to 5 lb. of washed wool.

In the reports of the sales and lettings of sheep for 1897, it may surprise some people

to find no mention of Hampshire down rams in the list of prices. The fact is, there are rarely anything but ram lambs of this breed used, and very good prices they reach, as the following will show :

RAM LAMBS

Breed	1896. Highest.			1897. Highest.			1896. Lowest.			1897. Lowest.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Cotswold	13	13	6	11	0	0	6	2	0	3	13	6
Oxfords.....	22	1	0	24	3	0	3	3	0	3	3	0
Shropshires.....	8	18	6	9	19	6	4	4	0	6	0	9
Southdowns.....	15	4	6	12	12	0	1	11	6	2	2	0
Hampshires (letting).....	73	10	0	65	0	0	5	5	0	9	9	0
Hampshires (sold).....	42	0	0	42	0	0	2	12	6	2	0	0
Suffolk.....	46	4	0	46	4	0	.....	.....	.....	2	12	6
Wensleydale.....	.....	.....	.....	11	0	0	.....	.....	.....	2	15	0
Border Leicesters.....	.....	.....	.....	8	0	0	.....	.....	.....	4	5	0
Black-face Mountain.....	13	0	0	13	0	0	.....	.....	.....	3	0	0

Sheep *let* have to be returned to the breeder by a certain date. The *Suffolk*, a cross of long date, between the old black-faced heath-sheep and the Down, is travelling rapidly along the road to early maturity. We have known the breed for upwards of 50 years: first class mutton.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE.)

HOT-BEDS.

(Continued.)

The covering of the hot-bed is now to be considered. As soon as it has settled a little, the frame may be put on; this is usually covered with glazed sashes, and these are necessary during cold weather, but later in the season sashes covered with oiled cloth will answer the purpose equally well.

The frames should be made of good well seasoned wood and put together by means of bolts so that they will occupy but little space when stored away.

Two very important parts of the management of the hot-bed are watering and giving air. If seedlings sown in them are not carefully watered but allowed to get too dry, they will soon shrivel and die, while, on the other hand, if they are in a continuous state of wetness or moisture they will soon decay.

To make young plants have a robust, vigorous growth, air should be admitted as often as practicable, not in too great volume, nor in draughts, but moderately, this can be done by tilting the sashes a little either at the back or front according to the direction of the wind, or, on very calm or warm days they may be tilted by alternate sashes, one at the back and the next one at the front. As the plants increase in vigor of growth, the quantity of air may be increased.

Shading is another important item to be attended to ; matting straw or spruce-branches are used for this purpose, the shading should only be resorted to in sunny weather and should not be allowed to remain on the sashes when not necessary to prevent burning by the sun's rays, because light is essential to growth and we must not exclude it any longer than we can avoid.

When vegetable plants have grown of sufficient size to plant, out the sooner that is done the better ; or, in the event of that being inconvenient, the frame should be removed, otherwise they will become drawn up and weakly, and will take some time to recover the transplanting.

Hot-beds are not so much in use as formerly, when permanent glass houses, and the means of heating them, were not so cheap or so well understood, but even now they are very useful especially in small gardens where it would not be worth while to build a forcing house.

Beside this, the care of a hot-beds, planting the seed, or propagating from cuttings, and the watchfulness necessary to produce successful results, are fascinating and salutary exercises of the mind and body of the young amateur.

INTERESTING FACTS

Plants obtain their elemental parts from the soil and from the air.

All the green parts of a plant, but especially the leaves, share in the power of decomposing atmospheric carbonic acid.

In Papilionaceous plants such as peas, beans, tares and those bearing seed in pods, the power of assimilation of the nitrogen absorbed by their leaves from the atmosphere is in " tubercles " which are formed on the roots.

Inauguration of the City Council

Montreal, February 14, 1898.

It is gratifying to remark that this function was made brilliant by the magnificent floral decorations which embellished the City-Hall. Some may say that this was extravagance but if they will reflect for one moment, they will see that the money thus spent was not wasted.

To produce the material employed gave work to a number of deserving and industrious citizens, and appealed to the good taste of all who had the privilege of being present ; the display must have had a good effect in this respect : the more the leaders of the public do to increase the love of the beautiful, the more they assist in stamping out the vicious and depraving elements of society.

All praise is due to the City Gardener, M. Pinoteau, for his skill in arranging the beautiful and admirably grown plants and flowers used on the occasion, all of which were the products of the City Greenhouses.





SAN JOSE SCALE (*Aspidiotus perniciosus*, Comst.)

- A. Adult Female (much enlarged), after Howard. Adult Female, Anal Segment (highly magnified) after Howard.
- B. Stem of Apple-tree thickly covered with Adult Female Scales (enlarged original).
- C. Lady-bird Beetle (*Rhizobius debilis*, Blackb., enlarged) found feeding upon scale in orchard, Berowra, N.S.W.
- D. (1) Showing spray of Apple-tree clean, without Scale, as it appears at the present time.
 (2) Showing spray, badly infested with San Jose Scale, cut off a dying tree at the same date Gosford, N.S.W.

Household Matters

THE MOTH

Our annual, unwelcome, little visitor will soon be with us, and careless people who make no preparation for its coming are sure to suffer in the destruction of valuable clothing.

The defence against this little pest is simple and easy, if done in time; make a good defence against its visits; no waiting till it is here; it may then be too late.

Valuable furs are to them a perfect paradise, as they attach their eggs to the long hairs, and when the eggs are hatched, the fur is eaten and falls out, leaving a bare patch, which nothing can remedy but doing over by the furrier, often at almost the value of a new garment. And this is the penalty of carelessness.

A little careful attention, now, will secure your clothing and your conscience from negligence.

My plan, which I have followed for the last few years, has answered so well that I can recommend it with the greatest security: always providing the moth has paid no visit in advance, and this cannot be the case if taken in time.

A long bag of unbleached cotton, single width 3 yards will hold a coat or cloak well. Saggy people can get the seamless pillow casing, which only needs sewing up at one end and a hem at the other for the string, a piece of strong tape sewn just under the hem to tie the bag tight.

Do this at once, and you can wear your coat, or cloak as often as you wish, providing you give it a good shake or two and pop it into its bag at once when done with. One bag will do for caps and small things but give everything a good combing, and I always put a bit of camphor into each fur mitt or cap. Thus treated, I can afford to laugh at the enemy.

A tar barrel is a very good thing for the country, where there is plenty of room to store it. Take the garments, after brushing and combing, put them in bags, or well secured in paper; cover up or turn upside down on a level floor and you will be safe from the enemy, as they do hate tar.

A large cedar box is about the nicest for winter dresses and ulsters; it should be made long enough to take them length ways, carefully brushed and put away in time with some pieces of camphor about them.

If the box is made and utilised as a sofa in a bedroom, it will answer the two purposes, and look well; with a small mattress and a cretonne cover, it will be an ornament worth having.

ABOUT SOUPS

Winter is especially the time for good, strong nourishing soups; and, as the soups under consideration are made up from both meat and vegetable, they ought to supply a felt want. When the digestive powers are weakened by a long fast and hard, perhaps harassing work, a clear soup is understood to give tone to the stomach and prepare it for further effort; hence arises the necessity for the soup tureen for the late dinner, when the master of the house comes home tired and hungry. For an early dinner a more substantial soup is permissible, but its nature and

quality should always be determined by what is to follow, both in the way of meat and pudding. For instance a soup in which there is a preponderance of vegetable need not be followed by mashed turnip, nor, on the other hand, need a strong meat soup be served before a hot roast. These little matters, trifling though they may appear, have important results in the way of keeping a household in health and strength; and judicious and well-balanced feeding will go a long way in warding off the poverty of blood and lassitude which often afflicts old and young alike, rendering them useless members of society, a trouble to themselves and to all around them.

Curried Ox-tail. (1)

On a cold day curried ox-tail makes a grand meal. It is surprising how few people know of the dish. Cut the ox-tail in pieces, remove all the fat, and boil for two hours in a pint and a half of water, then take the tail out and fry a nice brown colour. Cut three or four onions in slices with some pieces of carrot and with a teaspoonful of mixed herbs, and fry. Then put in all together in a saucepan. Mix a dessert spoonful of currie powder, and a tablespoonful of flour, with the liquor the tail has been previously boiled in. Boil the whole for an hour, salt to taste, squeeze a lemon in, and serve with boiled rice.

Baked cheese pudding: Two cupfuls of broken crackers or stale bread, one cup of mild cheese, grated, one tablespoonful butter, salt and pepper to taste. Butter a baking dish and fill with cheese and crumbs in alternate layers. A dust of salt and pepper and some bits of butter go on each layer. Pour in enough milk to fill the dish two-thirds full, and bake three-quarters of an hour in a hot oven.

HOUSEKEEPER

The Horse.

HORSE BREEDING FOR THE MARKET.

II

Care of Mare and Foal

What in the "wild and woolly west" is dubbed "the corn crib cross" is a most important factor in horse breeding. Whatever else one may be able to do, one cannot raise fine horses on scrub feed and care, and to this fact, we must join the belief that mares should be allowed to follow as nearly as possible the teachings of their natural instincts. If they are let do pretty much as they please, and feed them liberally, keep them well sheltered from the blasts of winter, the cold rains of spring and fall, and the insects and the burning sun rays of summer, the mares, except in cases of dire disaster, will not only look well, but are in fit condition to produce colts and fillies the breeder is looking for. As early spring comes round, the mares have had such care taken of them, and have been fed so liberally that they are now strong and virgourous, and look as though they would make admirable mothers. They should be in their boxes, away by themselves. When turned out in the day time they stand in sunshine, making little effort to move around, and generally are a series of pictures of contentment with all and sundry of their surroundings. Very shortly they will bring forth foals, and the slipping of the bones causes a certain amount of weakness, not, however, nearly as great as might be expected. Even immediately after delivery, mares have

(1) How it used to grieve us, at Sorel, to see both head and tail of a beast chucked out as offal! 'Ed.

been known to perform most extraordinary feats of strength and agility, but only of course under great pressure.

Naturally, the matrons are inclined to be a little cross at this time. They do not wish to be bothered, and consequently it is better that only two should be let out together in any sort of small enclosure. When food or water is to be considered special care should be taken to prevent any kicking being done, for it is at such times that the mares are crossed to each other. For feed, to commence the day the mares should get, say at six o'clock, bran, chopped hay and bruised oats moistened with hot water. At 10 o'clock another ration of of the same. At 2 in the afternoon they should get a feed of dry oats and raw carrots, and at six at night a ration the same as in the morning, with a liberal allowance of boiled turnips or beets. If troubled with a cold let the mare have half a pound of treacle mixed with her bucketful of feed. Fed in this manner, each mare's portion being gauged according to her needs, the old ladies will fare splendidly, and come through their trials all right. Above all things avoid having the mares at all constipated, or "dry in the inside," as an old Scotchman would put it. That condition is foreign to every law of nature. Avoid the other extreme as well, but of the two scouring is to be preferred to constipation in mares about to foal.

There is no necessity for either condition, carelessness is responsible for either. When the mare is about to foal, don't bother her by eternally looking at her, nothing bothers her so much, or makes her so uncomfortable as being closely watched when close to foaling. If she could do as nature dictates she would slip quietly away to some secluded spot, and stay all alone until she could return with her foal: but she cannot slip away so she should be left unmolested. Certainly an attendant should be on the spot where he can see, without being seen, for he must watch her in the act of foaling, for perchance she may need a little help, though most mares will get through alone all right. Supposing that the youngster is ushered into this vale of tears in a healthy manner, the attendant should see to it that he does not smother. The mare should be treated gently and given a drink of thin gruel warmed to about blood heat, and she will after her drink go to work to clean up her foal briskly.

Meanwhile do not hurry the little fellow. He will, if strong and healthy, go through all sorts of evolutions with his legs, striving to get up, which after a while he will, his object being to get his first independent meal on this earth. It is bad policy to hurry a foal too much, there is no great hurry to get him round to his mother's udder; give him a little time.

Foals have as soon as born a most extraordinary amount of strength, and also a habit of getting into the strangest predicaments, and no man can tell how they manage to wobble into them.

It is always best to give a newly born foal an injection of castile soap suds, not too much nor too coppy, but just enough so for the purpose it is used for. Some breeders still stick to the giving of a tablespoonful of castor oil the very first thing, but there is no need to resort to that nauseous stuff. The mechanical application is far better. If the foal is at all weak, a little stimulant should be given, but it is better to get along without putting anything unnatural into his stomach if possible. Assist the little fellow to get his first drink, if the mare is a bit ticklish, by holding up her near front foot, so that the ordeal may be got over speedily. After the first drink has been successfully swallowed, offer the mare another ration of gruel, put some hay in front of her, and leave the two alone together for three or four hours, keeping watch though to see nothing goes wrong. With this sort of care very little bad luck will be experienced. It is always well to remember that the more nearly natural the birth may be the less trouble will be experienced. After foaling the mare should be liberally fed. Give her plenty to eat both of grain and roughage, and let her pick as much hay as she will. Do not stint her in this. Turn both mare and foal out into the sunshine as soon as possible. Do not let them get to grass too suddenly, or you will have a case of scours on your hands, which is a very bad malady for foals, carrying off many annually, and should therefore be carefully guarded against. Of course it is only natural that when turned out to grass mares should scour a little, but that should not bother

the breeder, it is the injury to the foals which is to be avoided. Let the foal run out so long the first time, if the weather is warm, so much longer the next day and so on, gradually lengthening the time till the whole day is spent in the fields. Avoid keeping foals out if it is cold, and in fact in the whole of their management use sound common sense.

W. R. GILBERT.

The Dairy.

THE MONTREAL BUTTER & CHEESE ASSOCIATION

Montreal, March 1st, 1898.

SIR,

The Executive Committee of the Butter and Cheese Association of this City, in view of the approaching season, beg to call your attention to the fact that advices from the leading Towns of Great Britain in which the great bulk of Canadian Butter finds a Market, point to the fact that, if our present Trade is to be continued and extended, it is imperative that our Butter be shipped while perfectly fresh; we would therefore beg to impress upon you the importance of selling the Product of your Creamery every week at the current rates, instead of, as has hitherto usually been done, at the end of each month, and we are strongly of the opinion that, if this course is universally adopted, as is followed in the case of Cheese, the results at the end of the season will be found to have been more satisfactory to the Producer than under the present system, and that the volume of trade will be thus greatly increased.

In fact, if Canada does not adopt the policy of selling its Butter when strictly fresh it might as well give up the attempt to do an Export business, because that is the system followed by all Countries competing with us for the British Markets. It is the system now followed in Canada, as you are aware, with Cheese, with the result that we stand at the top of the ladder amongst the Countries that supply Great Britain with that article, whereas, as regards Butter, we at present stand at the bottom.

A. J. BRICE, President,

JAMES OLIVER,

ARTHUR HODGSON,

WM. NIVIN,

P. W. McLAGAN,

JOHN McKERGOW,

J. A. VAILLANCOURT.

CREAMERY RECORDS

In all creameries a daily record should be kept, not only for future reference but for the buttermaker's use as a check to his daily work. Such a record conscientiously kept would furnish proofs to many a contested theory, and would form a valuable supply of creamery statistics. The buttermaker's ability would be perfectly apparent to the expert, and the care given by the patrons to their milk supply, as well as the work and efficiency of the separators is clearly demonstrated.

In the Compton Model Creamery it is the duty of the students to ascertain and keep the records under the supervision of the Instructor. Three separate classes keep three separate list of records, Class a. record all the figures whilst separating; Class b. have the cream manipulations to follow, and Class c. do the churning, working and making up the butter and record all the results.

For computing the acidity of the milk, cream etc., the Farrington alkaline tablets are used, and have proved of great service to beginners in acquiring correct ideas.

I give herewith our daily records for the month of October, which is the last month in which we separated every day. It must be born in mind however that although recorded on the same date as that on which the skimming was done, the cream in every case was churned on the following morning. For recording the grain and flavour of the butter the following abbreviations are used, for grain, R. stands for: right, O. W. for overworked, O.C. for overchurned, and U.W. for underworked; for flavour, G. stands for good, F. for fair, B. for bad.

The unfortunate presence of so many B's. towards the end of the month was entirely owing to the persistence of the patrons in feeding turnips and in some cases tops.

In further explanation of our record, I would say, that the outside temperature is taken at 7 a.m. each day, that two No. 1. Steam turbine Alpha de Laval separators are used, that "Conn's B. 41" culture is used for a starter, followed for a week or ten days by buttermilk; that all our butter is retailed weekly in Montreal which accounts for only one working, and that salt is added according to the amount of moisture remaining in the granular butter so as to leave 3 per cent in the finished product.

Variation in amount of milk separated per hour is due to the milk arriving faster some days than others, and on Saturdays but one separator is used.

H. WESTON PARRY.

	1	2	3	4	5	6	7	8	9
a. Outside temp 7 a. m.....	60°	54°	31°	35°	39°	51°	50°	34°	50°
Commenced separating.....	7 a. m.	7 a. m.	7 a. m.	7.15	7.20	7.05	7.15	7.15	7.15
Finished ".....	9.30	9.30	9.30	9.30	8.20	8.45	8.15	8.35	8.25
Length of time.....	2.30	2 hrs	2.15	1 hr	1.40	1 hr	1.20	1.10	1.10
No lbs. milk separated.....	4347	4740	5983	3296	5805	3280	5095	4202	4202
" " " " per hour.....	1140	2350	3980	3296	3480	3280	3800	3600	3600
Skim milk tested.....	.02	.02	.01	.02	0	0	0	0	.01
Whole ".....	4.16	4.20	4.22	4.16	4.34	4.38	4.38	4.38	4.40
b. Temp. of cream room.....	54°	54°	54°	53°	49°	53°	49°	47°	48°
Acidity of cream after sep g.....	.119	.102	.119	1.02	.119	.102	.119	.119	.136
Cooled cream to.....	54°	55°	58°	56°	56°	56°	56°	56°	55°
Held for how long.....	30 hrs	30m.	30m.	30m.	30m.	30m.	30m.	30m.	23 hrs.
Time cream is set.....	9 a. m.	9.30	10 a.m.	9.30	10.45	9.45	10 a.m.	8.30	8.30
Kind of starter used.....	B. 41	B.M.	"	"	"	"	"	B. 41	B. 41
Temp. cream is set at.....	58°	58°	60°	60°	58°	60°	60°	65°	65°
Time cream is put in churn.....	6 a. m.	6 a. m.	5.45	6 a. m.	6 a. m.	6 a. m.	5.45	7.45	7.45
Length of time ripening.....	21 hrs	20½ h	19.45	20 hrs	18.45	19.45	19.45	23.15	23.15
c. Temp. of churn room.....	48°	49°	47°	53°	48°	42°	50°	42°	42°
" of cream in churn.....	58°	56°	59°	59°	58°	57°	58°	57°	57°
Acidity ".....	.595	.595	.595	.612	.527	.581	.544	.561	.561
Amt. color used (if any).....	¼ oz.	¼ oz.	1½ oz.	1½ oz.	1½ oz.	1½ oz.	1½ oz.	1½ oz.	1½ oz.
Churning started.....	7.20	7.20	8.20	7.12	7.20	7.20	7.20	8.20	8.20
" finished.....	7.55	8 a. m.	9.20	7.40	8.10	7.50	8 a. m.	8.45	8.45
Length of time churning.....	35 m.	40 m.	60m.	25m.	50m.	30m.	40m.	25m.	25m.
Temp. butter came at.....	57°	57°	59°	59°	58°	55°	58°	57°	57°
" of water for washing.....	54°	54°	54°	54°	52°	49°	49°	56°	56°
No. of washings.....	1	1	1	1	1	1	1	1	1
" workings.....	1	1	1	1	1	1	1	1	1
Amt. salt per cent.....	5	4½	3½	4½	4½	5	3½	4½	4½
Grain.....	R	R	R	R	R	R	R	R	R
Flavour.....	G	G	G	G	F	F	F	G	G
Total butter lbs.....	209	229	434	160	286	180	251	207	207
Lbs. milk 1 lb. butter.....	20.80	20.70	20.70	20.60	20.30	20.50	20.30	20.80	20.80
Buttermilk tested.....	.03	.03	.04	.01	.02	.05	.05	.03	.03

The Separating of Milk.

Essentials to perfection. The separators must be running at a proper speed, the speed depending on the class & build of the machine. They must be kept scraped thoroughly clean & entirely free from smell, so as to prevent any taint or odour in the cream & skim-milk.

The causes of improper separating are numerous; among the most prominent are low speed, scarcity of oil, gritty oil, dirty separators. The machines, whether steam turbines, belt power, or hand power, should be placed on a solid basement to prevent their being shaken & put out of gear. They create enough vibration by their high speed to do this if not firmly fixed. Enough oil must be kept in the lubricators to keep the bearings from heating. On the Alpha Laval separator, there are 4 lubricators.—1 in front to feed the top-bearing of the bowl spindle—1 to feed the base of the spindle, & 2 to feed the gear when the steam is driving the machine.

The effects of careless separating. The cream will not be properly separated if the separator is not run at a high enough speed.

The care of milk: (From milking to separating) The evening's milk should be kept cool over night. If possible, the morning's and night's milk should not be mixed till the time the milk is tempered, just before separating takes place. Milk should be kept in a place entirely free from all odours.

The man at the receiving platform of the creamery must be on the 'qui vive' for milk that is off flavour in the slightest degree; and should a patron object to having his milk returned, then heat a sample of his milk to 120 F. and ask him to smell it, and if he has a nose worth any thing he will detect the odour. Milk from a distance should be brought to the creamery on spring waggons or else the cream will churn in the cans. The weigh can must be situated so as to cause as little trouble and time as possible after the milk is hauled. When dealing out skim-milk, 80 percent is, as a rule, allowed to patrons.

A sample of milk is taken, every time separating takes place, at the weigh can. The samples are preserved in bottles & tested about once a week in most creameries.

The straining takes place after the milk leaves the weigh can and the milk is strained through a cheese cloth doubled.

The tempering takes place after the milk has left the receiving vat; it is heated to about 90° F, so as to warm all the milk from different patrons to a uniform degree, as it was taken from the cows. Separation is most perfect at this temperature.

The quality of cream to be taken depends on the time of year.

The breed of cattle will influence the quality of the milk and cream. This will change, also, according to feed and to the time of year.

The separators should be washed immediately separating is finished.

Every speck of dirt must be removed from all soiled utensils to prevent odours arising in cream, butter, and creamery.

W. J. BUNBURY.

The Ripening of Cream.

To perfect the ripening of cream, its temperature must be neither above nor below the given temperature that it is to be set at. The cream must be raised to a certain degree, that is 90° F, it must contain at least .02 per cent lactic acid to cause it to sour. The cream room should be as cool, and even cooler, if possible, than the cream. (1)

The causes of improper ripening are careless cooling or heating of the water surrounding the cream vat, and improper separating. Cream will ripen in a warm room, therefore care must be taken to keep the room cool. To ensure this, have the cream room as far from the boiler room & engine room as possible.

The effects of careless ripening are bad, evil smelling butter. The butter will have no good grain, the flavour will be bad also. In the best butter, about 8 per cent of casein is found. This is the objectionable substance that is in all butter and should be washed out in the butter-milk. Even in the very best butter casein is unavoidably present; but bad butter will have a distinct taste of casein.

(1) Unintelligible. Ed.

The manipulation of the cream from separator to churn comprises: cooling, tempering, use of starters etc.

(a) **Cooling.** Directly the cream leaves the separator it is run over a cream cooler (in warm weather), inside which is placed (or in some coolers) flows cold and iced water and outside which flows the cream. As above stated the whole milk is raised to a temperature of 90° F. and raised still higher during the actual process of separating. When the cream reaches the cooler it is 63° to 67° F. Around the cream vat iced water is kept in warm weather.

If the cream is to be churned the next day, a temperature of 56° or 58° F is required when all the cream is through the separator. If it is not to be churned for two days after, a temperature of 55° F should be reached.

(b) **Tempering:** The ice, if any, is taken out of the water surrounding the vat and the water heated to such a degree to allow the cream to ripen at the degree it is set at. e. g. The cream is cooled to 55° and it is to be set at 63° subtract 55 from 63, the result being 8; add on 8 to 63 and the result is 71; 71° F is the temperature to set the cream (Usharming! Ed.)

In warm weather, the water will be warm enough to melt the ice without being heated by steam. To set the cream then, the ice taken out when the cream is about 50° F.

(c) **The use of starters.** There are several different kinds of starters: viz. B. 41, butter milk from the previous day's churning, Hansen's Ferment, sour skim-milk, ripened cream of the previous day, whole milk of a new calved cow, tempered and cooled to a certain temperature. These should be put into the cream about 20 hours before the cream is to be churned. If the butter is off flavour, neither the ripened cream nor the buttermilk of the previous day should be used as a starter, as they only continue the bad flavour. These all assist to hasten the ripening and the action of the lactic acid in the cream.

(d) **Straining.** The object of straining is to prevent any lumps of casein or curd getting into the churn, and to aerate the cream as it flows from the vat to the churn.

(e) **The acidity of ripened cream** should be about 36 c. c. of sweet cream 7 c. c. (119) 1 c. c. - 0.17. The acidity (1) is subject, nevertheless, to variation according to the quality of milk supplied.

(f) **Among other things to be mentioned in connection with the manipulation of the cream are these.** Never stir or touch the cream with the hand or person. It is not clean: the heat of the body is higher than that of the cream, and will therefore heat the cream. Provide a wooden paddle 18 to 20 inches long for stirring the cream and a dairy floating thermometer for finding the temperature of the cream.

The old way was to dip a finger in to the cream to see if it was cool or hot enough; but, since there are thermometers, they should be used, for they are exact, if made by reliable manufacturers and are the cleanest way of testing heat or cold.

Another item: stir in the frothy cream that is made by the separator. A loss of butter is thereby prevented because this froth contains butter fat just as much as the rest of the cream.

Again; attention must be drawn to the fact that no creamery, dairy, or cheesery will succeed if utensils, churn, butterworker, vats, etc, are not kept free from dirt. If things are dirty, smells arise and harbour in the cream, and so in the butter, and consequently poor prices are realized in the market.

The sooner the utensils are washed and scrubbed after being used, the easier will they be to wash and cause less trouble to everybody in the building.

J. H. PLUMMER.

(*) The acid referred to is lactic acid (4 c 3 d 6 o 3) and it is this that is the actual part that ripens the cream,

The Farm.

COLD STORAGE

To the Editor of the JOURNAL OF AGRICULTURE.

The Minister of Agriculture at Ottawa, the Hon. Sydney A. Fisher, has instituted a system of cold storage, in order to place our butter on the English Market in first class order.

Formerly, Canadian butter was in rather bad repute over there ; so bad, in fact, that they never thought of placing it on the table, they used it for cooking purposes and axle grease. They imagined we could not make first class butter. When the Hon. S. A. Fisher was made the Minister of Agriculture, he knew something had to be done in order to put the butter makers in Canada on an equal footing with other countries that were also exporting butter to Great Britain.

He began at the beginning : at the creamery. By offering a bonus of \$100, \$50 for the first year, and \$25 for each of the two following years, to each creamery owner who would fit up a cold chamber and keep it at a temperature of 38° F. or under, in order to keep the butter from deteriorating while kept at the creamery ; then to provide for a system of refrigerator-cars once a week to carry the butter to Montreal or other places of export ; then to furnish certain steamers to the different English Markets with cold chambers, in order to put the butter down with a fine flavor, in order to try and capture the market. The people in Great Britain have been gradually using more butter for the last 10 years brought from foreign countries. Whether this is due to less butter being made at home or not, I am not prepared to state ; (1) but one thing, I do know ; that is, that a gradual increase of the imports of butter has been going on, while the quantity of cheese imported into Great Britain, for the past 10 years, has been about stationary, until perhaps the year 1897.

The Minister of Agriculture intended to give the bonus of \$50, only, for 1897, but so few having availed themselves of it, he has concluded to give another chance, so that more creameries may make an effort to fit up a chamber, and keep it according to the regulations laid down by the department this year, 1898.

I would advise each and every creameryman that intends to fit up, to immediately write to the Department of Agriculture, Ottawa, and get the plans, free, in order that he may learn the best way to fit up. The Department does not insist on having all buildings made exactly according to the plans ; as long as you keep the chamber down to the proper temperature it is sufficient.

Though during the past two years our butter has come up nearer the price of the best Danish and Normandy butter, still, we have a long pull and a strong pull before we overcome the prejudice against Canadian butter.

The manner of selling our butter must be attended to, also, in order to capture the British Markets. We must send our butter over when new and fresh before it gets a chance to get stale. No matter how fine our butter is when made, it must be landed on the other side before it has had time to go off in flavor. Some people imagine that this system of cold storage will be a hurt and detriment to the cheese business, but it is not so. Our gradual increase of milk must be made into butter in order to save our cheese-trade ; or if not, it will be overdone, as at present we are supplying about 65 per cent of all the cheese imported into Great Britain, and this last year we shall have furnished perhaps 70 p. c. or more, while our butter is only about 2 per cent of all that is required to supply their market. So we can increase our butter tenfold and still be far behind what we are today with our cheese-trade.

(1) The quantity of milk sold in England is now ten-fold of what it used to be. ED.

By so doing what we have started to do and getting our share of the butter-trade, we shall in that way help the cheese business at the same time. Every one knows that in 1896 apples were very cheap, not because they were poor in quality but because they were plenty, while in 1897, they were very dear, and poor into the bargain, because they were scarce, so, if we make less cheese, we may help to enhance the price—and in that way help the greatest number.

Yours very truly,

Chateauguay, 1st January 1898.

PETER MACFARLANE.

P. S.—I might say that it is intended by the system of cold storage to ship fruit, and poultry, so that it will help the agriculturists of Canada generally.—P.M.

GREEN FODDER

To the Editor of the Journal.

Dear Sir. There are many farmers in this province of ours that keep cows who get very little profit from them because they do not feed them properly. If the cows could only be induced to give for, say, 3 months something near what they do in the month of June, what a difference there would be in the cheese or butter factory accounts!

Some years ago, when I kept cows, I found the best way to keep them up to their milk was to sow a piece of oats and vetches: about $\frac{1}{2}$ an acre for every 5 cows is enough, usually; if you have more cows, sow more ground in proportion. It is a good idea to choose a piece of ground not too far from the yard, where the cows are to be fed. If the ground is not very rich put some manure on it and make it rich. Plough it early; divide it into 3 parts; sow the first third as early as possible and then after 10 days, or so, sow another, and then 10 or 12 days afterwards the last portion.

About the first of July or when the pastures begin to dry up and the cows begin to shrink in their milk, your first piece of green fodder will be ready to cut. Commence very lightly at first as the cows will not care to eat it, it is always better to cut the fodder 12 hours before using it that is to say the fodder that is wanted for the evening meal can be cut in the morning and the morning meal cut the night before; this will allow the fodder to wilt a little, when the cattle will eat it with a greater relish. By the time your first piece is cut the second will be ready, and so on to the last piece, and if it is an ordinary year you can cut it twice. I have cut in a moist year as often as three times but you cannot always depend on it. Then if you have some fodder corn, by the time your green fodder is all done, you can feed corn. Keep up the flow of milk if possible, and when grain is selling so cheap as it has the past year or two, less than a cent a pound and while cheese is selling say at 8 cents or butter at about 18 cents or over, you will find the best market for grain is to feed it to the cows, the cows never turn out bankrupt the always pay cash, feed them well to-day and they will repay you to-morrow: this is not a very long credit.

Some farmers are a little afraid to grain a cow, but I can assure them if they are the right kind of cows they will pay for a moderate grain ration nearly always. I hope some farmers will try the green fodder the coming season; they will not be sorry, and should they not need the whole piece to cut for summer food it can be cut and saved as hay for winter food: they certainly will not need to lose any of it. I also feel certain that there will be no portion of the farm sown to grain that will give more profit than the piece fed to the cows. Why is it that all the factories in this province, have hardly room during June to work up the large product? while in Sept. and October they have hardly milk enough to keep open? Usually, too, the price of milk during these two months is dearer than in June. Make an effort and see if you do not think it pays; there is not much chance—none in fact, to raise the price of cheese and butter but we can reduce the cost per lb of milk, and by doing so we shall have a chance to make a little profit. There are many farmers crying out that it does not pay to keep cows: not if you starve them. Be liberal; it is an old saying, if you feed a cow straw you will have a straw profit, and many farmers make only a corresponding profit. Try and feed better and see if your profits will not be otherwise.

Yours faithfully,

PETER MACFARLANE

CHATEAUGUAY
24th January, 1898.