ANNUAL REPORT

OF THE

MANITOBA

DAIRY ASSOCIATION.

WINNIPEG, MAN.
1897.
DAVID PHILIP, QUEEN'S PRINTER

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To the Honorable the Minister of Agriculture,

Sir;—

I have the honor to transmit herewith the Eleventh Annual Report of The Manitoba Dairy Association.

Your obedient servant,

E. Cora Hind,

Secretary.

Manitoba Dairy Association,

OFFICERS FOR 1897.

HON. PRESIDENT (for life),
Wm. Wagner, Ossowa, Man.

PRESIDENT,
John Hettle, M.P.P., Boissevain.

1ST VICE-PRESIDENT,
Richard Waugh, Winnipeg.

2ND VICE-PRESIDENT,
W. M. Champion, Reaburn.

SECRETARY-TREASURER,
Miss E Cora Hind, 364 Main St., Winnipeg.

DIRECTORS;

D. W. McQuaig, Macdonald P. O.
Geo. Steele, Glenboro.
Robt. Scott, Shoal Lake.
Jacob Reghr, Hochstadt.
Jas. Bray, Longburn
R. E. A. Leech, Brandon.
D. Munroe, Neepawa,
Wm. Scott, Winnipeg
Wm. Ryan, Ninga.

EXECUTIVE COMMITTEE;
John Hettle, President.
Richard Waugh, 1st Vice-Pres.
E. Cora Hind, Sec-Treas.
W. M. Champion, 2nd Vice-Pres
Wm. Scott.

REPRESENTATIVE ON EXHIBITION BOARD;
C. C. Macdonald, Provincial Dairy Superintendent.

LIST OF NAMES AND ADDRESSES OF MEMBERS OF THE MANITOBA DAIRY ASSOCIATION FOR 1897.

NAME.	ADDRESS.	NAME.	ADDRESS.
Bray, James	Longburn, Man.	Loewen, J. R.	Hochstadt, "
Broad, R. L.	Douglas, "	Lutley, F.	McGregor, "
Bedford, S. A.	Brandon, "	Lund, John	Giroux, "
Barre, S. M.	Winnipeg, "	Munroe, D.	Neepawa, "
Brann, Johan	Hochstadt, "	Morton, M. L.	Gladstone, "
Baird, A. K.	Manitou, "	Messner, J. M.	
Binscarth D'ry As'n	Binscarth, "	Marshall, S.	Souris, "
Black, J. H.	Headingly, "	Macdonald, C. C.	Winnipeg, "
Bigelow, Geo. C.	Pop'lr P'nt, Man.	McQuaig, D. W.	Macdonald, "
Crerar, J. S.	Yorkton, N.W.T.	McLennan, Alex.	Gladstone, "
Champion, W. M.	Re burn, Man.	McCartney, Thos.	Longburn, "
Crawford, J. S.	Birtle, "	Nesbitt, J. R.	Pilot Mound, "
Elliott, J. H.	Winnipeg, "	Piggott. Harry	Carberry, "
Foley, R. D.	Manitou, "	Ryan, Wm.	Ninga, "
Foxwarren D'y A'n	Foxwarren. "	Reghr, J. T.	Hochstadt, "
Freisen, Jacob F.	Steinbach, "	Roberts, H. & Co.	Strathclair, "
Garden, R.	Stonewall, "	Reimer, R. W.	Steinbach, "
Grassick, Wm.	Pilot Mound, "	Scott, Wm.	Winnipeg, "
Greig, G. H.	Winnipeg, "	Scott, Robt.	Shoal Lake, "
Gourlay, Robt.	Birtle, "	Scott, A.	Hamiota, "
Hettle, John	Boissevain, "	Simpson, R. G. T.	Portage la Prair.
Hinman, Dr.	Winnipeg, "	Steele, Geo.	Glenboro, Man.
Hind, E. Cora	" "	Stevenson, J.	Winnipeg, "
Jory, A. A.	Newdale, "	Thompson, S. J., V.S	Carberry, "
Laidlaw, Jas.	Clearwater, "	Waugh, Rich.	Winnipeg, "
Leech, R. E. A.	Brandon, "	Wagner, Wm.	Ossowa, "

MANITOBA DAIRY ASSOCIATION,

Eleventh Annual Meeting, held in the Council Chamber, Winnipeg, the 16th and 18th days of February, 1897.

The directors met at 10 a.m. February the 16th in the Council Chamber; present Messrs. Hettle, Waugh, Champion, McQuaig, Bray, Munroe, Ryan, Leech, Crerar and the Secretary Treasurer.

Report for Annual Meeting was read, discussed, amended and finally adopted. Treasurer's report was read and the books having been audited for the Association by Mr. Greig the Directors appointed Mr. S. A. Bedford, Brandon, to audit them on their behalf.

The matter of appointment of representative on Exhibition Board was brought up, in accordance with a minute passed at the last Annual Meeting, and on motion of Mr. Champion, Mr. McQuaig seconding, Mr. C. C. Macdonald, Provincial Dairy Superintendent, was chosen to fill the position.

On motion of Mr. Champion, Mr. Leech seconding, a vote of thanks was passed to the Free Press for accommodation in the matter of butter and cheese market reports. Meeting then adjourned.

The Eleventh Annual Meeting of the Manitoba Dairy Association was called to order at 2.15 p.m. February 16th, in the City Council Chamber, the President, John Hettle, M.P.P. in the chair. The Rev. Hugh Pedley, B.A. opened the session with prayer. The minutes of the last meeting were read and confirmed.

The Secretary then read the following report of the Directors for the year.

DIRECTORS' REPORT.

Your directors have nothing very startling to report in dairy matters, but can confidently assert that the year has been marked by progress all along the line of this great industry.

Immediately at the close of last Annual Meeting your directors addressed themselves to the task of dealing with the question of appointing an agent to act for the Association in the City of Winnipeg.

At a meeting held on the 21st February, 1896, it was decided to appoint a committee to wait upon Mr. Greenway in reference to this matter, and the meeting adjourned until the afternoon in order to receive the report.

Committee reported a very courteous reception from Mr. Greenway, but that he had stated decidedly that the Government could not appoint an agent, who would sell or give prices on produce, that such an agent must come from the Association. The report was received and adopted and after some further discussion it was decided that an agent should be appointed, and that the appointment should rest with the Executive. The only stipulation being that he should not be a dealer in any kind of farm or dairy produce.

The Executive took up the matter, and a circular was issued to all Creameries and cheese factories asking their opinion as to the appointment of agent, and on the 16th of April the Executive again met and considered the applications received by them for the position. The President reported a grant of $300 from the Government towards the salary of this agent. The choice of the Executive fell upon Mr. J. C. Macdonald.

The duties of the agent were drafted, and copies sent to secretaries of creameries and cheese factories. At the same time they were notified that the agent would commence his duties on the 15th June.

The Secretary of the Association was instructed to make arrangements as to the receiving of markets by telegraph, the cost of sending out bulletins, etc.

Through the Free Press, arrangements were made to obtain markets from Montreal at press rates, and to have them appear daily in that paper; the Free Press to pay half the expenses of the messages and your Association the other half. It may be stated here that the cost of the messages for the four months was a little over seven dollars.

The agent commenced his duties on the 15th of June and continued until the 15th of September. During that time one barrel of sour cheese was shipped to him, and was the sole consignment received by him during his term of office. The Weekly bulletin of markets was prepared and sent out as agreed. On the 15th of August, after two months trial, the Executive finding that no use was being made of the agent, decided to dispense with his services, and so notified him that his term would cease with the 15th of September. From the 15th of September to the 15th of October the Secretary of the Association took charge of and sent out the Weekly bulletins.

The appointment of the agent was strictly in accord with the wishes of the last Annual meeting but cannot be looked upon as an entire success, as those who clamored most loudly for his appointment made no

use of him. It would appear however that indirectly his appointment has been a benefit to the dairying industry. It would also seem, from letters received by the Secretary, that the sending out of the weekly bulletins of markets was satisfactory, and that the publication of the markets in the Free Press was a decided advantage to the manufacturers of butter and cheese.

Only one request came in during the year for Speakers. This was from McGregor and as the request was for the President or Mr. Waugh, and neither gentlemen was able to attend, it was not possible to comply with it.

One question with which the Association had to deal with during the past year was the putting of dairy butter in creamery boxes. Complaints came in from Stonewall, Manitou, and Pilot Mound. An opinion was obtained from the Attorney General Department as follows;—

Winnipeg, June 19th, 1896.

Miss E. Cora Hind,

Secy. Dairy Association,

Winnipeg, Man.

Madam,—

Since seeing you I have found a provision in the Criminal Code which covers the case you were speaking to me about. It is Section 448 of the Code and provides that everyone is guilty of an indictable offence who sells or exposes, or has in his possession for sale, or any purpose of trade or manufacture, any goods or things to which a false trade description is applied. A trade description is defined to be any description as to the mode of manufacturing or producing any goods, I think therefore to put on a package covering hand-made butter a description that it is creamery butter is applying to it a false trade description. If any farmer therefore puts up his butter in such packages and sells or has them for the purpose of sale, or if any person to whom he consigns such packages knowing them to have been so put up, sells them or has them for sale, such parties are guilty of a contravention of the provision of the above mentioned Section. Those guilty of this offence may be indicted, or they may be dealt with summarily by Justices of the Peace.

I have the honor to be,

Madam,

Your obedient servant,

H. A. Maclean,
Chief Clerk.

The complainants were asked to secure definite information as to the parties committing this offence. This seemed to be difficult to do and it was finally decided, upon further consultation with the Attorney General's Department, that the opinion of that Department should be printed in all the daily papers as a warning, the Department being of opinion that the offence was committed more in ignorance than with deliberate intent to break the law. This action seemed to have the desired effect as no further complaints of this nature have been received.

The increase of dairying through the year has been almost phenomenal. It is estimated from reliable sources that 776,000 lbs. of creamery butter were sold out of the province, at an average price of 16.4 cents per lb., giving a total receipt for butter of $127,264. It is also estimated from the same source that 886,000 lbs. of cheese were made which sold at an average of 7 cents per lb. making a total of $62,007. A grand total of $189,284 for dairy produce. This estimate is if anything below the actual amount manufactured. The increase in the value of the output for creamery butter alone is $41,612.

POSSIBLE MARKETS.

The rapid development of the mining regions of Western Ontario, as well as those of British Columbia is an intimation to the Manitoba farmer to be up and doing. These countries must have supplies and Manitoba is the nearest point from which to obtain them. Everything the farmer can raise is needed but special attention might be directed to the market for condensed milk—"Tin Cow" as it is familiarly called in the camps. The brand now used is "Reindeer," made in Nova Scotia and is not considered very satisfactory, but that which was made in Manitoba was much more unsatisfactory, leaving a dull starchy substance in the bottom of the vessels in which it was dissolved.

There can be no doubt of the extent of this market or the fact that it will last as long as the mines, as there is no possibility of keeping cows down there unless they can be taught to live on rock. The Directors would recommend that the Association take into earnest consideration the manufacture of this article. Already inquiries have been received from an American firm as to the possibility of opening a factory here. Somebody is going to have this market and why not Manitoba. Then there is a market for pigs, beef, mutton, flour, oatmeal, eggs, and in fact everything that is raised on the farm. Even hay has to be imported to these districts.

The annual report of the Association was issued before the House rose last March and the 3,000 copies well distributed.

Acting upon the power conferred upon them at the last annual meeting, your Board of Directors have elected Mr. C. C. Macdonald to fill the position of Dairy Representative on the Board of the Industrial Exhibition.

Your Directors also recommend that By-law No. 5 of this Association be amended by adding: "And the funds of this Association shall

"be deposited in some chartered bank in the name of the Association and "that all cheques shall be signed by the secretary-treasurer and counter-"signed by such general officer of the Association as shall be appointed "for that purpose by the Executive Committee."

This report was adopted without discussion, Mr. Champion being the mover and Mr. Ryan the seconder of the motion.

The President then called for the report of the representative to the Exhibition Board, whereupon Mr. G. H. Greig read the following:

Mr. President, Ladies and Gentlemen,—

For the past two years I have had the honor of representing this Association upon the Winnipeg Industrial Exhibition Board. This past season I occupied the position of Chairman of the Prize List Committee, a position that entails very considerable responsibility and a vast amount of work upon the holder.

At a meeting of your Executive Committee held on March 1st., a resolution passed suggesting a number of changes in the prize list, seven in all, and I am pleased to be able to report that I was able to have every one of these changes put into effect. Among the more important were the sweepstakes for best cheese, white or colored, with a silver medal for the maker; two sweepstakes for butter, one for farm dairy, and one for creamery, with a medal for maker in the latter class; in the farm dairy classes the distinction between the "deep setting" system and the "separator system" was done away with. In spite of the depressed prices of dairy products during the early part of the season, the exhibit was as you all are doubtless aware, a gratifying success, especially in the improved quality of the exhibits. I might here say that after visiting the Toronto Industrial and the Western Fair at London last September, I was more than ever satisfied with the arrangement of our dairy department and the general excellence of our exhibit. There are, however, a few minor improvements that might be made that would add still further to the convenience and attractiveness of this department. The Exhibition Association was fortunate in securing at my suggestion the services of Prof. H. H. Dean, of the Ontario Agricultural College, Guelph, as judge, who performed the arduous duties with impartiality and gave as universal satisfaction as any mortal can hope for. The score card system was followed as previously and the scores mailed to each exhibitor. I would suggest that you carefully examine the prize list and submit any desired changes to your representative and also that you prepare a list of expert judges from which the Board may make selections. All of which is respectfully submitted.

Mr. Greig's report was adopted on motion of Mr. Ryan, seconded by Mr. Leech.

The Treasurer then read the statement of finances for the year which was as follows:

MANITOBA DAIRY ASSOCIATION.

Statement of Receipts and Disbursements from Oct. 1st. 1895, to Dec. 31st., 1896.

1895.

RECEIPTS.

Oct. 1.	Balance on hand	$ 40 43	
	Membership fees at last Annual Meeting	80 00	
	Grant from Government to Association	78 20	
	Grant from Government for Agent's salary	300 00	
	Dividends 6, 7, 8, 9 from Commercial Bank	19 90	
	Total Receipts		$518 53

DISBURSEMENTS.

Expenses last Annual Meeting	$ 43 45	
Additional salary late Secretary	25 00	
Salary of present Secretary	50 00	
Salary to Agent, 3 months, $70.00	210 00	
Stamps for year	17 68	
Telegrams	7 47	
Printing, stationery, typewriting, incidentals	27 75	
Expenses of Officers attending Executive Meetings	26 50	
Total Disbursements	$407 85	
By Balance in Bank	$110 68	
		$518 53

The books having been audited by Mr. Greig for the Association and Mr. Bedford for the Directors, this report was adopted on motion of Mr. Ryan, Mr. Bray seconding.

The President then addressed the meeting as follows:

President's Address.

Ladies and Gentlemen,—

In coming again to our Annual Meeting I have nothing very new to say to you.

The past season, all things considered, has been a fairly prosperous and satisfactory one. Owing to the late spring and thelow prices in the early part of the season things looked discouraging, but the improved prices in the latter half very considerably redeemed the year and when everything was totalled up it was found that it had not been such a bad factory season after all. The increases in the manufacture of creamery butter, as you have seen from the Directors report, has been very large.

The returns from the season should have been larger, however, and might easily have been so if our farmers had taken more pains to provide green fodder for the cows when the grass became burned up. This is a point upon which I wish to lay great stress. Our season in Manitoba is a short one but it can easily be made from a month to six weeks longer by a little forethought and management. The planting of coarse grains for green feed does not require either much time or effort and the results are often surprising. It is utterly unreasonable to expect cows to keep up a flow of milk on dead grass and nothing else. And it is just at the time when butter has reached its best price that they usually go off their milk. Let us see to it that we use every means in our power to prolong the flow of milk and keep up its quantity and quality to the utmost limit possible of our season.

In my own experience with the Manitou Creamery, I found that during the latter part of May and the month of June the butter was not up to the mark, it was not that there was any bad taste but there was a marked absence of flavor. In looking round for a cause for this I came to the conclusion that the late spring and the large quantities of water lying in swales and swamps was the reason of this lack of flavor. There was no flavor in the feed, consequently none in the butter. After the moisture dried out a little there was a marked improvement, and the butter made during the last half of the season was all marked "extra fine" both as to the flavor and quality. It is well to keep all these things in mind so that past experience may serve us for the future. Many of our patrons did remarkably well with their cows this season, in spite of the lowness of prices, they realized really more per cow for our short season than did the farmers in Ontario.

The question of butter versus cheese is often raised. For my own part I believe that the manufacture of butter is the wisest course for Manitoba. The difference in actual money gain is perhaps not large but there is the added advantage of being able to raise the young calves cheaply and well at home. With plenty of sweet skim milk and a little chop the calves will thrive amazingly. Then there is always the possibility of overflooding the cheese market and making the price still lower than at present.

One of the important moves of our Association during the year was the appointment of a Dairy Agent to act for the Association in Winnipeg. This move although not an entire success, had its good points. The bulletin of markets sent out were very helpful, and the very fact that there was an Agent in Winnipeg to receive consignments, made buyers more eager to offer for the butter.

I will conclude by hoping that our Annual Meeting will be both pleasant and profitable to us all.

The first paper of the session was given by Mr. A. A. Jory, Cheese Instructor in the Provincial Dairy School and was upon the subject of "Cheesemaking" the paper was as follows;—

Cheesemaking.

Mr. President, Ladies and Gentlemen,—

The part which has been assigned to me in this convention is a paper on practical cheesemaking.

In cheesemaking as in every line of business continual progress is the road to success. I know of no better illustration to bring before a cheesemaker than bicycle riding. If one does not keep on going he will certainly and quickly fall off. And in order to maintain our reputation as cheesemakers we must constantly strive to acquire a knowledge of the best methods of cheesemaking in order to improve the quality of our cheese.

From my own experience in cheesemaking I have found continual and patient research is necessary in order to keep pace with the times and requirements of the consumers.

The first important matter which we must consider is the cleanliness of our cheese factories. Everything in and about the factory, from make-room to curing-room must be kept perfectly clean and free from any offensive smells. This is a very important matter. Without attention to cleanliness in every detail we cannot expect to be successful in operations.

RECEIVING MILK.

This is the next step in cheesemaking when the skill of the cheesemaker is taxed more than at any other time during the process of the day's work. Great care must be exercised in receiving the milk, accepting none but that which is pure and sweet and free from foul odors. He should use firmness in rejecting all other milk, for if impure milk is received an impure flavored cheese will be the result.

HEATING THE MILK.

When the milk is being received, steam may be applied lightly to the vat, after the first few hundred pounds are in. The heating should be done slowly until the temperature has reached 86 degrees Fahr The milk should be stirred occasionally until heated. When the desired temperature is reached the steam should be turned off and the pipes conveying the steam to vats disconnected so that the temperature will not go above 86 degrees. At this point the milk should be tested for acidity in order to know its condition before adding the rennet.

The most practical test known is the cup test. The instruments used in this test are an ordinary tea-cup holding something over eight ounces, a dram glass and a spoon. The test is operated as follows:

Take eight ounces of milk out of the vat, measure a dram of rennet, pour it into the spoon, hold the spoon in the right hand immediately over the cup, holding your watch in your left hand. When the second hand of the watch touches any figure on the dial, drop the rennet

into the milk and stir rapidly for ten seconds so as to create a whirling motion of the milk, keeping one eye on the milk and the other on the watch, counting the seconds which it takes to coagulate If it takes fifty or sixty seconds to coagulate, the milk is not ready to set, and should be matured by letting it stand until such time as the milk will coagulate in about twenty seconds by the test. The maturing or ripening of the milk is a very important matter in cheesemaking and the cup test is a guide that will direct us all through cheesemaking. The seconds on the watch are known as degrees in the test, that is degrees of acidity, twenty seconds being twenty degrees of acidity. The milk should be ripened to that degree every day so as to insure uniformity of quality in the cheese from day to day. The test will be found valuable even where over-ripe milk has been received as it will tell us the exact condition of the milk. I would not think of making cheese without this test. A little practice is required to be able to operate it quickly and successfully.

The milk being matured to the proper degree of acidity the rennet should be added.

ADDING RENNET.

If the test is made and the milk is found to be working so slowly that it will not be ready to set for more than an hour after heating, a starter may be used to advantage. I have found that by ripening milk more than an hour there is considerable loss of butter fat owing to the rising of the cream. The stirring of the milk with the rake churns a portion of the milk into butter, and there is a considerable loss of butter fat in the whey.

A STARTER.

A starter is a small quantity of pure sour milk not too thick, and free from foul odors and impurities. The amount of starter required will depend altogether upon the acidity of the milk in the vat, and also the acidity of the starter, and I would only recommend its use in extreme cases.

APPLYING RENNET.

In applying the rennet it should be diluted with from two to three quarts of cold water to the thousand pounds of milk. The amount of rennet used depends entirely on the condition of the milk, the quality of the rennet and the time of year For fast working curd I would advise the use of a little more rennet, cutting the curd earlier and cutting it finer.

Enough rennet should be used to coagulate the milk sufficiently in from thirty-five to forty minutes.

AFTER RENNET IS ADDED.

After the rennet has been added a thorough stirring is required from four to five minutes. The cream may be kept down by floating a dipper on the top of the vat and pushing it from side to side for a couple of minutes. When it has been sufficiently stirred the vat should be covered and kept perfectly still until fit to cut.

TIME FOR CUTTING.

The time for cutting can best be determined when the curd will break clear over the inserted finger without showing traces of milk. Care should be taken to cut the curd evenly, so that the heating of it may be uniform.

WHEN PROPERLY CUT.

When the curd is properly cut it should be gently stirred by hand to free the sides and bottom of the vat from the particles of curd. Heat should be applied very gradually at first and increased, as the whey separates and the curd becomes firmer until it reaches 98 degrees. This temperature seems to give the best results for cooking almost any kind of curd. I would not advise heating a fast working curd any higher than 98 degrees. If it is heated say 100 or 105, the heat has such a softening effect, for the time being, that the curd does not dry sufficiently before the whey is dipped out, and it then mats together so quickly that it will be impossible to drain it as dry as though it had only been heated to 98 degrees.

SHOULD BE KEPT STIRRED.

The curd should be kept stirred and not allowed to mat until the acid has developed enough to remove the whey. For a normal working curd the acid should show about one quarter of an inch on the hot iron test; for fast working curd I would not allow acid to develop quite a quarter of an inch before dipping the whey; the curd should be well cooked so that when a handful of curd is pressed together it will fall to pieces again. When this stage is reached the whey should be removed and the curd hand stirred until it has a shotty appearance and will squeal between the teeth. It should then be piled up half on each side of the vat and about eight or ten inches deep.

WHEN MATTED.

When sufficiently matted it should be cut in pieces about twelve inches wide and re-piled every twenty or twenty-five minutes to free the pools of whey, and turned outside inward to keep it warm and the heat uniform throughout the curd. The heat should be kept as near the original temperature as possible until there is a sufficient development of acid. This can be done by keeping two or three pails of hot water in the vat at one end.

WHEN DEVELOPED.

When the acid has developed sufficiently to show one and a half to two inches on the hot iron test, or when it has assumed a silky or velvety appearance it is ready for the salt. The milling should be done twenty or thirty minutes before the salt is added, and the curd well aired to reduce the temperature to 80 degrees before the salt is added. As soon as the salt has dissolved and the curd is back to its velvety appearance again it is ready for the press. A very moderate pressure should be applied at first and the force gradually increased. If the pressure is too

heavy at the first there will be a considerable loss of fat. When the curd has been in press an hour it should be taken out and the hoops removed and the bandages fixed neatly on them to make the cheese look as tidy as possible. They should also be turned end for end in the hoops the first thing the following morning to improve the appearance. The cheese should receive from twenty to twenty-four hours pressure after which they may be removed to the curing room.

A FEW BRIEF POINTS.

Just a few brief points on the care of the curing room, which is a very important point and is very often neglected. The room should be kept clean and sweet with as much pure cool air as possible in order to secure the best results; the temperature of the room should be kept as even as possible. About 65 degrees is best. The room should be neither too damp nor too dry. If too dry the cheese are liable to crack under the bandage or on the ends, for green cheese contains about thirty per cent of water, so if the atmosphere is too dry in the room the cheese will lose moisture rapidly and cracking is the result. If the room is dry cold water may be sprinkled around the floor which will help to keep the room cool. If the room is too moist the cheese are liable to mould and this will soon spoil their appearance.

The cheese should be turned and wiped on the shelves every day. The shelves should be made of good clean pine about 1¼ inches thick and well supported. The shelves should be a little wider than the cheese so that they will not project over the edge.

If they are allowed to project over the edge it will very soon spoil their appearance.

I have tried to give very briefly the process of making cheese and some of the points that require the greatest watchfulness in order to the production of a first class article, and I shall now be glad to answer any questions in regard to these to the best of my ability, as in this way I think more can be learned than by reading a long paper.

At the close of the paper Mr. C. C. Macdonald, Dairy Superintendent, urged the students present to avail themselves of Mr. Jory's offer and ask questions.

H. Piggot; Is there any test by which you can tell which patron is supplying tainted milk?

Mr. Jory; No, I do not know of any.

A. L. Broad; How do you estimate the strength of the rennet?

Mr. Jory; By the time taken to coagulate the milk.

A. L. Broad; On what part of the milk does the rennet act?

Mr. Jory; On the casein and albumen.

Mr. Hettle; On the solids of the milk?

Mr. Jory; Yes.

H. Piggot ; What will make a room dry if too moist ?

Mr. Jory ; The use of stone lime on the floor.

H. Piggot ; Is there any means of determining if the milk is gasy when received ?

Mr. Jory ; That is a very difficult matter.

To what do you attribute gasy curd ?

Mr. Jory ; Oh it comes from a variety of things.

Mr. Waugh ; Would it not be produced by feeding ?

Mr. Jory ; Yes, sometimes.

Mr. Waugh ; When is it most troublesome ? In the fall.

Mr. McQuaig ; What would you do with sour milk ?

I would send it back.

This closed the discussion of this paper.

The next item on the programme was a paper from Mr. W. M. Champion of Reaburn, on "Signs and Signs of the Times." Mr. Champion said :

Ladies and Gentlemen,—

Nations are governed by signs, and every man of common sense is governed by signs also. The man who makes his plans with reference to the signs around him is much more likely to succeed than the man who makes his plans disregarding them.

For instance, two men come to Manitoba not knowing what branch of agriculture they will follow. One starts out and plants an orchard of apples, pears and peaches ; he has no sign that he will succeed. Do you think he will ? I think the signs are against him. The other man looks around and says I see signs that this country is destined to be a great dairy country ; one of the greatest in the world. Why does he think this ? Because the bones and horns of countless herds of wild cattle, that lived and bred on these plains before they were inhabited by white men, are to be seen. And if it was provided by nature for wild cattle why not also for dairy cattle, the food is abundant, the water good and the climate perfect. As it is a long way from the markets of the world the product to be profitable must be concentrated ; therefore this man goes in for dairying with every sign of success.

And there are signs to-day that the good and prosperous times are not all buried in the past, for our dairy products are holding their own in the world's markets and with the natural advantages we possess we need not fear competition from any quarter.

But with all these favorable signs let us be very, very careful, and take heed how we stand lest we fall. I think we can see a sign here. A few years ago our cousins to the south were in such a hurry to supply the English market with cheese, they were not particular enough as to what they sent. Let us take a warning from what happened to them. There are honest cheesemakers in the States to-day who are rising in indignation against their predecessors for whose evil deeds they are paying the penalty. Let us be mindful that our children will have as a legacy, the market which we make or mar. For the signs are that the next generation will be far, far ahead of us in dairy wisdom and we should not throw a stumbling block in their way by sending inferior goods to market. Let us remember that money is not riches but a good name is. I trust our worthy Minister of Agriculture, who is doing so much for Manitoba, (that sentence is a sign that I am a Grit, but some signs fail) and I think that all true lovers of Manitoba appreciate his efforts, will in his wisdom see fit to pass a law that neither butter nor cheese shall leave Manitoba before being judged and the quality branded on every package. I believe when transportation companies see these signs of carefulness on our part they will be more ready to grant us the best of facilities for reaching market.

It is an encouraging sign to-day for us to have Professor Robertson with us. I am not going in this paper to give you his views on Manitoba as a dairy country, but it is a sign that he thinks us worth something or he would not be here.

My friends this is the Eleventh Annual Meeting of our Association and the tenth which I have attended. And I tell you plainly that I saw ten years ago signs of this larger gathering. In a paper which I read at one of our early meetings (I think in the Nor'-West Farmer office) when I wished to encourage the few that were there, I predicted that the time would come when there would not be a building in Winnipeg large enough to hold the Manitoba Dairy Association and that prediction will yet come true. In closing I cannot help comparing this Association with an acorn planted in good soil. It was planted by Mr. Wagner, the first signs of life were protected by Mr. Waugh and the Nor'-West Farmer, it was hoed round by such men as the president and myself. A thoughtless passer-by often plucked off a branch and checked its growth but it always showed signs of life. When it really began to grow our Minister of Agriculture took off his coat and went to work and helped us to cultivate it. Now let us remember that one can plant, another can water, but only one can give the increase. And we may look for a blessing with that increase if we remember that the All Seeing Eye is upon us as we follow our calling as dairymen.

Mr. Champion's paper was greeted with hearty applause and listened to with attention.

The President next called upon Mr. S. A. Bedford of the Brandon Experimental Farm for an address on "How to Extend the Milking Period of Our Cows."

On rising Mr. Bedford said:

Mr. President, Ladies and Gentlemen,—

My subject this afternoon is "How to Extend the Milking Period of Our Dairy Herd."

When speaking to a dairy expert some years ago he gave it as his opinion that the only serious drawback to successful dairying in this province was the very short season of pasturage on the average prairie farm. Since then however, many steps have been taken towards lessening this drawback, until now with proper management the milking period can be made fully as long as in Ontario.

The following are some of the requirements necessary for the maximum yield of milk.

1st. The selection of a suitable animal.

2nd. She must be in good condition when calving.

3rd. Milking should commence early.

4th. A good flow should be kept up all summer and

5th. Continued late in the fall.

I will leave the subject of selection of a suitable cow to better qualified persons, but would point out that even the best cows require to be fed with easily digested and nutritious food, before as well as after calving, if the best results are to be attained; it is unreasonable to expect a large return from the thin mangy cows one often sees in the spring, for by the time such animals have recovered their vitality much of the milking season is over.

We have found that a limited quantity of roots or fodder corn in the ration, greatly assists to fit cows for calving; it appears to produce the laxative condition so desirable for this trying period.

We find as a rule that in this province cows come in too late in spring, this does not give sufficient time for their calves to be weaned from milk before the factory season commences. This is no doubt also largely attributable to a general scarcity of nutritious food at this time of the year; farmers prefer to have calves come on full pasture, rather than earlier in the season, when often there is nothing but dry hay provided and possibly not an abundance of it. This surely can be avoided in a country where such a large crop of roots, fodder corn and coarse grain can be grown and where bran is as cheap as at present.

The nutritious food should be given not only when the cow is confined to the barn, but even during the first few weeks of pasturage, a liberal allowance should be fed both morning and night as the soft pasture of early spring is deficient in feeding qualities; with a little care in this matter both the condition of flesh, and flow of milk can be kept up, and the herd is prepared to do its best when on full pasture later in the season.

Much complaint is heard regarding the small amount of food afforded by our native pasture; this we find can be remedied on the higher land by breaking up the old run out sod, taking off a crop or two of grain, and then re-seeding to native or other grasses. On a plot treated this way 4 tons of clean native hay was cut, while a plot adjoining it left in virgin sod gave only ½ a ton of very weedy hay. We find that it is best before seeding to grass, to take off two or three crops of grain, so as to kill out any perennial roots and to germinate as many weeds seeds as possible.

We now come to our last requisite, keeping up the supply of milk in the fall months.

While our native grasses can scarcely be excelled for the quality of butter, and cheese made from them, they have the great disadvantage of starting late in spring, and ripening or drying up early in fall; greatly lessening their usefulness as pasture.

At the Farm in Brandon we have found no grass to equal the natives in yield of hay, but many of the imported grasses are much earlier to start in spring, and keep green later in the fall, for that reason we do not recommend the natives for pasture when sewn alone.

Among the best imported grasses for pasture and hay is Austrian Brome Grass (*Bromus Inermis*) and a few notes on its cultivation, and the result obtained in pasturing of it may be of benefit.

AUSTRIAN BROME GRASS.

(Bromus Inermis)

It is a perennial grass, a native of Russia but has been cultivated for a long time in Austria, hence the common name.

It has a tall stalk with a spreading head and the plant is well provided with leaves. We find it relished by both cattle and horses; calves being particularly fond of the tender leaves and judging by several analysis it is very nutritious.

ITS SUITABILITY FOR PASTURE.

As a pasture grass for the Province it is perhaps unequalled; starting early in spring it is fit to pasture two weeks earlier than our native grasses, enabling cattle to be turned out much sooner, the after-math in summer and fall is also heavy.

This year the Experimental Farm cattle were pasturing on it up to the first of November and when snow came it was still several inches high and quite green; there is no question that this grass will materially assist in keeping up the flow of milk in the autumn months; when native pastures are dried up, thus overcoming one of the greatest drawbacks to dairying here, viz:— the shortness of the season.

ITS PERSISTENCY.

A field of this grass was sown on the Experimental Farm in the spring of 1890, and has borne crops of hay every year since.

The first four crops averaged from 1½ to 2½ tons per acre.

HOW TO SOW.

Three different plans for seeding with this grass has been adopted on the Experimental Farm.

1st. The grass seed is sown broadcast by hand with a grain crop, preferably with wheat, this is done just before or after the grain is sown, when the one harrowing will cover both lots of seed, to avoid burying the grass seed too deep, it should not be sown on rough plowed land until it has been harrowed at least once.

The objections to sowing this grass with a crop of grain is that should a drought follow, the grain having the stronger plant absorbs all the moisture, leaving the tiny grass plants to perish, and should the season be a wet one, or the soil strong, the grain will lodge and smother out the grass.

2nd. A better plan and the one generally adopted, is to sow the grass seed on spring plowed stubble, in the month of May or early June; weeds and a volunteer crop of grain come up with the grass, but these are cut down before seed is formed, this leaves only enough for protection to the young grass, and its growth is in no way checked; the only objection to this plan is that some of the shorter weed plants in spite of every precaution will escape the mower and go to seed, and the crop of grass the next year will be more or less mixed with weeds.

3rd, On farms not subject to drifting by winds, the better plan is to prepare the land as for summer fallow, by plowing in May or early June, followed by harrowing or cultivating until about 15th of July, when the seed can be sown and harrowed in, the seed will germinate in the moist fallowed land at once, and the young plants will have made a good stand by the winter; if the cultivation has been thorough the surface soil will be quite free of weeds, and the crop of grass the following year perfectly clean. This is an excellent plan to follow when the grass is intended to be saved for seed, as the sample is pretty sure to be pure and clean.

On soils liable to injury from wind this plan is not to be recommended, as the well worked soil is very apt to drift, and expose the grass seed to injury.

Eastern authorities recommend sowing from 25 to 35 pounds of seed per acre; this is much too thick for this country. With such thick sowing the grass soon becomes matted and fails to send up stalks, and in a year or two is useless except for pasture, and in a dry season even the pasture is poor.

With from 15 to 20 pounds of seed per acre, the stand is sufficiently thick to ensure a good crop; the plants are not crowded, and large crops of hay are secured the first two or three years, and if by that time the grass becomes too thick it can be pastured.

GROWING THE SEED.

The plants produce abundance of seed which weighs fourteen pounds per bushel, the yield of seed this year on a 4½ acre field was 511 pounds per acre.

Several Americans visiting the Farm last summer expressed surprise at the fine crop of Brome seed growing here, and stated that an almost unlimited market could be found in the neighboring republic, where they found it impossible to grow such good crops of seed.

It is found here that the ripening of a crop of seed materially lessens the yield of hay in the following year, but does not appear to injure it for pasture.

ITS EXTERMINATION.

Owing to the many branching roots of the plant some anxiety has been expressed regarding the danger of its spreading and becoming a weed. In the six years it has been growing on this farm none of the plants have spread, and on a plot broken thinly immediately after haying, and backset this fall, it was found that the sod was well rotted, and apparently all the plants killed. Another field however, that was allowed to ripen its seed, and then plowed late in August and not well rotted when backset this fall, and many of the plants were quite green.

Evidently for the complete extermination of the plants the grass must be broken early, and then backset in good time.

Accompanying this will be found a table showing the yield of Brome grass since it was first sown (with the exception of 1892) with character of soil, area of fields, etc.

Date	Tons	Yield of hay		Age of grass.	How Situated.	Character of Soil.	How Sown.	Area.
		Lbs.	Crop					
1891	2	1105	1st.	2 yrs.	Valley	Black loam.....	With grain	1-10 acre ..
1893	2	333	3rd.	4 yrs.	" ...	"	"	1-10 acre ..
1894	..	1668	4th.	5 yrs.	"	"	"	1-10 acre .
1895	1	950	2nd	3 yrs.	Undulating	Sandy loam	On summerfallow	1½ acre....
1896	2	80	2nd	3 yrs.	Side hill ..	"	With grain	1¼ acre....
"	2	359	5th.	6 yrs.	Valley	Black loam.....	"	1-10 acre ..
"	1	1252	2nd	3 yrs.	Undulating	Very gravelly loam .	"	3¼ acre....

As an illustration of the usefulness of Brome Grass for fall pasture. I will give you our experience on the Brandon Farm last fall: On the 3rd of September last we experienced 8 degrees of frost; this soon dried up the native grass and the flow of milk from the farm herd of four cows fell from 116 lbs. on the 7th to 88 lbs. on the 20th, or a gradual decrease of two lbs. each day per cow.

On the 20th the cattle were turned into summerfallowed fields, partly sown with grain late in summer and the balance more or less grown up with volunteer crop.

By the end of the first fortnight the decrease of two lbs. per day had been turned into a slight increase, but the pasture on the fallow was thin, and the plants soft and apparently not very satisfying.

After being on the fallow for three weeks the feed became short, and the cows were herded on a field of Austrian Brome Grass of this spring's sowing; the grass was from six inches to a foot high, quite green and fairly thick on the ground.

During the fortnight the cows were in this field the flow of milk again increased, averaging thirteen lbs. more per day than during the time they were on the summerfallow. The Brome Grass was much thicker on the ground and therefore contained more feed per acre, which was apparently more nourishing.

The Brome Grass was not nearly all fed off when winter set in, and it remained green until covered with snow.

Apparently this grass is excellent for pasture, and every farmer keeping cows should have a field ready to turn into before the native pasture is ready in spring, and after it is dried up in the fall.

The President called for discussion of Mr. Bedford's paper,

Mr. Bedford rose again to state that the Experimental Farm would give a pound of Brome Grass seed to anyone who wished to try it and would sell fifteen pounds at 15c per lb., but would not sell more than this as they had no wish to appear to enter into competition with seedsmen.

Mr. Waugh; I saw some of this grass that Mr. McKay had which had much more leaf and less grain than this grown at the Experimental Farm.

Mr. Bedford; That which I showed is an average sample of the grass. If you sow too thick you will have pasturage but no hay.

Mr. Champion; I have seen this grass grow where nothing else will grow.

Mr. Bedford; That would be the native Brome, not the imported.

Mr. Piggott; Would you plough deep or shallow for roots?

Mr. Bedford; I would plough as deep as possible.

The question was asked: What variety of carrots do you recommend?

Mr. Bedford said he thought Steele's Short Reds the best. He would not top dress for grass and for roots the manure should be put on in the fall. They sowed roots on the level with hand drills.

Dr. Thompson; You would not plow as deep for grass as for roots?

Mr. Bedford; No.

Mr. Bray asked as to planting roots frequently on the same ground.

Mr. Bedford said that at the Farm they planted their roots year after year on the same ground; this was done because it was so much easier to keep down the weeds, and the roots did well, but he was not recommending the doing of this by all farmers. As an example of how well their crops grew, he said they had had 597 bushels to the acre of potatoes. Mr. Bedford recommended the thorough rotting of manure.

At the Farm they drew it from the stables to a natural depression in the land and there allowed it to remain until it was thoroughly rotted before drawing it on to the land. It was hauled out in the winter and had layers of snow between and the warmth of the manure melting these helped in the rotting process.

Mr. Greig asked if rape seed had been tried to increase the flow of milk. Mr. Bedford said they had tried it but it tainted the milk and the cows were not fond of it. Mr. Greig then asked if mangels were more expensive to grow than corn. Mr. Bedford thought the difference was slight.

Mr. Hettle said he considered the average season of our cows much too short and that it could be lengthened a great deal by judicious feeding.

Mr. C. C. Macdonald, Dairy Superintendent, said that the dairy season ought to be twelve months long.

It being now 5 o'clock the President drew attention to the fact that an hour had been set apart for any who wished to bring in motions or notices of motion to amend the constitution. or to introduce any matter which they wished to bring before the Association.

Mr. William Scott, Winnipeg, gave notice that he would bring in a motion on Wednesday morning with reference to a reduction in freight rates.

The President then explained that the Secretary had received several letters from the Hon. Sidney Fisher relating to information to be laid before the tariff commission. It had been intended to have this matter discussed by the whole Association, but the commission coming earlier than had been anticipated, a meeting of the Executive had been called to deal with the matter. A quorum of the Executive had not convened but as the matter was urgent the members of the committee had prepared a memorial to be laid before the Commission which he would now ask the Secretary to read. The Secretary then read as follows:

MEMORIAL.

The Honorable Gentlemen,

The Customs Tariff Inquiry Commission.

Sirs,—

In response to the request of the Hon. Sidney Fisher, Minister of Agriculture, for information to be laid before your Commission, the Manitoba Dairy Association respectfully beg to draw your attention to the following:

1. Dairying in all its branches is becoming more and more an important factor in the commercial life of our province. At the close of last season there were fifty-two cheese factories and twenty-four creameries, and we have noted with interest the help the Dominion Government are extending to enable the people of the Territories to open creameries and cheese factories in that section of the Dominion.

2. A very large part of the machinery used in these factories and creameries is imported from the United States and is subject to heavy duty, the duty on separator frames being 30 per cent.

3. The Manitoba Dairy Association would respectfully suggest that as a means of encouraging the dairy industry the duties should be removed from every kind and class of dairy machinery and utensils, including, besides separators, churns, butter workers, oil test churns, milk testers and the like.

4. Not only are American made machines and utensils preferred by our butter and cheese men, but, owing to our geographical position they are more easily obtained.

Signed on behalf of the Dairy Association,

(Signed) JOHN HETTLE, President.
" RICH. WAUGH, 2nd Vice-President.
" E. CORA HIND, Secretary-Treasurer.

The President stated that in presenting this memorial both Mr. Waugh and himself had seen the Commissioners privately, and he had great hope that the duty would be removed from separators.

The action taken in this matter was generally approved by the Association. There being no further motions offered the meeting adjourned to re-assemble at 8 p.m. in the same place.

EVENING SESSION, FEB. 16th.

President in the Chair.

The first item of the evening was a paper by Dairy Superintendent C. C. Macdonald on "The preparation of cream at the farm for use at the creamery." Mr. Macdonald said:—

THE PRODUCTION OF CREAM.

"The manufacture of creamery butter has become one of the staple industries of Manitoba, and is increasing in money value year by year, and in order to continue with the greatest degree of success, we muse begin at the beginning, that is to say, begin at the farm, and give the matter a thorough study from the producing of the cream to the making of the butter. We have the buttermakers to manufacture the butter at the creameries, but the work of producing cream falls to the farmers. The cream gathering system is the only one that we can use for the operation of our creameries in Manitoba until such time as the population of the province is much greater than it is at present. Nearly every district is so sparsely settled, the distances the milk must be hauled makes it impracticable to operate a creamery on the syste m known as

the central separator plan. It costs so much money to haul the milk owing to distance that would have to be covered in order to get a sufficicient supply to make a creamery pay, that the milk drawing alone would eat up even more than the profits. The cream only, under present circumstances, can be taken to the creamery. Larger areas of country can be gone over and the cost of hauling be greatly reduced. Hence the production of cream at the farm is the first important step in the manufacture of good creamery butter.

FEED.

The first matter to be considered in the production of cream is feed for the milch cows. In summer, cows should have good pasture, with a variety of succulent grasses. A sufficient acreage of vetches or oats and peas should always be sown with which to feed the cows when the pasture becomes dry and short. The cows should at all times have plenty to eat, and not compelled to work hard for it; the more they have to travel in hot weather to get what they require to eat, the less milk they will give, and the poorer will be the quality, consequently the less profit will be realized from the proceeds of the dairy cow. The flow of milk should be kept up to its fullest capacity each month, in order to realize the greatest benefit, and the largest profits from the dairy herd. The soiling crop can be cut in the green state two or three times during the season, furnishing a nutritious and succulent fodder during the whole of the dry season. This green fodder will help very materially in keeping up the flow of milk. Sow plenty of coarse grains for winter feed, make every provision to winter the cows well, so that when the spring time comes they will be prepared to go ahead at once and do business instead of being so thin and weak that they will have to board at your expense for half the summer to gain strength and flesh before they are able to do the work required of them.

WATER.

An abundant supply of pure water should be kept within easy reach of the cows at all times. When cows are scantily supplied with water they will not give as much milk, or milk of as good quality. They should never be permitted to drink water out of stagnant pools, such practice causing very serious trouble in the manufacture of butter. Impure water given to the cows produces impure milk, and is one of the causes of bad-flavored butter, and it is impossible to make a fine quality of butter from the cream of such milk.

SALT.

Cows should be allowed access to salt every day. Have the salt in the pasture or milking yards where they can get it whenever they need it. They will regulate their requirements much better than you can do if they are allowed to do so. A cow will not eat more salt than is good for her if she gets it regularly.

MILKING.

The milking should be done regularly at the same corresponding hour night and morning. The milking should be done with dry hands. This is very important; it is more cleanly, and leaves the milk in a more

wholesome condition for the manufacture of fine butter. The atmosphere of the stable should be pure to prevent contamination from that source. The milk should be strained immediately after it is drawn from the cow to remove any impurities, stable dust, etc. The straining should be done with a double strainer cloth. Cheese cloth makes the most desirable strainers. It is inexpensive and can be easily renewed when it is worn out. For simplicity and convenience the strainer cloth may be fastened over the top of the can with clothes pins. The strainer should be removed and washed as soon as the straining is done.

CONSTITUTION OF MILK FAT.

To successfully handle anything, it is necessary to know something of the raw material with which we are attempting to deal. Milk when fresh is a thin emulsion of butter fat, in a watery solution of albuminous matter, milk-sugar and mineral matter. Under the microscope it appears to be a clear liquid, in which is suspended an immense number of small, fat globules, that are more or less collected in groups. These globules vary considerably in size, the smallest being about one ten thousandth of an inch in diameter, and the largest about one two-thousandth of an inch. The average diameter of these globules in cows' milk is about one five-thousandth of an inch. Twenty-five fat globules placed side by side so that one would touch the other would span a distance about equal to the thickness of an ordinary writing paper The size of the globules varies considerably with different cows and with different breeds. It is characteristic of the fat globules of some breeds of cows, such as the Jersey and Guernsey milk, to be large and quite uniform in size, while those of some breeds are smaller, and some are uniform and some variable. The number of globules in a given volume of milk varies greatly, according to their size and to the percentage of fat. These globules are known as cream. Milk containing large globules will cream more rapidly and completely than milk with small globules. Uniformity in the size of globules is also desireable, as globules of a uniform size will reach the surface in about the same time, if the setting system for creaming be in use. The centrifugal cream separator will be found in all cases to do the most efficient work in creaming, the principle of which machine will be mentioned later on.

The average composition of cows' milk is approximately as follows:

	Per cent.
Fat	3.5
Milk serum—	
Nitrogenous matter (casein, albumen, etc	4.3
Milk sugar	4.5
Ash	.7
Water	87.0
	100

The specific gravity of fresh milk varies from about 1.030 to about 1-036 acccording to the amount and composition of the solids. The solids not fat, tend to increase the specific gravity, while the fat tends to diminish it; for example; milk containing a large percentage of fat will have

a low specific gravity, while the specific gravity of skim milk will be high. When milk is cold it has a greater specific gravity than when it is warm. The best defination of specific gravity is, in a simple word, the density. The term density is now more frequently used by chemists than specific gravity, so for clearness I will use the term density. here. Hence when milk is cold its density is greater than when it is warm, or, perhaps, a better word (meaning the same) it is thicker. Such is milk in a few sentences as the butter maker should know it to be successful in his, or her operations.

CREAMING.

The globules of fat above mentioned are what constitutes the cream of the milk and to get them all out is the work of the dairyman. We have seen that they are too small to be strained out with the finest sieve. There are two methods of taking them out namely; the natural method and the mechanical method. The natural method consists of allowing the fat globules to rise to the top of the milk by the power of gravitation. If the milk be left at rest, they will rise to the top because they are lighter than the liquid in which they float. The heavier parts of the milk are drawn down by the force of gravitation and as the cream of the milk composed of water, casein, sugar, albumen and ash, moves downwards, it displaces the fat globules and forces them towards the top.

The mechanical method is that of centrifugal force which attains a like result. The centrifugal force is applied by means of a machine known as the cream separator. The important part of this machine is the bowl or cylinder which revolves very rapidly, the heavier parts of the milk will be forced outwards against its resisting side or inner surface with a sufficient pressure to push the lighter parts, the fat globules, towards the the centre of revolution. The continual inflow of milk necessarily causes a continual outflow, thus the fat globules are seperated from the milk serum. The cream separator is the most efficient method of creaming, because it practically takes all the cream from the milk, so much so that at least twenty-five per cent more butter can be made from a given quantity of milk by means of creaming with the separator than by any other means of creaming. The following table shows the effects of the different methods of creaming, proving conclusively the advantages of the separator method of creaming:

	Separator.	Deep Cans.	Shal'w Pans.
Whole milk, per cent of fat.....	3.67	3.67	3.67
Skim milk, per cent of fat.....	0.08	0.52	0.48
Butter milk, per cent of fat.....	0.18	0.24	0.22
Unrecovered, per cent of fat.....	2.29	12.05	11.63
Pound of butter per 100lb of fat.....	113.52	104.77	105.57
Pounds of milk per pound butter.....	24.06	26.11	25.89
Proportion	108.52	100.00	100.85

The above is the result of an exhaustive experiment carried on at Ottawa, at the experimental farm there, covering a period of one year, from January to December.

When the natural, or setting, method is practiced, great care must be exercised, in order to force all the fat globules possible to the top of the milk. The practice of leaving the milk setting in the milking pails for even the shortest time after it has been drawn from the cows is a bad practice, and certainly means a great loss to the dairyman. The milk should be thoroughly strained and set immediately after it is milked, while it is warm from the cow. The temperature of setting should at least be to 90 degrees Fah., and a few degrees above that temperature will be all the better. The warm milk should be set in ice water, 40 degrees Fah., the colder the better, to give the best results.

EFFECT OF TEMPERATURE.

If milk in a deep setting pail be left at a temperature of 60 degrees Fah., it would take the small white globules from two to four days to get to the top of the milk, at the rate at which they would move, because as I said before, the milk is thicker when it is cold than when it is warm. Milk at a temperature between 90 degrees and 95 degrees Fah., is slightly enlarged in bulk because it is thinner, and by putting it in deep setting cans at a temperature of from 90 degrees to 95 degrees Fah, the advantage of a falling temperature from 90 or 95 degrees Fah. to 40 degrees Fah. may be gained. That treatment will cause a more rapid upward movement of the fat globules, hence a smaller percentage of fat would be left in the skim milk. Should the milk become cooled before setting, it should be warmed at time of setting to the temperature described above. This may be done by the addition of warm water at 120 degrees Fah., adding about 10 per cent. The addition of the warm water is a two fold benefit; it both warms the milk and makes it thinner, thereby hastening the raising of the cream. Milk treated as described above should throw all its cream to the top inside of fifteen hours. There are two ways of removing the cream from the milk, namely, drawing the milk from the bottom by means of a faucet in the can, and with a conical-shaped dipper; the latter is to be preferred, as it is cleaner, as the sediment always found at the bottom of the can is avoided.

CREAMING WITH THE SEPARATOR.

When the separator is used for producing the cream, the milk should be strained and run through the separator as soon as it is drawn from the cows. The milk must be warm when separated, in order to gain best results. The separator should be placed where the atmosphere is pure. When first starting the separator, see that it is perfectly level also that all bearings are clean, and all well oiled. In starting to separate first get up the required speed then fill the bowl with warm water. When the water begins to run from the milk spout of the separator, start the flow of milk and keep it steady while the separator is running. When finished separating, after all the milk is run through, fill the bowl again with warm water to clean out all the milk and cream. The separator must be cleaned every day immediately after using, as is the case with all dairy utensils. The many advantages that the separator has over any other system of creaming, makes it a most desirable dairy utensil for the buttermaker to possess, and the modern butter maker cannot, in justice to himself, do without it. Among some of its many

advantages are, more and better butter, which is the principal; the skim milk is perfectly sweet and much more valuable for feeding young stock than cold sour milk. Fewer utensils to keep clean, and less work for the operator, consequently less labor and more money.

OIL TEST CHURN.

Before closing my remarks, I wish to draw your attention to the work of the oil test churn in the creameries. This instrument is used in the creameries for the purpose of determining the value of each sample of cream sent in, to enable the buttermaker to divide the proceeds among the patrons in proper proportion, according to the value of the cream. Many farmers seem to look upon this instrument as a robber, and often try to test it by sending samples of cream which do not represent the whole bulk of cream sent by them. It is useless to try tests of this kind. When the cream is delivered at the factory the butter-maker, who thoroughly understands his profession, receives it and prepares it for churning. When churned he has so much butter. He takes the butter out of the cream. Where the oil test churn is likely to show more butter than there really is from the fact of not having a representative sample of the bulk of cream churned. It matters very little what the oil test churn says, if the sample of cream was not representative, the manufactured butter is there to speak for itself. Some farmers seem to think that the butter-maker tries to cheat them in his tests. The butter-maker has no object in doing so his only object being to get the manufactured butter to tally with readings of the oil test churn. The idea that thick cream is desirable, is wrong. Thick cream is not necessarily rich cream. When the cream is very thick portions of it will adhere to the churn and be washed out in the buttermilk, causing a great loss of butter fat. It is easier churned, and will in every case give a more accurate test with the oil test churn.

At the close of the paper the president called for discussion.

Mr. Bedford asked the object of running water through the separator just before the last of the milk had run through.

Mr. Macdonald said if this were not done a considerable quantity of cream would be found in the bowl when the separators ceased working.

Mr. Hettle pointed out that this water must be clean and warm.

Mr. Champion gave a practical demonstration, with two tumblers and a piece of paper, of the kind of strainer which he had found most convenient. This was a pail, somewhat on the lines of the ordinary strainer pail but with a much longer spout, perfectly round. Over this spout cheesecloth was stretched and held in place by a ring of tin. He would recommend this as a clean, cheap and effective strainer.

Mr. Macdonald urged the use of cheesecloth as the best possible strainer, and added that it should always be first washed in cold water to prevent clogging.

Mr. Bray asked if running warm skim milk through the separator would not answer in place of water. Mr. Macdonald said it might, but he would prefer using water.

Mr. Ryan, inquired as to what guarantee a buttermaker could give the patrons that each one would get the right proportion of cream according to the value of his milk.

Mr. Macdonald said that they would have to depend to a large extent on the skill and integrity of the buttermaker, but he believed a time was coming when this matter would be wholly adjusted by the Babcock tester.

Mr. Waugh said he had heard one or two complaints along this line; one woman had tried to test the matter by retaining half of her cream on a particular day and sending the other half to the factory and she had made more butter from the half at home than she was credited with at the factory.

Mr. Macdonald said that there were several things that might have led to her doing this without any carelessness or dishonesty on the part of the buttermaker, the woman had probably retained the richer half of the cream. Mr. Waugh said she had stirred it before dividing. Mr. Macdonald: that is not enough, cream cannot be thoroughly mixed except by pouring and that is just why I say we will come to having all this work done by the Babcock tester.

Mr. Scott wished to know if Mr. Macdonald had ever tested the residue left below the oil in the Oil Test Churn. Mr. Macdonald replied that this would be a very difficult thing to do without having the oil get in to it.

Mr. Scott pronounced the Oil Test Churn a back number.

The President next called upon Dr. Rutherford, of Portage la Prairie, to address the meeting on "The History of Breeds." It is to be regretted that this address cannot appear in full. The Dr. said it was a condensation of a number of addresses.

He first dealt with the ancient history of the ox: then he took up the cattle of Europe, which were classified into three divisions, giving an account of each family. Modern breeds of cattle, he said were all derived from these three families. He pointed out that some of these breeds were specially adapted for beef and others for dairying. He then took up the domestic cattle and the salient points of the different breeds. He discussed the present day breeds, giving first the beef breeds, Longhorns, Shorthorns, Durhams. All of these breeds began to improve during the last two-thirds of the last century. Judgment was frequently not exercised in the mating of the animals. He expressed a preference for the Shorthorns. These began to be developed in England about a hundred years ago. He showed the great importance of selection in the breeding. Next, he took up the Herefords, which began to be improved in 1770. The third breed was the Polled Angus. The dairy breeds were next considered; the first and most prominent breed was the Ayrshires, this breed originated as a cross between the Guernseys and the Devons. They crossed very readily with the Jerseys. After describing a number of others, he spoke

of the general purpose breeds, which had been improved during the past half century. The Galloways and the Aberdeen Angus were discussed and the differences pointed out. The West Highland cattle and Swiss cattle were also described, and then the Kerries in conclusion.

The Doctor was listened to with marked attention and at the close of his address received very hearty applause. As the hour was then late the address was not discussed.

The session adjourned at 11.15 to meet at 9.30 Wednesday morning

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WEDNESDAY MORNING SESSION,

Opened at 10a.m. President in the Chair.

The first business taken up was the motion of which Mr. Scott had given notice the previous afternoon.

The president called upon Mr. Scott to read the motion.

Mr. Scott read as follows:—

"Whereas the high rate of freight on dairy produce in small lots, to the East, prevents the shipment of the same, except in car lots; and whereas none of our Western factories are large enough to ship a carload at one time without overkeeping; and whereas we are in consequence shut up to deal with only a very few firms of exporters, and on frequent occasions can find no one in a position to buy a carload at fair current market value, and whereas our market is thereby restricted to ridiculously narrow limit, and the trade concentrated in the hands of two or three firms, which interferes with competition and works a serious loss and injury to the producer.

Be it resolved that in the opinion of this Association, the railway companies as a matter of public policy and in their own interests, should grant Bills of Lading from Winnipeg to Montreal, and Ocean Bills to British ports, where a regular refrigerator service exists on less than car lots of a minimum weight of 2240lbs to individual shippers at car lot rate, and that the Federal Government in the event of their subsidizing the railway companies to enable them to maintain a satisfactory refrigerator service should stipulate that such a regulation should be adopted for dairy produce shipped in cold storage from Winnipeg to the East."

Mr. Scott moved the adoption of this motion, Mr. McQuaig seconded it.

Mr. Scott then spoke to the motion giving some further details of why he thought this change in freights should be made, and read a number of extracts from an American paper showing that this privilege was enjoyed in other places.

After some slight discussion the motion passed.

It was then moved by Mr. Bray and seconded by Mr. Wauhg, that the President, Mr. Robt. Scott, Shoal Lake, Mr. C. C. Macdonald, Dairy Superintendent and the mover of the motion, be a committee to wait upon Prof. Robertson, to lay this matter before him, and if possible obtain his assistance in laying it before the railway authorities.

The election of officers was then taken taken up. Some discussion arose as to the method of election, some suggesting a nominating committee, others that it be as formerly, by open nomination and ballot. It was finally decided to adhere to the old method.

The only change in officers was that Mr. Waugh and Mr. Champion changed places, Mr. Waugh becoming first vice-president and Mr. Champion second. The list of officers and directors will be found in full on page three.

Mr. Champion moved that Mr. Wagner of Ossowa, be made a life member of the association, in recognition of the work he had done in founding the "Manitoba Dairy Association." Mr. C. C. Macdonald suggested that Mr. Wagner be made Hon. President as well as a life member. Mr. Champion concurred in this. Mr. Waugh seconded this and it was carried with a standing vote.

This concluded the business part of the session and the balance of the morning was given to a paper by Mr. D. Munroe, Neepawa, on "A good cow, how to get and how to keep her" Mr. Munroe said:—

Mr. President, Ladies and Gentlemen.

"I think the President or myself, or both of us owe you an apology for my appearance before you the third time in succession.

I intend to promise you it wont occur again; but when I tell you of playing truant six days in succession, getting spanked every morning and promising father "not to do it again" YOU probably wont have much confidence in my promises.

The Hindoos have a proverb that "with most men wisdom comes slowly while folly runs easily". Centuries ago—Euclid the father of Mathematics—replied to his king who wanted to learn the science by some quicker method "ah sire! there is no *royal* road to learning." These sayings are as true as ever. From the cradle to the grave, mankind everywhere must begin at the foot, travel the same road, everywhere *still urged* to education

A famous orator of the middle ages thus defined oratory:—"To please; to convince; to persuade"—Now I trust you wont regard me as trying to pose as an orator, but I *do* hope to please you so as to convince you and to convince you so as to persuade you, if it will benefit you and through you benefit others and our country.

A few days ago Hon. W. D. Hoard, ex-Governor of Wisconsin, said at Brockville, Ont:—

"There are three factors that govern in making good milk cheaply.

"1st. The capacity of the cow.

"2nd. The fertility of the farm, to enable the abundant raising of "food for the cow.

"3rd. Modern and improved methods of handling the cow and farm.

"It is the fearful cost of poor cows, poor farm management—destroy-"ing fertility, and bad methods of handling and feeding—that is standing "squarely across the way of dairy profits. The days of high prices are "gone. We must learn how to make as much profit with milk at 60c as we "used to at $1 per hundred. The great drawback to dairying in Canada "as in the United States, is the carelessness of farmers everywhere about "improvement of the dairy quality of their cows and better methods of "feeding and care." Having selected this subject and written on it, I felt assured by these words from such a high authority that it was appropriate and timely.

My text is:—

"A GOOD COW; HOW TO GET HER, AND HOW TO KEEP HER."

It's found in all the books but unfortunately not in many other places.

It is fair to suppose that no one disputes the advantage of a good cow over a poor one, and every one wants every cow a good one, and yet the fact remains that the very great majority of our cows are poor ones .I t is also as surely fact that we may have good ones if we will.

I do'nt bring you anything "new under the sun" but only hope to show from actual practice the value of teaching already old.

"A good cow?" yes everyone knows she is more desirable than a poor one. How to get her? You have all read of and been talked to death about slim necks, wedge shapes, big udders, pure bred sires, raising heifers from best cows, etc

How to keep her? I'm sure you're tired of being preached to about lots of feed, good warm stables, gentleness, cleanliness and the 101 stale but sound priciples of cow keeping. Do you want to hear all this from me now? I'm afraid not. Do you believe these fundamental principles? I think everyone does. Then why all the talk and printers ink, and precious time wasted about it? Well, there seems to be an element in human nature that will shout "AMEN" to the truths of religious gospel, of dairy truths and of animal, agricultural and commercial principles, then wilfully violate them both in the spirit and the letter every day, and come back to shout "AMEN" again.

What am I going to do about it? I'm going to try to show the working out of these old truths, in actual common-place practice. I'm going to try to *alarm* you at the negligence that so generally exists.

Perchance it may knock that chip off *your* shoulder and set you striking out and put you at the top of the heap when the grand rush comes.

Dairying, dairying, everywhere dairying, and a steady decline in-prices is the unmistakeable turn things are taking.

Elgin butter market quotations 1st October each year in

1893....	13,800lbs....	@ 29c.	1894.... 41,420lbs.... @ 25c.
1895....	21,600lbs....	@ 22c.	1896.... 63,360lbs.... @ 15½c.

Nearly 50,000lbs—400% increase in quantity—90% loss in price.

Do I hear you say you are doing well enough, why bother your head about us? Yes, but all that benefits you benefits me, and if we are benefitted you are. If the country gets a good name we each own a slice of it's reputation; and reputation is a good thing to trade on. John W. Decker, who is a leading authority on cheese-making in the United States, said publicly a month ago "The cheese factories of Western Ontario rule the English market."

Can you tell me of any good reason why the butter from Canada' perhaps from Manitoba, should not rule the English butter market? I do'nt know of one. Are we too small? We feel big enough. At least we are broader than Elgin or Denmark, and they do a lot toward making prices because of quality and reputation. We have with us authority (Prof. Robertson) in whom we have implicit confidence, who will tell us we can surely equal if not excel them.

How shall we figure to get to the position of boss? We must begin at the cow end. The cow and her care is the central sun around which all dairy prosperity must revolve, which by its light and heat animates and nourishes it; around which all its life must dance attendance. Cloud this sun; you dwarf its development; blot out its power, and all the attendant satelites fall flat.

Ambition, intelligence, care, energy and all the good qualifications that may grace a good dairyman are dwarfed or blotted out, if devoted to a poor cow, and yet this poor cow cuts a figure everywhere. The average for New York State—an old established dairy country containing many noted herds of large producers—is less than 130lbs of butter per cow annually.

The average of Manitoba does not exceed 125lbs probably. Records show that we have some good cows; sorting them out only makes the distinct inferiority of the inferior ones more painful. Oh my friends! Shall we not awaken? Shall we not make some improvement, distinguish 1897 over 1896? You can't do business any more with the old grain cradle, hand rake, and straw bands with some thistles thrown in to keep you meek; nor can you do any better with poor old Brindle and the straw pile, and the log stable that do'nt have to have any windows nor much plastering.

You keep cows? Oh yes, a big herd, 25. What is the average cost to keep? $15 per year. What the average product? 125lbs butter at 12 cents, $15; profit —

That came out well didn't it? Didn't lose a cent, yet it represents the full average.

Of course if you cut all your cloth after this pattern it's only a question of time when you'll go out of business.

No we'll keep 25 good cows only. The average product is 300lbs butter per year, at 12 cents.....$36.00
We'll feed them each $10 worth of grain more than the ones that we didn't lose a cent by, and they then cost us for to keep each $15 and $10..... 25.00
Profit.....$11.00

Such cows pay an income of 22% on a cost of $50 each (and are worth it) after all expenses are paid, and the coarse feed has been marketed at home at full values.

Then the calf from this kind of cow is worth something, for you said, 'I've got good cows and must breed from a 1st class sire," you are pretty sure to get a heifer that will "wear more diamonds than her ma ever did." The manure from this herd is worth something too, you have fed about 50 tons of bran and its manurial value is more than $3 per ton, or about $6 per cow. The better the quality of the feed the more value in the manure, and consequently the more loss if wasted.

This calf, and this fertilizer, and a little hog are worth fully the cost of the labor, and you thus have a very fair percentage of profit.

This good cow has another value, she is a part of the best kind of a programme to keep the children on the farm, and give them a practical, useful education that will qualify them for the actual life's work.

The farmer's son or daughter is either unfortunate in natural inheritance, or else badly reared, who cannot be attracted by a good, well kept cow, that by the profit on her daily industry helps to earn and furnish a home, and home comforts, and besides affords an interesting, profitable study in the yearly propagation and improvement of her species.

Likewise no boy or girl of the timber go-aheads are built of, will be satisfied to remain on the farm to waste their days on a no-account cow, or perpetuate her by rearing her offspring. Encourage the children of the farm with interesting, attractive work from which there is something tangible, something apparent besides hard work. It 's the kind of preaching to convert them to stay converted to farm life.

I've tried to impress the lesson that the number of cows is no indication of profit. It's better to keep *one* cow and get $10 profit, than 25 cows and get nothing for profit. Then increase that one cow kind as fast as we can, but by all means get rid of the no-profit kind.

I've spoken to you before of Mr. Menzo Wilcox of New York State. He started with cows making less than 300lbs. In 1895 his herd averaged 418lbs, and for 1896, 465lbs of butter each. This is from a herd that does not boast of pedigrees or fancy figures. They're mostly Jersey grades. Where the fancy figure is cut is that Mr. Wilcox doesn't admit the peculiar Yankee "guess" into his business, but reduces it to a certainty by daily tests.

Be sure you're not milking the wrong cow. This brings up at part second of our subject—"*How to get her*"—which implies of course that you must *know* her. You would at once say it's a very ignorant person who do'nt know the difference in value in a pound of stone or a pound of gold. There is no more need of being ignorant of the difference in value of the good or the poor cow. The accuracy, simplicity and cheapness with which the cow's product may be tested and valued is no longer a matter of dispute. To "*get*" her we may buy her, or else must raise her. To buy her, the usual plan has been to depend on ones skilled to select by signs the good, and avoid the poor. In this the most expert are more or less failures. As a rule dairy quality follows dairy type or forms, but more especially is this true of the *quantity* of milk. There are signs which are said to indicate *quality*, but they are not so reliable as the signs of quantity. To illustrate; a friend visiting, shortly after purchase of some cows, walked out to the field to see them, "I dont think much of her" said he, pointing to "No. 5," "Nor do I" was my reply, "but the auctioneer got the drop on me and I got a cow I didn't want though I bid on her." Well, "No. 5" has a record of 316lbs butter last year, and can be made a 400lb cow I think. That friend is an acknowledged authority on cattle judging. The "Babcock" judgment revealed the incompetence of both of us.

If one is buying without a chance for testing, he must depend on his skill in selection, and take the risk of being taken in, but if an opportunity for testing is given, her real value can be known to a certainty.

This test *may* not be infallible, but the attendant conditions such as the feed, care, condition, period of lactation, etc., can be pretty accurately estimated. The Babcock test is a great boon to dairymen if they will only use it; simple, cheap, practicable, *reliable.*

It has established some *facts* which have knocked the wind out of some *theories.*

Under normal conditions the average percentage of butter fat is practically permanent and regular, varying in the different periods of the milking season on a nearly fixed scale.

The more her ancestry is backed by continuous lines of good performers, the more certainly is the quantity of milk and percentage of fat determined. The percentage of fat is practically a fixed qualification in the cow, and cannot be increased by the quantity or quality of the food, after she is regularly supplied with a properly balanced ration sufficient in quantity to equal her full capacity; but if she is fed a ration too small, or badly balanced, both quantity of milk and percentage of fat will be diminished. The percentage of fat is very perceptibly affected by changes, by worry, exposure to cold or storms, by lice, rough treatment, etc., and more variably than the quantity of milk.

Cows of a beefy type are not so easily affected by such things as those of pronounced dairy type, and this is very conclusive evidence that the milk giving function is directly a result of the operation of *nervous* forces, and also a very good reason for exercising great care that the

dairy cows should be especially protected from such hurtful conditions or treatment.

With these qualities so easily ascertained it is quite unnecessary to buy a cow by guess work. If one is to purchase very valuable stock to form a foundation for future breeding; the true way is to visit the cows in their home, and make a few days test, taking into account the surrounding conditions and value them accordingly.

I would not buy a cow on superficial signs alone, without deducting from her probable value sufficient to cover the risk of failure. The records so frequently advertised of pure bred dairy cattle, covering a short period of 1 day, or 7 days, are usually to a certain extent misleading, being the result obtained from a few days forcing that the animals would not stand for a whole season. Several experimental stations, notably Guelph, Michigan and Minnesota, and a few prominent breeders are working on the only true system by making the tests cover a whole year. For these reasons I do not regard our exhibition ground tests as worthy of being continued on our present plan.

Hence from my experience "to get her" by buying. The Babcock test is the only sure method of value. But by far the most satisfactory way is to *raise* her. The *right* sort of breeding will almost invariably give the results you are *entitled* to look for, and the right sort of handling will establish correct habits which adds much to her value. *Only, do'nt* forget that one, or a few, poor cows as breeders, yield but little evil influence as compared with the damage a poor sire may spread through the *whole herd,* and it will be 3 years—3 generations of blunder—when you have realized it. "How to keep her."

I'll not very soon forget the expression of disgust with which President Hettle remarked to me one day last summer, "Oh! bother our farmers, they wo'nt feed; its awful nonsense." Well, that pretty fully covers the ground.

Let me illustrate how it works.

A thresher comes to your place with a machine capable of threshing 2000 bushels of wheat per day. His expenses for labor, repairs, interest, depreciation, etc., are $31.50 per day. The feeders take it easy and they average 900 bushels per day at 3½ cents, making $31.50 per day. The proprietor has nothing to show for his work, risk and enterprise when the outfit is used up. But if they push along, and average 2000 bushels per day he has $70 less $31.50—a clear profit of $38.50 each day, and can well afford to do the work for less than 3½ cents. So the same principle applies to the dairy business. We cannot entirely overcome the effect of competition on prices. We *must* be prepared to meet declining prices, but we *never* can do it if the machine has not capacity, or if it is not run at full capacity. Why should not individual dairymen conduct their business with the same kind of energy and business principles, as individual business men in any other calling? Low prices dont cost as much as a poor outfit, or a badly run outfit, or worse yet, both put together, and "that's what's the matter" with much of Manitoba dairying. Do'nt you believe it? Then I shall tell you I know of a cow being

frozen to death, in this year of 1897. Was that good cow keeping?. I know of men who are drawing straw from neighbors fields for their cows to eat off the load in the yards. Is that good cow keeping? We found that by making an increase of ½ ton of bran per week to our herd, we gained 25 pounds of butter a week, worth 20 cents per pound—$5. That's $2 profit each week on an investment of $3 (the cost of the ½ ton of bran). I suppose you think you're pretty old boys to go to school, but you're not. I want you all to line up for a practical arithmetic class. We'll take a problem in percentage. We have pretty serious evidence that percentage *has* been and still is a matter of *much interest* to Manitoba farmers, (this remark has more than one application). I hope the day will speedily come when it will be a case of *less* interest. If we milk the right cows, and stick to them, it will soon reverse the current of interest.

Now class! toe the mark, and give close attention to our problem in interest, "it's a stunner"—A man invests $3 and gets an income from it, a clear profit of $2 each week. What is the annual rate per cent? Who has the answer? No one yet? You'll need to go to school a while longer. There ard 52 weeks in the year; $2 × 52 = $104; and $104 interest on $3 principal is **3466⅔%**. Isn't it a stunner? Is your business costing you that rate? Don't you think you had better try another bank if it is?

If you are feeding your herd below capacity that's the plan you're doing business on. You can get such a rate of interest by changing the programme and feeding the machine full capacity as would make Mr. Shylock feel pretty silly for not living up to his privileges.

What you *refuse* or *neglect* to gain, when you have a *sure opportunity*, is as much a *loss* as though you *had* it, and lost it. Many think the cows "*pay some*" because they are not much cost or bother.

In summer they can rustle pasture somewhere, but sometimes the blue summer evening air is made bluer, and a lot of dog fat lost, to get the "pesky critters" home; while in winter "the boss" damages the chances of his soul, while the dear cows have their pick of straw piles afield, and eat snow if thery're too proud to stand on their heads, to get an iced drink, "far, far, away". "The Mrs." harvests the milk while "my lord" smokes and manages politics. It dont require much from him, but it helps buy the tea, sugar and tobacco; somebody does the menial for it though. The man is listening to me now who saw the weary-faced shoulder-stooped woman enter a country store last summer and meekly ask, "What are you paying for butter?"—"8 cents" The 60 pound tub that was brought in gave her the privilege to "trade out" $4.80 at credit prices. When we got away we discussed the many steps and strokes, and terms, and throbbings pictured so decidedly on her face and form, to get the butter for that store counter. Somebody's mother! May God bless her, and bring relief to cheer her. Is this far-fetched or sentimental? Not a bit of it. Is the price of this 6, 8, or 10 cent butter the slackening footfalls or the wrinkling hands, or the sighing sound of the voice of her whose patience and love hushes her complaining?

I'm sure this portrait does not picture any member of this dairymans' association, but I presume you know of some such case. I know of several; I hope they'll all read all I'm saying. No, my friends! If there's nothing wrong with your head, you'll make your dairy work pay for every expense, or effort whoever does it. You are more likely to try if you do it yourself. Why am I saying so much about this? Because it's this very butter that costs nothing, forsooth! that clogs the market and every addition counts a loss to our reputation and brings a less price in trade than the cream would bring in good cash at the door, while it would help to build for us a good name.

January 16th report of the New York market says, "Dairy and poor creamery butter has gone to entirely unremunerative prices, and there are thousands of packages of this butter now on the market practically unsaleable." The problems of agriculture are every year becoming more serious, and we must not be indifferent to the rapidly changing situation.

Our fathers probably did not suspect the competition sure to follow the civilizing efforts of the subjects of Her Majesty, whose administration stands in all history a worthy monument for admiration.

Australia, Argentina, India, Africa, China, Japan, Siberia, etc., are all coming into line to affect our affairs.

When the steady decline of values began and we felt the pressure of competition and low prices, we were told how to avoid a loss of $\frac{1}{8}$ to $\frac{1}{4}$ in poor skiming. We got the separator and so did others.

But our trouble did not end here, for the butter we willingly fed to pigs when it was worth 20 to 25 cents, we were careful to put on the market when it was worth 15 to 20 cents to add a quarter more to the volume. Then we "must improve quality" and we tried to put on the "gilt edge". Still we can't corner prices, for this seems to be one of the unworkable combines, and the prices continue to decline. What shall we now do? Better say, what *must* we do? We must hitch the *whole* team at one end of the load, and get all the pull in one direction, not put the fancy horses ahead, while the heavy draft horses pull the whole show backwards Put the good cow to the front; fetch a chain to hitch up all the team together. Yes, here is a good one, Ah! but there is a link missing. Never mind the rest of the chain is good. *That wo'nt do*, we must have *every* link to make the whole chain of any use. The cow, the dairyman, the breeder, the feeder, the caretaker, the maker, the marketman and all the other links must be linked together to make a chain to pull us out of the slough of despond.

Some people say they "don't like dairy work anyhow", "it's too confining," and "the stables smell so." Well, the smells are not the fault of the cows but of a poor stable, or a bad stableman. Yes, it's exacting work, but it tends to regularity, cleanliness, gentleness and godliness. The successful dairyman *loves* his work and his cows, and can see through their instinct and intelligence Nature's god revealed.

If you *do'nt* like it or *wo'nt* like it, dont meddle with it; it wo'nt benefit such, and they wo'nt benefit the business.

There's another very important item in this work, upon which I'm aware, some people call me a crank. However, I have proven my position and fully intend to apply it to our own work as far as possible. Although not strictly in the line of my subject, I shall venture to call your attention to the value of the manure. For several years we have been applying it directly to the field intended for summer fallow; working early, and taking a crop of green feed off it the same season, instead of bare fallows. Fresh, coarse manure and the *liquids* along with it, from the water-tight trenches. Care must be exercised to spread *very thinly.* The result has in every case been very satisfactory. What is the tendency of the fertility item in your soil? Is it decreasing? Or unimpaired? Surely we cannot expect to violate the laws of nature without suffering for it. Our own physical system requires food to repair the exhaustion resulting from labor. Equally so our soils must have recompense for the exhaustion following every effort of production. The experiences of other countries ought not to be lost on us. They all warn us of the inevitable consequences of continually selling fertility off our farms and returning nothing. Depreciation in productive capacity, and to equal extent in land values, is the uniform result. Let us heed the warning before the day of calamity comes. It is easier to retain what we have than to regain what we have lost. We should study the relative value of different feed stuffs, not only with a view to their results in the production of meat, milk or growth, but also with a view to the manurial value. This value in a ton of bran is almost 4 times, and in a ton of oil meal 6 times as much as in a ton of prairie hay.

Let us now refer to the charts from which we shall see the proof of the statements I have made, fully illustrated. These records were made for our own use to guide us in the management of our herd. The future of each cow is determined by these records:—

NO. 6.

Calved December 25th, 1895.

Date of Test		lb Mlk	% Fat	lbs B'tr	Remarks.
March	20	15 12	5 4.6	1.533	In the 3rd column (lbs milk) fractions of pounds are dropped.
"	30	13 11	4.4 4	1.170	5th column are the correct totals.
April	7	11 13	4.6 4.6	1.288	The upper numbers are for morning milk, lower for evening milk.
"	20	13 12	5 4.2	1.360	
"	28	14 14	3.4 3.6	1.123	
May	4	11 11	3.6 4.4	1.016	*Lice; loss of product 32% less than average. April 7th, 20, May 19th, 26.
"	12	10 14	4.2 4	1.106	
"	19	13 13	4.9 4.2	1.388	
"	26	12 12	4.6 5	1.344	
June	2	13 14	4.6 4	1.328	
"	9	12 13	4.8 4.2	1.337	
"	16	13 13	4 4.4	1.270	
"	23	12 11	5 5.4	1.343	
"	30	12 12	4.5 4.4	1.246	

No. 6 Continued.

Date of Test.		lbs Mlk	% Fat	lbs B'tr	Remarks.
July	7	11 12	4.8 4.8	1.260	
"	14	12 11	5 5	1.312	
"	21	11 10	5 5.2	1.300	
"	28	13 15	4.2 4.6	1.453	
August	4	11 13	3.4* 4.6	1.154	*Cold rain during night of August 3rd; morning milk shows loss of weight and per cent fat. Average loss of fat, 38%.
"	11	11 11	5.2 4.4	1.182	
"	18	10 10	4.8 4.7	1.110	
"	25	9 9	4.4 5.2	.978	
September	1	8 9	4.6 4.6	.842	
"	8	8 6	4.7 3.4*	.649	*Kicked at strange milker at evening milking, loss of fat 47%.
"	15	8 7	6.2 4.6	.954	
"	23	6 6	5	.671	
"	30	7 6	4.2	.637	
October	15	6	4.2	.392	

November 1st—Dry—No. 6 calved December 25th, 1895, and again December 28th, 1896; making 308 days in milk, and gave 368 lbs butter.

NO. 7.

Calved March 6th, 1896.

Date of Test.		lbs Milk	% Fat	lbs B'tr	Remarks.
March	20	11 12	3.6 4	1.054	
"	30	11 12	3 4.4	.966	
April	7	10 12	4.3 3.8	1.057	
"	20	10 9	4.4 3.8	.867	
"	28	12 11	3.2 4	.950	
May	4	10 9	3.6 4	.836	
"	12	9 10	4 3.6	.830	*Lice; loss of product 25%.
"	19	10 11	3.8 3.2	.866	
"	26	10 9	4.4 4.6	.995	
June	2	11 10	4.8 4.2	1.078	
"	9	11 9	4.6 4.4	1.052	
"	16	10 10	4.4 4.6	1.035	
"	23	9 8	3.8 4	.770	
"	30	9 9	3.8 3.4	.766	
July	7	9 9	3 3.6	.696	

No. 7, Continued.

Date of Test.		lbs Mlk	% Fat	lbs B'tr	Remarks.
July	14	8 8	4.2 5	.858	
"	21	9 7	4 5.2	.850	
"	28	9 10	4 3.4	.830	
August	4	3 14	2.6* 4.2	.767	*Ugly; was punished. Average loss of fat, 61%.
"	11	7 8	4 3.8	.671	
"	18	8 8	4 3.8	.728	
"	25	7 6	4.6 4.8	711	
September	1	7 6	4.4 4.2	.640	
"	8	8 6	4 3.6	.588	
"	15	7 8	4.2 4	.705	
"	23	8 6	3.2	.504	
"	30	8 8	3	.560	
October	15	8 6	3.8	.622	
November	1	6	4	.300	
"	15	4	4.2	.196	

November 20th—Dry—No. 7 calved 6th March, 1896, aud began training for the butcher November 20th; making 258 days in milk, and gave 203 pounds of butter.

As the test did not begin until 20th March, No. 6 was given the average (from December 25th) of the first 4 tests, to complete a full year, and No. 7 the average of first 4 tests, to complete her full year.

No. 6 is an Ayrshire grade, and No. 7 a Shorthorn grade. Both these cows stood in the double stall, and each had just the same amount of feed, and same care.

The average price for their butter was a little more than 19 cents for the year. The results are as follows:—

No. 6.....	...368lbs butter@ 19c.....	$69 92
No. 7.....	.....203 " "	38 57
	Total difference in product.....	$31 35

Which shows that No. 6 is worth 81% more than No. 7, *each year*, but her real worth is very much more, as the offspring of No. 6 are proving very valuable as dairy cows, showing improvement in quantity of milk over their dam. and equal in % of fat and continuation of milking period; in fact one of her daughters refuses to go dry at all.

Let us continue this comparison a little further and we find the difference on a herd of 10 cows at $31.35 to be.....$313.50
" " 20 " " 627.00
on a herd of 40 cows which is now about our average it amounts each year to the snug sum of.....$1254.00

The average life of usefulness of a cow may be safely put 10 years, and we thus find a loss (which is a *net* loss since each of these cows cost the same for feed and care) of only (?) $12.540 for the privilege of keeping a herd of 40 of the No. 7 kind, instead of the No. 6 kind every 10 years; or to put the question in the affirmative, it shows that by *study* and *action* our dairymen may be many thousands of dollars ahead on every 40 cows, in a very few years. Right here I wish to acknowledge the value of instruction and study that have been available and highly valuable to us through the efforts of Prof. Robertson and Prof. C. C. Macdonald, and "Hoard's Dairyman" published weekly at Fort Atkinson, Wis., for $1 a year, or less than 2 cents a week; full of the experience and advice of the very best authorities on the continent. Of course instruction and *study* are useless unless mated with *action*. We must first *know* and then *do*. I told you that I brought you "nothing new under the sun" but only should "try to show from actual practice" the real value of the *old* truths. By a study of these charts and remarks you will easily observe the importance of a "good cow", and how we may "get her", and how we may "keep her". I might also show you the value of good cows over poor ones by further comparison of pairs of cows, stable mates, and under like conditions of these two. The pairs bracketed together stood in same double stall. Taking 3 groups

No. 6	368	
No. 7		203
No. 13	330	
No. 14		229
No. 9	308	
No. 15		224
	1006lbs.	656lbs.

A difference of 350 pounds between the 3 poorest and the 3 best of these 6 cows, or a loss of over 53% by keeping the poorer kind I'm sorry I cannot show you the effect of breeding from the No. 7 sort, but heifers proved so very inferior that their history was ended before we began the use of the Babcock tester. The last one refused to give milk longer than 5 to 6 months out of 12, and no amount of inducement would change her; but she made good beef. However, I can show you the bad effect of using a scrub bull. No. 24 is a three year old daughter of No. 23. and a scrub sire. She does not require many figures to show her life record as a *dairy* cow. She is now in almost ripe condition to feed the gold diggers in our noted Wabigoon gold mining country. You see she has her own particular sphere of usefulness, and it would be no credit to me to do violence to my cash account by trying to divert her from it, and make her pretend to be a dairy cow.

Her mother, No. 23, is a very good cow as you will see by her record for the few weeks of same dates used for our illustrations of the damage a scrub sire is most sure to accomplish

No. 23, 8 years old. Calved July 6th.					No. 24, 3 years old. Calved July 11th.				
July	14	17 15	4.8 3.2	1.551	July	14	15 8	5.4 4.8	1.421
"	28	15 17	3.8 7	2.060	"	28	12 12	3.8 3.2	.989
August	4	10 13	4.4 5.2	1.302	August	4	5 5	6.8 3.4	.595
"	11	12 12	4.8 4.4	1.262	"	11	3 7	4 4.8	.497
"	18	12 12	4.2 4	1.148	"	18	5 5	3.6 1.7	.314
"	25	12 11	3.6 4.8	1.099	"	25	3 6	2.8 4	.361
Sept.	1	11 10	5 4.6	1.180	Sept.	1	4 5	2.4 5	.404
"	8	10 8	4 3.2*	.767	"	8	3 3	3.8 6	.344
"	15	0 8	0 2.8*		"	15	Dry		

*No. 23 came in from field evening of Sept. 8th, with a badly cut teat. The morning of Sept. 15th, she knocked over her milk. These two tests show plainly the loss of fat caused by worry.

No. 1 in our herd is a 2 year old heifer, and gave in the year, 261 pounds butter.

No. 3 in the herd is a 2 year old daughter of No. 6 (shown above) she gave in the year 287 pounds of butter., Each of these heifers are from a pure bred Ayrshire bull. Compare their record with No. 24.

I only hope to have been useful to you to stimulate investigation and benefit the dairy industry. If these comparisions could be extended to the whole number of cows of the country, the showing would be startling. If every dairyman would investigate their own herd and put the misplaced ones where they belong (into beef), there would be few to say "dairying do'nt pay."

Mr. Munroe's paper would undoubtedly have provoked considerable discussion but there was not time.

The session adjourned at 12.15 to meet again in the evening at 8 p.m.

Wednesday Evening Session.

February 17th.

The President in the chair.

On rising to open the session the President expressed the very great pleasure it gave him to have present, Prof. James Robertson, Dominion Agriculture and Dairy Commissioner.

The first item on the evening programme was a paper by Mr. J. Y. Griffin on "Hog Raising in Connection with Dairying." Mr. Griffin said:

Ladies and Gentlemen,—

I hope my remarks on this subject will be the means of giving information to the farmers of this country, and that swine breeding will realize, at an early date, a large amount of money value to the farmer, thereby benefiting the country at large.

My object is to bring the packing industry, which I represent, to the front, also the farmer and his interest, and also this Manitoba of ours. Without the assistance of the farmer, it would be useless for capitalists to invest in such buildings as they have to, in order to successfully kill and cure bacon for market.

I shall not take up your time by talking butter, as other gentlemen present, more capable than I, have discussed that, but I would just say that I am glad to see this Convention is now taking up new ideas and being run on new lines, which will, no doubt, be the means of doing more good, in the near future, for and in the dairy interest, and the

members are to be congratulated on feeling and seeing the good they have accomplished in the past. Certainly, our local government deserve great credit for their generous assistance to the dairying industry throughout the province.

In the early days of the cheese factory system, it was customary, in some cases, to feed the hogs at or near the factory in some low place, in a hollow, or in a ravine, so that they could get water, thereby losing all the manure by washing away and thus wasting a manure, which is so highly valued in England as a fertilizer, and, at the same time, allowing the hog to bask and broil in the hot sun and flourish.

What is the custom now if fed at the factory? They are provided with a good field, a pasture, fed regularly with, not whey alone, but grain, shorts and other mixed foods and kept clean, thereby paying the man, or company, who intelligently feeds and cares for the hogs in a proper way. Remember there is no gentleman in the country who appreciates clean quarters, good food and proper attention, more than the hog.

Regarding the whey. Some are of the opinion that if it could be taken back to the farm, in some way, so as not injure it, that it might be of more value and do more good by being mixed with other food and waste from the house and dairy than by being fed at the factory.

No doubt these ideas will bring out some controversies, criticisms and discussions and, in the end, will do good; as a discussion from the floor will, I hope, draw out the ideas from men whom we want to speak on the subject.

How many of our leading breeders import and show every season at our exhibition the best and most superior hogs that are shown at the exhibitions in the Old Country. Some people think exhibitions are no good and waste of time. Not so in my opinion, as there the farmer meets the breeder, compares notes and sees what his neighbor in this country is doing. Besides, it is one of the best advertising mediums for a new country like ours (Canada.) We ought to be proud of the Winnipeg Industrial Exhibition. It is doing good work.

The packing company, which I represent, are anxious to have the co-operation of the farmers of this country. We want them to feed and breed hogs to a much larger extent and the sort of hogs required to make fine bacon now so much in demand.

Remember it will require a large increase in the hogs you must raise to supply the several packing and curing houses you have now almost at your doors, provided you breed and feed the kind of hog required for bacon purposes. With our almost millions of bushels of barley, oats and other cheap grain, which are difficult to ship east as grain, we shall have to do the same as they do in the Western States; put it into hogs, cattle and dairy products. We would, therefore, recommend the culture of hogs, not as by-product of the farm to be taken up now and again, but as a regular, steady and increasing article of production which will not be dependent upon frozen wheat, good as that food may be, but will have as its basis the raising of a sufficient amount of rough grain from creameries and cheese factories, all of which can be profitably converted into hogs.

There is a difference of opinion in this country as to the best breed of hogs to keep, but one thing is certain, you must breed the hog that will mature quickly and give you a long, lean side of meat necessary to make the fancy quality and shape of fine sides now required in the European market. The Suffolks are now out of fashion, as they give too much shoulder and fat, and are too short and thick. In the past the Chester White, the Berkshire and of late the Tamworth, have all proved good pork and bacon hogs, but some of the leading packers in the east think, (and we agree with them,) that the Berkshire, crossed with either Tamworth or imported Yorkshire, are the best, as they give the long, lean side so much required.

A large number of farmers have been, during the past season, feeding hogs practically and, I might say, were successful. I understand from them that wheat fed at present prices would make a profit to the farmer.

All this cannot be accomplished in a day, but pluck, perseverance, push and brains, are bound to succeed.

Supplementing his paper Mr. Griffin said his firm had had a good deal of difficulty in handling the cheese made in 1896, sixty per cent of it being very poor. He spoke very highly of the improvement in butter making.

Mr. Hettle expressed himself in favor of making butter in preference to cheese.

Mr. Kitson, president of the Sheep & Swine Breeders Association, took objection to the remarks made by Mr. Griffin, as to cross breeding. In Mr. Kitson's opinion the best way to secure the hog now required by the packers, was to give the hogs more room for exercise, and pay more attention to the selection of sires.

Mr. Thompson V. S. defended the practice of cross breeding but thought one cross sufficient.

Mr. Rich Waugh, sustained the argument as to cross breeding giving as an illustration the success of Mr. McNaught, M. P. P. in crossing Tamworth and Berkshire.

Mr. R. D. Foley, Manitou, sustained Mr. Kitson's objections to cross breeding.

Several others took part in the discussion, the weight of evidence seemed to be in favor of the cross-bred pig, and of the Tamworth and Berkshire cross.

The President then called upon Professor James Robertson to address the meeting.

On rising the Professor was greeted with very hearty applause and expressed his pleasure at at last having an opportunity of attending the annual meeting of the Manitoba Dairy Association.

He felt that he could perhaps benefit them most in talking to them for a little while on "Cold Storage." Speaking of the drawbacks in Manitoba, the Professor said other countries have their drawbacks but they are too wise to advertise them to the world.

Wherever a cow can do well a man can do well; there is an old saying that prosperity follows the cow and you can prove this if you follow the histories of such countries as Norway, Sweden and Germany. The cow is the foster mother of the human race, and where she thrives a man can get plenty to eat and drink, and the climate will be such that he will be vigorous and prosperous. There is no finer climate in the world for cows and men than Manitoba, though it is given to intensities to such an extent that it sometimes affects even the speech of the people. But the climate is all right if the people would just try to adjust themselves to it. Then there are some marketing difficulties; we are a long way from markets; this means expense and danger of injury on the road. It also means that to be profitable our commodities should be sent to market in the most compact forms. It costs a little less than six per cent of the value of butter—a reasonable charge—to carry it to the British markets, the cost of wheat is nearly dollar for dollar, it stands to reason therefore, that it is better to send butter than to send wheat. The wealth of a country is to be increased by labor and by increasing the value of the products of labor.

Will cold storage raise the price of anything in Manitoba? If so, the people will produce more of it; the farmers will get more profit, and those who handle it will also. This applies to butter, bacon, beef and cheese, and to wheat to a limited extent. The British are good customers for all kinds of food. There is not a country that does not send its surplus goods to England. Whatever surplus goes east, fixes the price for all that goes west. Butter in British Columbia, for example, will bring just a quarter of a cent more than the price in England. Our products, which are the best, should go to the markets at their best and not be spoiled on the road. He pointed out the advantages of exporting flour and oatmeal rather than wheat and oats. To ship steers to Britain costs $30 a head, and they don't get there at their best; there is a shrinkage of fifty to seventy pounds; they run the tallow off their kidneys. To ship the carcass, tongue, heart, etc., costs $12 instead of $30; there is a shrinkage of only five pounds instead of fifty. Cold storage on the railways should add $10 to $15 to every steer exported. Talking on the pig question, he said that a great deal depended upon the bringing up. He had found pigs, when badly fed, quarrelling all the time. If pigs were given skim milk or buttermilk three weeks after weaning, a good foundation would be laid. Pens should be made so that the pigs would not be exposed to the wind. Grain should be ground and soaked; hogs should never be fed on whole grain. The Professor exhibited a tabular statement of the values of various articles imported into Great Britain in 1895, and the values of the imports from Canada. He held that it does not pay to make more cheese than is wanted for the home market. In butter $1,750,000 had been gained in two years by cold storage. He advised to go slow with reference to the establishment of a condensed milk factory in Manitoba; the milk must be put into the factory within an hour or an hour and a half after the cows give it. Manitoba should raise poultry enough for its own market and a surplus for British Columbia. He gave some practical suggestions as to turkey raising. He described the construction of a box for young turkeys so that they can run on the warm dry grass until they are eight or ten days old. In these

days people pay for the condition and not for the composition of things; people pay for dainty quality in the things called perishable. Cold storage is not for the purpose of improving things, but to preserve them against being spoiled by natural changes. There are four ways of preserving things; one is by keeping the air out; another is by raising the temperature, as by boiling; another, by adding things, and the last, by the application of cold. The low forms of life which cause change do not act in cream above 158 degrees or in butter one degree below 32 degrees. The Professor in this connection explained the principle of reducing the temperature of a building by running gas through a pipe, which was called mechanical refrigeration; also the method of best refrigerating by ice. By means of a blackboard diagram he showed the defects in the construction of the old storage cars; it was a question of preventing the heated air from the outside from getting in, and the cold on the inside from getting out. Air, he said, is the poorest conductor of heat if held still. He proceeded to explain the construction of an ice house building, showing that the hollow spaces between the walls of boards and paper, the top and bottom of the spaces should be made air tight by being packed with mineral wool. He would have at least two still-air spaces. Taking up the question of cold storage for cheese he said it was important now to make cheese as soft as possible; to keep it from spoiling it must not be above 65 degrees. Cold storage for beef and butter had already done important work for getting the best customers.

THE QUESTION DRAWER.

The question drawer was then opened, and the questions, bearing to some extent upon matters already discussed, were answered by Prof. Robertson. In answering, he showed that pure bred pigs had their place, but were too valuable to be used for producing bacon; he explained that these pure breeds themselves are composites of several others. The expression "Gas in Milk," is a mis-use of words. Freezing cream does not spoil it for butter-making. Butter itself is injured by the brine being frozen. Heating cream, while sweet, eliminates the odor of turnips. The separation of cream should not take place above 92 degrees. He would not use butter tubs at all, but would use boxes instead. Butter is the better for being kept at 28 degrees, but may be kept at 35 degrees for two weeks. He would feed warm, sweet skimmed milk to calves, to feed it to cows does not pay; pigs do equally well on buttermilk. He would never try to make ensilage of green oats in Manitoba. Ice cold water is injurious in washing butter, it takes all the flavor out, the best temperature is about 54. Butter should not be washed in alkaline water. He would prefer to send butter east for the same price. He would not run any risks by sending to an unknown market. The best size of package was a 56 lb. square box; he would make some also of 28 lbs. The best motive power in the country is steam; it is required also for other purposes. In the package the best quality of the thickest papers should be used. Milk should never be aerated for butter-making.

Mr. McKellar, of the Provincial Department of Agriculture, said the question has often been asked, would not the Dominion Government give the same assistance to creameries in Manitoba as in the North-west Territories.

Prof. Robertson in answering, went a little into the history of the course of action taken. Dairy work, it was held, should be done by the people of the province, as it belonged to production and not to transportation, and markets. It was found, however, that the Provincial Governments were not doing much work, and they were not doing it along the line it should be done; here he had recommended that it be undertaken by the Dominion Government in all the Provinces. This assistance was now withdrawn, except in the case of the North-west Territories, where the work was still under the direction of the Dominion Parliament as regards the money, the Territories being without Provincial Government.

On motion of Mr. S. J. Thompson, seconded by Mr. Kitson, votes of thanks were passed to the mayor and council of Winnipeg, for the use of the council chamber; to the press of the city for notices of the meetings; to the Free Press, for printing the market bulletin throughout the year, and for procuring the same from Montreal at greatly reduced rates; and to all who had taken the trouble to prepare and read papers.

The meeting adjourned shortly before 11 o'clock.

JOINT MEETING.

A new and popular feature of the Annual Meetings of the Dairy, Horse Breeders, Pure Bred Cattle, Poultry, and Sheep and Swine Association, was a joint meeting held in the City Council Chamber on Thursday Evening Feby. 18th.

It had been hoped that the Hon. Sidney Fisher, Minister of Agriculture would be present but this gentleman found his official duties prevented his doing so.

On motion Mr. S. A. Bedford of the Brandon Experimental Farm was unanimously chosen to fill the chair. This choice was especially appropriate as it is felt throughout the province that Mr. Bedford represents and takes an interest in the work of every one of the Associations.

Fearing that a whole week of unadulterated of butter, cheese, horse, cow, sheep, pig and poultry, was a little trying the committee of arrangement for the joint meeting, provided some excellent instrumental and vocal music.

Mr. Bedford's first duty as chairman was to call upon Mrs. Billington for a Piano Solo

His Worship the Mayor was to have been present to deliver an address of welcome, but finding it impossible to attend he sent the following address which was read by Mr. Robt. Strang.

Winnipeg, Man., Feb. 18, 1897.

Gentlemen, — It affords me much pleasure on behalf of the city of Winnipeg to extend to you, as representatives of your different Associations, a cordial welcome to our city and the hospitality of its citizens. While

we have had many conventions assembled in the city during the past few weeks, there is certainly none of more importance to the city and province in general than that which you have the honor to represent. As many of you are aware, it was for many years considered that the growing of wheat was to be the chief industry of this country for the farmers, but owing to climatic conditions and other circumstances, it is becoming quite apparent that if our province is to succeed as a whole, certain portions of it at least must resort to other products for success, and the wisdom of a convention of this character is self-evident. You are here to exchange ideas and views, and to present facts in order that the most improved, practical and advanced methods may be adopted for the betterment of this class of our population, who intend pursuing stock-raising and mixed farming, instead of continuing along the old lines of wheat growing. The old theory that the smart boys should leave the farm and go into professional and mercantile pursuits, has proven a fallacy, and there is no doubt that according to the present requirements, successful farming calls for a greater intelligence than either banking, the professional or mercantile persuits. Social discrimination against the farmer must also shortly disappear, and I believe that within a short time, the social condition of the farmers will be superior to that of the merchant. These things however, can only be attained by the farmers themselves taking up the various questions which you have been discussing with intelligence and industry and seeking to become pre-eminent in their profession. It gives me especial pleasure in welcoming you, because in my opinion there is no portion of the province more suitable for the raising of stock or dairying and mixed farming, than in the country tributary to Winnipeg, where as is not the case in some portions of our province, we have an abundance of hay and timber for building, and an excellent water supply. I am fully aware of the struggle it has been to arouse interest among the farmers and how long established prejudices have had to be overcome, but there is no doubt that if you continue your efforts, you will ultimately meet with success. In reading some American papers the other day I was struck with the interest which is taken in stock and dairying interest by the president and management of the great trans-continental railways and by the legislature of our sister states to the south, and it seems to me that it would be a wise step on the part of our government as well as our great C. P. R., to follow in their footsteps and by a judicious use of some of their capital promote the stock and dairying interest in this province and the Territories, as I believe that within less than a decade they would be repaid ten-fold. Allow me before closing to congratulate you gentlemen upon the organization and success of your various associations which I repeat must necessarily result in broadening your ideas and better fitting you and the farmers of the province to more successfully carry out these objects and ambitions, which deserve the notice of every well-wisher within our borders.

A solo was sung by Miss Katie Anderson, the title being " Ben Bolt. " In response to an encore she gave " Kathleen Mavourneen. "

Dr. J. G. Rutherford responded to the Mayor's address of welcome. He took it as a great honor, not being himself a farmer, to be called on by the farmers to respond on their behalf. He expressed his pleasure at

seeing so many present. He thought the Mayor's expression as to the importance of the gathering should be made still stronger. With the exception of the Industrial Exhibition there was no other annual gathering held in the city that was of equal importance. He spoke of the farmers as essential to the existence of the city; and proceeded to give an explanation of what was really farming, pointing out the mistake of confining attention merely to wheat raising, and wearing out the soil by cropping and recropping. The cultivation of cereals could not last; and it was necessary to go into mixed farming, or "diversified agriculture." He proceeded to show the growth of the dairy and industries, and the cultivation of poultry. Speaking of the last of these he referred in a complimentary way to the poultry show now in progress. The improvement of stock he said, would tend to the benefit of the whole country. Referring to his worship's remark about the social discrimination, he told an amusing story of a farmer's wife in Scotland who was greatly annoyed because at a social gathering she had been invited to meet "a draper." He hoped such comparisons would not be made again, as they might lead to reprisals. The speaker went on to point out the value of the Winnipeg Industrial Exhibition, and its superiority over the local show as an educational factor. In conclusion he said to the people of Winnipeg, thanking them for their welcome. "You cannot welcome us too much; if you receive us with open arms, we will try to fill them."

The next item was an address by Miss B. Livingstone, of the school of Domestic Science, on "Schools of Domestic Science," and "Demonstration on the Cookery of Milk, Cheese and Eggs."

MISS LIVINGSTONE.

Miss Livingstone expressed her pleasure at being asked to address a joint meeting of the various associations and hoped that the farmers of Manitoba, who were so progressive in other particulars would be glad to learn something of progressive house-keeping. She had prepared no regular address, but would give a brief sketch of the work being done in the various schools of domestic science. Miss Livingstone then described some of the schools in New York, Boston and Philadelphia, where for $60. for tuition, young women can receive instruction from 9 a. m. to 4 p. m. each day, three or four hours being devoted to practical cooking, and the remainder of the time to the study of the chemistry of food, and kindred sciences. In addition to these places there were schools at Government Experimental Stations where the pupils actually live in the school and do the work. In these schools the time is divided into courses, and pupils spend say two weeks in kitchen, doing the work of that department; two weeks in the corridors and halls, two weeks in the bedrooms and so on, learning the practical work of each department of house-keeping. In addition to this there were lectures on physiology and hygiene, bacteriology and home sanitation, and the botany of fruits and vegetables. Miss Livingstone thought the greatest advantage to be derived from these courses of study was the fact that they fitted young women for the duties of home making.

The speaker next touched upon the need of improvement of farm kitchens, pointing out that so often the best and most convenient appli-

ances were obtained for doing the outside work of the farm, while the wives and mothers were left to get along with the old fashioned and inconvenient kitchen utensils. After a very brief address the speaker applied herself to the making of a milk soup, a cheese omelette, a milk sauce and a Welsh rarebit. As each dish was completed, it was handed round for inspection. As the cooking proceeded, Miss Livingstone explained the best heat at which to cook milk, vis., 160, and that it should always be cooked over hot water; that eggs should never be allowed to boil, as that toughened the albumen, but should be cooked either by being placed in very hot water and allowed to stand for seven minutes, or by putting the eggs in cold water and allowing it to just come to a boil. She recommended that potatoes be cooked in their jackets and in cold water. Many other items of information were given as the lesson progressed. The audience were in high good humor, and indulged in some pleasant speech during the intervals of the lecture.

While Miss Livingstone was making preparations for her demonstrations, Rev. R. C. Johnstone sang, "Scotland Yet." The song elicited a lively encore, and Mr. Johnstone responded by singing "The Warrior Bold."

PROFESSOR ROBERTSON.

At the close of Miss Livingston's demonstration, Prof. Robertson was called upon for an address. Expressing his pleasure at seeing his friend, Mr. Bedford in the chair, he said Mr. Bedford's conduct in the chair was characteristic of him; he was always passing on the best things to others. He spoke of Mr. Bedford as the "uncrowned king of agriculture." The more he learned of Canada, from Prince Edward's Island to British Columbia, the more he thought of this province of Manitoba. The people were full of enterprise and courage, and had a good opinion of themselves. While there are many excellent things here, there is nothing that cannot be made by the industry, skill and economy of the people, blessed by Providence with good harvests and good weather. He saw marks of substantial progress; no part of Canada was making more progress, and Canada was making more than any other part of the world. He asked where else farmers who had begun with nothing had made $5.000. There was a lot of nonsense talked about populating the country he would spell "prosperity" with a very large p; and "population" with a very small one. When the people adjust themselves to the conditions so as to make a good living, population would come. He told the farmers as to the real wealth of the country, the products of their labor. He admitted that the farmers do not get their proper share. The government can help the exchange of one form of wealth for another. Not more than one-tenth of the wealth the farmer creates goes for machinery. He advises the people not to chase after little things and ignore the big things. There had never been an instance of 60,000,000 bushels of cereals produced by so few farmers, yet it would pay them to sow fewer acres and reap more bushels. If this were done and more care given to stock, it would be better for the country. Only the Indian could prosper by feasting and faminining. An even grade of feeding, summer, fall and winter should be provided; also better shelter in winter—this could be done by means of poles and straw. He thought if the

language of the cattle on some of the farms could be translated into human speech, it would be unspeakable in a meeting like this. Cold storage means keeping things at their best when they are being carried from the farms, to where people buy them; this will secure a better class of customers and better prices. He touched upon the cold storage facilities now provided for shipping to the British market. Manitoba and Northwest people had been too generous in allowing their wheat to go through the United States and grade up the American, to the detriment of the name of the Canadian product. He illustrated the importance of establishing a reputation for Manitoba butter; the government was taking steps which would benefit the province in this regard. The Professor closed his address with a commendation of Lady Aberdeen's scheme of cottage hospitals in connection with the Canadian Order of Home Helpers. These hospitals, under the guidance of the medical profession, dotting the whole country, would afford the very best help to the hearts and bodies of the people. He thought a million dollars could be raised for this purpose, if the people were awakened to the value of the movement. Colleges and Universities were needed; and so also were trained thinkers and skilled workers, who would save the physical life of the people. If a million were raised, hospitals could be put all over the country. New openings for women were needed, and this would give employment to thousands. He hoped Manitoba would do its part. The people should magnify their citizenship as much as they could in this prosperous and promising province. At the same time it was well to forget sometimes, that Manitoba had boundaries: and to remember that Canada is bigger than Manitoba; that Manitoba is only a part of Canada; and that we have duties—large duties— to the Empire of which we are citizens, the Empire to which we owe the safety of our hearthstone. We should believe in the wisdom of the men, who are at the helm, and labor for our province, our homes and the empire, and that means for our God.

On motion of Mr. Munroe, seconded by Miss Hind, a hearty vote of thanks was passed to the speakers, to Miss Livingstone for her demonstration, and to those who had furnished music.

The proceedings were closed with the singing of "God Save the Queen."