ANNUAL REPORTS

OF THE

DAIRYMEN'S AND CREAMERIES' ASSOCIATIONS

OF THE

PROVINCE OF ONTARIO

1890.

I. DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.
II. DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.
III. CREAMERIES' ASSOCIATION OF ONTARIO..

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

TORONTO.
PRINTED BY WARWICK & SONS, 68 AND 70 FRONT STREET WEST.
1891.

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I.—DAIRYMEN'S ASSOCIATION OF EASTERN ONTARIO.

OFFICERS FOR 1891.

President, - - - - - - - WM. EAGER, Morrisburg.

1st Vice-President, - - - - - - - PLATT HICKMAN, Grafton.

2nd Vice-President, - - - - - - - WM. BISSELL, Algonquin.

Directors :

Division No. 1.—E. KIDD, North Gower.

Division No. 2.—JOHN MCTAVISH, Vancamp.

Division No. 3.—RICHARD MURPHY, Elgin.

Division No. 4.—D. VANDEWATER, Chatterton.

Division No. 5.—T. B. CARLAW, Warkworth.

Division No. 6.—H. WADE, Toronto.

Secretary, - - - - - - - - HARFORD ASHLEY, Belleville.

Treasurer, - - - - - - - - P. R. DALY, Foxboro'.

Auditors, - - - - - - - J. G. FOSTER, Moira.
M. K. EVERTT, Easton's Corners.

LIST OF MEMBERS

FOR 1891.

NAME.	POST OFFICE.	NAME.	POST OFFICE.
Alexander, A.	Napanee.	Faucet, Arthur	Bishop's Mills.
Alexander, Jas.	Montreal.	Foster, J. G.	Moira.
Ashley, Harford	Belleville.	Forester, Nelson	Lyn.
Ayer, A. A.	Montreal.	Frost, F. T.	Smith's Falls.
Bailey, Arthur	Campbellford.	Gardner, O. L.	Lyn.
Bissell, Jas.	Brockville.	Garrott, W. W	Tweed.
Bissell, Wm. I.	Algonquin.	Gerow, W. F.	Napanee.
Bissell, Howard	Brockville.	Gilroy, Craft	Glen Buel.
Bissell, A. P.	"	Godkin, G. E.	Waterdown.
Brenton, F. W.	Belleville.	Gould, W. J	Elgin.
Brown, W. A.	Carleton Place.	Hinman, P.	Grafton.
Bush, O.	Kemptville.	Hicock, W. W.	Sweet's Corners.
Burnie, Matthew	Spencerville.	Jelly, Robt.	Jellyby.
Campbell, A.	Ormond.	Johnson, H. M.	Cherry Valley.
Carlaw, T. B.	Warkworth.	Johns, A. C.	Fairfield East.
Chipman, Wm.	Ottawa.	Jones, Andrew	Maitland.
Cleal, George.	Selby.	Keating, Jas	Lansdowne.
Cummins, Jas.	Lyn.	Keeley, J. D.	Railton.
Cunningham, R. W.	Gananoque.	Kidd, E.	North Gower.
Daly, P. R.	Foxboro'.	Ketcheson, Jas.	Belleville.
Dargavel, Jno. R.	Elgin.	Lane, Jas	Pittsferry.
Davis, A. A.	Brockville.	Lavine, Frank	Elgin.
Daugherty, W.	Napanee.	Legge, Joshua	Gananoque.
Dempsey, W.	Belleville.	Madden, E. J	Newburgh.
Eager, Wm.	Morrisburg.	Murphy, R. G.	Elgin.
Eager, Geo.	Kemptville.	Metzler, Robt	Odessa.
Earl, J. S.	Belleville.	Moore, W. A.	Perth.
Earls, R.	Algonquin.	McCready, R.	Lyn.
Eastman, Thos.	Vernon.	McDougall, A. D	Brockville.
Evertt, M. K	Easton's Corners.	McLean, D.	Eric.
Eyre, Geo.	Lyn.	McTaggart, Samuel	Belleville.

List of Members—*Continued.*

Name.	Post Office.	Name.	Post Office.
McTavish, John	Vancamp.	Soper, H. L.	South Mountain.
Publow, G. G	Perth.	Smith, Henry	Harlem.
Purvis, A. P	Maxville.	Stillman, J. H	Campbellford.
Potter, Arthur	Mountain View.	Tallman, Chas.	Kilmarnock.
Ragsdale, W. J	Bishop's Mills.	Thompson W. H	Prescott.
Reddick, J. A	Lancaster.	Thompson, R	Napanee.
Robinson, G. H	Morin.	Vandewater, D	Chatterton.
Rollins, Robt	Madoc.	Whalen, Wm	Centreville.
Spence, Hugh	Norwood.	Warton, W	Selby.
Spence, S. S	Cottesloe.	Wilson, Jno	Maitland.
Strong, P	Brockville.	Wade, Henry	Toronto.
Stagg, Jno	"	Whitton, Jas	Belleville.
Stringer, R	Sand Bay.		

FOURTEENTH ANNUAL CONVENTION

OF THE

EASTERN DAIRYMEN'S ASSOCIATION OF ONTARIO.

The Fourteenth Annual Convention of the Eastern Dairymen's Association of Canada, was held in the Court House, Brockville, on Wednesday and Thursday, January, 8th and 9th, 1891. The President, Mr. JOHN T. WARRINGTON, jr., of Belleville, took the chair at ten o'clock, and called the Convention to order.

ADDRESSES OF WELCOME.

Mr. D. DERBYSHIRE, Mayor of Brockville, in welcoming the Association to the town, spoke as follows: As Mayor of this Island City it is my pleasant duty to extend to you a hearty welcome. It should be a source of pride to any community to have the privilege of affirming its hospitality to so distinguished a body as the Dairymen's Association of this province, and although this is only the Fourteenth Annual Convention, yet you are scattering your permanent blessings throughout Eastern Ontario, and exerting an influence far beyond our borders. Well do I remember the early struggles of this Association, when a few patriotic men put their hands into their own pockets to pay the expenses of carrying on our annual and other meetings. Now you are aided by the Ontario Government, who also print your annual reports, and you have the influence of the whole people. Fourteen years ago we had the common butter and cheese that anyone could make, and everybody against us; while to-day, thanks to the good work of the Dairymen's Associations, we make the finest cheese in the world. What means this rapid progress, unless it be the adaptability of this province to the butter and cheese interests and the earnestness and ability on the part of those engaged in its manufacture, aided by this Association and the Government? To-day we stand in the very front. No association of men has done more for every citizen in this province, than the Dairymen's Associations. We can congratulate ourselves that the dairymen of Ontario were the first in the whole world to employ instructors and inspectors. Dairymen in other parts are now following our example, and coming to Ontario to get its instructors. We congratulate ourselves that Canada has the best reputation for making fancy cheese. We have to thank this Association for the plans formulated and carried out, and for the high and enviable position that we now occupy. I trust that you will take hold of the work and make this the finest meeting yet held. It is justly a source of pride to Leeds and Grenville to have among our citizens some of the oldest and most enthusiastic dairymen in the province; those who are alive to all the modern improvements in the manufacture of cheese; those who are aiming to keep this province abreast in this important enterprise. You will have their cordial support and earnest attention. I trust this community will respond liberally to your call for membership, and that you will be instrumental in impressing upon more of our farmers, the need of better stock,

more improved appliances, and a more thorough understanding of the dairy business. I sincerely hope that your pleasure in meeting with us will be as abundant as the welcome we extend to you. I hope that your meeting will be pleasant and profitable and one long to be remembered by your Association.

Mr. D. W. DOWNEY, President of the Board of Trade, briefly addressed the convention in words of welcome. He spoke of the importance of the dairy interests to the province, and also pointed out the influence of the make of Ontario cheese on the British markets. He looked for a still greater improvement in the quality and quantity of cheese made in the province.

Mr. H. F. J. JACKSON, a member of the Board of Trade, said he regarded cheese as the staple product of that portion of the province. Twenty years ago the farming interests of the section were languishing in the production of corn, barley and wheat, but the manufacture of cheese had revived the condition of agriculture. He joined in welcoming the gathering.

Mr. JOHN R. REID, Secretary of the Board of Trade, said he had a friendly feeling towards the cheese industry, having been engaged six years in the produce business, and he had still an interest in the cheese industry. The dairy industry was indeed a tower of strength to the country. Phenomenal progress had been made in the cheese business of the province, and Ontario was now said to be leading the van. At one time the Americans pointed the finger of scorn at Canadian makers and their product, but the tables had been turned. Canadian cheese was now as good as any made in the world. He extended a cordial greeting to the members of the convention.

Ex-Mayor DANA referred to the large amount of money brought into the country by the cheese industry, and welcomed the visitors.

Mr. A. D. MCDOUGALL re-echoed the words of welcome spoken by his fellow townsman. Personally he was largely interested in the cheese trade, and had been so for nineteen years. He had started as a manufacturer. He had learned much that was valuable about cheese making at the conventions of the Associations. He could cite factories which had been benefited to the extent of cents—not a cent—on the pound. In fact a man had told him that day that his profits in cheese-making had been doubled by the instruction received at the gatherings of the Association.

The PRESIDENT responded to the addresses of welcome, thanking the speakers for the warm greeting extended to the members of the Association.

THE PRESIDENT'S ADDRESS.

Mr. WARRINGTON then proceeded to deliver the annual address of the President, as follows: It gives me great pleasure to have the honor of occupying the position I do today. I trust that this, the fourteenth annual convention of the Association, will prove even more successful than any of the previous conventions, and that every cheesemaker and every factoryman and all interested in the dairy products of Canada will leave Brockville satisfied that the information they have received well worth the time and money they have expended, and, as Mr. Evertt happily put it last year, "It was good to have been here." In view of the heavy amount of business to be got through, I will make my remarks as short as possible. In the first place I cannot praise too highly the manner in which the inspectors and instructors have done their work. Mr. Bailey's section, Belleville proper and Peterboro district, has not required so much instruction, but the number of people found guilty of skimming, stripping or watering their milk is astounding. Mr. Rollin's section, Kingston and Prince Edward, may not have had nearly the same proportion of adulterated milk cases, but I can speak from personal experience of the marked improvement in the quality of cheese made in those sections under his instruction and I am glad, especially, to see Kingston coming to the front again. I remember the time

when cheese made in Kingston section was considered to be the finest quality turned out in Canada and they commanded the highest price of cheese made in any section. With regard to Messrs. Publow and Ruddick, they have not come under my personal supervision, but from all I can learn they have been as zealous in their duties as Messrs. Bailey and Rollins. One of the most important things to be considered here at this convention, in my opinion, will be the subject of winter dairying. It is my firm conviction that the cow can be utilised as a money-making animal for two or three months longer than she is under the present system, and that, without any detriment to her, and I trust that Prof. Robertson will give us his views on this matter. I have two suggestions to make which I think will improve the sale of cheese. The one is the marked improvement in quality that can be seen in any factory where the cheese is kept 48 hours in the press. A large number of factories about Belleville have pressed their cheese for 48 hours this year, and there has hardly been a cull found among them. In Mr. Carlaw's factory where this 48 hour pressing system was practiced, 258,000 pounds of cheese were made and there was not a single complaint made of a poor cheese. Another thing I would suggest is that the cap cloth be not taken off the cheese when shipped out of the factory. I have had frequent complaints about blackened surfaces on this account. These cap-cloths can be bought ready cut round, at a very reasonable rate from any dealer in factory furnishings. I am just in receipt of an estimate of the stock of Canadian and American cheese on the first day of the year, and I am pleased to inform you that the visible supply is 150,000 less than the same date last year. This promises well for a good demand for your early makes. Trusting this may be so, and with every good wish to you all for a happy and prosperous year, we will now proceed with the business of the convention.

COMMITTEES.

The following committees were then appoin[illegible] —

BUSINESS—W. Eager, D. Derbyshire and W. Bissell.

NOMINATIONS—P. Hinman, D. Vandewater and H. Bissell.

DAIRY UTENSILS—R. Rollins, J. A. Ruddick and G. G. Publow.

FINANCE—H. Wade, T. B. Carlaw and P. Hinman.

LEGISLATION—H. Wade, D. Derbyshire and Prof. Robertson.

MAKERS, MAKING AND COMPETITION.

Mr. HOWARD BISSELL, of Brockville, was requested to address the meeting in the absence of speakers delayed by the train, and delivered the following extempore address:—I congratulate you, Mr. President, upon being one of the largest exporters of cheese to Great Britain. I feel at home on this subject of the manufacture of cheese, and I believe that both buyers and makers will agree with me when I say that there has been remarkable progress in the industry during the past ten years. And I have not the least doubt that this good result is chiefly caused by the holding of conventions of this and sister associations. I am looking for further progress. But I can plainly see that Ontario must look at the fact that the Lower Province is going to compete very closely with us before long. I had the pleasure lately of attending a dairymen's convention at Cowansville, in the Eastern Townships. It was the first convention of the sort ever held in that section, and it was a success. I spoke there upon the subject of winter dairying, and soon found that they were alive to its importance, and that we must be prepared for their competition. We have also competition across the river. Last September I was in Fulton county, N. Y., and saw September and October cheese sell for $8\frac{7}{8}$ to 8 4.5 cents per lb., while the cheese in Brockville was selling for $9\frac{5}{8}$ to $9\frac{3}{4}$. We may well feel proud of

the position we hold at present, but we must not forget that our American neighbors are also putting forth an effort to overhaul us, and some of our best makers are being enticed across the line. They can sell cheese higher at Ogdensburg than they do at Utica because they have Canadian makers, and they will soon be here in this district for more of our best men. In Quebec they are also sending for our makers. Speaking of makers reminds me of the fact that there are some men who imagine that they can learn to make cheese in one year. A maker should study at least two years before he should undertake the charge of a factory, and then he will have a great deal yet to learn. Too many cheesemakers are anxious to make money at the business before they are fully equipped for the work. I believe in employing good makers and giving them good wages, and if a man is a first-class cheesemaker he is deserving of a good price for his work. It is a deplorable fact, however, that some makers cannot make good cheese, and there are too many miserably built and equipped factories in Eastern Ontario. This "cent a pound" business is a great evil. No man can make good cheese if he is paid only a cent a pound. I attended a meeting at North Augusta, where it was announced that a man would tell us how to make cheese at a cent a pound. The man who called the meeting said that if they would guarantee the milk of 200 cows the cheese would be made at a cent a pound. I asked him for his figures, and he said he had not any figures, but that they were making cheese for a cent a pound all over the province. I then asked him how much cheese the 200 cows would produce, and he replied 40,000 lb. I told him that at a cent a pound that would give only $400. I followed up my question by another regarding the wages paid for a maker. I was told that it would be $300. Now, that left $100 only for building the factory, putting in machinery and other expenses. Then I gave him 60,000 lb. for 200 cows, and after estimating the cost of manufacturing, interest on investment, etc., brought him in $297 in debt. (Laughter.) This matter of poor buildings and poor wages needs to be talked about plainly. When I was on the road as instructor I had a good deal to contend with, as the cheesemakers were prejudiced. Some of them would hardly allow me to give instruction. I also found a difficulty in getting a chance to properly inspect the milk. Now the Dominion Government is assisting in the work of analysis, etc., it is easier to deal with the question of adulteration.

Mr. R. G. MURPHY, Secretary of the Brockville Dairymen's Board of Trade, was next called upon, and said: I agree with the remarks of Mr. Bissell regarding the manufacture of cheese. I am a partner in quite a large factory, and my experience in regard to the prices paid for making cheese may be worth repeating. We took hold of a large joint stock factory, and in our section of the country they have not proved successful. The principle may be correct, but in practice they have invariably failed. We bought out the stockholders and rigged up the factory in first-class shape. But other factories were all around us. We were, so to speak, the hub, and at the other end of the spokes were factories making cheese at a cent a pound, and we were in competition with all of them. We paid more money for making than the other factories did, and found patrons. We succeeded admirably, and the cheese made pleased the buyers, while at the same time we paid as much to our patrons as those factories did which were not paying their makers so high. It pays to rig up factories in better shape and pay more for making. The patrons will soon help to pay men for any improvements.

A MEMBER—What did you pay a pound?

Mr. MURPHY—A cent and an eighth. We declined to run the factory at the prices prevailing around us. At first it was uphill work, but we have succeeded in keeping our patrons and paying them good prices for their milk.

A MEMBER—How do they manage to draw the milk?

Mr. MURPHY—Each man draws his own milk, and every one may bring it in his own way.

Mr. DERBYSHIRE—I have been delighted with the very practical addresses given this morning. This afternoon the speakers advertised will be present. We are proud of the Brockville district as being the home of the pioneers in this great cheese industry.

We have now in this section many factories well equipped, and more are continually being built, but Mr. Bissell's factory, five miles from here, is, I believe, the finest in Ontario to-day. Messrs. Murphy and Dargavel have paid a good price for making cheese, and, although so far they may not have cleared much, they have made a reputation as handlers of the finest cheese. Our people are bound that we shall put up good factories and pay a decent figure to first-class makers, for it is only in that way that we can maintain the splendid record we now have. Good cheesemaking cannot be expected at a cent a pound. Our neighbors are waking up all around. Even across the line, in St. Lawrence county, they have hired some of the best makers from here. They are willing to give more money than we will pay if we continue to hire at a cent a pound.

The meeting then adjourned until the afternoon at 2.30.

FIRST DAY.—AFTERNOON SESSION.

The Convention met again at the appointed time, the President in the chair.

THE PRESENT STATE OF DAIRYING IN THE PROVINCE.

Mr. M. K. Everett, an ex-president of the Association, was called upon for an address, and said: I have been much pleased with the character of the addresses delivered at the morning session. I regard dairying as the leading industry of the Dominion. In order to beat the world, as we have done, or even to keep pace with other countries, we certainly will have to look sharp to our business, and lose no time in producing milk more cheaply and turning out a finer grade of goods. This is a question that is stirring the minds of many thoughtful farmers. If the patrons have not been getting good prices for their cheese about the first place they begin to cut down expenses is in the price paid to the maker. But they are beginning at the wrong end. I repeat that what we have to do is to produce the milk more cheaply. Other countries are beginning to feed cheaper fodder to their stock, and so must we. Some claim that the bottom is falling out of the cheese business. I claim that the dairy industry was never in a better position. The bottom is dropping out of the old plan of feeding and caring for dairy cows, and out of those cows which are not producing the amount of milk a good dairy cow is expected to produce. Factory men are doing all they can to turn out the best goods. Bettter buildings are steadily being erected. We have led the world since 1884, and we shall continue to do so. (Applause.) The mayor said to day that the reason St. Lawrence county, N.Y., was turning out so good an article was because they were getting our makers. Canadian boys have gone to New Zealand and to the Old Country to teach the people how to make first-class cheese. It is the duty of the farmers to come to the rescue of the men who are building up this business, as we cannot afford to take a second place in the manufacture of cheese. I know there has been a very great improvement in the quality of cheese in what is known as the Brockville section this season. We are advancing very fast. I have been able to make and sell $110,000 worth of cheese. Out of that amount I have paid to two factories $46,079.22. Of the $25,000,000 worth of cheese imported by England, Canada sent $10,000,000 worth. With proper treatment and feeding, and using the silo, we should send $20,000,000 instead of $10,000,000. Our return, as regards the value of our milk product, is very meagre, compared with that of Denmark, a country not so large as Ontario. So the question crops up again, how shall we get more milk for less money? Some people say we cannot compete with the west, because there they have food and grasses at all seasons of the year. I hold that the man who has a silo has the far west at his own door, in a compact and convenient form.

THE BENEFITS OF ASSOCIATION WORK.

Mr. D. M. MACPHERSON, an ex-president of the Association, was also called upon, and remarked: I believe that this dairy interest is to-day superseding every other industry of the country, and in the quality of its cheese and the talent of its manufacture Canada is surprising the nations of the world. In order to keep our proud position we must continue to put science, pluck, intelligence and energy into our work. I was pleased to learn from the last speaker of the high standing Canada has attained in dairy products, particularly in cheese. I can certify to the truth of his assertions. We have not only a good reputation, but we are receiving the advantage of that high reputation, and no individual or nation can gain a reputation for making an article of superior quality without receiving some benefit therefrom. The dairymen of Canada are to-day receiving the reward of their industry. But we must not dream of resting content with our laurels, but go on improving. To cease making progress is to fall behind. Others will go forward with improvements and take our place at the front. We must take advantage of every means to hold our lead, and nothing has contributed and is contributing more to raise the reputation of Canadian dairy produce than the meetings of the Eastern and Western Dairy Associations of Ontario. The interchange of opinions, the results of observation and experiments by our best men are invaluable. The work of these Associations is to-day more popular than ever before, not only with dairymen themselves, but also with the Government. The Government has seen fit to subsidise our efforts very handsomely indeed, and great credit is due to the administration of the province for its liberal assistance in enabling us to carry out the good work planned by these Associations. There are some things, however, in which we can make advances, but I will do no more just now than throw out a few suggestions. I believe that in too large a degree the work of the inspectors has been extended over too wide an area. Yet the good results are so apparent that I believe the Government would be justified in at least doubling its subsidy to the Associations, and increase the grant to $3,000 or $4,000. (Applause.) I have found from experience that the great drawback to-day is the large extent of territory we have to cover. It is too great for a full measure of success. We should have smaller inspectorates, so that the inspectors may have opportunity of visiting the factories oftener and keeping a closer oversight of the manipulation of cheese. We can recognise it as a fact that this system of sending out instructors has been one of the grandest things we have accomplished. It has brought to the manufacturers of cheese the best skill and experience, and has shown them the benefits following the putting of that skill and experience into work. We must further strengthen and systematise this work of inspection and instruction, so as to accomplish even more in the future. It is a certain means of bringing efficiency into our factories and a higher level to the quality and reputation of our product. We must strive to bring each individual factory up to the high standard already attained by the best factories, and in doing that we will raise the reputation of the product of the whole country and increase its value, meet the growing demand for first-class cheese, and lead the world in the future in even more marked a manner than we have done in the past.

WINTER DAIRYING.

Prof. ROBERTSON, Dominion Dairy Commissioner, was next called upon, and after congratulating the Association on its good record and the town upon its enterprise in the matter of handling cheese, proceeded to say: I was very glad to learn from the remarks falling from the lips of Mr. Evertt that he was preaching that good gospel of people minding their home end of the business first. I thought as I listened to him that if he took pattern by many dairymen I know of, he would have been running down the cheesemakers, the salesmen, the buyers, the Government, the old country market, the Association, and in fact everything but his own carelessness. It is a good thing for a man to remember that the most important part of his business is his home end of it, and that he cannot improve matters by paying too much heed to the market end of it. In

looking over this large audience I find what I expected to see—representatives of all those engaged in this cheese business, now not only a large industry but the best paying one in our province. I find the farmer, the maker, the local buyer and the large exporter here. To each one of us an advantage must come in considering how we can improve our business for ourselves at the home end and not at any other man's end. I cannot accomplish much in striving to instruct a dairyman how to improve his circumstances if all the time I am directing his attention to the man in Montreal who sends back for a rebate of a half or quarter a cent. per lb. on ten boxes. And when I speak to cheese-makers it will not be about those ends over which they have no control.

From my standpoint, as Dairy Commissioner for the Dominion of Canada, I have some plans under consideration, by the carrying out of which I hope to help very materially the cheese business during the coming summer. Meanwhile I would like to notice that all over this province of Ontario we have very many more cows to the square mile than they have anywhere else in Canada. When population is of the right sort, it is an important factor in the success and prosperity of a district, and it is generally a good indication of the value of property. It has been estimated that each new immigrant is worth $1,000 to the country,—but that is only one kind of population. A large cow population also means wealth and permanent prosperity, for where the number of cows is increased, every township, town and county in that immediate district is bound to get the benefit of their productiveness. Wherever you find an influx of producers giving out more than they take, there is thrift. In every part of Ontario where there is arable land there should be four times as many cows kept as are now owned. We should keep 25 cows on each 100 acre farm. This would mean more money in circulation. I want to say a few things as to how this can be done in Ontario. Owners of cattle must learn what immense value lies in the corn plant. Some people think that when a man begins to talk corn, corn, corn, that he has corn on the brain. But let me tell you that until a man gets cheese on the brain he never wins prizes or gets the first call on the cheese board. (Applause.) I would like to get in every township men who are regarded as cranks on corn, and this would do the township more good than the presence of men who are willing to be exhorters on the political hustings. Corn is one of the hardiest growers of any plant cultivated on the farm. It is easier to grow, and it suffers far less from parasites. People thought for years that the corn crop was adapted for the southern or middle states, but that it could not succeed in Canada. I have never seen a farm in Ontario that had not some land suitable for a fair crop of corn. During the last season on the Experimental Farm at Ottawa the cost of growing a crop of corn, counting the rent of the land, the cost of the manure ($\frac{2}{3}$ value), cost of seed, labor of filling the silo, etc., was $1.34 a ton. We are feeding cows on fifty or sixty pounds of corn ensilage a day and they are thriving upon it. We will be feeding some steers also on corn ensilage alone, and I know that they will do well on sixty pounds a day. Fifty pounds of ensilage costs about $3\frac{1}{2}$ cents, and the manure is just about worth the work of feeding. You will readily perceive that a farmer can winter just four times as many head at $3\frac{1}{2}$ cents a day each as he can if the feed costs 14 cents a head, as it ordinarily does. This is one way in which a man can increase the cattle population —four times the number of cows can be wintered at the same outlay. Sixteen tons per acre of corn is a reasonable yield, and that quantity will winter, so far as fodder is needed, four cows for five months and a half, while an acre of average hay will not carry one cow through the winter. And the farmer will not only feed his cows more cheaply on ensilage, but he can have more on the same acreage. I know of one case on this continent where a firm keeps 258 cows on 204 acres of land and buys little feed except cotton seed meal and bran from the proceeds of the skim-milk. Everyone cannot do that, but most dairymen could keep 25 cows per 100 acres. That is four times more than is the average. I am in this matter advising what every man can do. If I advised a man to hold back his cheese, it might be that the market price would come down and he would blame me for giving him wrong counsel. But there is no such risk in recommending the growing of corn for winter feeding. You may put this first of all, that the man who grows corn for the making of ensilage should try to grow that corn in rows or hills, so as to admit of plenty of sunlight and a free circulation of air.

A MEMBER.—Do you believe in the rows being far apart?

Prof. ROBERTSON.—About 3 or 3½ feet apart. Grow your corn in rows about that width apart so as to get broad leaves, and lots of them. If you grow corn too close together the leaves will be white and delicate and the whole plant will lack vigor. The nutritive qualities of corn as shown by analysis, are in these proportions: Nearly one-half are in the leaves, about one-fourth in the stalks, and the remaining fourth in the nubbins. I had this tested by selecting 160 plants from different parts of a twenty acre field, grown for ensilage, and it was found that about one-half of the food value was in the leaves. I say, then, let your corn get plenty of light and air, for a plant grown in the dark or crowded too closely to others is bound to grow spindly and weak.

Now, as regards the erection of a silo. I believe a man should build his silo inside his barn if he already has room for it. There is no offensive smell from ensilage. I can put it in my pockets or handle it with my hands, and no bad odor from it will attach to my person. There is no putrid matter about it. The ensilage will keep against single boarding, but not as well as if there are two thicknesses of lumber with tarred paper between. It pays also to have the corners filled by having a bevelled board put in. The triangular space behind it should be filled up with sawdust. If air can be excluded no mould will form; and your chief object should be to so fill the silo that no air can get into it. The corners filled with sawdust give the best results. I do not think any extra good results from coating the lumber with tar or crude petroleum. I question the advisability of putting any preservative on the inside. My friend, Mr. Fisher, M.P., who is here, has had considerable experience with wooden silos, and at his place I saw one silo six years old which did not evidence any signs of decay. In the covering of the ensilage, I have not found much that is new. This year we had one silo covered with six inches of cut straw and eighteen inches of long straw, and there was not more than an inch of waste.

A MEMBER—Do you cut the corn with a straw cutter?

Prof. ROBERTSON—Yes. Our past experience has shown us that where corn is put in the silo uncut, there is always a waste at the butts—where the ends come against the wall. The full corn stalk is very hard to handle, difficult to feed, the cattle will not eat it up so clean, and there is therefore more waste. To those who desire to have their cows give a large flow of milk during the summer, I would say that your best practice is to feed the animals well all winter. If a cow is fed dry fodder all winter, she will give less milk when fed on succulent grass, because of that poor feed in the previous winter months. It is a great gain to feed a cow all winter on this succulent corn food from the silo, so that her system will be kept in a more relaxed condition.

One of the things that comes within the control of the farmer himself, is the making of his stables more comfortable. I do not know of any subject which has been more neglected than this very important one of constructing cattle-sheds and stables that will be comfortable and convenient and fully adapted to the requirements of the farm. Some of the places used for these purposes are most unsuitable. This means loss of vital power in the cows and less milk. I would have my cows kept warm whether the air was pure or impure, looking to the matter of production. There has been a craze in some quarters for ventilation, but in our climate, if you ventilate a stable as many do with the thermometer 20° below zero, the cows will not enjoy the ventilation. (Laughter and applause.) It is a good thing to have a barn well ventilated, but if we are to have one of two evils, it is better to have the warm stable that is not too well ventilated. In a warm stable not well ventilated, there will not be an offensive odor if you use gypsum.

A MEMBER—What about dry earth?

Prof. ROBERTSON—The dust is not so active, and gypsum makes the very best manure. I have time only to mention the next point, the benefit of having the stables convenient. Much waste of time and valuable manure results from having the stables badly placed. The four conditions requisite for success in handling dairy cows are succulent food, a comfortable place to live in, plenty of water and salt, and kindly care.

As I said near the beginning of my address, too many farmers are looking to the

cheese and market ends of the business for their profits instead of saving in the cost of production and in the by-products. If men will take care of the manure instead of letting it leach, it will mean practically one cow more on the acre of corn grown. Comfort, convenience and compactness, with every device for saving the manure should be considered.

Some farmers are becoming just a little bit disgusted with our glorious cheese trade. If I were living on a farm trying to make money by sending milk to a factory, I too would soon become convinced that milking cows was not a delightful occupation when my cows gave me back less than 3,000 lb. of milk from which I got less than $24 a year. If cheesemakers would give a little more attention to helping farmers to enlarge their capacity in these little things, they would not complain that the farmers were trying to get the last cent out of them. Farmers are finding it so hard to make ends meet and get cheese-making to pay, that they must try to get what they can from everyone. Cows should give 7,000 lb. of milk for a whole year. If you can show a farmer how to get 7,000 lb. of milk from his cow, which means $32 more per cow, he is not going to begrudge the maker $1.75 more for making the 700 lb. of cheese. The quarter of a cent per lb. extra would pay every factory owner so well that he could afford to paint the factory inside and out. I find that a great many men are trying to console themselves with the idea that they are doing a benevolent thing in keeping cows that give a small quantity of milk. I have heard men talk as though they were the neighborhood's benefactors—so kind, generous and charitable. They said in effect: "Because I send less milk it is therefore all the richer, and my neighbors get the advantage of that richness." This is one of those well gilded fallacies that people are only too willing to swallow in preference to the truth. The quality of a cow's milk as regards the solids, is nearly always controlled by its breeding, and the quantity and flavor of the milk by the feeding of the cow. If you can make a cow give you 30 or 50 lb. of milk per day, the larger quantity of milk has just as good and perhaps a better flavor. It would pay every patron of a cheeese factory to have a pass book or ruled sheet for each cow, where a record could be kept for every day in the week. An examination of that record once a day for a week would show what each cow was doing; the man who did that would be a benefactor to his neighborhood.

The home end of the business for cheesemakers is the next point. The important end of the cheesemaker's business is essentially his factory. Every cheesemaker knows in theory that no man can make fine cheese out of impure milk. Every cheesemaker accepts that as a part of his creed. A great many makers bend their energies mainly to scolding factory patrons for not sending pure milk. But they sometimes neglect to furnish a good example, and a good example goes a great way in influencing a neighborhood. Whenever I go to a cheese factory and find the weighing can to be just as bright as hot water and elbow grease can make it I see the milk cans on the waggons in the same condition. And when I find the cheese factory cans dirty, the patrons' are much the same. I have learned that it takes just half as much work to keep a can wholly clean as it does to keep it half clean. Many farmers do not strain their milk. Out of a number of farmers whose milk was recently examined 47 had sent an article which had never been hindered by passage through a strainer. If a man sends a can of unstrained milk the maker will soon remedy the matter if he will put a note in the can when it is returned, to this effect: "I am very sorry to see that some one forgot to strain your can of milk this morning." This note would not be kept on show as school boys keep their cards of honor—(laughter)—but it would have a good effect in the home end of the business. If this were done five-sixths of the off-flavored cheese would not be found.

A MEMBER.—What is the best article to strain through?

Prof. ROBERTSON.—I would prefer a wire strainer for the farmer, and a cloth one for the cheesemaker at the factory.

A MEMBER.—I prefer Canton flannel.

Prof. ROBERTSON.—I have found that where a cloth is used by the farmers, five-sixths of them do not smell sweet. And I would say further that the cheesemakers

must keep every article in the factory clean. A few years ago when I addressed gatherings of dairymen I used to speak of the fat globules, coagulation, casein, rennet and all that. But now, I deem it better to tell the cheesemakers that the main trouble with the Canadian cheese industry is that the factories are not kept quite clean enough. It is worth more to a cheesemaker to keep his factory clean every day than to be talking and studying about fat globules, etc. I do not believe that the factories are as clean now as they were when I made cheese twelve years ago. If cheesemakers will pay more attention to cleanliness, and finish the job right to the end by having neat looking boxes just the size to fit the cheese, and each with its exact weight stencilled upon it, and if they will persevere to the end and work in their own sphere, they need have no fear of the result.

A MEMBER.—How can we secure the kind of corn that will grow the greatest amount of stalk and leaves, and mature at the most favorable time?

Prof. ROBERTSON.—I consider the Thoroughbred White Flint the best.

A MEMBER.—Have you tried the Red Cob?

Prof. ROBERTSON.—Yes. I fear, however, that the Red Cob does not ripen early enough with us for filling the silo.

A MEMBER.—What variety has the most leaves?

Prof. ROBERTSON.—I believe all the large ensilage corns have broad long leaves in plenty.

Mr. WHITTON.—Have you ever tried mixing with native corn?

Prof. ROBERTSON.—Not with the same sowing. Why?

Mr. WHITTON.—I tried it this year and found good results from it. The Canadian corn matures earlier and helps the other varieties which are rather green and do not fully mature.

W. J. BISSELL.—We filled our silo with Canadian and Southern Sweet ensilage mixed together. We find more ears on our own common corn, but not so much stalks, and by mixing the two varieties together we get the very best results.

Prof. ROBERTSON.—The best varieties of corn for ensilage in Ontario are the largest growing sorts which grow to near maturity. One half the acreage should be planted with the large growing sorts, Thoroughbred White Flint, Mammoth Southern Sweet, Red Cob, Giant Prolific Ensilage, and the other half with an earlier ripening variety.

A MEMBER.—How far would you have the rows apart?

Prof. ROBERTSON.—I would have the rows at least three feet apart, and so as to have the stalks from four to eight inches in the row. I would harrow the corn just when it is coming through when the weeds are coming up. That would kill about one-fifth of the plants but you can spare that. If you can get corn to grow well the first four weeks it is in the ground it will take care of itself after that, in most seasons.

A MEMBER.—How do you harrow—across?

Prof. ROBERTSON.—Everyway. It does not matter.

A MEMBER.—Would you make every silo with perpendicular walls?

Prof. ROBERTSON.—So far we have made them perpendicular, and I would not approve of building them a little wider at the top. I cannot see where there is much loss in the perpendicular wall.

Mr. THOMPSON.—I read an article a short time ago which said that cotton seed meal fed to dairy stock improved the milk.

Prof. ROBERTSON.—In the case of some cows, extra rich feed like cotton seed meal or pease meal will make richer milk, but as a rule the breed has the greatest influence on the per cent. of solids. The feeding of cotton seed meal is a capital practice, if only to get the excellent manure, but I would not feed more than 1½ lb. per day.

A MEMBER.—Do you approve of any particular kind of grain for feed?

Prof. ROBERTSON.—For economy in Ontario forty lb. of ensilage, five lb. of hay or straw, four lb. of mixed barley and pease and two lb. of bran and one lb. of cotton seed meal is a reasonable daily allowance. The cheapest grain this season is the mixture of barley and pease. I would also advise early sowing of grain. We have had six plots sown in the spring, each one a week later than the other. The first and second sowing of barley gave at the rate of nearly sixteen bushels to the acre more than the third plot sown a week later. So those of you who keep cattle for profit should sow your grain early in the spring, and that means that your plow should be going steadily in the fall.

Mr. P. HINMAN.—We sowed our Red Cob corn perhaps a week earlier than usual in order to avoid frost. It ripened so thoroughly that for a week or two before we put it in the silo there was plenty to roast or send for canning. That sown later was not very good. It escaped the frost in the fall, but there appeered to be two or three weeks difference in the time of ripening although only about a weeks difference in the planting.

Prof. ROBERTSON.—We tried planting corn on successive dates, with a week apart and we found that the earliest sown gave us the best quality, but not the most in quantity on account of the frost. It is a good thing, however, to get a big root to the plant. I would prefer to sow half a bushel to the acre and harrow ; but if I did not harrow I would not use so much seed. The proper time for cutting is when the corn is glazing, or when the leaves are turning yellow. If every second stalk carries ears you have a good crop.

A MEMBER.—What size do you cut the corn ?

Prof. ROBERTSON.—I prefer an inch, but I have found that two inches will also do. The cattle will eat it.

Mr. H. BISSELL.—What about feeding the ensilage when there is a good deal of acid in it ? Is there any such thing as sweet ensilage ?

Prof. ROBERTSON.—When the corn is cut it should be left in the field two or three days, and then it will keep for two or three years. I have never seen ensilage entirely free from acid. It does not do for corn to be put in too green, or it will develop lactic acid or the acid of sour milk, which is very offensive.

Mr. ASHLEY.—Would you put water on it if too dry ? I did so this year.

Prof. ROBERTSON.—If the corn was too dry I would put water on it.

Mr. H. BISSELL.—The reason I asked if there was any such thing as sweet ensilage was because some people will smell the corn and say it is sour when there is nothing more than a brewery smell to it

Mr. KEELEY.—I filled my silo last year and followed the advice then given about feeding. I began feeding the cows in January, giving them a little ensilage only. At that time the animals were in good shape. They calved in February, but kept going down, although I also gave them all the hay, straw and roots they would eat. They got poorer and poorer, and I never had a thin cow before. But this year I had the same silo and the same ensilage, and I fed them all the corn they could eat. I went up to the silo one day and it fell in five or six inches. I felt like swearing—(laughter)—and had hard work to keep from falling a second time. But from that silo I have given my cows all they could eat—they will hardly eat anything else but ensilage now—and to-day I have the plumpest and thriftiest looking cows in the section, and have also sold my milk and butter for more than anyone else in the neighborhood. I have fed ensilage straight, and nothing but ensilage. My corn got the frost before I could cut it this year. We commenced to fill on the 16th of September and it got the frost, and I was afraid it was not going to be a good year. But to-day I am proud of the appearance of my cattle.

Mr. ASHLEY.—I had a case last year somewhat similar to Mr. Keeley's. I found that my cows would not eat the ensilage, which was a part of their allowance. I left the ensilage in the silo, and the cows are now eating it freely. That silo settled half way down, and was being continually filled up. It settled nearly to the ground in the corners, and this year while tramping it my man went down through a hole and I could

not account for that. The silo was sheeted inside and covered over with tarred paper and matched lumber and covered over with hot tar. I cannot account for its settling down so, and why the cows will eat this year when they would not do so last year.

Mr. CARLAW.—I was one of the first in the Peterborough district to try the silo. If the corn is well tramped in the silo it will remain sound. Mr. Ashley must have had a lazy man. (Laughter.) I get all the ears and all the stalks I can. I mix Crompton's Early and the Mammoth Southern Sweet or Red Cob. I have not raised more than fourteen tons to the acre of the varieties I have named, but I have had twenty tons per acre of other kinds, for instance, the Michigan Dent corn, which will grow eight feet high with many large leaves. We have been told at our conventions about cutting the corn one, two and three inches in length, but you cannot get the cutter to cut it three inches long with any degree of satisfaction, for the machine will be running idle half the time If you cut it five-eighths or three-fourths of an inch it will be more practical and profitable, as you can get a little more in. I believe that Prof. Robertson is the best posted man on this subject of dairying that can be found on the continent of America to-day. (Applause.) I used to be like other farmers, thinking that if I got 3,000 lbs. of milk from the cow that was all she could do for me, but since I have begun to feed the creature properly she has nearly doubled that quantity. But it will take starvation to drive the average man to do what he should in this matter. (Laughter.) We must look to an increased production of milk for our profits, for I do not think we will ever get twelve cents per pound for cheese again.

A MEMBER.—What breed of cow do you prefer?

Mr. CARLAW.—Would you have me pick a wife for you? (Laughter and applause.) Get the cow of your own choice if she will fill the bill—or the pail. It does not matter where she came from. I do not care whether she is called a common Canadian cow, a Jersey, an Ayrshire or a Holstein. You can get the common cow to do just about as well as any if you feed her properly. Do not get a grade of a thing there is nothing in. Nothing from nothing and nothing remains.

Mr. REDMOND.—Prof. Robertson has talked about the farmers and the cheesemakers, but he has not given us his opinion of the cheese-buyers. I hope he will speak to us about the buyers and the exporters. We have had some differences in the past with the cheese-trader, and it is to be hoped that the Professor will give his opinion on this subject.

The PRESIDENT.—Prof. Robertson will speak later on, and will doubtless touch upon the point suggested.

Mr. EVERTT.—I think the corn Mr. Carlaw spoke of is the same that I alluded to to-day. He calls it the Michigan Dent while I have known it as the Minnesota Dent. I would advise Canadian farmers to try that variety. It will mature well in the Brockville section, if sown early. It is very prolific of leaves and has a fine stalk.

Mr. CUMMING.—I suggest that Prof. Robertson speak a little further this afternoon. I imported a car load of Michigan Dent and sold it freely, and it has given great satisfaction. It had ears 14 inches long in some instances.

Mr. CARLAW.—That corn is grown in Minnesota and Nebraska, and if it stands the climate there it surely ought to do so here also.

Prof. ROBERTSON.—I have no reason to be afraid of saying to the cheese-buyers or salesmen here anything that I believe should be said about their end of the business. This business of cheese-buying and exporting involves the handling of a large amount of money, yet it stands peerless among the trades and callings of the country as to honesty. I do not find as much litigation in this calling as in others of like proportions. A law suit is a rarity, and that in a business of over $10,000,000 a year speaks well for the men engaged in it. (Applause.) I put this down first, that the buyer is not altogether a benevolent gentleman, but a man who wants to make a living and a *little* profit. When a cheese-buyer comes to a salesman it need not be expected that he is going to make a present of a half cent a pound to the other. If a man buys cheese for 10 cents he should

not expect to get 9½ cents worth of cheese with a few pounds per box thrown in. If he buys cheese for 10 cents he has no right to get the salesman to dock off weight so as to bring the price down to a fraction less. During the last year there has been a little too much of this, which is not altogether above board—in that one factory gets more than another factory and gives a pound or two a box of cheese extra that is never paid for. Something for something and never expecting anything for nothing is fair. The chairman in speaking this afternoon said he hoped I would say something on winter dairying. I believe that farmers all over the country should add to their cheese business by making fine butter. When I first advocated that a great many farmers said my remarks showed that I was hostile to the cheese trade. They argued that every gallon of milk that went to butter-making took so much away from the cheese factory. But this conception is no longer accepted. No business can expect to be maintained comfortably upon a loss in any branch of it. Why persist in having cows milked for just six months (the average cheese factory is going but five and a half months) when by having the cows milked for ten and a half months you can send as much milk to the cheese factory and have more profit all the year around, with an income for nearly every month? The man who will attempt this will have more cows, better fed, giving more milk for a longer period, and there will be an increase in the cow population of the country. It will mean a longer winter season of production and manufacture, which means more earning power. Better calves will also be raised, and the reproach will be taken away of "cheese-factory calves —mainly barrel, hair and legs." The winter calf will be stronger, and having more care will be fortified in youth. The stock will be increased by better cows grown from calves worth rearing. We have now a large trade in the exportation of cheese to other countries, and as the quality improves the consumption will increase. But those countries which buy cheese from us buy twice the value in butter from all countries that they do in cheese. We have here the best opportunities for making cheese in the summer time, but we cannot make the article to advantage in the winter time First of all we have cold weather. The milk is extra sweet and it is hard to get body in the goods. But we have the best climate for making fancy butter in the winter. We have cold weather for keeping cream sweet and for keeping butter unhurt by transportation. We ought, therefore, to follow out our natural adaptations, and manufacture butter in the winter season. Then we will find more profit in this dairy business; we will extend into more stock and raise steer calves. It has been said that a man cannot raise milking stock and also raise steers. But that is a mistake. No one man cares to milk more than twelve cows, but he can feed and milk easily ten cows and feed ten steers, and find profit in it. Winter butter-making will soon mean a footing in the English markets, and fresh-made butter there is worth 26 cents per lb. Danish butter was quoted in Liverpool last week for 133s. and American summer creamery at 45s. There was no fancy Canadian butter selling. A few years ago I sold Canadian butter with the bloom on it to take the place of Danish butter, and there was no limit as to price. We can get the same price for butter as the Danes do if we make it as good as they do, and there is twice as many dollars worth of butter imported into England as there is of cheese. It would give us more money, more profit, and more transportation business during winter. A doubt has been expressed as to whether we can establish this trade in England. It is hard to overcome prejudice and get rid of a bad name. Nearly one-fourth of our fancy cheese is still sold as English cheddar. It goes from here as Canadian cheese, but it is palmed off as English cheddar by the retailer over there. If this is the case after twenty-five years' experience with cheese what will it be with butter? It was asked at one of our conventions that the Government should undertake to make an appropriation of $5,000 for the purpose of introducing fresh-made butter into the British markets by small, regular shipments until the name of Canadian butter was established and the people would call for it. Nothing was done in the matter; but it is now under consideration how far the office of Dairy Commissioner can be be used in having experiments made in butter making as well as cheese making, and having that butter sent to England every week until we lead the farmers to see the benefits of producing good butter, and thus induce buyers to go forward shipments of our finest fresh-made butter to the Old Country. We hope to be able to demonstrate that farmers can get a large profit in sending cream

to the creameries during the winter, and also demonstrate that we can send to England as fine butter as she can get from any other country, while at the same time we hope to educate the English people to call for Canadian butter, furnished by men who have plenty of time in winter, and a good opportunity to handle the product to advantage. I trust this is something that will commend itself to all present. I am glad that we have here the Minister of Agriculture for the province—a gentleman who has at heart the interest of the farmers. We have also Mr. Thomas Ballantyne, who is the father of the cheese industry in this province, and we have the genial Gov. Hoard. Here is a triumvirate such as has never been presented to an audience of agriculturists before. (Applause.)

ENSILAGE FOR WINTER MILK.

Mr. Sydney Fisher, M. P. for Brome being called upon for an address, said: I had no idea in coming to Brockville on this occasion that I should be called upon to address you, and for two reasons. In the first place I understand that this is a meeting of cheesemakers, and as I am essentially a butter maker and really know nothing about the manufacture of cheese I do not believe I would be justified in asking your attention for any length of time. I may say, in the second place, that I came here to try and find out why the Brockville Cheese Board and the makers of this district have been able to distance us so much in the prices commanded by your cheese. We of the neighboring province have been looking for a long time with envy upon the success of the Ontario cheese makers. In years gone by our Eastern Townships butter led the other provinces and commanded the markets, but of late we find that Ontario butter has been pressing us, and we must bestir ourselves if we would keep ahead. Of late years, however, we have been turning our attention to cheese making, and are putting forth considerable effort to promote the industry. You need not fear our rivalry, however, for even if the other provinces make better cheese it will only put you upon your mettle to make a still better article. I have been very much interested in the remarks made upon the subject of ensilage. I have also been much interested in what has been said on winter dairying, for that has been my hobby for the last three or four years. I have had greater success than ever before by following out the plan outlined by Prof. Robertson. I have found that even during the summer I can produce fully as much milk from my cows, notwithstanding the fact that they are giving the extra milk in the winter. Or in other words, I do not believe the production of milk in winter is going to affect the yield of milk in the summer. This means that cows can be milked for ten months in the year as well as for six months. I got tired of having my cows doing nothing, and am now making a profit out of my winter milk while it does not interfere whatever with my summer supply. And this has been done by ensilage. I was convinced some years ago that this was the right system, but was frightened at the cost of the silo as then built. I have taken some credit to myself that I was the first man on the continent of America to make a wooden silo. (Applause.) There need be no fear at all of building a silo. It will enable you to feed your cows at a nominal cost, and you can raise your corn at very little more trouble than it gives you to raise grain. Prof, Robertson has given you a sketch of a silo. I have built several silos, and I can assure you that any farmer can build one only costing at the rate of 50 cents per ton capacity, that is to say a 100-ton silo can be built for $50. I am convinced that a 100-ton silo can be built in any neighborhood at an outside cost of $60 or $70 for the full cost of its construction I do not think, therefore, that there is anything to frighten farmers from entering upon this new system. We can feed more cows on the same extent of land, and therefore enter the industrial and commercial race with brighter prospects. We can make more butter at a time of year when the price is the highest for that article. I am very glad to be here to learn what I can from your methods, and find out what is the secret of the wonderful success which has attended the efforts of the cheese men of this Brockville district.

The convention then adjourned until 8 p. m.

FIRST DAY—EVENING SESSION.

A large audience, including many ladies, assembled at the Opera House at the evening session. President Warrington occupied the chair. The platform was occupied by prominent members of the Association and leading citizens of Brockville.

A WELCOME TO HON. MR. DRYDEN.

Mr. D. DERBYSHIRE, Mayor of Brockville, read the following address on behalf of the citizens of Brockville :

ADDRESS FROM THE CITIZENS.

Hon. JOHN DRYDEN, Minister of Agriculture,
Toronto, Ont.

MY DEAR SIR,—We are delighted to have you with us this evening, and extend to you a hearty welcome to our Island City and Eastern Ontario. We feel it a great honour to have you here to aid us in advancing one of the greatest industries of our country. You are now in Brockville, the county seat of the rich old agricultural counties of Leeds and Grenville, among the pioneers of the great dairy industry of this province, where the largest and by far the most important dairymen's board of trade in the Dominion is held, where some of the finest factories in the land are situated and a great many of the most energetic agriculturists of advanced thought live. I know, sir, that some of our Ontario Ministers think that if they visit the peninsular or western section they have seen the best of Ontario, but we are gratified that you have come to our eastern section, and I would say to you now, if you desire to be strong in the interests of agriculture, as I am sure you are, "Look well to the East." We feel proud of you that you belong to a Government that has ever had a fostering care over every interest pertaining to agriculture. I shall always remember Hon. A. M. Ross, then Commissioner of Agriculture, who so generously assisted this and kindred associations, farmers' institutes, our agricultural college and attended carefully to the wants of our agricultural community. But, we sir, expect greater things from you because this has been your life work. You have been specially trained for the very important position you have been called to fill ; you have always led in every branch of agriculture in your section ; you know our wants and failures in the past, and thus you will be able judiciously to apply the remedy. You represent the seven-tenths of our people upon whom the whole are dependeat. And, sir, we congratulate you on your clean record in parliament and every other public position you have been called upon to fill, on your legislative ability and also on your careful, consistent life. We feel proud of you as our special representative and trust you may long be spared to adorn the position which your high attainments so admirably qualify you to fill. Again, sir, I bid you welcome and extend to you the freedom of this our Island City.

D. DERBYSHIRE,
Mayor.

President Warrington then presented the honourable gentleman with the following :

ADDRESS FROM THE ASSOCIATION.

HON. JOHN DRYDEN,—On behalf of the Dairymen's Association of Eastern Ontario, I have pleasure in welcoming you here to-night and of thanking you for your sacrifice of time and the annoyance and trouble of a railway journey to honour us with your presence this evening.

On behalf of the Association I also compliment you on being called upon to fill that most important position, viz.: Minister of Agriculture for the Province of Ontario. You prove, sir, by the inconvenience you have put yourself to to be present with us this evening that you have the interests of the dairy industry at heart and I trust that this visit to Brockville will show you the great work that is being done by this Association to maintain and increase that high character we hold to-day, as manufactures of the finest cheese, on the average, made anywhere in the world, and I trust that the endeavors of the Association will meet with your approval and approbation, and once more on behalf of the Association I bid you a hundred thousand welcomes.

J. T. WARRINGTON,
President.

THE MINISTER OF AGRICULTURE'S REPLY.

Hon. Mr. DRYDEN, in coming forward, was received with hearty applause. He said :

MR. MAYOR, MR. PRESIDENT, LADIES AND GENTLEMEN,—While I listened to the mayor reading his address I began to think that possibly I was mistaken after all, and that it was intended for some other gentleman. I must confess that I did not quite recognise the description which in his address he was giving of myself. However, when I got a look at his kindly eye (he can look pretty sharp, too, when he likes), and found that it was really intended for me, I must say from the bottom of my heart I feel like thanking those whom he represented in his address. I am glad to be permitted to visit the town of Brockville. I am glad to be present and meet with the members of this Convention. I meet with a Dairymen's Convention for the first time in my life, and that means, as you all understand, that I am not a dairyman myself. If my other half, I should say my better half, were here, I could introduce to you the "dairyman" of our family, and she is a good one. When I go home the butter tastes all the sweeter and all the better because I think that possibly she had a hand in it. But while not present at your meetings, and while I have not been considered a dairyman myself, I have always taken a deep interest in what you have been doing as an Association. I have watched the efforts which have been put forth by our dairymen in this country. I have also observed how you have increased the dairy products in this country to the immense proportions which it has to-day. I have also observed how the quality of the product has been so much improved, until now my friend, the President, has been telling us that you manufacture the best cheese in the world. Now, I believe that I am not saying too much when I say that every loyal Canadian in this country is proud of the result of the efforts which have been put forth by this Association, and Mr. Fisher will pardon me for saying that this afternoon, while I listened to his address in the other building, that a feeling of pride spread over me as I heard him say that he had come up to this province to learn how it was that our cheese was so much better than that made in the lower province. He says he came up here to learn. I hope that you will endeavor to help him, because you will be only caring for your own interests in doing so. I hold that if they are not putting as good products on the market as you are, they are injuring your trade ; they are injuring you because their product does not come up to the product which you yourselves export. A man thinks he has does a smart thing, possibly, when he has palmed off a thousand boxes of cheese which is inferior and gets nearly as good a price as you do for a superior quality. I say he has done a mean thing. He has injured himself in putting that inferior quality of product on the market. He has injured his country as well. He has injured the reputation of his country. If you ship cheese after such a man has preceded you, your would be customer looks at your article and says: "There is a Canadian brand upon it ; that came from Canada. I had some from Canada once and I don't want any more of it. It is an inferior quality, and I desire you to understand that lightning does not strike more than once in the same place." (Laughter and applause.) I wish that I could influence our farmers all over the country that in the product of their farms they would seek to produce a better quality of whatever article they are sending forward to market. It is just as true of every article as it is of cheese. The fact is, what we want to do as farmers is to increase the quality of every article which we produce. Of what advantage is it to me if I am able to produce six or seven hundred bushels of wheat of a very superior quality and put it on the market. I may get a little more than my neighbors. It is put into an elevator and mixed up with other inferior wheat, and the result is that my wheat is to be sold on the average quality of the general product, and therefore it comes to pass that I loose what I ought to gain in that better product. A gentleman told me when he was buying some sheep from me once, "I could give you a good deal more if I were buying a thousand of the same quality, but have to sell your sheep according to the average of the lot." Now, if you can put good beef upon the market you are creating a demand for your product which you would not be able to do otherwise. One of the farm delegates while he was up in the North-west

was relating to me a good deal of his experience. He was like other Englishmen, very fond of beef, and there being steak on the bill of fare, he thought he would try a bit of this beefsteak which was not broiled but fried—and it was fried pretty hard. He got it upon his plate and he used to the very best advantage possible the knife and fork which they had given him, but he could not make any impression on it. He turned it over and tried on the other side, but without any effect. So he called the waiter and asked him "Do your people of this country grade the beef just as they grade the wheat?" "I don't know what you mean," said the waiter. "Well, I mean what I say; do you grade the beef as you do the wheat? If you do I would grade this beef as No. 1 hard. (Laughter.) Now a good deal of No. 1 hard has been put upon the market, and so it goes in reference to all the other articles. I am very fond of a little roast lamb; I like it perhaps better than anything else, and sometimes I screw up my courage sufficient when I am at the dinner table in a hotel, to ask for a piece of this roast lamb. But it turns out to be what I call a ten year old lamb. It is like the chickens. All hens are called chickens, but old hens are generally called spring chickens, the older they get the younger they become. I don't like this sort of thing. I don't know whether it is the butcher or whether it is the landlord that has defrauded me. The fact of it is, I quit calling for mutton. It means that just so much less is consumed. That touches me and you as the producers. Sell to one of your prominent townsmen some of your inferior butter, and I ask you how long will it last. It will last a long time, but if you replace it now with a choice sweet article, then what is the result? Every one wants to eat it, and the result is that the head of the house has to warn the members of his home not to take so much of this butter. Now, it is hard on the consumer, but it is good for the producer. So I say, that if you want to you can create a demand for your own article by putting upon the market a really good quality of that article.

When I was coming here to-day I happened to bring with me one of the reports relating to agriculture in Great Britain, and I observed from this report, that the consumption per head, in Great Britain, of cheese and butter imported is on the increase. Twenty-five years ago the amount per head, which was consumed of butter products, was about four pounds, now it has increased, until in 1889 it was more than double, being 9.04 per head. The cheese consumption has also increased from 2.09 to 5.06 pounds per head, but the truth of it is that within the last five years there has been no increase in the cheese, while there has been a considerable increase in the butter. The inference, I say, is this, that outside Great Britain there are some countries producing butter good enough to create a demand in Great Britain for that butter, whereas the cheese is not being improved in the same proportion. Now, where does this butter come from? I don't think very much of it comes from Canada. I think if you will study it out that you will find that much of it comes from the state of Denmark. Until now I am told that in England parties are inquiring for and demand the Danish butter, no matter what the price is. It is perfectly true that in England and in London, there are those who demand a better quality and they must have it, and I think what we ought to do is to seek, by some possible means, to produce this better quality and so fill this demand. Now how shall this be done? I say it must be done by continuing the process of instruction and education which have been given by this Association in the years of the past, I hope you will not cease. It will take the coming years to educate all the farmers. We cannot see the result of it just yet, but we will see more and more of it as the years go on. Now, I am not one of those who think that governments can use legislation so as to make the people rich. That is not true. But governments can do a great deal in helping the people, and one of the means which they can use is to endeavor to educate them. I am happy to say, however, that the Government of which I have the honor to be a member, will always assist you in this direction. I have, myself, been considering what means we may be able to use in order to do this better than we have ever done in the past. (Applause). We must not stop, we must go forward. We have to enter into competition with all other countries. We must educate the people. I am seeking to do this from my Department and in order to do this, I have coupled myself with the farmers' institutes of this country, and if there are any of you here who are not interested in

institute work, I beg that you will interest yourself now. I am asking the secretaries of these institutes to send in their names and addresses of all their members, and then I propose that the members of these institutes will have the benefits of all the bulletins and other papers I can lay my hands on. It means some work, but I have just this to say, Mr. President, I believe the Government owes the farmer something in this regard. The Mayor, I think, in his address referred to the fact that I represented in my Department seven-tenths of the people. And I submit that this seven-tenths of the people are at the very foundation of the prosperity of this country. Some of the farmers are beginning to get discouraged. They say it is terribly hard times, everything is looking very blue, and wish they could get into some other business. They cannot carry on any other business successfully in this country if you and I don't prosper, and therefore I say that the Goverment of this country owes something to that seven-tenths of the population which I represent.

You have been good enough, Mr. Mayor, to refer in your address to the fact that some of the Cabinet Ministers think that when they have visited the west they have seen the best of this country. I desire to say in reply that with your humble servant, sir, there is no east or west to this country. I mean to say that my sympathies go out to all the farmers and to all the dairymen, I don't care whether they live in the east or in the west and I am prepared to say that I am bound to treat you all just exactly in the same way. It is just the same when we get down to Quebec. I like the idea of understanding that I am a Canadian. I was born in this country, and I expect to die here. I was born a farmer's son, and I am therefore always proud to represent them and to lay claim to the position of a farmer no matter where I am. Now I say I believe in agriculture for this country. We have not a poor country as some of you seem to think. If you will go to Great Britain you will find that there they have depression. I have seen men there who have lost thousands of pounds in this pursuit, but right alongside of them I have seen men gaining instead of losing. How does that come to pass? They have been willing to adopt some new plan which they have seen will be greatly to their advantage. When a man has got to that pitch that he thinks he knows everything about it I think he has begun to go down. The farmers who hang around the bar-rooms belong to the class of people who have learned all there is to know about their business. They say, "What is the use of me going to their meetings, I am living on the farm my father used to work and I am following in his tracks." Now when you get a man like that you have got a man who sooner or later must go down. He cannot keep up with those anxious to learn. Now, Mr. President, you will observe that my voice is getting husky, and I will only say that I am extremely obliged to you for your kind words. I have made many acquaintances in your town; I have met men whom I wanted to see and I hope to be better acquainted. If you have any suggestions to make I hope you will not be slow to give them. I look to you as helpers in this work. I know that so far as this Association is concerned I shall have your hearty co-operation. Give me this and your sympathy and I will always try and keep this country to the front, as it has been in the past. (Applause.)

MIND AND MUSCLE ON THE FARM.

Prof. ROBERTSON began his address by some complimentary references to Brockville and its enterprising cheese buyers, and expressed his regret at the absence of Prof. Saunders, of the Central Experimental Farm, who was to have addressed the meeting, but who was detained by the death of a friend, after which he proceeded to make the following remarks: The farmers of Canada need to do more thinking instead of more laboring with their hands. The experimental stations of this country are intended to aid in the enlargment of thought, and to stimulate activity in head work among farmers. Somebody's clear thinking must precede and underlie every rational action that makes for the mitigation of toil and the increase of profit. Farmers spend too little time in practical thought. Men in other callings sit down to think out the questions pertaining to

their business, but the farmer is often too tired to think on purpose to plan. Every farmer should think out the problems he has to face, and having solved them mentally he should proceed to carry his plans into practice. Too many farmers are content to get their living in a dreary, humdrum way, without a single aspiration more than to have a bare living and two ounces of tobacco a week. (Laughter.) If each would try to be the leading farmer of his locality, profits would come more certainly and easier than if there be only the desire to be merely a sort of higher animal that eats and sleeps comfortably. I was pleased to hear the Minister of Agriculture say that governments cannot legislate good times for the farmers; and governments cannot legislate bad times for the agriculturists. If a man depends upon himself he can make good times come, but if he looks off to the far hills and lets his muscles and brains become numb, he will never amount to anything. Personal ambition is a good thing in a farmer, and so is persistence. Now, farmers often cannot make ends meet, because they lack the element we call persistence. Let me give an illustration. In one part of the Dominion recently visited, I found that the roofs of houses still wore brackets used twenty years ago when the shingles were put on. There were barns grown old where the doors had not been hung. Most things were left half finished, and the people wondered why the good Lord did not smile upon them. They were complaining of hard times and moving away, yet that section is in my opinion blessed with good land and a fine climate. But the people lacked persistence, reliance, aspiration and clear thinking. A farmer's occupation demands peculiar powers and special training. Men who live in cities or towns have only one trade or business or profession, but the man who lives on the farm has to follow a three-fold occupation. He must be a good tradesman and understand the use of tools; he must be a good business man to know when to buy and sell, and he must be a professional man to plan how and when and what to sow in order to get a profit from his work. He must be fitted for his calling if success is to follow. Farming with everybody but Scotch people is to make money; the sole object with Scotch people is to set a good example. (Laughter.) I will not speak to you about the advantage of knowing how to handle tools, etc., any more than to suggest its importance. You all know that in a neighborhood where plowing matches are held annually the crops grow the better. And the boy who excels in plowing usually becomes fond of other farm work. Where land is plowed uniformly the crop has a better chance in the seed bed, and so it pays to encourage good plowing. It is not necessary to dwell upon the business aspect of a farmer's life. It is too generally the case that the farmer does all the business of the family, even after his boys are grown up. The young men have no experience in marketing until they are thrust out at say twenty-five years of age to do for themselves with the experience of a lad of ten. Let the boy take a load of grain to market, and even if he loses a little at first it will not be a great amount, and he will be gaining a valuable experience which will be a most useful part of his education. The farmer should thoroughly understand his business. The man who knows why he drives a spade into the ground will do better work because of that knowledge. If he does not know why he should drain his land he will have failure. Speak to some farmers about their place in society, and they will hardly ever assert themselves as having influence or dominion. But if a man can govern plant and animal life for good he will likely be able also to influence his fellows in the higher activities of life. Many a man is lost because he would not think for himself, but delegated that to others. When a man begins to think, and says "I want to know," he is asserting his manhood, and that one thing distinguishes the man from the hind. A man in those counties where agriculture is behind is called a hind, a grade between a man and a lower animal. But as the tiller of the soil thinks, he assumes, or rather resumes, the birthright of prosperous manhood. In this country we have a capital illustration of this. First we had the deep and almost impenetrable forest, and the farmer was a devastator. Those magnificient monarchs of the woods fell before the strokes of his axe and the bush became a ruin. While the work was destructive there was not much thought or skill required. But when man began to put new plants in the place of those cut down, he began to need the helpful guidance of clear thinking. Then came the construction of roads, the erection of bridges and the building of houses and general development. For that kind of constructive work, that work which emulates creation, a man must have some thought and bring his own hands to his own work. The farmers were at first

getting big crops off virgin fields, but after a time the fields became poor and the crops would not yield enough, and men needed new instruction in order to make the earth give forth a fresh increase. Farmers need to rescue their calling from a condition of decay. No sudden calamity or disease is going to strike us; but agriculture has been suffering from slow decay. Farmers must recover themselves, and that improvement must come through the mind. Many farmers have had a prejudice against education, but I am happy to know that it is no longer needed to plead with them as to the value of an education, for they now say that their boys must not start where they began. The old misconception was that education would hinder a man, but now these old prejudices are being uprooted and it is seen that education helps to fit a man to bring things to pass, whether it be in the office or on the farm. A man should live on a farm to make things give out an an increase just because he is there. A few farmers still belittle education because it makes a man stuck up. They say "Oh he is a fiddling scientist, but there is nothing in him." When you find a man who loads up knowledge to put it upon his back and carry it around with him for display, you will find him a very tiresome person. (Laughter.) But if you find a man who gets knowledge only to use it and keep it under his feet he is deserving of and will receive respect. I want to say to the young man here that knowledge is power to a man just as fuel is power to an engine. You may have a big engine, magnificently prepared by the skill of the ablest mechanics, but if there is no fuel in the furnace box there will be no power. The boy who goes through life and gets no instruction about his own calling is just as magnificently constructed, but he has no power because he has not possessed himself of the energy of knowledge. Get knowledge, not to carry it about, but to make men better, more useful and more comfortable because of your having it.

Now just a few words about the present needs and how they can be met. The Government of Ontario has authorised the introduction into the public schools of a text book on agriculture. That I consider one of the greatest strides in the right direction ever made by the Government. It is a book costing only 40 cents, but it is a compendium of agricultural information, the equal of which has not before been printed. The boys of this province will be all the better for reading this book; they will farm better because of its help. I hope every Board of School Trustees will insist upon having it put into their school, for the good of the little boys, the bigger boys and the old boys. I do not know a better way of spending 40 cents than by buying that book, and I have no royalty on it. (Laughter.) Then there is the agricultural press, but with our 200,000 farmers there is a circulation of only 20,000, or about one in every ten homes—a bad state of things. Man's mind needs food, but that brain food should no more be borrowed than his breakfast should be. Such a breakfast would not taste very good. Do not borrow your agricultural paper; pay for it. We have also our Farmers' Institutes, the existence of which has done more than anything else in the past ten years to stimulate better farming. Then we have our Dairy and Creamery Conventions, and last of all our Experimental Stations, to send the kindly light of information into the poor homes, as well as into the homes of the wealthy and enterprising. At Guelph the Ontario Government has had an experiment station for sixteen years, and it has rendered good service to the province. The Dominion Experiment Stations are to-day doing equally good work for all the provinces. In connection with this system there are a number of pupils who do not live at its centres, whom we may call non-resident pupils. They are expected to do all they can to assist in the work of the Department. They are the farmers of Canada, and it is inspiration to a man to think that 3,000,000 non-resident pupils are looking to him to play the part of one giving them helpful knowledge. The farmers are said to be seven-tenths of the people, and if you can get them to have confidence in and co-operate with each other in their study and work, you will have them bound together in a nationality which will make them strong and great. Individually, alone, each farmer cannot do much. I have watched a boy blowing soap bubbles and floating them into the air—such little things—glistening, sparkling. There was so little water that when one burst I could not see it. I began to wonder what a soap bubble would look like if it were as large as a waggon wheel. Perhaps I could then see some of those wonderful molecules. But Tyndall says that if a

bubble were magnified to the size of the earth those molecules might be seen about the size of No. 6 shot. Taken singly and alone, these infinitesimally wee units of matter cannot do much. Let us see an evidence of their power in united action. A quart of water—all made up of these inconceivably little molecules—is put into a strong iron vessel, which it quite fills. The sides of the receptacle are as thick and strong as the acquired experience of centuries of metal working can make them. The small opening is securely closed. The water is made to freeze. These little molecules seem to turn a little, and, when shoulder, to shoulder they all push together for more room for themselves, the strong vessel is burst like an egg shell. Let farmers co-operate for ends that are just and objects that are for the common good, and nothing can hinder their success. Education in concerted action is their great need ; not for coercive application, but for mutual help in bettering their avocation, their circumstances and themselves.

The speaker then went on to describe the work of the experiment stations conducted by the Dominion Government, painting in beautiful language some of the charming scenery in the provinces east and west, and concluded in the following words : We have in this country every natural resource that the heart of man can desire, and to realise upon their power of service for our national development we have only to put our skill into practice. I trust that all the educational helps to agriculture mentioned this evening may have plentiful fruitage, and such gatherings as this will not be in vain. May we all with one united effort try to make this Canada of ours prosperous, that our land may be filled with happy homes, kindly hearts and a strong manhood.

MENTAL CULTURE AND AGRICULTURE.

Mr. Sydney Fisher, M.P. for Brome, after a complimentary allusion to the eloquence of the previous speaker, said : Our friend, the Hon. Minister of Agriculture, has told you that I came up here from Quebec for instruction. I have indeed come here for agricultural education, and so far as I have seen of it this Dairymen's Convention is a very good school to come to. It has been my good fortune to listen on several occasions to some of the gentlemen who have spoken to you, but never to greater profit than during the present Convention. I have said to the educationists of my province some things which I would not undertake to say to the educationists of the province of Ontario, and above all in the absence of my friend Hon. G. W. Ross, your Minister of Education, who has so much at heart your educational system and who is so justly proud of it. I fear that the educational system of our country has tended to lead our youth away from the farm, and I believe this is a reproach which should cease in the future. It has been a national misfortune that so strong a tendency toward city life on the part of our rural youth has prevailed of late. The whole trend of our schools has been to turn our boys away from agriculture rather than towards it. I speak more especially of those young men who are a little more ambitious than their fellows. They have had some success at primary schools, then at the academies and finally at the universities ; and the tendency of all they have learned at these institutions is to crowd them into the professions. There is too much competition already in the commercial and professional world, but the great lands of our country are crying out for men to fill them. Our Governments are trying to bring men from the crowded centres of Europe to come and work our soil. We do not want immigrants to our cities, but farmers with capital. Still the whole educational system of our country has been tending to drive our young men from the country to the cities. But I am glad to say that a successful attempt has been made to change this condition of affairs, and all honor should be given to your educational system here for that improvement. You are the first in the Dominion of Canada to put into the hands of the youth of the country such a work as Prof. Robertson has described this evening. I, too can say, as the previous speaker has said, that the putting of that work into the common schools of the province is one of the best things that has been done in the Dominion of Canada for years. It used to be thought that only the stupid boys should remain on the farm, and that the bright lads should go to the cities. Our clever young men have left the farms and gone into the cities because they wanted to attain high positions and be among the first in the land. Heretofore we have been disposed to look with envy upon

the men whose hands were driving quills, and who were able from one year's end to the other to drive around the city wearing tall hats. But these are not the men who have developed the country. It is the men who have been 70 per cent. of the people; the men who consume the greater part of the imports of this country—the men who till the soil. And I am glad to know that while in the past the other callings have had the main credit the people of the country are now beginning to honor the farmers. There is Gov. Hoard, essentially a farmer, a man who has arrived at his present high position by force of his ability. We have with us to night also Mr. Thomas Ballantyne, a gentleman who has occupied for a long time an honored place among the people of Ontario. And the farmers should be proud of the fact that they have so fitting a representative in the Cabinet as the Hon. Mr. Dryden. When I came to man's estate seventeen years ago I bought a farm, and have been learning all that I could about agriculture, but I have much to learn yet, and have come here to gain knowledge. There is no calling, not even medicine or the law, where there is more scope for the exercise of a liberal education than in agriculture. Farming is yet to hold a higher position. There are new conditions and circumstances arising, which demand changes in the business. There was a time when we had a virgin soil, but we have abused the land and it has become exhausted. In consequence of that exhaustion we must apply the best intelligence for the recuperation of the soil so as to be able to compete with other lands. Our forefathers were able to scratch the land and produce abundance, but we have to try many means in order to get an increase. We have the competition of the whole world, owing to new modes of transportation. India, Australia, and Asia are seeking wider fields for disposing of their produce. We may not be able to control prices, but we can apply ourselves to the best methods of production, to lessening the cost of that production and so meet competition with better prospects of success. Such meetings as we are now having are the best means of education along the lines I have referred to. I am able to come here and get the benefit of the labor and knowledge and experiments of the more intelligent men who practice agriculture. You can also go to the gatherings in the west, and you have here some representatives from that quarter. The effect of such meetings as these, with their eminently practical discussions, is to improve the general make of our cheese product, so that when once the article is known to come from Canada it will not be necessary for it to pass any further examination but it will be taken simply upon the fact that it has come from this country. Canada to-day occupies the very highest position as a manufacturer of cheese. Our professional men have not been able to put Canada in the van, but our cheesemakers have placed us in the very forefront. I trust that when I go home I will be able to give such a report of this meeting as will encourage my neighbours to imitate the good work you have done here. What I have learned to-day has amply repaid me for my trip here.

After the passing of votes of thanks to all who had assisted in the evening's proceedings the convention adjourned until the following morning.

SECOND DAY—MORNING SESSION.

After bringing the meeting to order the President said: I have great pleasure in calling upon Gov. Hoard to address us this morning. He was to have spoken yesterday, but felt indisposed owing to not being in good health and having taken a long journey.

WINTER CARE OF COWS AND BREEDING.

Gov. Hoard, who was apparently in far from robust health, was most cordially received, and spoke as follows: I am a good deal this morning like Jimmy McGinnis's musket. He was a fellow soldier of mine, and one day he started off to do a little bit of skirmishing with an old-fashioned cartridge. Some of the boys had played a trick

upon Jimmy by doctoring his cartridges—the contents being half salt and half powder, and Jimmy declared that whenever the gun went off "it had a quare way of expressin' itself. Troth, and it sounded to me as if it was troubled with bronchatis." (Laughter.) That is how I feel to-day, having been taken with a severe attack of la grippe last December, and it has settled in my throat. You will excuse me, therefore, if I do not do justice to my subject. I will take for my topic this morning the winter care of cows. I find, particularly in the old dairy districts of New York and Canada, a great degree of indifference on the part of the average farmer concerning the winter care of his dairy stock. There seems to be an idea prevalent amongst cow owners that almost any kind of usage will do. For instance, I was attending a dairy convention in New York State on the 15th of December. In riding through one of the counties I passed hundreds of dairy farms and saw cows wandering in the fields while the thermometer was down to zero. I saw them turned out at nine o'clock in the morning, and kept out until four o'clock in the afternoon. And that appeared to be the general custom with those farmers. In asking some of them afterwards why they handled their cattle in this way, they told me it was because they wanted to give them exercise, and that the cows needed exercise. I asked them if they had ever summed up the cost of trying to warm a forty acre field in the winter time with good food, and they said they never had. I asked them if they had really determined whether they had learned the temperature of that field, and they said they never had. I asked them if they had investigated the temperature of the cows, and they said they never had. Here were old farmers, who for years had been grumbling about the hard times, and swearing that the west had cleaned them out, and I said to them: "You can go into Jefferson county, Wisconsin, twenty years old, and I dare you to find such an example as you are setting, turning a cow out on a cold winter's day and leaving her to wander over the dreary fields." Some men never realise that it takes more food to keep their cows if they are to be exposed to the cold. There is not a dairyman here present but knows that a cow well wintered is considerably increased in her productive powers in the summer. The dairymen of this section are largely engaged in the production of summer milk, but not one in a hundred is handling winter milk. Your cow is a boarder in the winter. Now, condition is a very important matter in the case of a cow. The dairy cow is a working machine, and if you are to have a well-ordered machine for next summer's work you must winter her honestly. We are making merchandise of that cow's maternity, but do we treat her from the standpoint of a mother? No, we treat her as a bullock. We are dealing with the maternal functions, and yet we are perfectly indifferent to the laws which govern a female. My wife, who is the mother of three boys, has been to me a potent agent in the study of this question. And I would say if you want to know how to treat a cow you must first study how to treat a woman. First study the human mother, and when you have got at the laws which govern her in the exercise of her maternity you have also arrived at the laws which govern the bovine mother. My wife gave me my first lesson regarding these laws of motherhood. One day we were driving a long distance, and she had an infant in her arms, when she complained of feeling cold, and said that it was too bad, as the baby would have to suffer from her chill. I asked her how that could be, and she said "Why it means less milk for baby." I then enquired if chilling had the effect of lessening the secretion of milk, and she said I was a very stupid man if I did not know that much. (Laughter.) And instantly my mind reached out to thousands of dairy farmers who never had dreamed of it any more than I had. That woman taught me there a very important lesson. She taught me that cold invariably caused a shrinking or weakening of the lacteal functions of the mother. That led me twenty-three years ago to my first investigation concerning the use of warm water. I said then to my wife, "What will you do to regain your wonted powers as a mother?" She replied, "When I get home I will take some warm drink. I shall endeavor by the use of heat and a little gentle stimulant to recover my lost power and have milk for my child." That showed me a principle upon which every keeper of the bovine mother could proceed, and led me to the use of warm water. I think I was the first to recommend the use of warm water for dairy stock in the winter. I plumed myself upon the idea that I had discovered something big, but every old woman in the land knew it long before I did. And yet we

stupid men go along with an idea of handling this bovine mother against our interests, while our own wives teach us something better every day in the week. This question of handling dairy cattle is a very close one and demands particular attention. Now, suppose you divide your duty as a dairyman. First you ought to be a good breeder. The day has come when every dairyman must go down who does not address himself to this question of keeping a better cow. Competition is crowding men to the wall. I have just been reading Gen. Booth's "In Darkest England," and it is an awful picture of human competition—of competition in flesh and blood. Human competition is crowding us also. You will have to make butter and cheese at lower prices than in the past. You must not flatter yourselves that you will get old fashioned prices, for they will never return again. If the farmer would get that cursed idea out of his head that he is a producer, and realise that he is a manufacturer; that there is no such thing as raw material with him; that the pound of wool is his manufactured product; that the load of cordwood is his manufactured product; that the pound of beef, or milk, or cheese, or butter is his manufactured product;—if he would then apply himself to the finer problems and economies which bring money, as studied by other manufacturers, he would soon rise to the dignity of his noble profession, and more practical results would attend his labors. Why do the farmers not more closely study the economy of a good cow? The actual record of Canada indicts the intelligence of its dairymen. It is a square indictment. And it is so in Wisconsin and in New York state. Here are men doing business with cows which barely pay for their feed. Your average production of milk in this province is only about 3,000 lb a year, and I heard Mr. Ballantyne say that he has a heifer that gave him last year, with her first calf, over 5,000 lb. Dairying cannot be prosperous unless you start with the idea that the farmer must become a breeder, and have a proper ideal of a good cow. You will have to stop this senseless and wicked principle of putting a premium on dishonesty. I tell you that when you have taken in milk by the pound, and have allowed a man, who would cheat, or had a cheating cow, to get as much for his milk as the man who dealt with you honestly you put a premium on that unfair dealing. Human nature in Canada, as is the case of Wisconsin, is dangerously weak. (Laughter.) I had a test in our factory recently. I did not let any man know who his neighbour was. I went to No. 8 and said "There is No. 11, whose milk is worth five lb. to the hundred, and yours is worth only three. Do you think you should have as much dividend out of this factory as that man who gives two lb. a hundred more?" He said, "I don't think the test is right." "Well," I replied, "here is the test of every patron in the factory; the test is by the churn, and the churn is two pounds ahead." And some of you have been paying a premium to a man who was breeding a cow that was no better than a pump. (Laughter.) You are putting a premium upon the dishonesty of your people.

A VOICE.—Yes.

GOV. HOARD.—Well, there is one Lot in Sodom. (Laughter.) It goes hard with Sodom. (Renewed laughter.) This premium business is well illustrated by the remark of an old German who lived near where I once resided, and he was a genuine old Dutch philosopher. One day I saw him leading a two-year-old heifer back from the fair. I asked him if he got a premium. He looked black and said: "You know what I tinks? Vell, I tinks dhis: If a man has the bestest heifer and go to der gounty fair, if he don't got a goot head he don't got a bremium." (Laughter.) He found out that a good head counted for something. People are seeing that quantity, not quality, is established as the rule, and they are making their fortunes at the expense of the man who gives quality in his milk. This principle has demoralised the business and impaired the moral sense of the people. The first thing to do is to teach the farmer that he needs to become a breeder of a dairy cow; that he can produce a cow to his own liking, and that his cow must be a cow that gives milk blest of God and not of the pump. (Laughter and applause.) Why cannot we forecast this question? Why cannot we exercise the brains of intelligent men, and, foreseeing the evil, escape it? We must produce milk more cheaply, and how can we do it? If we have formed erroneous opinions of the economics of a cow we shall be punished by these opinions. If we have deluded ourselves with the notion that there is

no waste in having a cow that weighs 1,500 doing the same business as a cow that weighs 900 or 1,000 lb. there is no help for us. You cannot keep a 1,500 cow on the same food as a cow that weighs only 900. It may be said that one man who weighs only 100 lb. eats more than another who weighs 200, but that is no answer. We must divide this question of the food of support from the food of production. The food of support is that which goes to support the carcass, and it certainly costs less to feed a cow weighing 900 than one that weighs 1,500, for what the larger animal must eat to support its greater weight the smaller cow can turn into milk. This one fact is an important point. I have been an auctioneer, and have sold herds of cows, and have seen farmers pay more for a beefy animal but not much cow than for one all cow from horns to heels—yes, sometimes twice as much. Now, how are we to reach such farmers? Over in Wisconsin we are trying to make each factory a centre of dairy knowledge. We are going to make them schools, from which information will be issued to a degree never before practiced by us. And if we do not do something of that kind the farmer must succumb. You may put your hands into your virtuous cheap factory pockets, but as sure as there is a God in Heaven your breath will be taken away. Competition is crowding us from every quarter and cheaper food means inevitable progress and influence. If we are to make any profit on our butter next year, it must be by decreasing the cost of its production. Let me suppose that I have two cows in my barnyard, each one giving 3,000 lb. of milk. I cannot support the carcass of these cows for less than $22 a year. Here is $44 for the support of these two cows, and they give me 6,000 lb. of milk. But I have another cow that gives me 6,000 lb. of milk. I support her carcass for $22, or half as much for her 6,000 lb. of milk as it costs to sustain the other two cows, yielding between them the same quantity of milk. Why has not a conviction gone abroad to reduce the number of cows and increase the production? One man asked me the other day, "Where in Heaven will we land when all the cows produce 300 lb. of butter? There will be so much butter that no man will be able to stand up. The country will be fairly slippery with it. What will you do!" I said, "My man, when you have a 300 lb. butter cow, she does the same business as two 150 lb. cows, and you are doing the same amount of business at half the cost." We must push this question and let farmers see the benefit of breeding a dairy cow, and getting the same quantity of milk from one-half the number of machines. The two cows that give me 6,000 lb. of milk cost for support, $44. What did milk average for cheese-making last year.

A VOICE.—About 70 cents.

GOV. HOARD.—Well, that is only $21 per cow. Now, I cannot even support a cow for a year short of $22, and yet the value of your average production is only $21. Now supposing again I had a cow that gave me 6,000 lb. of milk. The average cost would then be how much? The same for supporting the carcass. She might take an increased amount of food but she would return it to me in milk and not in mere existence. There is a heap of difference, as the Arkansas man said, in forty acres of sky and the same amount of solid land. (Laughter.) We have a lot of men on the other side who are clamoring against the tariff, and the railways and the trusts and keeping 3,000 lb. cows. And they are taking it out in clamoring.

One more point. We must learn how to breed a good cow. What constitutes a first-class cow? We must get the idea out of our heads that there is a cheese cow and a butter cow and a dairy cow. Well, there is a very profitable cheese cow, and if you can only rob your neighbours you will get rich on it. You may have a good cheese cow if every other patron has a good butter cow. (Laughter and applause.) Then comes the question of handling. In nine out of ten of our stables the manure freezes in winter. I have taken the actual census of it. I regret that, owing to the tariff, I was unable to bring with me a model of a good stable. When I was elected Governor of Wisconsin I was full of reform, and the first reform I executed was to put that stable into the executive barn. I put in a couple of cows, and when any one came in and talked dairying to me I sent them out to look at that stable. We must have comfortable, clean stables. Each cow in that stable is allotted 3½ feet of space, and she can lie in it

without any part of her body being in the manure. I have one Guernsey cow splashed with white and she is just as clean looking in that stable as in a June pasture. That one word "comfort" must be well considered and looked after with a cow or she will take her revenge out of you. I was very much amused the other day at the way some men refuse to get knowledge. In Madison county, New York, where I was raised, there is one silo, and the farmers go and look at it critically, a sort of sideway glance; and that one silo still remains, a lone exhibition of one man's good sense, while the others are expensively speculating as to whether or not they will try it too. In the town [or township] where I live there are 45 silos, and in the town adjacent 65, and the other day one of the farmers wrote to the superintendent of the farmers' institute, "You do not need to talk silos. Talk about something beyond. That is conquered ground. Every man who has not a silo is thinking about building one, and those who have one are thinking of enlarging." Farmers need to be conservative, mind you, but there are some things which have been proved. The silo is an established fact. The man who has not come to the conclusion that there is a better cow than the 3,000 lb. animal, and that he can produce her, is a back number. The man who has not come to the conclusion that there is a cheaper and more comfortable and profitable way of caring for his cows is a back number. If he has not learned that there is a cheaper way of feeding his cows he is in the shade. Can we afford to be back numbers and remain in the shade? Knowledge is worth something; there are dollars and cents in it. I feel that some men are getting into the condition described by an Irish friend of mine. He came to me a year or two ago during a great drouth and I said to him, "Michael, it is very dry." "Yes, sur," said he, "It is as dhry as a limeburner's wig." Said I, "I see the wells are giving out." "Yes, it's dhry." "Well," I went on to remark, "what are you going to do?" "Shure, an' if it doesn't rain soon I'll have to soak my pigs to make them hould the shwill." (Laughter.) That dry-cracked pig is typical of many of us. We need to be more soaked with knowledge and intelligence if we are ever going to hold dollars and cents.

PREPARING CHEESE FOR MARKET.

Mr. A. A. Ayer, of Montreal, after a kindly personal allusion to the President, congratulated the Association upon the splendid gathering before him, and also upon the fact that the Minister of Agriculture, in addition to other able speakers, was present. He trusted that the outgrowth of the visit of the honorable gentleman would be the development of some schemes to aid the dairymen of the province to still further advance their great industry. You have heard it said that the western peninsula is the garden of Canada. The people of Brockville could scarcely make that claim for their locality. Nature has not done as much for its soil as she has done for western Ontario. But she has done much for the men of this section. They have been hardy and energetic, and their enterprise and industry have worked a wonderful improvement in their surroundings during the past twenty years. As I listened to the excellent counsel you have been receiving regarding the improvement of the dairy farm, the best crops to grow for feeding, the new and progressive methods of handling stock in winter, and above all the importanct of manure. I was reminded of the story told of Mr. Samuel Briggs, of Manchester, who had brought his land to a very high state of efficiency. It is said that in a raffle for a donkey he found himself half-owner of the animal, and as the other man would not sell out his interest, the gentleman first named proposed that his partner might take the front half for his share, while he himself took the tail end—the part that gave the manure. (Laughter and applause.) The manure end is too often slighted, but it means the vitality of the land. When the figures of dairy product were read to-day I was led to think of thirty years ago when a product of 175 lb. of butter per cow was considered something wonderful. I remember that my father found a cow that was a good mother, giving 60 lb. of milk a day, and he said, "That's the cow to breed from." That cow had twins several times, and as fortune would have it they were always heifer

calves, and soon we had a number of dairy cows all tracing back to the one mother, and all good milkers. Water was constantly before our cows, and that water was luke warm. My father did not have a silo, but he raised a good many acres of corn, and the native corn grew ten feet high on that farm. The corn was mixed with straw and cut up and fed to the cows. I am certain of this one thing, that a cow will not give much milk if you do not feed her well and keep her warm. There are a great many cows supposed to be poor milkers that would be good dairy animals if they were properly housed and fed.

I would like to say a little upon some of the aspects of the cheese business with which I am more directly acquainted. Some men do not like to hear of their faults, but that is not the way with you or you would not have made the advancement you have in the past few years. The next great step forward should be the improvement in the flavor of your cheese. I know you have improved in this respect, but not in the same proportion as you otherwise have in your make. I believe there are more cheese defective in flavor than in any other one thing.

Use the Aerator. It will be nothing short of a sin if every farmer does not put one in. There is no way in which you can make more advancement than in getting factories to use pure milk well aerated. You would not expect to get a cow that gives 6,000 lb. of milk for the same money that would buy one that gives only 3,000 lb. Then why should you hesitate to pay two or three dollars for an aerator, and so have milk that will make perfect, well flavored chesse? There is the tendency for a larger cheese. The bulk of the best commercial cheese should weigh 70 to 84 lb., although some weigh 100 to 120 lb. And why? Because the market always wants something that is difficult to make. But the average farmer says: "How do they expect us to keep up to all these things? It will ruin me if I attempt to do all that is expected of me." And then he goes home and does not even try what he can do. And that reminds me of a little story. A colored man down South was driving a mule one day when it fell to the ground and refused to get up. A doctor came along and asked what was the matter. The darkey replied: "Dis mule done lay down, and he won't go. I've licked him and coaxed him, but he won't go no how." The doctor took out a syringe and gave the mule a strong hypodermic injection, when it got up and started off at a lively gait before his owner could get aboard. The negro raced after the mule, the doctor following. After a while the man of medicine came up to the darkey who was out of breath, when the latter said: "Say boss, can't you give me one of dem *interjections* so dat I may be able to catch up to dat dar mule?" (Laughter.) There are some farmers who require that treatment to help them catch up to their neighbors. Mr. Fisher has very modestly told you that he has come up here to learn. If you should miss some of your best makers, you will know where to find them. You must not under-rate the Eastern Townships, because they comprise one of the best watered and best grazing sections of this country, and no place is more suitable for successful dairying. They have been making splendid butter there for years, and of late they have gone into the manufacture of cheese. The cows they have there have been bred from Guernseys and Jerseys in days gone by. They can afford to sell cheese for less than you get for yours, and still pay the farmers just as much for the milk.

You ask me about the system of selling. You arrange your own system and I shall adapt myself to it. I had thought, however, that if the factory men who spend so much time in trying to get the extra 1-16 of a cent, would spend as much time in endeavoring to improve the quality of their cheese, *the article would soon sell itself.* If you want to get more money for your cheese, *spend your time* and *thought* in deciding how the cows will get more and cheaper food; that you will get better cows, better milk, better dairies and better dairy utensils. You must not imagine that we buyers are in the business for the simple pleasure of it. We are there to make money. You dairymen can help yourselves and help us in a very simple way. It cost our firm $5,000 last year to cooper or repair boxes alone. Is not that a ridiculous condition of affairs? If I were a factoryman I would make a 75 lb. cheese, and then I could afford to get a better box than I could put on a 60 lb. cheese. I would get samples from all the box-makers, and select the one that would carry to China. You should have as good boxes here as they have

in the Ingersoll district (and I am sorry to say that the Ingersoll boxes are not as good as they were two or three years ago). If you would have us pay you more money for your cheese, we must be able to handle your make with less cost to ourselves. We take every cheese out of the box when it comes to Montreal. And why? Simply because we we cannot trust you to leave out any defective cheese, and so every cheese must be taken out of the box. If you have a sour cheese or an off-flavored cheese, it is sure to be put in without being marked. You can depend on it that the honest factoryman will always get an honest price for his honest make. We think the fair plan is to pay a high price for good cheese, and pay for poor cheese just what they are worth.

A MEMBER.—What is your opinion about stencilling cheese?

Mr. AYER.—We would like to have the weights stencilled on. Some can make good figures with pencil, but as a rule we have to make the weights over again. As to putting factory brands on cheese, to be perfectly frank with you it is almost impossible to do so. Every large house on the other side wants us to put their own registered brand on the cheese, and that is because the dealer does not want to have Jones, or Smith's name on the goods he handles but his own.

A MEMBER.—How do you weigh your cheese?

Mr. AYER.—We *do not weigh them.* The public weigher does it all and we take his weights.

The PRESIDENT.—Your cheese is weighed at the factory. You put it into a dry box, and you might as well expect a sponge to weigh as much some days afterwards.

Mr. AYER.—In my experience there is not one factory out of three that has a perfectly correct scale and where they know how to weigh properly. The majority of factories are not built on a level, and if your scales are not on a level you must not expect them to weigh fairly.

A MEMBER.—And then it cannot weigh the milk correctly?

Mr. AYER.—But you do not move your scales all over the factory for milk. In closing this address I would desire to impress upon you the importance of four things. First, have tight-fitting boxes; secondly, use plenty of nails in fastening the box; thirdly, be sure that the box is not too tall for the cheese; and, fourthly, pay the boxmaker two to three cents each more for your boxes so he can afford to give you a perfect box.

A PLEA FOR DAIRY SCHOOLS.

Mr. THOMAS BALLANTYNE, M.P.P., was next introduced by the President and said: I can assure you that it gives me sincere pleasure to see so many representative dairymen and buyers here to-day. I have been connected with dairying from its commencement in this country. I shipped the first hundred of cheese on the Grand Trunk Railway, and I was present at the first Dairymen's Convention held in Canada, which met at Ingersoll. I have been on the Board ever since, but whether I have been of service or not I cannot say. I do not think that I need do much in the way of trying to enlighten you along the old lines. We have all got over the first stage. But since my return from Great Britain recently I have been much impressed with the thought that if we are to continue improving the next onward move must be the establishing of dairy schools or more properly dairy experimental stations for educational purposes. Let us take a glance at the history of the industry with us. The manufacture of cheese was first carried on in Oneida and Herkimer counties in the State of New York. Soon we saw the American dairymen coming over to Canada, selecting our best milking cows and driving them across the lines, for in those days we had the old Reciprocity Treaty. When we saw the droves of cows going over there we asked ourselves, "Why should we not use them for cheese-making over here? We will have the same market for our surplus product, and if it pays them it surely ought to pay us." About that time the late Harvey Farrington, a native of Herkimer county, N.Y., settled in the county of Oxford in Western Ontario, and no man was better fitted to introduce the business of cheese-making into a locality. He was one of the finest men I ever knew. He was philanthropic and patriotic.

He had no narrow views, and anything he knew he was willing to impart to others. I honor the memory of Harvey Farrington. His views regarding cheese factories spread rapidly, and in a few years we were making cheese all over the country. But it was selling at a less price than that of On ida and Herkimer counties, as it was of inferior quality. As I visited the cheese districts on both sides of the line I determined to learn how to produce the finest quality of goods, Canadian cheese then being at a discount in Liverpool, although a few factories here and there were making superior quality. We solved the problem, and to-day Canadian cheese is at a premium. We had our conventions, with papers and speeches and discussions, all very good in their way, but I never knew a first-class cheese maker who was made so merely because of his attendance at conventions. Actual work—demonstration—is the best means of instruction. The Western Dairymen's Association determined that it would not do for only a few factories to have a high reputation and sell at the highest prices. The makers then were anxious to improve, and were making an honest endeavor to do so. The question suggested itself to us, should we not employ some one to visit the factories and give instruction to makers? I wrote a resolution recommending such a move, and it was carried at one of our meetings. We were not altogether fortunate in the selection of the first person chosen; so much so that the Board was almost solid against continuing an instructor. In fact I was the only one the other way inclined, and I agreed that if the next attempt was not successful that I would pay the expense myself. He corrected his mistakes, and since that time a general improvement has been noticed. Our cheese soon sold for a cent or a cent and a half higher than Brockville cheese. But you followed us along this line of inspection and instruction, and now your cheese is getting as high a price as ours. And you have been making fine butter here when we were making butter that was unsaleable.

But let me go a little further. A few years ago when visiting the dairy districts of Scotland I was struck with the low average quality of their goods. There was every attention to cleanliness, and they had advantages which we have not here, yet their cheese was inferior. About that time a Scotch gentleman happened to be visiting me in Stratford, and he asked me what they could do to improve. I told him to form an association and get the best and most practical men they had to come together and discuss matters. I pointed out that it was the attention to detail that needed to be studied. Well, they decided to try and form an association. And let me here show you how small a matter may lead to great consequences. I gave this gentleman a cheese a year old and he distributed to his neighbors. "Here is Canadian cheese," he told them. "We have nothing like it. We must also improve." They formed a Dairy Association, which had its first meeting in Ayr at which I was present, with the Earl of Stairs in the chair. Acting upon our experience and suggestions they decided to appoint an instructor to visit the different districts giving practical lessons in cheese-making, and applied to myself to send them one, and there have been three different men, all from Canada, doing that kind of work, followed by the establishment of a dairy school at Kilmarnock in charge of Mr. Drummond, a Canadian whom I engaged for them. The result is the immense improvement in the quality of their cheese as shown by the recent dairy fairs held in London and Kilmarnock, in London taking every prize (except one) for which they could compete, including the Lord Mayor's cup. The newspapers in England and Scotland recognise our system as taught by Mr. Drummond and others as the cause of their great improvement, making a difference in prices of at least 15s. per cwt. At the dairy fair in London there were 109 entries of cheese, of which no fewer than 84 were from the pupils of our Canadian system.

Mr. Ballantyne then read extracts from *The North British Agriculturist*, *The Scotchman* and *Glasgow Herald*, these papers all giving credit for the great improvement in the quality to our Canadian instructors. That has advertised Canada more effectually than through any other means that have been used.

I visited several places in Scotland during the year past and was struck with the uniformity, the high quality and the great improvement generally in the character of the goods compared with former years. I can remember when only a few years ago

our finest fall Canadian cheese would sell in London in preference to the Scotch make by 10s. or 15s. per cwt. When I was there this year they were paying for some of their home make 60s. per cwt., whilst our best Canadian was selling at from 44s. to 45s. per cwt., and I found some goods from a certain combination going at 43s. That is the result of teaching. Meeting a retailer one day I asked him why there was so much difference in the price as there was not a relative difference in the quality. He said: "I would like to sell the Canadian; it is a sixpenny cut and I have good profit in it, while I have to sell the other at eightpence, but then there is a perfection about it." I said to him, "How is it?" He replied, "The working people are well off now and they want the best." That is the reason. The cheese and butter we sold twenty years ago, some of it as strong as a horse's hind leg, cannot be readily disposed of now. While we must make more milk and cheaper milk, we must also attend to the make. Great Britain is now getting food from all parts of the world, and her providers are carefully studying her taste. She has been inundated with fresh pork from Norway and Sweden which retailed at 4¾d. per lb.; but depend upon it, the better the cheese the more of it will be consumed. I have noticed while driving for two or three days through a dairy district that there is an extra richness in the Old Country cheese. There appeared to be a large percentage of butter fat present. The cows were exclusively pure Ayrshires, and you can rest assured that they would not be bothered with a 3,000 lb. yielder. But they did not stint these cows in their food, for, although there was plenty of rich grass, they were feeding the animals drumhead cabbage and beans. There is no waste in those factories, and the curd could not be more carefully manipulated. Meeting the factor of the Duke of Portland he remarked to me, "The rental roll is not behind, and it is all owing to the improvement of the cheese," and consequent high price for the product. We have not been sufficiently impressing upon the people the importance of preventing the cream from rising. If once separated the milk can never afterwards be thoroughly assimilated. With a view to assisting the patrons of one of my own factories I gave them an aerator last year as a present, but I fear that on account of the cool weather they did not use it more than once on each lot of milk, and milk must be stirred sufficiently to prevent much separation of the cream. The rennet theory as an agent in the curing of cheese was considered an important factor, especially by the late Prof. Arnold, until it was exploded by Prof. Robertson whilst at the Ontario Agricultural College. I believe that our cheese has been selling at something more than a cent a pound higher than at Little Falls, New York. We have made improvements. Educational influences have been at work. Now, if we had a dairy school with good men in charge, cheese-makers wanting to be perfected in their business could spend a few days there and get advantage of the highest instruction. Factory men do not want to listen to second class men who may visit them, although I have known much improvement to result from the visits of some of our inspectors. But only the very best men could take hold of this experimental work. I know that our new Professor of Agriculture is very desirous of assisting us, and the country would sustain any action on his part which would aid in the development of agricultural knowledge of this character. My opinion is that we should have two schools in the province, east and west, to which makers could come for improvement. I do not mean that we would try to make them thorough dairymen, but it should be a place where makers could come and learn more. It takes a year or two to develop a good maker. Last year there was an immense quantity of very ordinary cheese in the west. But we had some very fine goods, too, and what one can do all may do. There is no maker who cannot spare a day or two to learn something at one of these dairy schools. It would be a school of enquiry for such a man. He would find his visit meant a step onward in still further improvement. The result of the shows held in Scotland have confirmed me in my views regarding the advisability of dairy schools. And you know that the trend of our conventions have been in this direction. It used to be nearly all talk about floating curds, building factories, etc., but we are now getting past that. However, we can see even now the benefits of these discussions on curd and rennet in the past.

The meeting then adjourned until the afternoon.

SECOND DAY—AFTERNOON SESSION.

The convention was called to order at two o'clock by Mr. PLATT HINMAN, who said: The president upon leaving the chair at noon said that it was doubtful if he would be able to be here, and desired me to take the chair as second vice-president. It is desirable that we should have the reports of committees at once so as to give us time to hear the addresses.

The following report of the nominating committee was then read and adopted:

REPORT OF NOMINATING COMMITTEE.

President.—William Eager, Morrisburg.

Vice-President.—P. Hinman, Grafton.

Second Vice-President.—William Bissell, Algonquin.

Directors,—Div. No. 1, E. Kidd; No. 2, John McTavish, Van Camp; No. 3, Richard Murphy, Elgin; No. 4, D. Vandewater; Chatterton; No. 5, T. B. Carlaw, Warkworth; No. 6, H. Wade, Toronto.

Auditors.—James G. Foster, Moira, and M. K. Evertt, Easton's Corners.

Mr. HINMAN.—No man is more sorry than I that Mr. McCrae, our late Vice-president has been forced to leave his home and go away for his health, as we believed that he would have been the next President. Mr. McCrae not being available, one of your oldest directors has been called to the presidency. I believe you have done wisely in accepting the report of the Nominating Committee. I shall now call upon the President elect to take the chair.

Mr. EAGER—You have conferred a great honor upon me gentlemen, in electing me president of this Association. I shall endeavor to promote the interests of the Association to the best of my ability and judgment. I ask your sympathy and your co-operation, and if I receive these I feel hopeful of having some degree of success in anything we may put our hand to. (Applause.)

Other reports were called for, but the committees were not prepared to respond.

THE BOXING OF CHEESE.

Mr. AYER, of Montreal, was then called upon to give a fuller description of methods of handling cheese.

I have been asked to say something more about this question of the boxing of cheese, as I did not go as fully into the matter this morning as some members of the Association desired. As to the kind of box required you need in the first place one having more nails. Use plenty of nails. Many cheese boxes go to pieces by the time they reach Montreal. You will often see a box with perhaps only five, six or seven nails in it. There should never be less than twelve nails in a lap, and there should be fifteen nails on the lid and another fifteen on the bottom. A box that has less than forty-two nails is weak.

The boxes are generally made too high for the cheese. Either make your cheese bigger or your boxes smaller, but do not allow any waste in the box. The bottom rim should be narrower than the top one—say $1\frac{3}{4}$ inches on the bottom and $2\frac{1}{2}$ inches on the top. A box of cheese is handled or lifted on the average about twenty times before reaching England. If the box is so tight that you can jump on it without breaking it you may rest assured that that box will carry; but if the cheese is loose, the box being too large, it will break with anything like rough usage. I am asked about cap cloths. I favor their use, but do

not press them under the bandage, but press them over the bandage *and leave them on.* Do not grease them all over, but let them go to market as handsome as possible. I have seen boxes in Montreal in the warm weather with the grease oozing out of them. Please remember that just as soon as the box is stained the price of a cheese is depreciated, no matter what the real quality of the goods may be, for there is something in appearance and style in the cheese trade as well as in any other. The factory should be built so that heat will never be extreme. Do not place a cheese where it will fry out.

A MEMBER—Has not this same thing often resulted while in the cars in hot weather?

Mr. AYER—If the cheese is well packed in a ventilated car there will be no frying out in the cars. We do not let the cheese remain in the car any longer than possible, and as the car is moving the greater part of the time there is generally a sufficient current of air. See to it, however, that your cheese is got off from the station as soon as is possible after it is placed on board the car. Do not use black scale boards because they are cheap, but get the best you can procure. In hot weather double scale board your cheese, both at the top and bottom, and unless there is unusual heat your goods will not be injured by the high temperature.

A MEMBER.—The scale boards we use come from the buyers.

Mr. AYER—Then if they are poor in quality go for the buyers. Do not permit the cheapness of the furnishings to spoil your cheese. It does not pay to ruin a first-class cheese by using cheap furnishing. Make your goods up stylishly. There is no style in daubing your cheese all over with brands such as "This is a full cream cheese." "Register Number 1000." And another brand on the box, "The High Flyer Factory, Germanstown Station, John Jones maker." You might as well expect a man to buy a white coat and have it branded all over with the name of the dealer he bought it of or a description of the quality of cloth in the coat. We make only full cream cheese in this country.

Gov. HOARD—If John Jones makes a skim milk cheese we must brand it so. (Laughter and applause.)

Mr. AYER—There is an impression abroad that it does not matter if cheese gets wet, but if you saw the condition of some cheese in Montreal you would soon change your mind if you had been that way of thinking. The boxes should be covered with tarpaulin in rainy weather. If you have two scale boards and a good top cloth you can stand a good deal of wet. But let me say very plainly that a cheese with a single scale-board and no top cloth will lose a cent a pound in value if left exposed to the rain.

A MEMBER—Why should not factorymen's weights of cheese be taken universally

Mr. AYER—I believe it would be a premium to dishonesty if we were to take the figures of factory men. Some give proper weight, but others are inclined to be dishonest, and this method would leave no check on such. But if there is an intermediate person who has no interest in favoring either party, to come between you and us and the men in England, what can be fairer to both buyer and seller? As to brands on boxes, I repeat that we do not care to have factory brands on the boxes.

TEMPERAMENT IN THE DAIRY COW.

Gov. HOARD was warmly received as he rose to deliver his address on the above-named subject, which was illustrated by life-sized black and white pictures of various breeds of cattle. The speech was in the main a repetition of an address delivered in Ontario on one or two occasions, and which may be found in the reports of 1888 and 1889.

At the close of Mr. Hoard's address the following interesting colloquy took place:

Mr. KEELEY.—Do you approve of small-sized cows for milking?

Gov. HOARD.—I do not approve of large cows if I can get the small cow to do the same work. I do not believe that size is any indication of talent. What I am for is a cow's talent, be she big or little. But I consider that if I have a cow weighing 800 lb. and another weighing 1,200 lb., each giving 300 lb. of butter, I can make more on the 800 lb. cow, as it requires less feed.

Mr. KEELEY.—What I want to know is, what kind of cow is best for us?

Gov. HOARD.—If I did that you might fire up just as you would if I told you what kind of woman you should have. Men go according to their own taste generally. But if you want to pool with your neighbor and put your milk with his into a factory vat I can tell you. If you were a patron of mine in my own creamery, where we keep two sets of vats, one for the men who bring in rich milk and the other for the men who bring poor milk, and where we make up these two sets separately, I would say breed from the cow that gives the richest milk.

Mr. KEELEY.—I would like both quantity and quality.

Gov. HOARD.—You cannot get that. You cannot load your gun to hit it if it is a deer and miss it if it is a calf. (Laughter.) But this gentleman is on the line of a question that affects you and me. He wants to know which is the best cow. I wish you could shape matters so that if you had a cow that gave milk of good quality it would be all right; but unless quality is recognised in a factory I would advise you to get the animal that gives the most milk of any quality. We established a Jersey and a Guernsey vat in our creamery and said that any cow having 50 per cent. of Jersey or Guernsey blood might go into it. We kept the milk separate and made up the butter from each of these vats, and it has all sold at one price, but the amount of butter each 100 lb. of milk makes is kept separate. The Jersey and Guernsey vat returned $1.05, while the common milk realised 85c.

Mr. KEELEY.—The small cow is best for us.

A VOICE.—What when she is dead?

Gov. HOARD.—You have had your return from her if she has been breeding. Mr. McPherson, a patron of ours, has a herd of 35 cows, Jersey grades, and we paid him last year in cash $63 a head, and returned him his skim milk, for which we would have been willing to pay him last year $12 per cow. His herd averages in weight 900 lb. to the cow, but the average yield is about 6,000 lb. of milk. Mr. Goodrich's cows have averaged 375 lb. of butter. The great question to be decided is how to increase the production without increasing the number of cows.

A MEMBER.—This system of close inbreeding must tend to produce evil results.

Gov. HOARD.—It means intensified Jersey grades. You have intensified your strain. You have not a family of Jerseys that has not been made by inbreeding. But inbreeding is like a razor—it all depends upon how you hold it whether it cuts your beard or your throat. (Laughter and applause.) The Governor then proceeded to describe his stable, a mere verbal description of which it is impossible to give with clearness.

RE-ELECTION OF OFFICERS.

At the conclusion of the foregoing address Mr. WARRINGTON, the late president, rose to a question of privilege and took objection to the election of officers earlier in the afternoon during his temporary absence. After some observations from Mr. Hinman and Mr. Carlaw the matter was reconsidered upon motion of Mr. Derbyshire, seconded by Mr. James Bissell, that the original report be now received and adopted. No objection being made the motion was declared carried.

REPORTS OF INSPECTORS.

The reports of the inspectors and instructors were then called for in the following order:

INSPECTOR RUDDICK'S REPORT.

Mr. President and Gentlemen:

I herewith submit my report, as instructor and inspector, for the season of 1890.

The district over which I was appointed includes the counties of Prescott, Russell, Glengarry, Stormont, Dundas, and Grenville, with parts of Leeds, Lanark, and Carleton.

Sixty-eight factories applied for inspection and received in all eighty-eight visits. These factories are scattered all over this large territory, and it will be easily seen that, to cover the work entailed a vast amount of traveling waier was of ca attended with a good deal of difficulty, and no little discomfort.

The names of the factories visited with the number of visits at each are as follows:

North Gower, 1; Manotick, 1; Burritt's Rapids, 1; St. Andrews, 1; Monklands, 1; Black River, 2; Mille Roches, 1; Hawkesbury, 1; White Globe No. 1, 1; White Globe No. 2, 1; White Globe No. 3, 1; Rose & Co. No. 1, 1; Rose & Co. No. 2, 2; Rose & Co. No. 3, 2; Rose & Co. No. 4, 1; Lunenburg, 1; Fraser's, 3; Elma, 1; Bowman, 2; Archer 1; Goldfield, 1; Newington, 1; Kemptville, 1; Millar's Corner, 1; Marlboro', 1; Silmser's Corners, 1; Spring Run, 3; Alfred, 1; Aultsville, 5; White Clover, 1; Leroy and Ogden No. 1, 1; Leroy and Ogden No. 2, 1; Glenroy, 3; Dalhousie Mills, 1; Breadalbane, 1; McCrimmon, 1; Glen Norman, 1; Comeron, 1; Balasville, 1; North Augusta, 2; Moulinette, 1; Anderson's, 1; Oxford Mills, 1; Rideau, 1; McKenna's, 1; Morrisburg Union, 1; Treadwell, 1; Plantagenet, 1; Morewood Union, 1; Beil's Corners, 1; St. Eugene, 1; Malakoff, 1; Eager's No. 13, 1; Pendleton, 1; Bidtie Corners, 1; Vankleek Hill, 1; Iroquois, 1; Maple Grange, 1; Orchard Valley, 1; Algonquin, 2; Cheneville, 1; Domville, 1; Centre Augusta, 1; Camerontown, 1; Willow, 1; Advance No. 1, 2; Advance No. 2, 1; Brinston's Corners, 1.

The total number of samples of milk tested was 3,850, among which I found 51 samples short of cream, and 32 samples adulterated with water, 83 cases in all.

In the thirty-two factories I found the milk all good.

Last year I reported 120 cases of adulteration and skimming in 52 factories, and only 11 factories where the milk was all good.

The plan adopted to punish parties sending milk not pure was to give them the option of paying into the factory a certain sum as damages, or going before a magistrate to answer the charge, and they invariably choose the former plan.

The damages were fixed at different amounts ranging from $5 to $50 according to circumstances. When it was convenient I usually had an interview with the parties, and failing that, I made it a matter of correspondence, or left it in the hands of the factoryman to deal with, always having a settlement made in writing or before witnesses.

Some of the parties admitted their guilt at once, while others would assure us that they could not account for the presence of water in their milk, and so on; but they were willing to settle without any trouble, and it happened somehow that the milk always came better in the future.

The cases were all settled in the manner mentioned above with the exception of a few, for there are still some managers who prefer to let those parties go unpunished rather than incur the risk of losing patronage or having any trouble. I am pleased to say, however, that they belong to a rapidly decreasing class, owing to the fact that inspection is becoming very popular with farmers of the right sort who see in it a means of protection against the thieving propensities of some of their neighbors.

The quality of the milk I tested shows a decided improvement over last year as far as purity goes, and in some factories the milk is better taken care of by the patrons than it formerly was. A large number of covered milk stands have been erected and aerators provided—all to good purpose.

I wrote to a great many patrons who were sending badly tainted milk, urging upon them the necessity for taking better care of it, and offering such suggestions as I thought most likely to help them.

A number of new factories were put up in my section last year, and I must say that they are better constructed than the average factory. Some of the old ones have been much improved also; but there are still far too many that as regard location, build and equipment are in no way fit for the purpose of making cheese in.

One of the chief troubles of cheese-making during the summer was a bad flavor which seemed very hard to get rid of. I was inclined to attribute the prevalence of this flavor partly to the peculiarities of the season. Much of the pasture being winter-killed, and very wet weather coming on early, an unusually large quantity of rank, woody grasses sprang up, and being eaten by the cows imparted their rank flavors to the milk.

The bad flavor of many cheese, however, may be traced to causes in and around the factory itself. Fully one-half of the factories I visited were not provided with a proper supply of good clean water, and at least fifteen were using water positively unfit for any purpose whatever.

The drainage is so imperfect at some factories, that the waste water and whey run out on the ground and not being carried away soak into the ground, which may at first filter it somewhat before it reaches the well, but the time soon comes, when it is so saturated, that it no longer performs this function and the result is a compound in the well, which to use where good clean water is an absolute necessity cannot have any other than a deleterious effect.

It is hardly within the scope of a report like this, to deal with anything outside the bare facts that have come beneath my notice, but I enlarge a little on this matter because I realise its importance, and the growing necessity for remedying the evil. I repeat it is a growing necessity because it is evident from the causes aforesaid that where the evils exists at all it is constantly getting worse.

The condition of some of the vats in factories I have visited also tends to create bad flavors in the cheese. I speak of those vats where the tinning is worn off more or less, leaving the iron bare in places. When it gets bad these spots where the tin is off impart a very objectionable smell to the curd. It is after the whey is run off and the parts exposed to air that it will be noticed more particularly. I don't know the scientific explanation of this thing, but presume it is the same trouble which occurs when certain dishes of food are cooked in iron vessels.

I find also that the whey tanks are not always kept as clean as they should be, some of them not being properly cleaned and scalded once during the whole summer. Since the whey from these tanks has to be carried home in the milk cans it is very important that they should be kept clean, and were they kept so I venture to say that there would not be so much cause for complaint against the practice of hauling whey home in the cans, inasmuch as I believe this to be the real evil itself.

Twelve of the factories which I visited were models of cleanliness, seven were positively filthy and the balance were not any cleaner than they should be.

The ventilation of curing-rooms is not attended to as it should be. Many of the factories are not provided with facilities for so doing, and even where they are it is often neglected. I have urged upon all the importance of this matter.

In conclusion I wish to take this opportunity of thanking all factory men, makers and others whom I came in contact with in the performance of my duty, for their courtesy and friendliness whenever I met them.

J. A. RUDDICK.

Lancaster, January 1st, 1891.

There was one matter I overlooked in my report. In my visits to to the factories I find that 50 per cent. of the thermometers are not correct. I find thermometers out 7° when tested as high as 98°. Cheesemakers find it hard to get reliable instruments. I hope that some of our enterprising dealers will do something to remedy this evil.

GOV. HOARD.—You speak of patrons watering milk. What percentage of fat have you established as being honest?

INS. RUDDICK.—I may say that we have not established any percentage of fat. We test the milk, and if we feel assured that it comes to the factory as it comes from the cow we have to let it pass.

GOV. HOARD.—Is this a really good state of affairs?

INS. RUDDICK.—It is not a good state of affairs, but under our present conditions we cannot do much better.

GOV. HOARD.—In Wisconsin we have established a minimum standard of fat—3 per cent—and say that no milk shall go below that, and it has helped us greatly in deciding what to do. If the milk is below that standard the owner has to stand the loss whether he skims it or the cow skims it. You also speak of a flavor in your cheese. You attribute it to bad feed. Have you examined the water drank by cows in certain herds?

INS. RUDDICK.—I believe that bad water has a good deal to do with it, and I have become convinced of that matter by a visit I made to the Eastern Townships some time ago where nearly all the water the cows drink is perfectly pure.

MR. BALLANTYNE.—How do you positively ascertain the impurity of the milk so that you can establish charges against them?

INS. RUDDICK.—I may answer that by explaining as briefly as possible our method of testing. I use the lactometer and the cream gauge. Of course we get nothing but the volume of the cream, but by bringing the milk with the help of ice to a temperature of 40° I have been able to get at it very closely. I occasionally use the lactoscope. I compare the record of the factory milk with the milk drawn from the cows about the same time. We make both a farm test and a factory test.

A MEMBER.—Can the milk that is left in the milk can or the whey tank be incorporated into the cheese?

INS. RUDDICK.—I do not think that cheese can be made without some of the cream going into the whey tank.

Mr. H. BISSELL.—The cream that rises on the can is not the same as that seen in the whey tank. The acid forming in the whey has a tendency to meet the butter fat in the curd. If the cheese is properly made you will find very little cream in the tank. How do people make full cream cheese for a fair but by adding cream to a vat? So it will be seen that cream can be incorporated into cheese.

Mr. AYER.—There are many farmers who have an idea that the cream on top of the cans can never get into the cheese, and therefore it is not a sin to take it off. (Laughter). If the gentlemen here to-day can be convinced that it goes into the cheese then their consciences will prick them and they will not offend again.

Mr. BALLANTYNE.—I was very much pleased with the Inspector's report. He appears to have done his duty fully. We were also troubled with those who were skimming milk. We had a better yield when we were taking the milk to the factory twice a day. The milk can be more satisfactorily taken to the factory by the farmer than by the factoryman. Where we had running water we generally had an agitator working which went from side to side and prevented the cream from rising. In a great many factories we made cheese twice a day, and we had good results. The Inspector's report has emphasised the importance of having experimental and educational stations for dairymen. It is utterly impossible that inspection can be efficiently done where the inspectors have to cover so much distance. Now if we had these dairy schools in charge of the best available men, running winter and summer, it would be a good thing, and thorough instruction can be given no other way. We have reached that stage where winter dairying must be made our chief aim. I was not always of this view. I at first thought it would interfere with our cheese business, but I have been converted in this matter. The demand for butter is increasing and will continue to increase. With all respect to our American friends our Canadian butter is better than the American, and has commanded a higher price in the British markets. We will have a home market for fine butter larger than we can meet for many a day. In the west we used to make provision for the winter's butter—we purchased ours in Morrisburg. But butter is not like wine, it will not improve with age. I had Babcock's separator brought to some of my factories, and showed all interested that we were able to ascertain the exact percentage of cream, and we have decided to pay patrons according to quality. On Monday three young men started for Madison to take lessons in the dairy school in operation this winter. And one of the best makers of Ingersoll recently said to me "I do not know a year when I would not like to go and spend a few days getting points from those who are interested in this great work of dairying." I am fully convinced that the next step we should take in developing the dairy interest would be to make cheese in the summer and butter in the winter, and thus keep our factories going all the year around. Speaking of the yield per cow, I had a heifer calf last January which gave me in twelve months 11,000 lb. of milk.

Mr. KEELEY.—Should not the Association arrange soon to have the dairy schools start so that the cheesemakers might get some instruction before the next season?

Mr. BALLANTYNE.—Large bodies move slowly. I believe that if the instructors were under Prof. Robertson's control the work would be given a prestige that this Association could not give it.

INSPECTOR PUBLOW'S REPORT.

To the President and Directors of the Dairymen's Association of Eastern Ontario:

GENTLEMEN,—Having been appointed instructor and inspector by this Association for the season of 1890, I beg to submit to you the following report:

The district to which I was appointed comprises the territory lying between Kingston and Ottawa, west of the B. & O. Railway.

The number of factories in this territory are, as nearly as I can judge, about 150. Of this number over 100 made application for instructions and inspection. I had as many applications in before I began as would have fully occupied the time allotted to the whole work, as some of the applications called for from three to six visits each. This accounts for those who made application for instruction later on not receiving the same.

I commenced work on the 15th day of May and ended on the 10th of October. During this period I was 117 days in the employ of the Association, 94 days of which time I spent in giving instructions and testing milk in factories, the balance of the time being taken up in travelling, etc. The amount contributed by the factory men for the service of my inspection was $470.

The following are the names of factories which received instruction and the number of visits to each: Palace, 2; Oak Leaf, 2; Riverside, 4; Stanleyville Model, 1; North Shore, 4; Singleton, 2; Clear Lake, 3; Model, 3; Centreville, 3; Salem, 2; Lake View, 2; Maberly, 1; Brookside, 3, Watson's Corners, 3; Hopetown, 2; Middleville, 3; Rosedale, 2; Mississippi Pride, 1; Mississippi, 2; Farmersville, 1; Fairplay, 1; Balderson's Corners, 2; Harper's Corners, 2; Bathurst Mutual, 2; Lombardy, 2; Smith's Valley, 1; Reliable, 1; Frankville, 2; Plum Hollow, 2; Farmer's Choice, 1; Delta, 2; Philipsville, 2; Elgin Model, 1; Washburn, 1; Lyndhurst, 1; Morton, 1; Seeley's Bay, 1; Bay, 1; Escott, 2; Warburton, 1; Rapids Valley, 1; Anvern, 1; Roseville, 2; Myers, 1; Forfar, 1; Fermoy, 2; Ardmore, 2; Franktown, 1; Beckwith, 1; Hazledean, 1; Golden, 1; Pakenham, 1; Clear Spring, 1; Holland, 1; Westport, 2.

In said factories I tested 5,640 samples of milk and found 72 cases of adulteration and skimming; 71 of those cases were settled by the parties paying into the treasury of their own factory, fines of from $5 to $50 each. In only one case had we to take legal proceedings, the party refusing to settle to our satisfaction. The fine and costs imposed in this case amounted to over $100. The amount realised by the patrons of these factories, from said fines, was $710.

One plan we took this year to try and raise the standard of milk and so to ensure the manufacture of finer cheese, was to post upon the walls of the factory a copy of the test, shewing the condition in which each patron's milk was found. This was objected to in some cases, but only by patrons whose milk was below the average quality of the factory, some of them maintaining that the instruments used were not reliable. To prove the correctness of the instruments, I sent samples (at different times and from different factories) to the Government analyst, at Ottawa, to be analysed, and in every case the test was sustained, the analyst showing that in some cases the percentage of adulteration was even greater than had been accredited to them, and in no case was there less.

The managers of many of the factories are to be congratulated on the improvements made to insure the manufacture of finer cheese, also on their endeavor to secure the very best makers, and their willingness to pay good wages.

I regret to say, however, that some factories are still in a deplorable state, although I have been notified that a number have been put in better condition for the operations of next season.

I think it is unnecessary for me to add anything more to this report. If any person desires information on any subject not taken up, I shall be pleased to answer any questions if it is in my power.

G. G. PUBLOW.

Mr. JOSHUA LEGGE.—I have been very much pleased with the reports of the inspectors. I have been a good deal through the country, more especially that section where Mr. Publow has been inspecting the factories, and the reports I have heard while there were that these factories have greatly benefited by the instruction he has given. The chief complaint is that the territory is too large for the inspectors to fully cover. There is present here a delegation from the Kingston district to ask that additional inspectors be appointed for the section from Napanee to Kingston. With reference to the schools of instruction in dairying that Mr. Ballantyne has brought before the meeting, I would say that the matter was discussed a few years ago. At that time I took the trouble to get up a petition that such schools should be established in different places, but it was decided that one be established at the Ontario Agricultural Farm, and that the matter be left over for a future time. I have the honor to move the following motion:

"Moved by Mr. J. Legge, seconded by Mr. H. M. Johnson, that this Association request the Minister of Agriculture of Ontario to have established in this province schools for the purpose of educating butter and cheesemakers in experimental and general dairy work."

Mr. H. M. JOHNSON.—In seconding the resolution I feel as though I should say one word for the county of Prince Edward, for which, I am sorry to say, I appear alone to-day. For the past two years we have felt that we need the services of instructors more than we do inspectors.

The motion was carried unanimously.

INSTRUCTOR BAILEY'S REPORT.

In presenting his report Mr. Bailey prefaced it as follows: I was very glad to hear the remarks made by Mr. Ballantyne. I have wished for years that schools of instruction in dairying might be provided for the young men of this province, where they might receive the highest class of instruction in advanced dairying. I was pleased to see the unanimous way in which the motion referring to this matter was adopted. I have been interested in the dairy business for nearly thirty years. I travelled over considerable territory this year that I did not visit last year, and in some instances I found things in

a very bad state, involving a large amount of rather unpleasant work. I am glad to say, however, that I found a vast improvement in the territory I covered last year. The improvement was noticeable not only in the quality of the goods but also in the cleanliness of the factories. In cases where the factories were not up to the mark, I have tried to coax rather than drive. I have endeavored to show that a bad condition of affairs at the factory not only was detrimental to the welfare of those working there but also to the health of those who consumed the goods. No man likes to deal with a dirty baker who makes his bread in a filthy place, and it is just as necessary and important that cheesemakers should have clean quarters, utensils, etc., if they would have a good, saleable article and good customers. When you find in a factory a can the bottom of which has not been washed for a long period, what can you expect from the patrons? Mr. Bailey then complimented Gov. Hoard as an editor and speaker, and proceeded: Canadian cheesemakers should amalgamate and form a society, and in that way they could provide for getting paid for the work they do and doing the work thoroughly. In the *Mark Lane Express* recently it was said that the beautiful Canadian cheddars were among those awarded prizes in various parts of England. We do not want this pulling and hauling and struggling to bring down the prices paid to makers, or we cannot manufacture such cheese for the British markets. Makers should have meetings to talk over their immediate interests, just as well as any other class of the farming community who now meet. So far as taint is concerned, I have found that in nine cases out of ten the cows have been drinking impure water. I have also found thermometers very unreliable. My report is as follows:

BROCKVILLE, January 8th, 1891.

I beg leave to submit the following report for the season of 1890:

Number of days employed, 178, divided as follows: inspecting milk and instructing, 123½ days; driving in the different counties, 8½ days; travelling by railway, 5 days; Peterboro' Board of Trade, 2 days; Campbellford Board of Trade, 2 days; Belleville Board of Trade, 2½ days; attending committee meetings, etc., Belleville, 6 days, writing, attending court, etc. in connection with trials, etc., 28½ days.

Number of cases of adulteration found coming to the different factories visited: county of Hastings, skimming, 23; watering, 9; watering and skimming, 1: county of Northumberland, skimming, 28; watering 12; countyof Peterboro', skimming, 49; watering, 11; skimming and watering, 1: county of Victoria, skimming, 12; watering, 8: county of Haliburton, skimming 3; watering, 4; watering and skimming, 1.

Number of cases fined, as far as heard from up to date 111; lost, 2; tried, but no judgments as yet, 5; admitted and not fined, 5; notified and no answer, 8; notified and no proceedings taken yet, 16; light cases, 15.

Amount of fines imposed, as far as heard from, $1,507.00, half of which goes to the factories and the balance to the Association.

I cannot give the exact amount paid in from all sources, as only a small part has been paid to me, as can be seen by the following account with the treasurer:

Paid to the treasurer by myself, fines from Haliburton county	$19 00
" " " " Northumberland county	53 50
" " " " Hastings county	22 50
Total amount received from the factories as paid to me and handed over to treasurer	245 89
Mr. Potter's annual subscription to Association	1 00
	$341 89

The balance of fines and factory subscriptions has been paid to Mr. Warrington or Mr. Daly, the treasurer.

Account against the Association for labour, etc:

178 day's work at $5 per day	$890 00
Railway fare, attending court, etc	26 60
Ether, alcohol, etc	8 85
Telegraphing, postage, etc	3 74
Paid witness as per receipt	2 50
Costs in trial	10 20
	$941 89
Received from treasurer as per accounts to date, cash, etc.	$941 89

Number of cheese factories visited for inspection, etc., 265. Number of samples of milk tested for past season with lactometer and cream gauge, 5,216. Tested with the ether and spirit test, 534. Total tests made, 5,750.

Number of samples tested and found below 3 per cent. of butter fat, as shown by the ether test, 200.

A. E. BAILEY,
Inspector, etc., Campbellford, Ont.

INSTRUCTOR ROLLINS' REPORT.

I now take much pleasure in submitting to you my second report as milk inspector and instructor for the western division of the Eastern Dairyman's Association. I visited 78 factories, leaving instructions and testing milk, and I am sorry to say that three-fourths of the factories are totally unfit to manufacture a first-class article of cheese, especially in the colder parts of the season. The making rooms are too open and lack the proper means of heating the room or keeping the curd at the proper temperature. I am pleased to report that factories built of late years are much better constructed than formerly, and some of the factorymen are repairing their old factories so as to make them more comfortable. During the past season cheesemakers were troubled very much with gassy curd. This kind of curd is much harder to manage when it cannot be kept at a high temperature. There is not one factory in twenty where I visited this past season that has the proper means of heating the curd without injuring it. All factories should be supplied with racks to let down in the vats, or a curd sink properly constructed, with a steam or pipe attached, so as warm water can be kept under the curd, and if the water be kept at a proper temperature it will keep the curd at a proper and even temperature. I have seen cheese this summer ruined by working it too much on the hot vat, with dry steam running under. I find that a good many cheesemakers neglect ripening their milk, and the consequence is that it works too slowly. This same result happens when they drain the whey off before the proper amount of acid has been developed in the curd. I think it best not to stir a gassy curd while the whey is running off, and I leave the curd rather moist until the acid is well developed. I have handled gassy curds very successfully by shoving the curd to each side of the vat when the whey is running off, and let it mat in that state for a few minutes, cut it and keep turning it until it is pretty well drained, then pile it deep in the end of the vat and turn it occasionally until there is quite a further development of acid. It should then be put through the mill and stirred and aired for a few minutes, and if too cold it should be warmed. It should next be piled and allowed to mat again, and put through the mill again when the acid is sufficiently well developed, which can be easily ascertained by the feeling and texture of the curd. It should then be salted and allowed to mellow down before being put to press. The cheesemakers and proprietors of the factories are not the only ones to blame for gassy curds. The primary requisite of good cheese is good milk. There cannot be too much importance attached to supplying milk to a factory in good condition. The indifference and sheer carelessness of some patrons is surprising, and until this state of things is improved it will be difficult to manufacture a fine article of cheese. During the past season, while going through the country, I found a very large proportion of milk kept in foul places some, in spite of all that has been said against it, so close to pig sty's that the whey is turned off the milk stand into the pig trough. In other instances milk stands were close to barn yards from which all sorts of objectionable odors were coming, such as manure heating, etc. Many do not pretend to strain their milk, and in examining cans of some factories I found some so dirty for the want of washing and scouring that it would be impossible to send milk in good condition in them. Another serious evil is that some cows are allowed to drink stagnant impure water. Some during winter keep cows crowded in ill ventilated stables, causing their systems in the spring to be fevered and their blood impure, and this, I think, has a great deal to do with the present state of the milk.

When factories were first started in Maloc township, where I first worked in a factory, I was four years in the business before I saw gassy curd, and then only occasionally. At that time few cows were ever stabled. I find, also, that where factories have just been running two or three years, in the north of the county, there are instances of some makers that have been at work two seasons and in that time had only one or two gassy curds.

I have dwelt at some length on this because of its great importance, and while on the subject of cheese making allow me to say that many of our cheese are too dry, lacking that fine buttery texture that all good cheese should have. I think this can be greatly remedied by not hand stirring so much and by leaving more moisture in the curd.

I am pleased to report that I find a marked improvement in the milk, so far as its being tampered with. I do not think I found this season one for every twenty-five I found two years ago, that, that in my judgment was tampered with more or less. I tested about three thousand samples and had only occasion to complain on eighteen.

There is another point I should like to refer to and that is the curing of cheese in the fall. I visited some factories last fall where there was cheese not more than one day or two out of the hoops and the temperature in the curing room as low as 34° Fahrenheit. Now, it is surprising that any cheese maker, after making a good cheese will allow it to spoil in the curing.

I have worked for the Association 143 days, as follows: 80 days testing milk, 37 days instructing, 14 days attending to prosecutions, 14 days visiting factories, and traveling between same. Also paid out $5.38 for tin box, test tubes, postage, telegrams, etc.

ROBT. ROLLINS.

BROCKVILLE, January 7th, 1891.

Mr. ROLLINS added the following remarks: Let me refer briefly to the lack of cleanliness at some factories. The filthy condition of a few factories is really surprising. In some cases the construction of the floor makes it almost impossible to keep the premises sweet and clean. The owners should be compelled to improve matters in this respect. I said to one or two cheese makers, if I was a buyer the very first thing I would do when I reached the factory would be to step into the making room, and in your case I would go into the curing room prejudiced against the cheese. Some have good floors, but do not try to keep them clean. Some weighing cans and floors are scrubbed only once or twice a week.

TREASURER'S STATEMENT.

P. R. Daly, Treasurer, in account with the Eastern Ontario Dairymen's Association.

RECEIPTS.

Jan.	9—	To balance from 1889	$269 36
	"	" Inspector's fund, 1889	21 30
	"	Members' fees, 1890	205 00
May	20—	" Government Supplementary, 1889	500 00
July	15—	" " Grant, 1890	2,000 00
	"	Inspector's fees from factories, Western Division	365 89
	"	Fines, Western Division	769 50
	"	Inspectors' fees from factories, Eastern Division	865 00
		Total receipts	$4,996 05

EXPENDITURES.

		By paid Expenses Convention at Belleville	$394 10
	"	Balance due Inspectors, 1889	114 00
	"	Burdette, law costs from 1888	130 00
	"	Delegate to Central Farmers' Institute	10 00
May	20— "	Expenses Executive Committee at Belleville	19 50
	"	Delegates to Ottawa	37 00
"	29— "	Board meeting at Belleville	51 50
Sept.	24— "	" "	75 50
	"	Grant, Cheese and Butter Exhibit	250 00
	"	Judges for same	71 00
	"	Secretary Ashley's salary	140 00
	"	Inspector R. Rollins	730 38
	"	" A. E. Bailey	941 89
	"	" J. A. Ruddick	672 00
	"	" G. G. Publow	702 00
	"	Expenses Committee Eastern Division	41 00
	"	Dempsey, expenses in connection with Inspectors	50 00
	"	Rebate of fines to Factories	80 25
	"	Treasurer's salary, $25; postage and stationery, $5	30 00
		To balance in Treasurer's hands	455 93
			$4,996 05

AUDITORS' REPORT.

We have examined your Treasurer's books and accounts as presented in the foregoing statement, and have found the same correct, and in accordance with vouchers produced.

We are pleased to notice an increase in receipts from factories to assist in defraying the expenses of inspectors, showing a disposition on the part of factorymen to assist the Association and the Government in securing the services of thoroughly skilled and competent instructors and inspectors, in order to hold our present *first place* as manufacturers of the finest average cheese in the markets of the world.

We would urge the importance of the Association and Government devoting all the money they possibly can for the building up and carrying on this grand industry.

Respectfully submitted,

M. K. EVERTT, J. G. FOSTER, *Auditors.*

Brockville, January 7th, 1891.

Total Receipts	$4,996.05
Total Expenditure	4,540.12
Balance in Treasurer's hands	455.93

Mr. EVERTT.—I think there are some gentlemen here who would like to ask questions. One of them has said he understood that there were some $200 from the Kingston Board, but there is no mention of it.

Mr. DALY.—I believe that all that has been received has gone into the Report along with the factory inspectors.

Mr. JOHNSON.—The reason I wanted to know was that the inspector was doing good work in Prince Edward and was called away, and I understood that he was offered $200 for so going, and I did not see any account of the work.

The Treasurer's and Auditors' Reports were then adopted.

REPORT ON DAIRY UTENSILS.

The Report of the Committee on Dairy Utensils was as follows :

Your Committee find that there are several aerators on exhibition, and while we do not propose to recommend any particular kind, we wish to urge once again upon all dairymen to adopt them more generally. We also find a cheese vat faucet, exhibited by D. M. Macpherson of Lancaster, which is the best thing of the kind we have seen. This Committee would also recommend that the exhibition of dairy utensils be more encouraged in the future, and that better facilities be afforded to exhibitors for showing off the merits or demerits of their respective machines.

Upon motion of Mr. Daly, seconded by Mr. Derbyshire, the report was received and adopted.

DAIRY EXPERIMENTAL STATIONS.

Moved by Mayor Derbyshire, seconded by D. M. Macpherson, and resolved :

That whereas the ever growing magnitude of the cheese trade is creating new problems and difficulties in the production of milk and the manufacture of cheese and butter, which the dairymen in their private business endeavors find themselves unable to solve ; and whereas the Provincial Government in the past has given liberal asssistance to associations and to the dairymen, for the purpose of assisting in the dissemination and the giving of assistance through inspectors to both the producers of milk and the manufacturers ; and whereas the Dominion Government has established the office of the Dairy Commissioner for the Dominion, charged with the duty of carrying on investigations with economical methods in the production of the finest quality of dairy goods, this Association in convention assembled heartily recommends to the farmers of the province the advisability of developing the practice of winter dairying, whereby they might add to the profits of cheese making in summer the enlarged profits from butter making in winter.

The Dairymen's Association of Eastern Ontario respectfully requests the Ontario Government to continue its financial assistance to this Association upon an increased scale, so that the work of the Association might be prosecuted with enlarged vigor and success.

Resolved further, that this Association urge upon the attention of the Dominion Government, the advantage and need for the extension of the work of Dairy Commissioner by the establishment of branch dairy experimental stations under the direct supervision of Prof. Robertson, for the purpose of carrying on such investigations into the principles and practices of cheese-making and the encouragement of improved butter making during the winter, by fitting up these stations for that purpose and by the making of trial shipments of fresh made butter in suitable packages to foreign countries, in order to establish a reputation there and to create a demand, at the highest prices, by demonstrating the excellence of its quality.

Resolved further, that copies of this resolution be forwarded to the Minister of Agriculture for the Dominion and the Minister of Agriculture for Ontario, for their favorable consideration.

CANADIAN CATTLE TRADE.

It was also moved by Henry Wade, seconded by M. K. Evertt, and resolved :

That whereas the trade in the export of live cattle from the Dominion of Canada has been gradually extending during the past few years and has been a source of profitable income to our farmers and carrying companies, we, the Dairymen's Association of Eastern Ontario, hereby record our judgment that the robust health of the cattle of Canada, their freedom from all dangerous diseases and their general excellence of quality, is proverbial, and that the people of England need not fear that the health of their stock will be injured by the arrival of our cattle on their shores. We regret very much that the weather has of late been so inclement on the ocean that a great many of our cattle have perished. This, however, does not establish the presence of any disease in Canada, and we hope that Mr. Plimsoll will remain in Canada long enough to be convinced of this fact. It will be a very serious matter for the landing of live cattle to be stopped in England, as we cannot compete with the rancher in the North-west, where they can raise cheap corn in the feeding of cattle.

RESOLUTIONS OF SYMPATHY.

Resolutions of condolence with the families of the late Wm. Weld, of London, Ont., and James Millar, of Spencerville, were passed, as was also one of regret at the absence, through illness, of 1st Vice-president, F. H. McCrea.

CLOSING WORDS.

Mr. DERBYSHIRE.—I have been delighted with this Convention. The speakers have handled their subjects ably, and the reports of the inspectors and instructors have been very satisfactory. I believe the instructors have gone more fully into their work than ever before, and a good influence is sure to result. I am looking for more vigorous work in the future as the result of this gathering.

After votes of thanks to the various speakers, the press and to the court house authorities for the use of the chamber, the Convention was adjourned.

COMPLIMENTARY BANQUET.

In the evening a complimentary banquet was tendered the visiting members of the Association in the Robinson House by the citizens of Brockville. The spread was an excellent one, and the toast list brought out many eloquent, practical and witty words from representative men. The Mayor of the city presided.

II—DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

OFFICERS FOR 1891.

President - - - - - - - - THOS. BALLANTYNE, Stratford.

1st Vice-President - - - - - - JOHN GEARY, London.

2nd Vice-President - - - - - - WILLIAM MESSER, Bluevale.

Directors.

Division No. 7.—ROBERT CLELAND, Listowel.

Division No. 8.—HAROLD EAGLE, Attercliffe.

Division No. 9.—E. CASSWELL, Ingersoll.

Division No. 10.—JOHN BALLANTYNE, Pine River.

Division No. 11.—ALEX. F. MCLAREN, Stratford.

Division No. 12.—WILLIAM SYMINGTON, Camlachie.

Division No. 13.—JOHN PRAIN, Harriston.

Secretary - - - - - - - - - C. E. CHADWICK, Ingersoll.

Treasurer - - - - - - - - - J. C. HEGLER, Ingersoll.

Auditors - - - - - - - - - JOHN S. PEARCE, London.
JOHN ROBERTSON, Gladstone.

Representative to Industrial Fair, Toronto - BENJAMIN HOPKINS, Brownsville.

Representatives to Western Fair, London - JAMES CARMICHAEL, Arva.
JOHN S. PEARCE, London.

LIST OF MEMBERS

FOR 1891.

NAME.	POST OFFICE.	NAME.	POST OFFICE.
Archibald, L. C	Antigonish, N. S.	Dunham, Peter	Innerkip.
Atkinson, M.	Melbourne.	Drummond, R. J.	Kilmarnock, Scotland.
Brown, M. R.	Appin.	Dobell, John	New Salop, England.
Blair, J. C.	Woodstock.	Dillon, T. J.	Ingersoll.
Ballantyne, Thos.	Stratford.	Edgar, Thos. S.	Brussels.
Ballantyne, R. M.	Stratford.	Elliott, James	Tilsonburg.
Brown, H.	Beaconsfield.	Eagle, Harold	Attercliffe.
Barr, G. H.	Culloden.	Fulton, John	Brownsville.
Bothwell, Wm.	Woodstock.	Fierheller, C. S.	Fordwich.
Butchart, J. M.	Burgessville.	Fero, Walter	Eden.
Brown, R. M.	Fordwich.	Farrington, J. L.	Norwich.
Brodie, John	Mapleton.	Farrington, G. G.	Norwich.
Ballantyne, T. J.	Listowel.	Gillard, Wm.	Stratford.
Bayne, Perry C.	Alberta, N.W.T.	Geary, John	London.
Burgess, Geo.	Bluevale.	Gray, Jas. A	Atwood.
Bonser, Jas. H.	South Middleton.	Grieves, Jas. L	Verschoyle.
Bean, W. H.	Eastwood.	Green, P. G. C.	Sheffield.
Bates, E.	Mount Elgin.	Holmes, D. E.	Embro.
Baxter, John	Beamsville.	Hopkins, Jas. E.	Brantford.
Caddey, Thomas	Ingersoll.	Hoover, A. H.	Springfield.
Cranston, R.	Lawrence.	Hopkins, Benjamin	Brownsville.
Cuddie, Robert	Woodstock.	Hodgson, H. A.	London.
Cleland, James	Listowel.	Henderson, W. G.	Marlett, Mich, U.S.
Chown, Richard	Youngsville.	Harmer, Luverne	Bright.
Corless, John	New Durham.	Hainer, J. H.	Springvale.
Copeland, J. W.	Eastwood.	Haines, James	Mount Elgin.
Coneybeare, Geo.	Oxford Centre.	Isaacs, John R	London.
Dickinson, Joseph	Springfield.	Johnston, E.	Arva.
Durand, Geo.	Belmont.	James, J. A.	Nilestown.
Duncan, Louis	Uttoxeter.	Johnston, Robert	Bright.

LIST OF MEMBERS—*Continued.*

NAME.	POST OFFICE.	NAME.	POST OFFICE.
Jones, A. G	Glenallan.	Rusling, John	Boston.
Kidd, M.	Seville.	Riley, C. W	Ingersoll.
Kelley, Thos. E.	Otterville.	Robertson, John, jr	Gladstone.
Keilor, Alonzo	Wallacetown.	Soper, C.	Guysboro'.
Leitch, J. A.	Lucknow.	Smith, E. P.	Tilsonburg.
Lane, J. F.	Crombie.	Snell, Robert	Norwich.
Lee, S. R.	Hickson.	Slawson, C. H.	Ingersoll.
Louden, W. C.	Putnam.	Sinclair, D.	Harriston.
Lockhart, M. T	Walmer.	Stewart, Chas,	Flesherton.
McCrimmon, S.	Otterville.	Schragg, C.	New Hamburg.
McCombs, Jas.	Kelvin.	Symington, Wm.	Camlachie.
McLean, Wm.	Crinan.	Scott, J. W.	Sparta.
McCallum, H.	Gladstone.	Stacey, James H.	St. Marys.
McBain, J. W.	Atwood.	Smith, C. W.	Centralia.
McLaren, Wm.	Aveming.	Sherman, Alfred.	Bismarck.
McDermott, Jas.	Tiverton.	Saul, J. L.	Crumlin.
McGillivray, M	Listowel.	Travers, C. C.	Straffordville.
Marr, Enos.	Fork Roads.	Talbot, Charles	Crumlin.
Morrison, James	Henfryn.	Talbot, Leonard.	Crumlin.
Martin, R.	Cassel.	Taylor, John F.	West Lorne.
Miller, A.	Walmer.	Thompson, George	Bright.
Matheson, Wm. A.	Northville, Mich. U.S	Thompson, Wm.	Arkona.
Noxon, James	Woodstock.	Wilson, H. E	Dorchester.
O'Mara, Thos.	Avon.	Whitelaw, R.	Woodstock.
Ostrander, W. A	Dutton.	Wilford, N.	Salford.
Ostrander, C. A.	Lyndoch.	Walden, James	Maple Grove.
Parker, A.	Rockford.	Wallington, Frank	Tilsonburg.
Phelan, Daniel.	Woodstock.	White, H.	Pine River.
Patterson, James	New Durham.	Webster, William	St. Marys.
Patterson, J. G.	Wingham.	Wood, William	Molesworth.
Pickard, A.	St. Marys.	Wilkison, J. B.	Verschoyle.
Pearce, J. S.	London.	Williams, J. F.	Culloden.
Ritchie, J. T.	Otterville.	Wilford, John	Shakespeare.
Robertson, John	Gladstone.	Wooliver, W.	Avon.
Robertson, R	Gladstone.	Young, Thos. E.	Strathroy.

FOURTEENTH ANNUAL CONVENTION

OF THE

DAIRYMEN'S ASSOCIATION OF WESTERN ONTARIO.

The Fourteenth Annual Convention of the Dairymen's Association of Western Ontario was opened at 2 p.m., January 21st, 1891, in the Town Hall, Woodstock. The convention was one of the most successful ever held by the Association, the accommodation afforded by the public hall in which the sessions were held being taxed to its utmost capacity after the first afternoon.

FIRST DAY.

Mr. C. E. CHADWICK, the Secretary, said :

GENTLEMEN,—Up to this hour, from some cause or other—I cannot tell what—there is not a single officer of the Association beyond myself who has put in an appearance. But perhaps it would be well to utilise the time, as far as possible, and you might appoint a chairman, and call upon some gentlemen to address the audience upon the subjects to come before the convention. There are parties interested in the trade present who can say something that will be of interest.

Moved by Mr. Schragg, seconded by Mr. Fewster, that Mr. H. S. Lossee take the chair. Carried.

The CHAIRMAN.—It is rather an unusual thing that at this hour of the meeting not a solitary officer of the Association has made his appearance, but as you are here it is probably best to have something done in the way of discussion, and I will call on Mr. Robertson to address the meeting.

Mr. JOHN ROBERTSON.—It certainly is rather an awkward position that we have all been placed in, and you all know the difficulty there is in introducing the dairy subject and in bringing the proper points before the meeting to get a right start. I think you are nearly all cheesemakers here, and if you could give me a few hints of what you would like to have discussed when the meeting is small you might have more freedom and more liberty, and might gain a better interchange of ideas about your own work and what you have found to be difficult points to yourselves than you would have if once the meeting was larger and regular papers were being read.

Mr. SCOTT.—I will ask, in milking in a stable that is not properly ventilated—when there is impure air—when a pail of milk is set aside while other cows are being milked, whether the milk will become tainted while standing in the pail.

Mr. JOHN ROBERTSON.—It will just taint in proportion to the time it stands. It is throwing off steam all the time, but there are elements in the air which it will absorb. For instance, in the foul air of the stable there is a good deal of carbolic acid gas, which is heavier than the ordinary air and keeps falling towards the ground, and the consequence certainly is that a portion of it is bound to fall into the pail ; it may be so small that in a short time you cannot detect it, but it would be present, though in a less degree than if the milk stood for some time.

A TALK WITH CHEESEMAKERS.

Mr. JAMES BUTCHART, Norwich, read the following paper: In view of the losses that some of us have had on account of bad flavor in cheese during the last two years, I thought I would have a talk with the cheesemakers, and see if we could come at the cause and find a remedy. These losses have not occurred with the poorest makers, but with some of the best and in the oldest factories, which have always been trying to elevate the standard of their cheese, and they are not the result of carelessness on the part of the maker, at least not in every case to my certain knowledge.

When cheesemakers have to make up in money for what cheese lack in flavor to the amount of from $200 to $1,000 during the season, it becomes a serious matter even with those of us who have not yet been thus dealt with. Just here let me say that I believe every cheesemaker, with the responsibility of the factory's make on his hands, is endeavoring to do all that can be done in his circumstances to make the best out of the material he has to work into cheese. So that there is not much danger of our cheesemakers spoiling good material. But the possibility of his making good cheese out of bad material is still less. It is just as impossible for a cheesemaker to make good, wholesome cheese out of bad milk as for a cook to bring a wholesome, delicious article of steak on to the table cut from a putrid carcase.

The cause of bad flavor in cheese in nearly every case begins in the milk before it comes to the factory. There is no article of farm produce so perishable and so critical to handle as milk. It is influenced by the food and water that the cows partake of; by the way in which cows are treated; by the weather and by the air; and this last I think is the most fruitful cause of mischief, but the least attended to.

I will quote from the late Professor L. B. Arnold, one whose memory we all respect, and than whom we have no better authority on milk, to show the influence air has on that article:

"Milk, it is well known, is an unstable compound. It is constantly undergoing changes, from the time it is formed in the lacteal glands until it is manufactured or consumed. When relieved from the action of absorbents within the udder, and brought into contact with the air, other agencies begin to act upon it, inducing the changes which afterward occur. Unstable as milk appears to be, it does not perish from anything in the nature of its own elements, but is destroyed by influences foreign to its necessary composition

If milk be drawn from the udder without being exposed to the air, and sealed up tight, it neither sours nor taints, provided it is healthy and sound when drawn, but if exposed to the air it soon sours and decays. Milk absorbs from the atmosphere the seeds of a fungus plant which grows and multiplies and fills it with their presence and produce the souring. There is nothing therefore in the necessary composition of milk which makes it sour or putrify. That it is always matter foreign to itself which destroys it must be evident from the fact that when all foreign agencies within it are killed by scalding, and those outside of it kept away by excluding the air from it, sweet milk will remain unchanged for time indefinite. Milk which has thus been kept sweet for a year or more will sour in two days at 60 degrees by simply letting common air come in contact with it.

The influence of air upon milk is not confined to the absorption of spores which produce acidity. Spores of every kind are taken in as well. Nor does the absorption power of milk end with absorbing living germs. It takes in every odor as freely as infectious germs.

It is a fact which cannot be too strongly impressed upon the minds of every one connected with the care of milk, or the manufacture of milk produce, that milk takes in every odor as well as the seeds of every ferment that blows over its surface. Every odor that comes in contact with milk is grasped and taken in at once, and its grasp is never slackened, once taken in it is there permanently. Milk must be handled and kept in clean and sweet vessels, and must stand in pure fresh air such as would be desirable and healthful for people to breathe."—*American Dairying, pages 167 to 173.*

Now what does all this tell the cheesemaker? It tells him that our system of airing milk is very disastrous in its results. Of late years dipping and airing milk as a means of preparing it for making cheese has been very strongly advocated. As the air is more or less cool than than the milk is when drawn from the udder, passing it through the air time and again was and is resorted to as a means of cooling it. But while this desirable end is accomplished in a small degree, we have lost sight of the fact that while airing it in this way we are inducing it to take in every bad odor and all the living germs with which the air of a cow stable or stable yard is loaded. Milk treated this way at night may appear to be all right in the morning, because of its being reduced to a point of temperature at which these agents of destruction do not work very rapidly. But as

soon as brought in contact with the heat they spring into activity, carry on their work of destruction, and can never be got rid of. Any one who knows the nature of milk, can see that milk aired in the atmosphere of a foul barnyard or on a milk stand, at the side of which there is a swill tub, and surrounded by a hog-yard, with all its filthy accompaniments, is not in a condition for making cheese.

Airing milk as a means of preparing it for making cheese has nothing to commend it. The object the patron has in airing his milk is to cool it. This it will not do when the weather is warm ; and the process is so slow and tedious that many give up before it is half accomplished. In my experience during the last twenty years, the best way to keep milk pure and sweet is to cool it with water or ice in a pure atmosphere to a temperature of 60 degrees or under, stirring it occasionally to let out the liberated germs. Milk when cooled is less susceptible to change or to take in spores, germs, or odors, and when at rest cannot take in so many. During the last season I was very much struck with the sweet wholesome character of a mess of the milk which sat all night in a spring of running water. It is well known that in the fall of the year, unless the weather has been dry and the water supply bad, we have no trouble with tainted milk or gassy curds. This we attribute to the weather being cool, and the milk in consequence is in better condition. Also at that time of the year there is very little dipping or airing of the milk going on. But enough has been said on the subject of airing milk, to cause us to investigate the question for ourselves.

There is another matter I would like to bring before you, briefly, and that is the subject of co-operation among us as cheesemakers. At present there is no understanding amongst us as to how we are to deal with the difficulties which from time to time present themselves at our various factories, or how we can best carry out matters of reform. If we had in every county an organization, and had certain rules and regulations whereby we could work in harmony with one another, and would meet in convention once or twice a year for the purpose of giving our experience in our work and talking over matters of reform, and annually send delegates to this convention, through which we might gather information from all parts of the Province it would result in some good. A thorough organization of this kind, it seems to me, would materially help the cheese industry.

The CHAIRMAN.—I consider this a very valuable paper, and one which this Asociation ought to dwell very largely upon. I am very sorry that there is not a larger attendance. I would almost suggest, when there is a fuller house, to have it read over again. We all know that no cheesemaker can make a good article out of bad milk. There ought to be some uniform way of taking care of this milk. There ought to be some sort of combination between the factories, and, as Mr. Butchart suggested, every factory ought to send delegates to these conventions, and through them they would make rules and regulations to much better advantage than ever has been done, and I would like to see that discussed fully.

Mr. HUGH ROSS (Embro).—What effect has it on milk to draw it to the factory in the same cans as the whey is taken back in ?

Mr. BUTCHART.—The simple fact of drawing back whey in the milk cans does not have any effect at all ; but other matters come up, there is the washing of the cans and taking care of them. Those that take back whey like to have things convenient, and generally you find they have a swill barrel right at the milk stand ; and the milk is aired on that stand, and these foul odors and germs are taken in which destroy the milk. I think that we have got into a very bad system of taking the whey back in the milk cans ; but we have got it now, and I suppose will have to make the best of it. You are all aware that in less than two weeks the whey will eat the tin off a can and then it is almost impossible to keep that can clean, and this must have an injurious effect on the cheese. Some are in the habit of sending back whey in the same cans as the milk comes in, and some fight against this. I think that the only remedy open for the cheesemakers now is legislation. We have legislation against sending skim milk to the factories, and against adulterating milk with water, and we might just as well have legislation against sending impure milk in the same cans as the whey is taken back in.

Mr JOHN ROBERTSON.—There is a clause in the Act that refers to milk that is either tainted or impure. Patrons can be hauled up for one as well as the other.

Mr. BUTCHART.—But they try to humbug you.

Mr. JOHN ROBERTSON.—Well, I think we have got a text from the gentleman who has read this paper. The first paragraph of his paper I entirely agree with; the second and third paragraphs I do not say I will never agree with, but it is contrary to what we have been taught by the most eminent professors and the most scientific investigators that have been educating us for the past two or three years. The paper says one thing; our teachers say another thing. There is a common saying comes in oftentimes in a dispute that the happy mean will lie somewhere between the two sides. Now, what Mr. Butchart said about airing milk is simply that it exposes a greater quantity of milk so that it will be more completely brought in contact with the germs and foulness that are in the air round about it. Well, I say yes, but I never heard anybody advocating airing milk in a dirty place, nor near air that was foul or impure. I am not at all, in any way, finding fault with the gentleman's paper, but I simply want to give you different views about the matter, and then you are the jury and I want you to talk the matter over. The first point there is room for disproving, if I got the thought right, is that there is nothing in milk itself that will lead it either to decay or sour. Now, our best teachers have taught us just the very reverse, and as far as my experience goes it has taught me the very reverse. Did you ever know of any animal product, take the whole animal kingdom, that has not the germs of decay within itself? Now, the first lesson that I got was this: I got, well I will call it a "tainted" egg for my breakfast one day and I sat and looked at that and I said, "How in all the world did that egg get that taint?" Because the film that lines the shell is both water-proof and air-proof, and it might have been laid in a dirty nest, but none of the foulness could have entered into the egg. Well, I just came to the conclusion that, like all other animal products, it had the elements of decay within itself. Suppose you put it in a silk handkerchief and keep it in the closest room in the house it will decay and all it requires is to be kept warm. 87 per cent. water, 4 per cent. fat, 8 up to 9 per cent. of other solids, with a very small proportion—something about 9 to 12 of 1 per cent. of mineral matter—that is the composition of an egg. Now, you all know if butter is not pure—if it has not the casein completely separated from butter—it will get rank with the flavor. Why is this? Not because it comes into contact with the air, but because the caseine—the chief ingredient of cheese nitrogen—has the elements of decay in itself, and that butter will decay, I don't care where you put it. Now another thing I know, for it affects this, is that milk will sour under certain conditions, supposing you put it anywhere you like, unless you boil it, and then you change its character. But take milk as it comes from the cow and put it anywhere you like, that milk is going to sour, unless you freeze it, and then you arrest all action of a chemical nature while it is frozen. What makes milk sour? When a boy I used to wonder when I saw grandmother churning, how she got nice, sweet butter out of sour cream. Now, the souring of milk is either quickened or retarded by the temperature the milk is standing in. You keep milk at 70° in the purest air under heaven and it will go sour in spite of everything. What makes it sour? It is just the very same element that makes it sour that makes cider sour; it is the sugar which is in the milk, which is nearly 4 per cent., and that sugar under the chemical action caused by the heat is gradually changed into acid. Now about the airing of milk; I thought until I heard this paper that we were making a little progress in knowing how to take care of milk and in knowing how to cure milk, but he rather staggered me, because he took us away back where we were ten years ago. Now, the way to treat milk is just simply this: What do you want it for? If I want milk to keep for two or three days so that I can use it then, I want that milk just as cool as I can get it, but if I want that milk to make cheese tomorrow morning I don't want it cool because I can take more cheese out of it and more profit all around. Is it not a fact in the fall of the year, when the milk stands outside while the air is frosty and cold, that when you get it to the factory you cannot get it at all cured and in proper condition and it has been after dinner time when you could get your vats set? Why was that? Just because your milk was kept far too cold during the night. It had not

been properly cured. If you want to make cheese don't keep your milk too cold. When I used to be making cheese every day I tried to have the milk so arranged in the dairy rooms that the temperature would never be below 62°. When the milk stands overnight it is just about right to mix with the nice fresh morning's milk, and just about ripe, ready to set inside of an hour, or sometimes it is ready to set by the time you get it in. Now, one word about the airing of the milk. I will give you just a word or two about my experience, but I do not mean to say I will give you all the reasons why this is so. Now, there would be no no need for airing milk at all if we got the milk always pure from the cow. I have sat on the stool and milked cows myself when I could feel the taint coming up out of the pail I was milking into. It was tainted in the cow's stomach. Now, that is the kind of tainting and injury that causes the gassy curds. It is in the milk from its very formation. Now the airing of milk is simply doing what you can to drive that out. That is the idea about airing the milk and exposing it over a thin sheet or surface in any way so that it will come in contact with the pure air, or the portion of the air that does it good, which is the oxygen which absorbs these taints and carries them off. I will tell you how you will see the principle exactly. You have been in sick rooms; the people inside would not feel it probably, but the air was so impure that it was almost unbearable, and if you will pull down a window and let a current of air go through the room it will not be long until it is purified. How does it do that? The window being opened starts a current of air through the room, and the oxygen being strong (and pretty well exhausted in the room) the fresh oxygen just gradually cleanses the air. I will tell you where you have seen it: in a church when it began to get warm and the lights grew dim and someone opened a window and the oxygen supplied what the burning lights wanted. Now the material is different, but the principle of airing milk to purify it is just the very same—exposing it to the oxygen of the air and it absorbs the taints and carries them off, and that is the best thing you can do. Now, it is not so very necessary if the milk is pure when it comes from the cow, but in our climate bad weather, hot weather and sometimes not the best of feed will account for this taint in the milk when it comes from the cow; and we should purify that which is impure and make the best article we possibly can. I have gone to farm houses that sent milk to the factory, and just as the gentleman who read the paper mentioned, the can was standing exactly beside the pig-sty and the milk came to the factory tainted and I wanted the farmer to shift his milk stand. One and another shifted their cans and that milk came next morning in perfectly good condition. You cheesemakers, I know, have been puzzled with all these things, and we want you to discuss this matter and tell what your experience is, and say whether you are not going to air the milk and go back where you were six or eight years ago, or whether you are going to go ahead and pick up all the crumbs you can.

Mr. Butchart.—I do not say I can set anything right, but I can give you common sense ideas for what I do and say. Now, I think I quoted to you very fully from Prof. Arnold on the subject of milk souring. The Professor has been one of our teachers for the last number of years, and we always sat and listened to him with a good deal of interest, and believed a good deal of what he said. It was he whom I quoted as saying there was nothing in milk itself which would destroy. Now, it has been tried time and again; milk taken from the cow and bottled up will keep almost any length of time, but exposed to the air it will be destroyed in a short time. An egg is not air-tight. If you could keep it perfectly air-tight it would not destroy. So it is with meat, and so it is with the fruit you jar up; seal it up air-tight and it will keep for years; take the cover off and it will soon destroy; showing there is an influence of destruction in the air. It is not the oxygen, and oxygen is but a twentieth part of the atmosphere. The spores that float around in the air are saved from the contact of oxygen by an envelope. If oxygen is going to kill those germs why does it not do so before it gets into the milk? Simply because they are protected from contact by this liquid envelope that surrounds them. You know in airing milk it takes away the animal odor, the taints that are supposed to be in the cow. It just depends upon the character of these a good deal. Why is the milk tainted as it comes from her? If she is healthy and has proper ventilation and good food the milk will not be impure. You know that breathing impure air will taint her milk. If you go into a room where there is turpentine it will not be long before your cloth-

ing will smell of turpentine. But tainted milk will not be tainted by anything that is purified. You may deodorize it, but the elements of taint are still there, and you cannot remove them by the process of airing at all. Now, in airing the milk you expose it to the air more. That is where I claim we are doing an injury, because in any air these germs of destruction will be found more or less, and the greatest trouble I had last summer was with milk that was aired. I said "Air it 10 or 15 or 20 times, we want to see if there is anything wrong in it," but it did not do any good. When it came on to the milk stand I could not detect anything wrong with it at all, but I happened to find out what mess of milk was doing the mischief, and I made it up alone. The milk came in in the morning nicely. I worked along and thought I must be mistaken just up to the time of dipping, but just as the change came on the taint began to develop itself. Now, we don't want milk cooled down too much, but I would rather you would all cool it down too much than send it in after standing in a temperature of 70° all night. In the paper I read—I advocated cooling down to 60° in the summer. I would rather have it even below that. We can regulate the working up in the factory, but I cannot do anything with this foul milk, and if it once comes from the cow foul you can deodorize it, but unless you make the cheese as hard as boards the taint will develop itself sometime in that cheese. If the milk is unhealthy when it comes from the cow it never should be sent to the cheese factory. People should be careful of that. But it does come to us, and we have to do the best we can with it. My advice to every man who wants to do right is when there is anything wrong with your milk keep it at home. If the cheesemaker says anything about it he is the best friend you have. He tells you because it is his honest conviction that the trouble should be remedied. I do say that I am emphatically opposed to airing milk. I was a little sceptical when the dipping was first commenced, because the milk never came in as good as from those that cooled it down a little, and I have been reading that we were just inducing it to take in these odors from the air.

Mr. Scott.—I have had some experience in airing milk. I sent last spring and got aerators for all my patrons, and all but four used them and they were small ones, and I believe we had the reputation of making better cheese than ever before. I thought myself they were far ahead of anything we had made, and I did not know what to attribute it to but airing all the milk—not in an impure air, of course. I know no other cause. I had the same maker as made for four years, and I must say the cheese was made better to my satisfaction than before. They were purer and sweeter in flavor than any of our former cheese. We went from one patron to another and tried to get them to put their milk through this aerator, and to impress upon them that our success depended upon the quality of the cheese, and that we must have the milk pure.

Mr. John Robertson.—I can quite sympathise with the gentleman who read the paper, and who gives a long quotation from Prof. Arnold's instructions, but if he (Prof. Arnold) had been here to-day his later reading would have led him to put a different construction on this matter than he did in his earlier teachings. He was a progressive man, and was always finding out something new. One night, when addressing us a few years ago, I think in this very hall, he told us that the little fat globules in milk were encased in sacs, and that the milk had to be churned a considerable time to burst these sacs so that we could get the butter. Now, that was believed at the time; but it has since been proven by scientific men, time and again, that the butter fats in the milk are not contained in any sacs, and that the proper system of churning is to get the cream to a proper temperature, and simply strike against it when the portions of butter fats will begin to adhere.

Mr. Scott.—It is not always the milk that is so much at fault. I must say the factory-men are at fault. We do not keep our factories clean enough. I believe, if every factory man would keep his factory clean it would be an example to his patrons, and then he could talk to them better.

The Chairman.—I will give you a little of my experience in cheese-making. I had one patron who has sent milk to me for twenty years, and he has always sent splendid milk. You can tell his milk blindfolded by the smell—it is so pure. His course of

taking care of it was to milk in the open air. Everything was pure and sweet all round the premises. Then his milk was cooled and aired. Well now, if one man can send pure milk for twenty years, I cannot see why the rest of them cannot. We get odors from pig-pens, and from this place and that place, and have a bad taint from a bad atmosphere and from bad water. Most farmers milk in the stables, and if you go into their stables you would not wonder that they send bad milk. The stables are filthy, and those cows are inhaling the most unhealthy atmosphere possible. I sold some aerators for Mr. Casswell, and I always told the men I sold, never to air except in a pure atmosphere, because they would do more harm than good.

MEMBERSHIP.

Mr. CASSWELL said the board had decided to do the same as at Listowel, and as had been done for the last two years—make no charge for admission. At the same time, you understand it is necessary according to Act of Parliament to have so many paid members in order to get the grant. We have tickets and badges for all those who want to become members, and the fee will be one dollar, which will entitle each member to receive a copy of the report.

DAIRYING IN WISCONSIN.

Hon. H. C. Adams, of Madison, Wisconsin, on being introduced was received with applause. He said: I supposed that it was to be an informal meeting this afternoon, and did not expect to say a word. I would like to do what Governor Hoard always says he likes to do: "Get the hang of the barn before he begins to tear around in it." (Laughter.) I am exceedingly glad to come to this province. I have wanted to come ever since I have seen Canadian horses, and Canadian sheep, and Canadian men, particularly Prof. Robertson. I have met no man in the United States engaged in the work of agricultural education who has impressed me, or the people of our state, more favorably than Prof. Roberston, of Canada. He came into the work of our Wisconsin institutes entirely unknown and unrecognised by any man except one, and that was Governor Hoard, and he took hold of that work with an enthusiasm, in a practical and theoretical business way, and with a clearness of statement which has made him thousands of admirers in the state from which I come. (Applause.) And so I am glad to come over here and to meet those who are engaged in the same line of business in which I am engaged.

The dairy interest is not bounded within state or national lines, and there is no one flag that covers it. We have to think pretty hard to make money in this business, and if you know any way to do it easier than I can I would like to find it out, and that is the reason I come over here. Then I want to find out how we can stem the competition of fraud that meets us, and I want to find out more about the handling of milk; so I don't come simply as an instructor, but I come over to meet you as a farmer in order to get instruction from you as to how we can get more out of the soil, which you can undoubtedly give me.

Over in Wisconsin we are supposed to be a great dairy state, and we are. We make 45,000,000 lb. of butter a year, and about 50,000,000 lb. of cheese, but we don't do all we ought to do, because out of that 45,000,000 lb. of butter at least 35,000,000—put it a little lower than that, 32,000,000—is second class butter, which sells at 14 cents per lb., and the balance sells at 22 to 25 cents per lb. Now, what is the reason of that? It is not because the men that make the 32,000,000 have not got the capacity to make a better kind of butter. They have got it. Can the man who makes poor butter not make a

better article? I tell you he can make a delicate, refined butter, and the trouble with that farmer is that he does not know what kind of a man he is himself—what kind of possibilities he has laid up in himself. It is necessary that we should make him use the information that he already has in order to secure confidence in himself. There is not one man in a hundred but has sense enough, if another man has got him, to take hold of a cow, study her and find out whether she does enough to pay expenses or not. There is no man hardly so common but that he can be taught that kind of a thing. The only thing with the Wisconsin farmer is that he loses $3,000,000 a year, not because taxes grind him, but just because he won't stop to think. He goes along blindly in the old way because it is easier to go along without thinking than to stop and think; and we have been working nineteen years to get these men to thinking and working on the lines of common sense and practical thought. We have accomplished something. Nearly twenty years ago we formed our dairy society. Before we organised the average was about 20 lb. per cow per year. The average product is now about 125 lb. per year, and that is not nearly enough. I have a great many times expressed a wish that lightning would strike 350,000 cows in Wisconsin before night, and the farmers would be better off. (Laughter). But we have had additions to farmers' associations, and good has been accomplished through scattering of thousands of reports. We have what we call "institutes." We go right down to where the farmers live—close to their homes—and have a dairy session and talk about milk and butter and cheese making cows, and men wake up where they have been sleeping all their lives. At first, out of a thousand, 900 of those who went to an agricultural meeting did so to ridicule or to look on with mild interest, but after the first session or two they began to think about these things; and I have seen men come who never made a speech in their lives, who would get so hot that they would be on their feet in less than two hours, and the rest of the meeting you could hardly keep them in their seats. (Laughter.) I remember a story of a man in a State across the boundary. This man's friends wished to induce him to be a candidate for Congress; he said he did not want to act; but they insisted upon it, that the party that he belonged to required his services, and he finally consented. He was elected and re-elected, and when he came up the third time one of his friends who brought him out the first time was a candidate against him, but he failed and this man beat him. The defeated candidate said: "Why, this man makes me think of a calf; you have to pull his head off to get him to suck, and you have to pull his tail off to get him away." (Laughter.) And so these meetings have been educational, and have drawn out the good that lies latent in the farmers, and storekeepers have said to me it is astonishing the change that has taken place in the butter made in the last two years in that state. The farmers are brightening up. I want to say, as I said to a gentleman this morning, that a man who goes through an agricultural college has a hard time of it with those hard-headed farmers. At the same time I do not wish to cast any reflection upon those men in agricultural colleges. They are doing grand, good work—a splendid work. I wish you could see the work of Prof. Henry in the experimental stations. He has made experiments with feeding hogs on milk, and with various kinds of machinery for the extraction of butter-fat, and with cream; and we have established the first dairy school in the United States in connection with that sort of work. We have not been able to make an agricultural course a success, but just as soon as the interest is so extensive in the State as to justify us in doing so, we have pledged ourselves to establish it. There were three young men over there from Canada at our dairy school. Now then, in that dairy school we have something we have wanted for a long time, that is a place where we can send boys, young men, old boys; where we can teach them to make butter according to a definite practice, and teach them how to make cheese. And preliminary to that work we send a man over to Canada to find out what he ought to instruct them in. I have been until the past year, an officer of the Wisconsin State Association for a number of years, and every little while I have got letters asking who were honest and made good cheese, and it is mighty hard to find them. You can get men who are honest, but most of them don't make good cheese—(laughter)—and occasionally you get one who is not so honest as he ought to be. So we are doing that in the line of dairy education.

A number of years ago it was my fortune to be a member of our State legislature, and I had just one ambition, and that was to establish an agricultural school in my State similar to the one you have here. I think the time will come when we will get it. I was beaten then; political influences came in. I received the support of nine out of fourteen lawyers of the House and the majority of the farmers were against me. It is a singular thing that the profession of farmers, to which I belong, look with more or less suspicion upon all public movements in their interest. That ought not to be so. I want to say to this convention, as I would say to a convention in my own State, that if the farming class obtains that standing in political life, in international matters, which it ought to have, it must simply be because it deserves it. It must not build itself up by tearing down other existing professions, by decrying or pretending more honesty than other professions; but by making itself more intelligent, cleaning out its own doors, becoming educated men, not simply in the schools, but educated where you live by all the influences about you, by your neighbors, by other classes, by agricultural papers, by agricultural colleges—by all the influences which in this country and my country surround every intelligent man. (Applause.)

MR. BUTCHART'S PAPER AGAIN.

The discussion of Mr. Butchart's paper was then resumed.

Mr. J. S. Pearce.—I have had more or less intercourse with cheese-makers—practical men—through the country, and the prevailing opinion is that airing is the proper way to get the odors out. I may state just one instance in my own experience when I was a cheesemaker myself, eighteen years ago. I then had a patron about three or four miles from the factory, who brought his own milk in every morning. During the five years that he supplied the factory his milk came in in perfect order. Now, what was the reason for that? That milk was strained into shallow pans, and set away in the milk house (first stirred) on a cold floor. I think this is a pretty good argument in favor of cooling and airing milk.

Mr. Butchart.—I would like to get the voice of the cheesemakers on the subject of co-operation, in the way of organizing county associations. Sometimes when the "big guns" come among us at a convention like this one we do not say so much as we might do at a country convention. We have difficulties in our business. For instance, I have a man who will not attend to his milk as he ought to; maybe he skims a little or waters a little; now, I want to train that man up a little, not that I care for the man himself particularly, but for the sake of the honest men who are suffering. The fear that he will take it somewhere else keeps you from saying anything about his milk. Well, now, if we arrange it amongst ourselves that if a man was a delinquent at one factory, another would have nothing to do with him, we might stop this sort of thing. Then there are a great many other things; some men will persist in setting milk by hog pens, and if you don't want it some one else will always take it in. What I want is, to get the cheesemakers together to work in harmony with one another to straighten up these things. We might meet and pass rules and regulations; but unless we have some way of enforcing them, there are some who will resist all the good that has been done.

A Voice.—I tell my patrons at the beginning of the season that if they send their milk the season throught I will consent to charge so much. I make a charge in proportion to the season. If they send for six months I charge so much, and if for three months so much more. I make this proviso also, that I need not take a man's milk if he sends bad milk. They all agree to this.

Mr. Robertson.—I have advocated strongly the last couple of years that if a patron after being instructed as to how to take care of his milk, will not take the advice in a sensible, quiet way, to simply tell him he has to keep the milk at home. Do not be

afraid of another factory. I see by *Hoard's Dairymen*, where they caught two or three of these stubborn "chiels," they simply told them they could not take their milk. I had one case of this myself last season. The man was very "honest." "Now," he said, "you are not going to get a sample of my milk." I said: "It is your property and you can do just as you please." He said, "Well, if the company is not pleased to take the milk as I send it I will just keep it at home." There was a meeting of the factory board and they asked, "What will we do?" I said, "Take him at his word." So the milk wagon would not haul it, and he left it at the factory himself. The milk hauler took it home again; and he went to another factory next day to see if they would take his milk. The cheesemaker said "No, if you cannot agree with the men you have been dealing with we cannot take your milk." I believe he would have given $50 if the factory had taken it. He had no pans ready, and actually for four or five days he was obliged to feed the milk to the hogs. Then he came to the factory again to see if they would not take his milk, but the directors said "No, we thought you were a man of your word," and I believe it was the very best lesson the neighbourhood ever had.

Mr. SCOTT.—I believe it was a very good stand to take. But many times we find other factories will take the milk. They make bad cheese, perhaps not so good as a factory which refuses such milk—and yet it goes on the market and has its place. I believe the rule would be a very good one not to receive milk at one factory when it was rejected at another on the ground of bad management or adulteration.

Mr. CASSWELL.—I would recommend the cheesemakers if they think well of this matter of county organizations that they prepare a resolution recommending such a thing and then it will be in business like shape; and I would also ask Mr. Butchart whether he intended to have these meetings for cheesemakers only, or whether they would ask the patrons in the neighborhood of those meetings to attend and give them some points on the keeping of milk? By doing this, I think you would arrive at two good points.

Mr. BUTCHART.—My idea was that this organisation should ask delegates to be sent to the county convention from the milk meetings, the representation to be, say, two from the patrons and one from the factory, and then send delegates from the county conventions to this convention, and in that way I think we could reach the patrons better than at the present time.

Mr. CASSWELL.—You are aware that on trouble has been to reach the patrons The cheesemakers attend the meetings, but the patron has not received the instruction he ought to receive. But far more could be done to educate them if you would hold county meetings and township meetings through the winter. If you would call out your patrons and tell them what they want, I believe there would be more good done and an end would be reached which has not been served by this convention.

Mr. PEARCE.—I think the time has come when you should organise yourselves in the line of Mr. Butchart's suggestions. One more subject for consideration would be a regulation as to routes, etc. You all know that the big expense in the making of cheese is the drawing of milk and that it is nothing unusual to see two or three waggons going over the same route; and I think the day has come when that should be done away with. It is money thrown away that does nobody any good. I would also speak of another point, and that is that cheesemakers are "beating" each other down to too low wages. Now, if you had an association of this kind you could fight against that unjust and unnecessary system. I, as a dairy supplier, say that you will have to lay down cast iron rules. I would suggest that a committee be appointed to draft some resolutions on these subjects. The day has come when you should act, and the sooner you take this thing up the better it will be for you all. (Applause).

Mr. P. H. GREEN, (Sheffield).—Some twenty years ago three other gentlemen in our neighborhood and myself established a factory. We ran it for a length of time, but, having other business, unfortunately I dropped out. I have lately taken charge of the business again, and I am here for information. During my short experience there we met with just the difficulties discussed this afternoon. I remember getting hold of one patron whose milk was very poor indeed. Our cheesemaker had very little experience, and we

had none, and as a result some sent good milk every time and some sent poor milk, and we had some difficulty in this way. I took the charge of arranging with the patrons in my own hands and when we found any person's milk not quite satisfactory, we quietly drove down to see it, and asked the man to come to the factory and see the milk he sent, compared with what he took from the cows. I never yet got a man to go with us. They were all quite willing to submit. This man said whatever we decided he would stand by. I wrote back that his milk fell short three-eighths of the standard. We gave him his choice of taking a reduction or going before a magistrate. He accepted the latter, and his milk fell short thirty to forty pounds. He said he had dried off two cows; I said he had dried off the best ones. We had some difficulty with the tainted milk. We tried every plan we could imagine to get over that difficulty. We knew we were turning out an article that was very unsatisfactory. The milk appeared to be all right when it came; it was put into the vats, and when the souring process was going on, we noticed a musty smell. The cheese was soft and had the same smell. We examined the milk and found it all right. We examined the cans and found they had that musty smell. The lids were worn and patched, and in these lids there were little openings large enough for the milk to get in and ferment, and that just spoiled the milk. As soon as these lids were "kicked" out of the factory we were done with the difficulty. I think Mr. Casswell remembers the difficulty we had. If I mistake not he handled some of the cheese we made at that time. We have one patron who aired and cooled his milk. It was stirred for a length of time and dipped. It was set in shallow pans and set in water. I have had, in the hottest weather, from six to seven cans of this milk kept over from Saturday night to Monday morning, and it came in as sweet as a nut. While I have the floor, I should like to ask another thing, and that is whether there has been a factory inspector appointed for this Association, or whether there have been any steps taken to have an inspector with reference to the management or testing of milk?

Mr. Benjamin Hopkins, Brownsville, the 1st vice-president, entered the convention at this stage, and was called to the chair.

Mr. Casswell.—I would just suggest, if it is agreeable to the vice-president's mind that I think it would be well to continue this first session in an informal way mainly for a discussion between the cheesemakers and the people on the floor, and I think more good can be done than by a good number of long papers. You have done a lot of good this afternoon; and with regard to the motion that I suggested it would be well to leave that until to-morrow.

THE PRESIDENT.

The Vice-President.—I am pleased to be here and to meet you to-day. Our esteemed friend, Mr. J. B. Lane, the president, about a year ago went home sick from our Convention at Stratford and since then he has been out but very little. I was in hopes he would be able to be with us to-day, but I hardly think now he will be here. However, we will do the best we can in his absence. There have been no inspectors for the past year and there has been no action taken in that matter so far as the present year is concerned. I suppose the new Board of Directors may recommend it. The year before we rather overstepped the bounds and went considerably in debt, but I suppose we will be able to declare a clean sheet so far as the finances are concerned at this time, and therefore may be in a position to do something in that direction.

Mr. Chadwick, the secretary, was called upon to read a letter from the President, which expressed his sincere regrets at being unable, in consequence of prolonged sickness, to attend the convention, and stating that though he despaired of ever being able to take part in the work of the Association again, his heart would be with them to the end in the good cause of developing and improving the dairy interest.

COMMITTEES.

The Vice-President named the Business Committee as follows :—

Business Committee.—J. S. Pearce, London; J. W. Scott, Sparta; Jas. Williams, Culloden; Wm. Fewster, Norwich; Thomas Ballantyne, M.P.P., Stratford; H. S. Lossee, E. Casswell, Ingersoll.

The following committees were elected :—

Committee on Resolutions.—J. M. Butchart, Burgessville; J. L. Farrington, Norwich; Ezra Bates, Mount Elgin.

Committee on Utensils.—E. Hunter, Woodstock; John Fulton, Brownsville; C. Schragg, New Hamburg.

PROF. ROBERTSON ON GENERALITIES.

Prof. Robertson was called upon to give "a general talk." He said: I am quite unused to being called upon to talk in a general way on some general and indefinite subject. I have made it one of my aims always to keep quiet when I had nothing but generalities to speak upon; so this afternoon I am beginning my mission on generalities in dairying.

The first general statement I want to make this afternoon is this, that when a man wants to make a speech, or run a cheese factory, without some definite object in view, he is almost sure to come to grief at some part of his experience. I find men all over Ontario going into cheese making on general principles, and they take milk of all qualities on general principles, to keep in with the people of the neighborhood. Then, I find them doing the work in the most particularly general way, without any particular attention to any particular process, and then we have cheese so comprehensive in every aspect of its nature, as to the shape and as to the size and as to the quality, that you could not possibly name any kind of cheese that would not be embraced in that lot. Now, these generalities do not suit me, so I would like cheesemakers always to have some specific object in view, whether they come to a convention or run a cheese factory; and if a cheesemaker comes here who should now, even at this late hour, make up his mind as to some particular point that he wants to know something about; or if he wants to give information to other cheesemakers about anything he has found out—if he has come with the intention of obtaining any information and of disseminating information—information will be brought to everyone who takes part.

Then I find that we are happy in having with us so many men who have done good service in the past to the dairy interests of this province. Since we have men who have an accurate acquaintance with all your needs I need not take long. My friend, Mr. Ballantyne, is here, and all want to have some of his bright thought, enthusiast as he is. Then we have our friend, the Honorable Mr. Adams, of the state of Wisconsin, the one state in the American Union which is pushing us hardest for the best place as a dairy country on this continent. Now, the Wisconsin people have the very kindliest regard for the people of Ontario, and I believe away down where I keep private opinions, that although they come here it is merely in the excess of their generosity and that they believe we will keep ahead anyway, but they like to stimulate us. So friend Adams, while telling us what they are trying to do in Wisconsin will tell us this one thing at anyrate which the people of Wisconsin have demonstrated to the people of the world, that it is possible to keep cows paying for their board for twelve months in the year, and that may help to lift from us the terrible reproach we lie under to-day of keeping herds of cattle paying seven months' board and living on us the other five months, just because we are fond of doing drudgery and of reproaching the Government instead of minding our own business.

Now, let me say a few things more about this dairy business as to its meaning here in Ontario. First of all we have been doing excellent work in making lots of fine cheese during the summer months, but we ought to do more than that with our herds of cattle. I would like to see the dairying season lengthened at both ends, but I cannot recommend the cheese factory men to make cheese earlier than April as a rule, because the roads are bad and fodder feed does not make the best of milk for cheese making. I cannot recommend cheese factories to lengthen the producing season at the other end, because when the roads get bad the expense of drawing is greater, and the cheese factory buildings are ill adapted for making good cheese in winter. What should we do at both ends to lengthen the incomes from buildings and business? First of all you will find these to be the existing demands; that there is a demand for fresh made butter, and that while stale dairy butter will bring 15 cents a lb. fresh made creamery butter will bring 24 cents. Roads will seldom be bad enough to hinder a man from sending all his cream to one centre, because the creamery wagon can go round twice a week in cold weather, collecting about one-sixth the weight that he would of milk for a factory and the farmer will realise from that, during the winter, nearly as much money as from the cheese factory in summer. In that way I think we ought to lengthen both ends Then, to do that, would involve slight changes. We need to have a few men who will begin having their cows milk the year round—not the same cow milking the year round, though each cow should work the year round. She should make milk ten months and then spend the balance of the year in making a calf. She should not be milked these two months, just because she has maternal functions requiring all her energy. Then we require some cheesemakers who are long-sighted enough and clear-headed enough to know that they can never get $10 a month more until the farmers make larger profits. Then they will urge upon their patrons the advantage and necessity of starting their cows to milk in the fall and all winter, and then from the enlarged profits they will get their own share. We need also to have a few common-sense factory owners who will advocate the desirability and practicability of changing the cheese factories into butter factories during the winter months.

The total cost of changing a well built factory need not exceed $250. Now, the sooner that is commenced the better for the dairy business. The whole change can hardly be made within ten years, but a few factories leading in this good work will soon induce most of the factories to follow their example.

In that way I think this convention could not do better than discuss details of any change in the basis of carrying the business on under that plan. I say that for this reason, that in the mass of general work our conventions now-a-days should be devoting their time far more to discussing the broad principles that we ought to follow and to apply in this business than in discussing the details in making cheese in factories; but in making this new departure we ought to follow even the minute details, so that plans formed and practices established may be undertaken at the beginning on correct principles. And then, to compensate for the leaving out of our dairymen's conventions, of so much discussion on the practical part of handling milk and manufacturing cheese, I would throw out this suggestion—which is not new, but I give it the endorsement of my approval—that the cheesemakers ought to have a cheesemakers' union, where they ought to have things settled which cannot be settled in a mixed meeting of cheesemakers and farmers and salesmen. Cheesemakers have several objects for such an organization. For myself I have very little sympathy with any combination that means coercion, but you can have combination without coercion; a united action, or combination, for expending energy with better results. Now, if cheesemakers had co-operation they would fix a scale like this for remuneration: they would say that a factory, where they make so many tons a year, shall not be taken by any cheesemaker at less than so much per hundred lbs., and then let the person or persons controlling that factory select a man according to the ability, capacity and competence for this work. Now, it is not often a question as to the man who can make the finest goods, but the owners strive to get a man who will cut his wages down, and if this is continued good men will become disgusted with the business and then our trade will go to pieces. Such a union would be useful. Perhaps its greatest usefulness would arise from this particular, that cheesemakers could there discuss the

very best ways of testing milk, the very best ways of discerning the proper ripeness of milk for cheese making, and all that part of the business which belongs to a cheese-maker's trade and has no special interest for the people who come to our conventions, they being farmers. Then they could discuss that aspect that has been altogether neglected, that is the equipment of cheesemakers by a more thorough understanding of their business, not merely as a trade, but as leading up to something better, where the cheesemaker would understand the whole theory of cheesee making, and where he would lead in his neighborhood and be not merely a labourer, working for a few dollars more a month than agricultural laborers. I know of nothing after all that would elevate them more as tradesmen than having a sound, well-conducted cheesemaker's union to enable them to solve some of these points.

Speaking of the patrons, Prof. Robertson said: One man sends milk to the factory and complains that the bottom has fallen out of the dairy business, because the cows last year gave him back $22 each, and then he begins to wonder why it is that the cheese-buyers always get the better of the poor farmer, and how it is that the cheesemaker can dress well on Sunday, while he has to wear the same coat for four years; and he goes on wondering how it is that the Government can pay such nice salaries, and he is all the while "nosing" after those far-off factors whence no help will ever come. First of all he forgets this, that the man who keeps 12 cows and never finds out which is paying and which is not, is tempting the devil—and he does not require much temptation to do wrong as a rule—to keep 12 poor cows living on him all the while. If a man will control that factor as a rule he will find the 12 cows that are paying and turn the others out. By having his eyes all the time intently fixed on something he can control, he will find the cows that milk for a long period.

Then he will have to control the factor of feeding a far less expensive feed. How will he do that? The man who does not grow anything but grass has no right to scorn Providence for putting him in a bad climate, because our country will grow bigger fodder crops than any in the world. Now timothy is a good grass, but it is not half so good as corn grass. Corn grows, you see, to a height of seven feet against timothy's two and a half feet, and it does not exhaust the land nearly so much. On general principles, you see, a man should look after his own business at the home end and he will find his prosperity established

Then a man should control this other factor; he can make his cows give nearly one-third more milk during the summber by having them stabled and fed all winter. I have been out the last four days since I was at Berlin, and I have seen farmers feeding cows on dry hay—so exceedingly dry that I question if the chemist would find much moisture there—and dry straw (and no roots) and a little dry grain; and the cows are all dried up, not only in their milk but in their hair, and then all the avenues for the milk are dried up and the cows cannot work next summer; and so if the farmer would feed some succulent foods, some corn and roots, they would make far more milk and larger profits.

Then, more than that, I find farmers keeping only six cows on 100 acres of land, whereas they ought to keep four times that number. An acre of corn will feed just four cows all winter, but an acre of timothy would not feed one cow all winter, so they have to go into this factor, which is altogether within their own power to regulate as they choose and to apply as they like. They might keep four times as many cows, and then that would mean what?—four times as much manure, and four times as much manure would mean bigger crops. And so by picking out the best cows, and feeding succulent food all summer and succulent food for the cows all winter, the farmer will get more milk and more money, and more manure and better crops. So he can keep more cattle until he will find it is a paying business to run his farm to the full capacity instead of only utilizing one-fifth of the land he owns. It does not pay a man to have a very large factory with a hundred people in his employ working at only one-fifth the capacity of the building and the people; he cannot make profits that way. His profits come from doing all that his machinery and people are capable of turning out; and so a hundred acre farm in Ontario ought to maintain 25 cows, and all young cattle ought to be complementary to that.

And so on general principles—and this is the end of this general talk. I would tell you this, the more cows you can pack on 100 acres of land, and the more corn you grow, and the more manure you get, and the more milk, the more money you will make as individuals and the more money you will have as townships and counties, and the more prosperity we will have as a province. So, on general principles, since population anywhere increases the value of property—the larger population of people you get, the more business you will have, and the larger population of good cows you get, the larger the profits you will make.

This is incidental, but sometime during the progress of the convention, I will try to give you either more specific advice or information as to how I think you will be able to carry this winter dairying on in the years to come. Meantime, I am not "giving anything away" when I tell you that in some experimental factories in different centres we hope to try and demonstrate the application of the very principles or practices that I have this afternoon been hinting at for your guidance, and when we have these centres established, and the practicability of these hints has been demonstrated, then I would hope that the whole province would by-and-bye be covered by cheese factories and creameries doing business for twelve months in the year. If we start these this winter, in three years' time we will have ten for one now, and later there can be 100 factories running all winter. I hope to come to Woodstock then and see it. (Applause.)

THE FOREGOING ENDORSED.

Mr. Thomas Ballantyne, M.P.P., followed with an endorsation of Prof. Robertson's suggestions. He said: It has been my experience and preference to do what I could in the way of improving the cheese product and also to assist in developing what Prof. Robertson has hinted at, viz.: combining butter with chesse. The more I think over it the more I am satisfied that successful dairying can only be profitably adoped by educating the cow. For a time I did not see my way to introduce butter in connection with cheese. We had established a very succestful business in cheese. We had been the most successful country on the continent of America. The state of Wisconsin had made a reputation by copying our methods and the state of New York, to some extent, as well as the Old Country, and so far there seemed to be some reason to fear there was a risk in combining butter with cheese dairying. But I am fully satisfied that in order to obtain the best results a percentage of the cows will have to calve in the fall. There are many reasons for this. It is the season when farmers have most time to attend to it; it will result in better feeding and in a better quality of article; it will enable us to make butter when there is a good price for it.

Then there has always been another difficulty in connection with cheese making and I have felt that from the first day I commenced. We have now a great many farmers' institutes doing a noble work in educating and making farmers think, and really the assistance the Government has given to stimulate these has been productive of much good. When cheese factories were first started the question with the farmers was how factories were managed and what they could expect from their cows. The first difficulty suggested was what are we going to do to raise our calves and feed hogs? Winter butter making will largely help this. The farmers have not been raising the character of the cows. It has been a hap-hazard system and they had either to lose the milk or starve the calf, and as a rule they chose the latter. Winter dairying will enable them to select better stock. They can feed their calves in the winter and turn them out in the spring. I was going to say that we have led in dairying; I hope we will continue to lead. My friend, Prof. Robertson, talked about general purpose principles or remarks. Well, he does not generally talk "general purpose," and he did not to-day. I have not much faith in general purpose anything; neither has he. I believe in something definite that we can practice and adopt, and we have been doing so in cheese making, but we must not stop here. We must look forward and see how we can be better educated.

Now, I would say this, that our American neighbors in some respects are very much ahead of us. They are doing work in Wisconsin, from which friend Adams comes, that we are not doing ; we have been doing work that they have not done. We have been more successful ; and I am glad that whatever politicians may do to raise barriers against the interchange of trade there has been the utmost reciprocity of sentiment between the dairymen of the United States and those of Canada, and on behalf of the President of the Western Ontario Dairymen's Association I am glad to welcome Mr. Adams to our midst. When we started we were indebted to our American friends for their assistance. At our first convention we were almost exclusively indebted to them for the information we got. The questions then were, what is a cheese factory and how is it to be managed ? The late X. A. Willard, the late Harvey Farrington and others were the men who assisted to lead us, and we have continued to exchange views. At the present time some of our men—three from my own neighborhood—have gone to Wisconsin dairy school to learn more about their business. This is what I like to see. I do not believe in a man following a trade unless he is bound to excel in it. You have a perishable article to deal with—the most sensitive that I know of—so easily affected in so many ways, and unless a man is an enthusiast and is bound to excel he will never make a successful cheesemaker. And these young men are our best. The very fact that they have gone there, that they may see something, incurring all the expense themselves, is evidence that they are of th right stamp.

Then as to the importance of having a cheesemakers' union. I have talked that for several years. What Prof. Robertson has said is the case. Twenty-five years ago, twenty years ago, or fifteen years ago, who were the young men then coming to learn ? They were the most intelligent of men, the sons of the best farmers, and they were the best young men in the country ; because, I care not what line of life you take, you find the men who are the most successful are the men graduated on the farm. There is a mental fibre about them that you don't find about any other class. The prices paid them were higher than for ordinary farm work, and all were anxious to learn. At first they were willing to work for nothing and pay $100. Now the owners have largely become joint stock companies, the farmers only owning the factories. If this thing had been left to them to start I would not have liked the cheese they would have made ; they have not done much to develop the business ; but they are exceedingly anxious to cut down the prices. However, some of them have paid a little dearly for that, and we find, as a rule this year, that they are getting a little more liberal. But I agree with Prof. Robertson that the cheesemakers should meet and form an organization and adopt some scale of prices. Then you would find the best men would come to the front. We have made an improvement this year in this matter. Maybe it is the result of Prof. Robertson's talking to the owners. At any rate I know three factories where they have raised the prices this year. As to the poorest paid workers, we know how that goes ; they are willing to shirk anything and you know the reasan. Why ? They say " We don't get enough money to make good cheese ; we don't need to do it " This is the worst kind of economy. I do not know that there is much more that I can say now. The meeting is very thin, as is usually the case on the first day, although since we commenced the three day's Convention the thinness of the meeting until the evening of the first day may suggest whether we should have three days of it or not. I shall answer any questions, because I think there is always too little discussion. I have not so much faith in addresses, and have always thought we had too many papers and speakers.

Mr. GREEN—Has the Association taken any steps to secure an inspector or has any application been made to the Government to make provision for one ?

Mr. BALLANTYNE—Do you mean a milk inspector ?

Mr. GREEN—Yes.

Mr. RESSOR—I see some of the county councils are moving in this matter. I think a short time ago the county council of Middlesex sent a notice to the county council of Wentworth, asking them to assist in having an inspector appointed, and it was unceremoniously set aside.

Mr. BALLANTYNE—My attention was lately called to a resolution which was passed at the June session, and a copy sent to the county councils. Now, in connection with cheese instruction, you are aware that this was combined as far as possible with inspection; but there can be no efficient inspection except by the management of factories. Let us see what this combined instruction and inspection means. Suppose one inspector has 60 or 70 factories, he can only test at one in a day perhaps, and he would be 60 or 70 days in going over the whole of the factories. Such a system of inspection is a mere sham. I have always felt that there can be no reliance placed in it. The men that this Association appoints should be merely for instruction. Some say the inspection might be done better, but it is impossible. You would have to have an army of inspectors. How would you support them? Are you willing to pay for it? Is that the proposal? If you asked the Government to pay for all this they would say it is your business to look after your own interests the same as in the case of any other manufacturers. There are things the state can undertake, but I do not believe that is one of them. I have run a factory from the very inception of the cheese industry, having shipped the first load of cheese on the Grand Trunk Railway, and I have never had a hitch or a misunderstanding with a patron. We are making more cheese to-day than we ever did, and I have no hesitation in examining every man's milk, and I have seen invariably that where factory men did that they had no trouble; but where they did not, trouble has arisen and sometimes resulted in the death of the factory. I recently got a Babcock separator for testing my own milk. There is no use expecting the Government or this Association to do this work. We were the first, so far as I know, to adopt the system of having cheese instructors. It has been productive of immense good, and has been adopted by others, but that is a different thing from having milk inspectors.

Mr. SCHRAGG.—What is the price of the Babcock testers?

Mr. BALLANTYNE.—They are all prices. I think the one we have will test thirty samples at once. I think the price was $30 or $40. I did not consider the price. It was a simple question as to whether it was necessary.

A VOICE.—How about sending out boxes with one scale?

Mr. BALLANTYNE.—The boxes should be all double scaled. Quite a large percentage of western cheese is shipped through; they are not touched from the time they leave the station until they reach their destination at London or Liverpool. Those shipped from New York are nearly all overhauled and put in fresh scale boxes. Others, of course, only get the one, and no cheese should be shipped out at any season of the year without two scales on each end of the boxes. There are plenty of factories that do this; but there are others which do not care a rap about the reputation of the goods. I never did send a cheese without a double scale box since I was told to do it, and since I have had experience in seeing the boxes with two scales at each end.

Mr. CASSWELL.—I have no doubt from what we have seen we are imperilling our reputation by shipping in these single scale boxes.

Mr. BALLANTYNE.—It is not to be considered. In sending out notices to factories we have a printed form to fill up, asking for double scale boards. I often said I would like to see the boxmakers form a union, so as to increase the price for a good box, but the cheesemaker has been left to cry down the boxmaker, so long as he could get the boxes cheap anywhere.

Mr. BUTCHART.—What is the effect if the cheese are not the size of the boxes?

Mr. BALLANTYNE.—They should be the size; but above all things don't let the cheese be higher than the box.

A VOICE.—Should the lids be nailed?

Mr. BALLANTYNE.—That is a matter of opinion. You may do as the shippers want them.

Mr. FEWSTER.—You said that joint stock companies cried down makers' salaries. Do they do it more than the private factories

Mr. BALLANTYNE.—We have so few private factories, I cannot answer. I know I have a private factory and I don't do it.

Mr. FEWSTER.—Of course you are an exception, but do the general run of private factories pay more than joint stock companies?

Mr. BALLANTYNE.—I believe in our part of the country the joint stock companies pay a little more than the private factories. The trouble is that when they open the tenders they generally take the lowest, but some of the factories this year made a change in that respect. They did not advertise for tenders, but selected their makers and raised the price in every case. I cannot tell you how pleased I was to see that change, because the system of cutting down meant driving all the best makers out of the business.

Mr. FEWSTER.—When a patron was reported, or fined, perhaps, for sending milk that was watered or skimmed, I have known some joint stock companies which would not take his milk afterwards, while private factories would.

Mr. BALLANTYNE.—As a business principle we have adopted the plan of sending patrons away who have adulterated their milk. It is a very serious disgrace for a father or his family to be branded as milk skimmers, and the man owning a factory should not be hard, but being satisfied that he has patrons who are guilty of adulterating their milk he should expel them from the factory.

A VOICE.—Have you any experience of milk brought to the factory in cans in which whey is taken back?

Mr. BALLANTYNE.—Many years ago I found the best factories were doing that. I found that it caused a bad flavor in the cheese, and began preaching against it through the press, and in season and out of season, and there is a great improvement in this respect. If you can find anything so sensitive as milk, I would like to know it. Think of the risk you are running of some careless individual neglecting to thoroughly wash and scald his cans. Then another reason against it is that milk hauling costs more. Another reason is that the tinning of the cans gets eaten away very soon with sour whey, and then it is impossible to keep the cans clean, and it costs more for cans. The whey could be sold to companies for feeding hogs. Speaking about the effect of taking the whey back in the milk cans you have all heard of the Elma factory. That neighborhood, where we get as good cheese as we get on this continent, was once making cheese so poor that I did not know what was wrong with them, and I called it the "Elma flavor." I once shipped this cheese in the ball; it cut nicely, but had a nasty, "buggy" flavor. I was in England in the spring and the buyers could hardly sell it; they had to sell it finally at 20 shillings under fine. Looking into the cause I came to the conclusion at last that it was sour whey. The owners called a meeting of patrons and decided not to send back whey in the milk cans, and they have had fine cheese since. I think the thing is all wrong together. The difference in the price that is paid for an extra fine cheese and an ordinary one is so great that it is worth while using every precaution; and it is these very fine factories that have enabled you to get the price you do for your cheese. I say this, that the highest price is paid for poor or secondary goods in this district which is paid on this continent; and why is it? Because this district has got a reputation and buyers send for your cheese; and the reason is on account of a limited number being exceptionally fine.

Mr. GREEN—Would you put the brand of the factory on the boxes?

Mr. BALLANTYNE—I would not advocate that. Every one knows that a factory may make a very fine article one month and very poor the next month. There are very few factories you can depend upon for getting the cheese uniformly fine.

A VOICE—What is your opinion as to feeding rape?

Mr. BALLANTYNE—There is no doubt the milk will be affected, but the feeding of rape in the fall depends on the way it is done. I would not allow patrons to feed Swedish turnip tops at any time. We feed on my own farm gray stone turnips after milking; but I cannot imagine, if the cows are allowed to feed on rape, but that the milk will taste and make a very inferior cheese.

Mr. CASSWELL—Rape is ten times worse than turnips or turnip tops.

Mr. BALLANTYNE—I believe in feeding a little turnips once in a while. It will increase the milk, and if fed just after milking, the milk has very little of the flavor.

A VOICE.—Which takes the market best, cheese with a little color or highly colored?

Mr. BALLANTYNE.—It is a matter of opinion. To-day colored is preferred; but there are districts where they prefer the white. The consumption of the white has increased. The time was when they were not consumed. London, for instance, did not take a white cheese. The working classes there, and people in the north of England and in some districts of Scotland use the colored; and you have other districts where they prefer the white. If white is in demand they rush into the colored, and if colored is in demand they rush into the white.

A VOICE.—We would like to have your views as to airing or cooling milk, or both.

Mr. BALLANTYNE.—There is no question they are both right; but see that the utensils are clean. People are apt to trust too much to a little water which is inconsequential. I will tell you what my experience has been last year. We had a very cool year, and with a view to assisting our patrons I gave them each an aerator. We never took more milk to make a pound of cheese than we did last year, and I do not know; but I think the people trusted to putting the milk through the aerators once. In cold weather it is more important to aerate the milk in order to prevent the waste of fat, and it is the extra fat that brings the extra price for cheese; and I am afraid there is a great deal of the loss caused by not stirring enough to make the separation perfect.

Mr. CASSWELL.—Some 16 or 17 years ago I bought a factory's cheese near St. George. I found a bad smell of turnips in the factory. The owners said it could not be, as there were no turnips in at that time. We "pulled" the cheese and knew at once it was rape. I said I could not take the chesse. They found one of the patrons had been feeding rape regularly to his cows The result was that they sold for several cents below the price that was offered first. It is bad to skim a little, it is bad to skim much, and there should be no skimming at all, and there should be no rape fed at all.

The convention adjourned till 7.30 p.m.

EVENING SESSION.

The convention resumed at 7.30. Mr. THOMAS BALLANTYNE, M.P.P., was the first speaker, his subject being:

EXPERIMENTAL DAIRY SCHOOLS.

He said: Owing to circumstances over which I have no control I will not be able to remain during the whole meetings of the convention. This I very much regret. You all know my interest, and if I have felt it more my duty, in connection with one thing and another, it is to aid to the fullest of my ability everything in connection with the dairy bnsiness.

It may be as well, in order to understand the question, to take a brief retrospect of the dairying business in this country. Those of you who are old enough, remember that some thirty-five years ago an immense number of cows were bought here and shipped to New York State, their milk to be manufactured into cheese and the surplus product to be shipped to England; and while we were asking ourselves here could we not do the same, the system was introduced into this country, and principally, I may say, owing to the late Harvey Farrington, of Norwich, who is justly entitled to the title, "Pioneer Dairyman of Canada." Remembering what he did, I say it would be difficult to find an individual in all respects so well qualified to do what was then required. When he started, he had

visitors from all parts of the province to learn what a cheese factory was. The result was that cheese factories were introduced into this country and dairying spread very rapidly. Had it not been for his efforts in connection with the cheese factory system the growth and development of the industry must have been very slow, but as it was it spread very rapidly and we became soon large exporters of cheese, It is true, at first our goods were occupying a very inferior position in the English market, selling lower than American cheese which was then made mostly in New York State, in Oneida and Herkimer counties, and it was thought there was something peculiarly adapted there for the manufacture of a fine article. They had very fine grass land and the country was generally well watered, and it was not thought we would become formidable competitors in the markets of the world. This was the position at that time.

By-and-bye we began to improve and there were a small number of factories producing, I think I can say, a very fine article. At the Centennial Exhibition we were successful in carrying off the highest honors, and that was important in giving us a standing in the markets of the world. However, it was seen that something must be done to get a larger percentage of fine cheese, and the question was in what way we could improve the whole product. The result was the Western Dairymen's Association of Ontario was the first to suggest the idea of employing instructors as a means of communicating information and showing makers the correct process of regulating the proper proportion of salt, the development of acids and everything in connection with the manufacture. The result was we had a very decided improvement. Cheese made in eastern Ontario at this time was selling at one to one and a-half cents per lb. less than western cheese, but they followed our example, the result being that their article brought equal prices with ours the past season. They were perhaps better situated than us; they had been dairying previous to the introduction of cheese factories, they understood the care of stock, they had been making a better quality of butter, ours was about as bad as could be. That was our position then.

What is our position to-day as a result of our care? Our cheese sells higher as compared with New York State and the Ingersoll district—meaning by that all west of Toronto—has best reputation and commands highest price of any American cheese on the English market. Looking, before I came to-day, at the *Grocer*, published in London, England, which contains a record and the transactions and the advertisements of all the leading men in the cheese trade, I notice American cheese is quoted about four shillings under best Canadian cheese.

So far we have done very well, but I still believe we can make a very great improvement. I remember a few year ago when Scotch cheddar cheese, made in the dairy districts of Scotland, where they are doing nothing else and where they are keeping pure Ayrshire stock, occupied a very inferior position in the markets of the world. In England our cheese would sell higher than the finest Scotch cheddars. But they have been taking a leaf out of our book. A gentlemen interested in the business, Mr. Wallace, happened to be on a visit to this country and spent a week with me discussing every matter in connection with the factory system. I suggested the formation of a dairy association, and said by that means the practices and principles of cheese-making could be clearly explained, because every day convinces me that while our meetings have been of immense good, yet it is actual demonstration that can do the most good, and when you consider how delicate a thing cheese-making is and how much difference there is in the value of the goods on account of quality, you must fully recognise the importance of every particular being fully attended to. I was present at the formation of the Scotch Dairy Association in Ayr. They decided to employ instructors, and instead of employing one of their own number, they applied to me to recommend one from this country as cheese instructor to do similar work there as is done here. They have now gone a step further and have established dairy schools in connection with their work of instruction. Now, if that is necessary there I think it is more necessary here.

But let us look at the position of affairs where these schools are in existence. I found last year on a visit to Scotland that the finest Canadian cheddars were selling at 43 to 44 shillings, while their finest cheddars were selling at 60 shillings. That was a

great difference, and it is a difference which concerns the farmers, because the cost of manufacturing good cheese is just the same as of manufacturing poor cheese. The demand for fine cheese is always good, and looking at the *Grocer* of to-day I find that fine is scarce, and common plentiful, with a dull sale. Now, I have felt that the advantage of having dairy schools as compared with the employment of instructors is very great indeed. Let us look at some of these advantages. We employ a number of instructors ; they can only visit one factory a day ; each instructor has, say, 60 factories. Of coure we have a number of factories making very fine cheese ; but there are a number making a very poor article indeed, and we must not think that we have reached that stage at which we can do without instruction. If we had dairy schools the makers could go to these. There could be half a dozen such schools. The makers could all make arrangements by which they could get away for a day to visit the schools ; and if we could improve the product--if we could raise the quality of the whole product—(because we must not think they are all as fine as they should be, and the result is that the poor ones drug the market) it would be a great step forward.

I visited these dairy schools in the old country. Before the introduction of these methods to improve the qualities I was struck with the small quantity of really perfect goods, and I now saw the immense advantages there of these schools. They were all private dairies, they were in the hands of intelligent men, but they had no means of informing themselves. The maker was comparing himself by himself, or herself by herself. The result of these dairy schools is that a large percentage of cheese are almost as fine as can be made. There is an immense difference, and it is not that there is such a difference in the value of the article, bucause we know it is not really worth 3c. per lb. more as a nutritious article of food, but the number of people who are willing to pay for a first-class article is getting larger every day.

Well, sir, we go further. I have told you that I spent several days in visiting those dairies, one day with Mr. Drummond, and several days with a gentleman who had very much to do with the establishment of the Association. I was amazed at the immense improvement in the quality of their goods. We found a small percentage that were not really fine, we found a large percentage that were clean, that were sweet, that were nutty and stylish, and this is largely the result of the means that has been used there to improve them.

There is a great show held in connection with what is called the dairy fair, at London, and out of 90 exhibitors 78 were from the district where these dairy instructors had been employed. Some dealers did not believe that such fine cheese could be made in Ayrshire as they made ; but they took all the prizes but one, and that was a third class prize. They did more, they took the sweepstakes prize for the best of the ordinary. There were 78 exhibitors from Scotch dairy districts out of 104, an evidence of the interest and emulation these schools have excited.

Later we find the great cheese fair at Kilmarnoch takes place, undoubtedly the largest cheese fair in the world, and where they take the greatest possible interest in the subject ; and the result was there we found the difference between Canadian and old English cheddar systems of making, the Canadian carrying off the day in the most decided manner, these instructors being all Canadians, whom I had the honor of selecting ; and here it is (reading from the *North British Agriculturist* of October 29th) :

"The great feature of the Kilmarnock cheese show last week was the extraordinary success achieved by Mr. Robt. Wallace of Auchenbrain, who has now the championship of the show for the second time in succession. This year Mr. Wallace has not only won the championship but also carrying off over £80 of prize money. I find these cheese are all made strictly according to the Canadian system as taught by Mr. Drummond, and his cheese which won the sweepstake was declared by the judges to be as nearly perfect as could be."

All the other Scotch papers in reporting the show testified in a similar manner to the superiority of the Canadian system. Now, I had visited that gentleman's place and found he was an enthusiast. There is no man who will ever excel in the manufacturing of dairy products unless he is an enthusiast. You are handling the most delicate article in the world, and the slightest departure affects the quality. This instruction may not

enable us to make a prize cheese exactly every time, but it will show us the system we are generally pursuing, viz : the time to add the rennet, the quantity of salt to use and all those things that go to make a really perfect article.

Now, sir, I felt we had to go a little further. Our instructors have done good, our associations have done good ; but I felt we ought to go farther ; that we ought to do better if we had two or three dairy schools. I don't mean to make cheesemakers there, but those who are already engaged in the business could go and see the later improvements and be stimulated to still further efforts. I have often found cheesemakers doing poorly ; it was difficult to find them going to another cheese factory to get lessons ; they thought they would lose prestige by doing so. We have even had to have recourse to drastic measures and tell them to go to some other cheese factory to learn. I have not seen them do so without being improved, if at all capable of improvement. I remember one case in which the cheesemaker had got off the track—and, mind you, the most skilful and intelligent men are very often apt to do so, and the result was he had a lot of inferior goods which were unsaleable. I happened to ship them. I said go to a certain factory and see how they do there ; he went, and I may say he has not made an inferior cheese since. Well, coming nearer home, during the past season we found several cheese factories not one hundred miles from Woodstock which were making a large quantity and not a good product. They went to a neighboring factory to spend a day and compare notes, and I don't know but the pupils obtained more than the teachers for the remainder of the year, and demanded the highest prices.

I think further, sir, we have reached a time when more attention must be paid to testing milk. We must pay for milk according to results. I know I was one, when this was first suggested, who thought it an impossibility ; but our best dairymen, our most intelligent dairymen, are now beginning to discuss it. In connection with the meeting of my own patrons of Black Creek factory, a motion was passed unanimously, in favor of its adoption as soon as practicable. A dairy school would be in touch with all the improvements we are making from time to time. Our own men would go there, and there is no doubt others. Here is a machine called the Babcock testing machine. I think that tests 24 samples in a very few minutes, showing the exact butterfat contained in the milk. Now, at our dairy schools the makers would learn the use of new appliances. Our past experience should make us realise that we need these schools, and as I mentioned this afternoon four of our young men have gone all the way to Wisconsin to take advantage of the instruction offered in dairying schools there. Now, we want to do this work at home.

We go further. If the best results are to be obtained, as Prof. Robertson said this afternoon, we must make butter in winter, and cheese in summer, and the dairy school would be to teach butter making in winter and cheese in summer. You will never get the best results unless that is done. The winter is not the time for making cheese, but it is the time for making butter ; and, even at present there is an unlimited demand in Canada for pure, fresh butter. I hope before long that the supply will be in excess of the demand and then we can ship to England—because the duty would prevent, even if prices favored us, from shipping to the centres of the United States. There can be no doubt about the advantage of such a change. Having the cows calve in the spring and giving milk for six or seven months is not beginning to do all that can be done. Having tried it on a small scale myself, and making between 60 and 70 lb. of butter per week, the result is we have no difficulty in getting 25c to-day in Toronto. Now, winter dairying will stimulate the farmers to feed better ; and they can get better manure. A difficulty about the time the factory system commenced was crowding the calf for milk. Now, there is nothing to prevent the calves coming in the fall and after a week or two you can give them skimmed milk.

There are some reasons, which, to my mind, render it important that we should make this further departure. I know the difficulty there is about carrying on these things. I know the great demands upon a voluntary association such as this, but I think this is one of those things where the State could assist.

The proposal has this further advantage : Let the results be carefully tested and published, and, while I am not sanguine enough to think that every farmer would at once

follow this example, they would in a very short time follow it. If deep setting were adopted (I am setting in the highest cans) the cream could be hauled once a week and each individual paid according to the value of his cream, because there might be a difference in the quality according to the different modes of separating the cream from the milk.

Now, I wanted to bring this matter up; it was impressed upon me so strongly this year in Scotland, and the whole of the papers, the *Grocer*, the *North British Agriculturist* and the rest of them give very full reports, and all giving credit for the great improved ment to the introduction of the Canadian system and schools for the proper teaching and selling for a difference of 3c per lb. over best Canadian. I will say, there was a richness about their cheese that is not in our cheese, and the consumer, for that nice, nutty flavor, is willing to pay the difference. I do not think it is from the richness of the milk, and I have thought that a great deal of this want of richness in our cheese came from not properly stirring the cream in the milk and preventing a separation which is never afterwards thoroughly incorporated. Do not take any risk in this matter. We have been insisting upon cheesemakers trying to educate the farmers to stir their milk. The last year was as favorable a season as we could have, for many reasons, yet we find it has taken a large quantity of milk to make a pound of cheese. I think, on account of the low temperature, there has been a separation without stirring. In order to emphasise the importance of stirring the milk and to keep up the enthusiasm amongst our patrons, I gave each of them an aerator last summer. Now, what I am going to state may not be anything against the aerators, but I think the patrons trusted too much to them. I felt confident that we should see that they do not allow the cream an opportunity to rise in cool weather. We want to see to it personally. Make it part of the business; not going to an individual suspecting that he is doing what is wrong, but making it part of the business to see that he is taking care of the milk.

Now, these are some reasons why I think dairy schools, or experimental stations, are wanted. My idea is to put one of them in the west and one in the east. I do not advocate this because I want one at Stratford; I don't know any place more suitable than Woodstock. I would like something more than that; I would like a dairy farm in connection with the school. I would make that experimental; I would keep dairying stock there exclusively, having the calves come in the fall. I think we could make one-third more from this than by having the cows calve in the spring in the ordinary way. In my own dairy we weigh the milk of each cow every day, every ounce, so we know what every cow is doing, which is the only way to fully realise the difference between a good and bad cow. I had a cow that gave 11,000 lb. milk in 10 months. I am satisfied if we had kept on the old way she would never have done that. There is no question about winter dairying paying if you can get 25c per lb. for your butter, and no doubt you can get that so long as you manufacture a superior article. I make my own butter on the farm. I am not advocating that, but the cream can be hauled to a factory in connection with the cheese factory at a very small cost. By getting a very large quantity of butter, from what might be small quantity of cream from each patron, you can get the very highest price. As I said, I would have a farm in connection with the dairy school, keeping, say 30 cows, and have the information as to what was being done there disseminated all through the country. A private individual may make an experiment and the result may reach your next neighbor, but it does not reach the same number as where an experiment is carried on under the State, when the result is disseminated through the length and breadth of the country. Now, I hope you will have a full discussion on the subject, and I am willing to answer any questions. I was very much pleased this afternoon at the turn the meeting took. It has always been one of my regrets that the time was so much taken up with papers and not so much with discussion. (Applause.)

Mr. BUTCHART.—Have those cheese that took the prizes been made principally in private dairies?

Mr. BALLANTYNE.—All in private dairies. There are no factories in Scotland.

Mr. BUTCHART.—Would that account for their milk being richer? There is sometimes skimming here.

Mr. BALLANTYNE.—I am not prepared to admit that. Don't let the world believe it. It is the meanest kind of stealing. I know of no kind of dishonesty so disgraceful as the skimming of milk. The person who does it would not dare to do it in the presence of his hired man, and it must be with the knowledge of his own family. I admit there are isolated cases, one or two in each factory, but that is about the extent of it, and I would favor, as soon as possible, wherever proved, expelling them from the factory, and that is the best way to cure that. Mr. Butchart suggested that as a reason for the difference in richness; I don't believe that. I believe there are a number of factories where there is not much of that and where the character of the people is a sufficient guarantee against tampering with the milk. I cannot but think that Mr. Butchart has run a factory long enough to know that patrons cannot skim their milk without exposing themselves to great risk.

Mr. BUTCHART.—Allow me an explanation. There are a great many who do not think it is at all wrong to take a teacupful of cream off to use in their tea. Men have come to me, apparently as honest as anyone, and told me they do it and they will do it whether you are there or I am there. A hundred men in one vicinity would be as honest as in another. A teacupful, you see, taken off by each of one hundred patrons would mean a great deal to the richness of the cheese made in that day and certainly a great deal to the average made in a season.

Mr. BALLANTYNE.—I am very sorry to hear it. I understood a few in one of my factories took off cream for coffee and we stopped it very promptly. There may be some localities where it is done, and if so that accounts for their inferior products and for their taking a low price. If factory managers knew of it and allowed it there was certainly something dishonest, for if each man was allowed to be the judge of his own cupful one man would take off twice or three times as much as another.

Mr. LOSSEE.—Do you think the effect of the cheese being made under the farmers' own supervision in Scotland would be to produce a better quality of milk and make a finer cheese? I think so.

Mr. BALLANTYNE.—I will not pretend to say that there should not be a delicacy of flavor that ours has not; but I will say this, that the patrons can attend to their own milk so that it will arrive at the factory in perfect condition. First, they should see that the utensils are perfectly clean, scalding them every day. We have found that every pound of poor cheese diminishes the value of the goods. If a man takes home a pound of poor cheese it may last him two months, whereas a pound of good cheese would last him only a day perhaps, and it is because we have recognised this from the first that we have all been willing to exchange our opinions. I would say that I remember when watching the milk very closely in the factory, making the cheese myself and saving a sample of every man's milk, that a sample of milk which came the farthest was invariably good; no sourness and no taint about it. What one can do all can do; but if it is a mere question of getting milk enough, looking after it no farther, taking no means to see that you are really getting it right, then of course the maker is struggling with floating curds and everything else during the whole season.

A VOICE.—I have seen butter fat seven or eight inches deep around the whey vats, and I would like to see it in the cheese.

Mr. BALLANTYNE.—It never became properly assimilated. Those of you who are using machinery if you cut the curd into square pieces find no waste from the manipulating of the curd, and those factories which have been taking the largest quantities of milk to make a pound of cheese have been most successful. I think it is chiefly owing to the nice milk, and corroborative of that I remember when we used to make twice a day and the majority then had agitators and the cream was never allowed to rest; but the moment we commenced to haul the milk once a day it took more milk to make a pound of cheese. The present arrangement is best if the farmers will only take care of their milk.

Mr. LOSSEE.—We want to know what effect these dairy schools would have on the product?

Mr. BUTCHART.—Mr. Ballantyne alludes to the richness of their cheese in Scotland, and he claims that they owe a good deal of this to the training they got in the experimental schools.

Mr. BALLANTYNE.—No, not the richness. Before these schools were started a small percentage of the cheese was fine, but a great deal of it was defectively made and got out of condition and in London they did not want it at all and could not sell it. I mentioned the character of the goods, but I did not say the richness. I referred to the extra qualities, the proper percentage of moisture, the solidity, the nice character, neither too much salt nor too little, and that the processes by which all this was accomplished showed that the pupils had been able to follow their lessons.

A VOICE.—Supposing there was a dairy school. In one section the cows are salted regularly and in another section they are not salted. Would that make any difference?

Mr. BALLANTYNE.—The very greatest difference.

THE SAME VOICE.—I don't see then that the dairy schools would make any difference.

Mr. BALLANTYNE.—In disseminating knowledge, that is all.

Mr. ROBERTSON.—I will read an extract from a letter bearing on the subject, from one of the most largely interested cheesemakers in Scotland; one who has spent a great deal of his time in assisting in the advancement of the dairy interest there. I wrote him some time ago as to what his opinion was as to how they had succeeded in improving the quality of their cheese. You know their surroundings, their cattle, their pasture, their manner of feeding. There is very little change in regard to these, and the most of the change that has taken place must have been simply in the manipulation of the milk. I asked in my letter if he could give me just what he thought had been most conducive to the great improvement, and he replied as follows:

"Regarding your enquiry as to dairy schools, with us *versus* instruction, I am of opinion that the latter is by far the cheapest and attains the greatest benefit, as with a few instructors going around the whole of the matters can be got at with a very moderate outlay of cash, and by this means we have made great progress with our two instructors."

Then he refers to the schools:

"However, if the means are available, a dairy school is of great benefit to those that are situated near the school, and more specially to young people who mean to make dairying their business. We find it rather expensive, however, and but for a government grant of £200, and something like £500 yearly for subscriptions from the landed proprietors, we could not carry it on, as the fees obtainable would not avail to pay the costs."

If Mr. Ballantyne and some of our other dairy friends can persuade our Government to give us a dairy school, by all means let them know that we want to have it.

Mr. BALLANTYNE.—I want to emphasise one thing: There was a large percentage of cheese that we knew were wrong last spring and they turned out worse than we expected, and the result was very much lower prices. If we had a dairy school the cheesemakers could go there, and I have often seen a case where a cheesemaker was sent to a good factory to learn, and there was a difference in his work from the day he came back. Then there are many things that could be carried on in such a school. It would require a little money, but it does not require so very much. Mr. Robertson has referred to a grant in the old country. It is a remarkable fact that the only grant given by the Imperial Government to aid agriculture is a grant of £5,000 divided among the different dairy schools in Great Britain.

Mr. G. R. PATTULLO.—Would it not be a good thing if this Association were to pass a resolution which might strengthen the hands of Mr. Ballantyne and other men in the legislature toward getting a grant. It seems to me that there can be no doubt if we are to have the character of our cheese raised to the same high standing as the old country cheese, this is an absolute necessity. Now, the only way in which expression can be given to this idea is to pass a resolution which will strengthen the hands of Mr. Ballantyne and other gentlemen interested in the dairy business. I would suggest that the matter be referred to the committee on resolutions.

Mr. T. J. Dillon seconded this motion which was carried.

THE FARMER AS A BUSINESS MAN.

Hon. H. C. Adams was again introduced and gave an address on the above subject. He said: Mr. President and gentlemen of the Western Dairymen's Asssociation: It seems almost too bad to snatch this convention from the subject of cheese-making to consider some other topic, for I see you are business men and many of you patrons of cheese factories, and that is a subject of vital interest to you. If I could have managed to satisfy myself I should have had Prof. Robertson to speak in my place. But I want to say, in reference to this subject, as I said this afternoon, that we have a dairy school in our State. We have there a State University, and connected with it a State Agricultural College which is practically a part of that university. We have also an experimental station under direction and control of Prof. Henry. There is placed under that now a dairy school. It is supported by an appropriation of $25,000 a year. We have located upon the farm a building which is known as the Dairy House, and the pupils are taken right into that house and shown the various processes in the manufacture of butter and cheese. We have not only a professor of dairying, but an accomplished agricultural chemist, and in addition, a practical man from the state of Illinois who has been known as the president of the dairy association of that state. We are already crowded for room to carry on this work and have struck out in no line that gives more hope than this one. I believe, here in Canada, where you are acknowledged as masters in the production of cheese, there is still room for dairy schools to do work.

It seems to me that if farmers are going to be business men, which I am going to talk about, they will have to stand up for themselves. It is an old saying that "Any fool can be a farmer." Any fool can be a lawyer, and some of them are lawyers; but no fool can be a good lawyer, and no fool can be a good farmer in these modern days. There may have been a time when a fool could be a farmer, but I tell you it hustles a smart man pretty lively now. (Laughter.) But there is a certain class of men who do get along in an average way on the farm. I come from the state of Wisconsin, and I see there farmers of every community, and every class, and every political belief, and every degree of mental ability, and I have talked and talked about this business of farming. Some of them say "We are going to the dogs; other classes are jumping on us, the railroads are squeezing the life out of us, there is something wrong about the government, and it seems to us the Almighty is against us." Right beside them we find men who get along well; even when butter averaged only 21 cents per pound, when we got 7 cents a pound for cheese, when oats sold—hundreds of bushels—for 25 cents, we found men making money and making it because they are business men. They apply to their business the same principles which the merchant applies to his business, and which the banker applies to his business; and if these men, have at least got credit for being business men they believe they have gained something.

Before I go any further let me say I like to see a man on a farm who has got some enthusiasm for his business, who respects it, who is ambitious to get on, who is always a child, who is always willing to learn even if his hair is white and there are wrinkles in his face. (Applause). The successful men go at their business and study it, and the first thing they do is to look at themselves and say, "I wonder what I can do best on the farm; what did the Almighty make me to do on the farm?" Maybe the man is best fitted for raising sheep, or it may be for raising cows, or to raise strippers, and like enough the Lord made him to make saurkraut, and like enough when he knows what he is made for he enters on that line. What is the use of a cowman trying to raise a steer, or a horseman trying to raise chickens, or a man like myself trying to raise beans? We can't do it. It is hard enough to succeed when a man follows the current of his ambitions. There are number of boys that are pegging right along after their fathers, trying to pick out the same tracks, and they don't get a cent richer and they don't stop to think what they are doing at all. Some of the boys think it would be sacrilege to get out of the ways of their fathers. I respect the boys who respect their fathers. It is the curse of our nations, and perhaps of every nation, that there is not enough respect for age and years in this modern age; but no man has any business

to do just what his father did. If he doesn't do better he is not half as good as hi father, because we know, standing to-day as we do in the centre of modern knowledge that our fathers have all along been coming up from darkness into light, and if a boy is as good as his father is he will do better, because he has his father's experience to start with. It is your business, young men, to stand upon the shoulders of your fathers, and, if you would be loyal to them, avoid their errors, emulate their virtues and go on from the point where they have left you. (Applause). I recollect when a boy on the farm we had a cow which gave two pounds of butter a week, and we wouldn't sell that cow because father had her for four or five years. I confess I had not wisdom enough to get rid of a poor cow until I got married and started out in business for myself, and had to get a living and to find out something about this cow business. Now, I want a man to go right on and think for himself; to act on the best judgment he has, and add to that the best judgment of every man from whom he can absorb wisdom and knowledge and facts.

There is one thing I notice a great many of our farmers do not do, and for that reason they are not business men. They do not keep a cash account. Now, that is a simple thing, but I find when I talk to an audience about it that not one in fifty of them do it. Like enough at the end of the year the farmer knows he is behind, but he don't know what particular account has cost him more than it has given him in return. If he keeps an account he can see like a banker where his money comes from and where it goes to. I find lots of farmers who go about doing this or that, but mighty little they know about it. I have known a farmer who thought clover grew seeds at both ends. (Laughter). I have known a farmer who did not keep a cash account, who, when two or three men were wanted to contribute toward getting some one to give an address at an agricultural meeting in his neighborhood, would say that he could not afford it, and then he would go down to the village and buy ten glasses of beer. (Laughter). Keeping a cash account makes a man acquainted with himself and enables him to do business like a business man.

Now, there is another thing; the farmer who is going to be a business man and a benefit to his class should conduct his business in such a way that the boys will take to it and like it. I don't believe in compelling a boy to be a farmer if he doesn't want to be one. I think if the Almighty has made a man that he considers he ought to be a lawyer let him go and be a lawyer, for heaven's sake; if he is so constituted that he wants to pull teeth, let him go and do it; but out of this class the farmers of this country want a greater portion. We don't want the young agricultural class continually drained off. We don't want the prize boys to go into commerce, trade and professions. We want some of them with us to help to build up this profession to which we belong. One way to keep the boy on the farm may be to drive a 20-inch spike through him into an oak tree, but it is not the only way. I am inclined to think one of the surest ways is to put a chain of gold around him and hold him there, because farming is a profitable business. We all like money, we like the comforts of life; and a boy is going into that line of business where he can get them, and he can get them on the farm. Not long ago I went between two towns in my state, a distance of nine miles about, and the friend who was with me, who knew every farmer on the road, said there were thirty men between these two places worth $20,000 apiece. See that the boy's life is not ground out of him. We can do something in that direction, and when the farmer runs business on business-like methods the boy sees logic in that fact. We can not only do that much but we can have some sympathy with the boy. I recollect I used to live on a farm and worked as much and as hard as any boy, and when I used to see other boys trotting off with their skates it positively made me think that farming was not worth a cent. At the same time we must not forget—and I don't forget, because I have been through all the hard experiences of farm life—that when a man is poor the business of farming is necessarily a pretty hard one; but a man of ordinary sense is just as certain to win in the battle of life upon the farm as he is to live, unless a special misfortune comes to him, and you cannot say that of any other line of business hardly. In the mercantile and manufacturing professions of the nation to day I believe it is true that 90 per cent. of the men in business fail.

There is one trouble about farming, I will admit. We are isolated, and out of that come some of our weak points. We are apt to get down into ruts, and you will find

graduates of colleges and female seminaries going out on to farms and shrinking under the grinding necessities of their life or what they conceive to be the grinding necessities of their life. But this is wrong and it is not absolutely necessary, and the farmer who is a business man will get out of those ruts so far as he can and get into meetings of this kind where he can touch elbows and think with men who think as he thinks and live as he lives. In Wisconsin we are helping somewhat in these things by means of farmers' institutes, and in winter we get together and many of the farmers contribute something of their experience; perhaps telling something about a steer, or a cow, or a pig, or something about clover, and all go away richer and none of them go away poorer.

There is another thing that farmers ought to do to dignify and ennoble their profession, and that is be a little more cheerful. Over in Wisconsin we farmers are called a lot of Quakers. They say we are eternally protesting against everything, and it is a mere habit, to a greater or less extent, and we ought to look at life with a little more cheerfulness, with a little more of the spirit of that little girl living in a hovel in one of our northern states. She was living under the care of her grandmother. She was sick, and there came a change when the night had half closed. They were poor and there was barely enough to eat in the house. To keep the child from freezing her grandmother tucked all the clothing around her she could find, and still she was cold. Finally the old lady went and got some boards and laid them over her, and then the child waked up and said, "Grandmother, what do you suppose the poor children are doing to-night who haven't any boards to cover them?" And it seems to me the farmers, out of the fact that they have got the protection of a splendid government; out of the fact that there is a stability about their business which there is about no other, out of the fact that they come in contact with nature as those engaged in no other business do, out of the fact that there is in the air a sinewy and moral fibre which makes honorable, moral men, should lead them to cultivate their business.

Then, the farmer who is a business man ought to be a politician, not to get office but to have things in the state as they ought to be done. I like to see a farmer take an interest in the politics of his country. I like to see a farmer who goes to a political meeting and stands up in his manhood and says: "I am part of this government, upon me rests some of the responsibilities for the excellence and efficiency and patriotic administration of our laws." That is the kind of a farmer I want to see, and we are getting more of them in our country, and no doubt you are getting more of them in this one. We have agricultural demagogues, but the friends of the farmer—the real friends—are the men who say to him, "Stand up in the exercise of your rights, independently and vigorously, and vote your way through, not simply for the interest of your class, but for the interests of all classes. I have no respect for that farmer who thinks some other business is more honorable than his own. It is not. Any business is honorable which has in it room for honest thought. The man who drives shoe pegs and the man who practises law, and the man engaged in any business, who is sincere and pays attention to the work that God has given him to do, stand precisely on the same plane, and I like to see the farmers take an interest in the management of political movements, and not because they are farmers, but simply because when that sentiment is spread broadcast throughout this land and throughout the land from which I come then we shall have less evils in government and less evils in society. (Applause).

VALUE OF EXPERIMENTAL STATIONS.

Prof. ROBERTSON, being again called upon, said: Mr. President and gentlemen,—I have been asked to follow Mr. Ballantyne and speak upon the value of experimental dairy stations. It is hard to hold the attention of an audience upon such a prosaic subject after being thrilled with the eloquence and good sense of our American cousin who has come over here to exchange dairy thought with us. It was my good fortune some years ago to go to Wisconsin and there meet for the first time the Hon. Mr. Adams, who was then a power in his own state; not to move political parties, but to lift the sluggish

farmer from indifference about the concern of his own business, to become a wide-awake citizen; and when I went back in the following year I could see, during my brief stay, a wonderful change for the better in the farmers' institutes of Wisconsin. The personality and efforts of Mr. Adams helped very much in accomplishing that. The farmers' institutes of the continent have become powerful agencies for the improvement of agriculture.

I am asked to speak to-night on the value of experimental stations to cheesemakers and cheese-making, and since the bulk of those present are cheesemakers I will intersperse my remarks with statements concerning experiments made last year and referred to by my friend Mr. Ballantyne.

The value of all experimental work is two-fold. Every act of investigation has in itself a double power of service. It is competent to discover, and every man who goes through the world with his eyes open knows how much need he has for additional knowledge from discovery. But the main value of experiment is not discovery, because most men are so far behind the leaders in every kind of experiment or investigation that they are not putting into practice one-half the truths that have been recognised. The other value is that of tuition, so that by repeated demonstration even those who are apathetic about their own business might be taught to put in force the truths taught by an experimental station.

Then, let me say this also, that the station should be a centre whence reliable and authoritative instruction in cheese-making should go out. Cheese buyers go around the country, many of them benevolent men, but more of them more anxious to make one-eighth of a cent a pound on every box they buy, and that is understood. Some of the best men know right well how to help a cheese-maker, and some others, with as good intentions, know only how to leave behind them instructions that may have most disastrous effects. All teaching is not reliable, and therefore we need a dairy station to which to refer for sound instruction.

Then these centres should be open to all comers. They should be open to the patron to learn how milk for cheese-making can be tested, and to learn how the Babcock separator distinctly discovers the exact per cent. of fat in milk. But the station should also be open to cheese factory salesmen, who by going to it once in a while and seeing how neat and fine and uniform in appearance were all the goods on the shelves, would go back wondering in the presence of a cheesemaker how they had got all the cheese of such uniform character. If you can stimulate a man into wondering why he is not doing good work, you do a good deal. So by way of illustration, when a buyer goes into a factory and finds the goods all uniform, in shape and appearance, he is prepossessed in their favour; but if they are not uniform in shape and appearance, he shall look out for the defects and will not have to look very long.

For the practical service of the cheesemakers who were not present at the last convention, I would like to make a few statements regarding experiments made in 1889 with a view to discovering the solutions of unsettled problems. My friend, Mr. Ballantyne, at the convention in London, proposed that experimental stations should be established. A resolution was passed at his suggestion, asking a small grant for experimental work and this work was carried on for a short time.

The investigation embraced "the effect of the use of certain quantities of rennet extracts upon a given quantity of milk and also the effect on the cheese when made." A vat was divided into three compartments, and the milk in each was not merely from the same patrons, but was precisely of the same quality, having been previously mixed. In the first, we used 9 ounces of rennet to 1,000 lb. of milk; in the second, 6 ounces to 1,000 lb., and in the third, 3 ounces. Now if any of you want to get the full details of these experiments you can get them in the last report of the Ontario Agricultural College, and I dare say you could get still a sufficient number of the special reports on these experiments. This was the first discovery: in the same quantity and the same quality of milk in three compartments, we put different rates of rennet extract, and there was no difference observed in the process of curing. Then the curing of cheese in regard to its rapidity does not depend upon the amount of rennet extract used. Hence the extract is not the curing agent, and its use is simply, so far as I can discover, to coagulate the casein of the milk and enable it to hold the fat so that there will afterwards be one-third fat and

one-third casein and one-third water in the cheese. Then the coagulation of fodder milk is more difficult than the coagulation of summer milk ; hence you should use more rennet extract when fodder prevails than when grass prevails. But a point not yet understood is this, that the coagulation of milk in October is also very difficult, and a larger quantity of rennet extract should be used in October than is usually put in. When cheesemakers have used rather more extract and rather more salt the October goods will be quite superior, and when cured at a proper temperature they will compare favorably with September's.

Then another fact noticed was this, that there is always a heavier body when a large quantity of extract is used with a sufficiently large quantity of salt to ensure the keeping qualities. The rennet enables the curd to retain more moisture, and the more moisture there is retained in cheese the more rapid is the fermentation that produces curing. Now, if you use an extra quantity of rennet without a sufficiently large quantity of salt, the cheese will not be preserved so well, but if sufficient salt is used, you can get a cheese that will keep. So another thing is, that we can make a heavy-bodied cheese by the use of more rennet and more salt than is usually applied.

Then this also is to be said, that the longest-lived cheese are those made by the use of the least quantity of rennet extract, all other things being equal, because the less rennet you use the less likelihood there is of retaining moisture, and the less moisture there is retained the less fear there is of fermentation. All fermentations act more quickly in the presence of moisture than in the presence of comparatively dry substances. Salt is opposed to fermentation. Therefore, you put in a large quantity of salt and you have a cheese with a rich body and still a good keeping flavor.

Then milk that is over ripe or acidy requires the use of a larger quantity of renne extract to enable the coagulation by rennet to precede the coagulation by sourness or acidity. We have learned a few things you see : To use more rennet in the spring and fall ; to use with it more salt ; and to make coagulation perfect in this way.

In case of over-ripe milk another experiment was made with the use of salt. I won't weary you with the details. In one lot we put $2\frac{1}{2}$ lb. of salt per 1,000 lb. of milk ; in another $2\frac{3}{4}$ lb. per 1,000 lb., and in another we put 3 lb. of salt per 1,000 lb. of milk. A large number of cheese were made, and were judged both by myself at stated intervals, and also by Messrs. Robert Ballantyne and A. F. McLaren, and here are the conclusions of the examinations. There were altogether eighteen lots. Now, these were judged at intervals from the end of August to the end of January. The first lot in which we used 3 lb. of salt, stood 1st fifteen times, 2nd once, 3rd once, and equal once. The cheese salted with $2\frac{3}{4}$ lb. stood 1st once, 2nd fourteen times, 3rd twice, and equal once. That salted with $2\frac{1}{2}$ lb. stood 1st once, 2nd only three times, 3rd thirteen times, and equal once. You can see that the large preponderance was in favor of the cheese salted at the rate of 3 lb. per 1,000 of milk.

Now, the highest rate of salting gave the heaviest body. The larger the quantity of salt the drier is the curd, and the longer the time required for curing ; but in the making of cheese from spring milk I would never exceed $2\frac{1}{4}$ lb. of salt per 1,000 lb. of milk.

Mr. BALLANTYNE.—Don't you think a little less would be better?

Prof. ROBERTSON.—I say I would never exceed it. Even use down to $1\frac{3}{4}$ lb. Now, I need not give you a long statement of the third investigation. It was in the treatment of curd after the removal of whey. *One* lot I had stirred on a rack, with a strainer cloth, and it was then allowed to pack, and was turned over and turned and packed seven or eight layers deep. The *second* lot was stirred and turned and packed two layers deep. The *third* was stirred on the rack and stirred all the while afterwards. The experiments were made with the same rennet, under the same conditions, and everything else was alike. I was not the judge, but had the judging performed by experts at the convention. There were five lots of nine cheese each. Lots 1 were matted, packed and piled ; lots 2 were matted only ; lots 3 were stirred and not matted.

Mr. BALLANTYNE.—Never matted at all

Prof. ROBERTSON.—Never matted at all. Lots 1, matted, packed and piled, stood 1st twelve times, 2nd once, 3rd five times, equal five times. Lots 2, matted only, stood 1st twice, second fifteen times, 3rd once, equal five times. Lots 3, stirred all the while, were 1st four times, 2nd four times, 3rd ten times, equal five times. Now, you see, no one of these treatments seems to be essential; and this is the average required to make a pound of cheese in August, weighed on the 3rd of January: by the matting and piling, 10.53 lb.; by the matting only, 10.60 lb.; by the stirring without matting, 10.74 lb. Those were the averages from the weights taken on the 3rd of January.

Let me quote a point here from the same report. That is this: Some cheesemakers are reluctant to believe that cheese shrink when put in boxes before being shipped when left a short time in storage. The average shrinkage from August 30th to October 18th was from 5 to 5.8 per cent. Then the average shrinkage by weight from the 18th October to January 3rd was 2.2 per cent., or nearly $2\frac{1}{4}$ per cent., making altogether nearly 8 per cent., or 8 lb. to the 100 lb. from the time the cheese were made until the 3rd of January. It sometimes does not pay to hold cheese past the time when they are best for selling to get $\frac{1}{4}$ cent more per lb. if you lose 2 to 3 lb. in the hundred. Then tests were made in setting some milk at 84°, 90° and 96° Fahr., and no appreciable difference was found.

I have gone over that perhaps as fully as I very well could do to-night under the circumstances, and in the time at my disposal, but you can see that there is still a great field open to those who will conduct dairy experiments, and the more authoritative that work is, the more serviceable it will be to every cheesemaker throughout the land.

I might cite a great many instances showing the necessity for dairy instruction; I will give you one instance to show the crying need of them. It has been claimed that milk for cheese making should be paid for according to the solids. The only test, so far as its service is concerned, is a test to discover the per cent. of fat. Now, that will determine precisely the value of milk for butter making, but will it determine the value for cheese making? It may or it may not, because so far as I know, no one has tried to find out. I propose in such experimental dairy stations as may be established that the exact quality of the milk supplied there be tried every day, and that all $3\frac{1}{2}$ per cent. milk should go to one vat. The cheese from that milk should be kept apart and compared; and all 4 per cent. and $4\frac{1}{2}$ per cent. milk should go to the other vats, and then with one season's investigations we would have some authority to say $3\frac{1}{2}$ per cent. milk is worth so much relatively to 4 per cent. milk, and 4 per cent. milk is worth so much relatively to $4\frac{1}{2}$ per cent. milk. Then if a factory is willing to receive any class of milk and pay for it according to its quality let it do so, and every man would feel that he was getting full value for what he was furnishing. As soon as you can make the patron believe that, you have put within him a strong element of attachment to his factory, which at present is absent.

Then as to the causes of cheese going off flavor, such stations could have cheese put to one side and keep it for one, two or three years. It would pay the country to have the best bacteriologist try to discover the causes and perhaps suggest a remedy. It would pay to have half a million spent on that if favorable results could be obtained, so that cheese could be kept without these continual risks.

Besides that, there could be done something to encourage farmers to go into the dairy business, realising that they could carry it on profitably all the year around, and if the first year a loss occurred in the running expenses of the factory, then the people could afford a loss on a few school houses for the benefit of the whole of the people of the Dominion. Assuredly I believe that these experimental stations would be very advantageous, and that the dairymen of this country need not do without them any longer if they make the Government know that they want them very badly.

Let me say in conclusion, that these stations would have a very wholesome influence upon the minds generally of the dairyman, as making him such a man, who, having a knowledge concerning the intricacies of his business would begin to esteem his calling at its true worth, and who would esteem it all the more highly because he knew he was putting his own thought into his work through his own hands. A man who blindly plans can never have manly respect for his vocation. When a man has his foot planted

firmly upon his knowledge he begins to realise that he is doing a man's work, and putting his knowledge into practical exercise is the pre-requisite of a man that distinguishes him above all other creatures for these reasons: first, because of material advantage, then because of social gain and respect from all other classes. It seems to me the establishment of experimental dairy stations should commend itself to every man who wishes the country to be in a prosperous state financially, that they may be in a better state in their citizenship. (Applause.)

A VOICE.—Have you used salt in over ripe milk before you added the rennet?

Prof. ROBERTSON.—I have used that but I have always found that a larger quantity of milk was required to make a pound of cheese, though I have not made accurate tests.

Mr. BUTCHART.—There is one point I would like to draw attention to. It is said that the matting process is nowhere. That is contrary to the way we have been educated in the years that are passed; but I also found out in my own experience that the stirring of the curd has been of no benefit at all. I never made as poor cheese as by the stirring process. I did it because it was advocated so much, but the cheese did not give me satisfaction and I quit the stirring process. I made others and gave the curd the double matting, and they gave me altogether better satisfaction. I have found out that the curd that has been treated to excessive stirring did not have that nice flavor that the other cheese had. Well, now, I have been revolving in my own mind how that could be accounted for. I have accounted for it myself. I may not be right. There are certain flavors that taste nice in butter and cheese. We like to get them. Any flavor that smells will escape. The smell from a bottle of the esence of turpentine will soon fill this room if the cork is taken out. These flavors are not like the spores or germs which cause putrefication, and they do not breed, but are becoming less and less as they are exposed to the air. I contend that by stirring we have been taking these flavors away, and also inducing the curd to take in other odors.

Mr. BALLANTYNE.—The time was, fifteen years ago, when the curd was stirred perpetually, but I am not aware that any makers have been making on that principle since. I remember that I never saw finer cheese than came from one or two factories before there was any matting. Of course it is impossible to keep the cheese without some matting, unless you stir the curd and get it to dry. But I think Prof. Robertson's experiments are of the greatest value in connection with rennet. It was taken for granted that rennet is the active agent in curing cheese, and to him is due the credit of proving that it is not. It enabled makers to know that they could use rennet more freely, which was necessary, in the spring of the year than later on. As he has remarked, when milk is over-ripe you can use more rennet, without any danger or risk, and get a very good cheese. Then the fall cheese was not fine, it was uneven and limp. It used to be that buyers would not buy fall cheese; now the ripening of the milk more has something to do also, and as he has said, you get as good cheese in the fall as at any season of the year. These are experiments of the greatest possible value to cheesemakers, and let them see that they act upon them.

Mr. JOHN ROBERTSON, (London.)—There is another point I want to mention since you are discussing the action of rennet on cheese. I went to talk to several makers last summer. During the summer they were troubled with the cheese—not being able to get a good, solid, smooth rind on them, although they had been careful. I asked them how much rennet they were using and they said 2½ ounces of extract per 1,000 lb. of milk. Now, I said, in the summer time that is too little. I am not prepared to say that using an ounce more will prevent your trouble, but it will in a great measure, and I could scarcely persuade them to use an ounce more rennet. I was in a factory this summer where they had a quantity of milk which was a little too ripe. The maker said: "What will we do with this?" I said: "It will scarcely stand heating; it is too ripe; you give it double the quantity of rennet and I will take the risk." We put in double the quantity, and the curd was ready for cutting in less than ten minutes, and when the cheese was cut up it had a splendid rind upon it. Now, I was going to tell you that not one of those five or six men that were troubled with cracking cheese and who used an ounce more rennet were troubled in that way afterwards.

A VOICE.—Which lot of milk made the best average?

Prof. ROBERTSON.—The average was precisely the same—10.88—in all cases of the tests with rennet. Let me say this that in those cases it was a test of rennet against rennet. In the matter of stirring: the curd with the most rennet was doubtless stirred rather longer than the others, because it is essential in cheese-making that the curd and the whey be separated in a large measure before the matting. I am on the programme for a talk on the dairy farming of Canada to-morrow, and if any cheesemakers want an answer to any questions I would be glad to answer them at the opening of the convention in the morning. I would like to say that in other provinces besides Ontario experimental stations are badly needed. I will give you one illustration: In the Island of Prince Edward—the gem of the Maritime Provinces, and perhaps the gem, in quiet beauty, of all the provinces—cheese-making was started a few years ago. The man that originated the business lacked something, and after a time the factories all closed up. Perhaps the island is best adapted on the whole for making the best cheese in the Dominion and there is a prospect of the industry being re-established. Meanwhile I have committed myself to finding places in the best cheese factories in Ontario for eight or ten young men from Prince Edward who want to come and learn the practical part of cheese-making for a whole season that they may go back and correct wherein their fathers erred. I would like to get the names of a few of those who want to have a young man to learn and who have well-built and well-equipped factories, and who—rating yourselves with all due modesty—consider themselves first-class cheesemakers.

The Convention adjourned till 10 o'clock to-morrow morning.

SECOND DAY.

The Convention resumed at 10 o'clock.

NOMINATING COMMITTEE.

Mr. FULTON.—Last year and the year before a little difficulty was experienced in the working of the Nominating Committee on this point, that a number of the committee—I think four—were on the Directorate Board, and even the directors themselves felt that it was an awkward position to be in to have a fraction of the committee nominating and supporting themselves as directors for the coming year. It has been suggested that in making your nominating committee this year none of the directors be appointed on it.

The PRESIDENT.—I think there is no director, after what has been said, would sit on that committee. Therefore, in making nominations you will please leave the directors out.

The Nominating Committee was then elected as follows: Messrs. John Fulton, Brownsville; John Geary, London; James James, Nilestown; Robert Facey, Harrietsville; Robert Ballantyne, Stratford; Harry White, Pine River; J. W. Scott, Sparta.

Letters were read from Mr. W. W. Huston, Principal of Woodstock College, inviting the members to visit that institution; from Hon. John Carling, Minister of Agriculture, Ottawa, acknowledging receipt of invitation to be present at the Convention; and from Hon. John Dryden, the Ontario Minister of Agriculture, to the same effect, and stating that he would make it a point to be present during some of the sessions.

QUESTION AND ANSWER.

Mr. SCOTT.—I would just like Prof. Robertson to be a little more explicit than he was last night, in regard to the use of rennet early in the spring and late in the fall?

Prof. ROBERTSON.—A very few words will suffice to make clear what I said. The use of rennet is for the purpose of coagulating the casein in the milk, and in the spring it is difficult of coagulation. Therefore, every cheesemaker, to avoid all leakages, should use enough rennet to coagulate the milk in 15 to 16 minutes, fit for cutting. Then, to prevent having cheese which is very dry or stiff, a cheesemaker should not use more than 2¼ lb. of salt per 1,000 lb. of milk. When the cows are in the stable, fed on dry fodder, I think he should not use more than 1¾ lb.

Mr. SCHRAGG.—In any kind of milk?

Prof. ROBERTSON.—I don't think it would make any difference, only this, that in very soft curds some of the salt may be washed off with the whey. So a cheesemaker's training should guide him for adding just so much more salt if some of it has been drawn off by the extra whey. In the fall the coagulation is not quite so thorough. Therefore in October I would use enough rennet to coagulate the milk in not more than 35 minutes fit for cutting, and then I would see that the curd was heated to 100 degrees and kept at that temperature. Then I would add 3 to $3\frac{1}{4}$ lb of salt per 1,000 lb of milk.

A VOICE.—Would you advise us to set our milk at 88° or at 90°? Which do you think would be best?

Prof. ROBERTSON.—Except in the case of milk that is over-ripe or over-acid it makes no difference. I spoke of experiments last night of setting at three temperatures. In these the milk was set at 84°, 90° and 96° and we found no difference. I believe the setting temperature makes no material difference, except that acidy milk can be coagulated always more perfectly at a high temperature than at a low one

A VOICE.—How would you handle milk that has a strong flavor of turnips so as to produce a fine-flavored cheese? (Laughter).

Prof. ROBERTSON.—I suppose the man who wrote this thought it would be an impossibility to give him an answer equal to the occasion. I would trade that milk off for milk from cows that got no turnips. (Laughter.)

DEHORNING CATTLE.

Hon. Mr. ADAMS, in reply to a question as to the effect of dehorning cattle, said: Of course there is not time to go into that at length, but during the last two years we have tried dehorning cows in Wisconsin. A great many who handle cattle have been dehorning. It is quite true that sufficient time has not elapsed to determine the effects of that process upon dairy cattle, but we do know this, that the experience of stock farmers has been in favor of this process. I recollect meeting a Scotch farmer in Dane County who had about 300 dehorned, and he said he would not have the horns put back for $500. Of course there are certain advantages which are obvious, and one is that you can turn steers together in a shed without any danger of them injuring each other, and you can get a larger number of them together in a given space, and you can handle them like a flock of sheep. Not only this, they don't fatten so well with the horns on, and when they are dehorned it don't require quite so much labor to feed them. When we come to the details of the process it is urged that it is a very cruel practice, but most of our men who have practiced it don't think it so. It is a very brief operation and the pain does not begin to be so great as during that certain other operation in the animal's life. Men who complain about it and who belong to humane societies have tried to stop the practice and have carried the matter to the courts and been beaten every time. I am a dairyman; I raise dairy cows and could dehorn them and would do so, but for one reason, and that is I like to see the horns. In my experience I have found them to be a device of cruelty. In a single year I think that one cow suffers more from the horns of other cows, than a whole herd would from the operation of dehorning. Then, as I said, the operation is a very brief one. A man will go into a herd of 80 and dehorn the whole lot in three hours. Governor Hoard maintains that if practiced the ultimate effect would be towards the beef side; that it will cause a cow to lay on flesh faster; that it will turn the process of making milk, into the process of making meat. Whether or not it takes anything from the vitality of a sire is something I don't know, but I have met men who have been dehorning seven or eight years and they say the sires maintain their vigor.

Mr. SCHRAGG.—What time would be the best to dehorn?

Hon. Mr. ADAMS.—It is a disputed point to some extent. It is claimed by men who have studied this question that it is not advisable to take the horns off calves for this reason, that when they mature they never know they had them and acquire a habit of hunting, which is just about as bad as hooking, but when taken off after they have got into the habit of using them, it is said to make them extremely tame and mild and tractable. I want to say they are using some sort of chemical now in our state which is put on young calves and prevents the growth of horns entirely, and I understand that the application of that mixture is not attended with much pain.

A VOICE.—I want to ask if the male and female were dehorned would there be any horns on the offspring? (Laughter.)

Hon. Mr. ADAMS.—That is a fair question, too. I think that probably there would for a time, but I do think, that if you kept dehorning these cattle for generations, finally the horns would disappear altogether. We know this, in ages past, when cattle were wild they had very large, strong horns. They had to fight to live and those with the longest horns and largest muscles survived in the struggle for existence, and when men got hold of them and they were taken care of and did not have to fight for a living, then the horns began to grow smaller until we have that highest product of cow science, the Jersey. The horn has disappeared because there has been no use for it, and when you go farther and cut off what little is left you will find that by-and-bye you will wipe it out of existence entirely.

DAIRY FARMING IN CANADA.

Prof. ROBERTSON, was again introduced, and said: I am to speak upon dairy farming in Canada. Ours is a big country and I have a large subject, with a short time to discuss it. I had either the good fortune or the misfortune to be called upon unexpectedly yesterday afternoon to say something to those then assembled in the Town Hall. I said some things which I had meant to save up until this session; but with my usual Scotch generosity I gave the best of them away then.

However, this morning I would like to bring some of these before you again, and dress them in a new garb, so that those who were not there may have the benefit of them, and that they may appear to some who were there in a new light.

I am glad to see here this morning cheesemakers, and I do not think cheesemakers should be satisfied if most of the time is given to the details of cheesemaking practices. A man who contents himself with knowing only the nature of the one circle in which he operates, will never have a widely extended influence in the community where he resides. So, I think cheesemakers should come to these conventions in order to be informed of the broader aspects of the questions that concern them, so that they may go back and stimulate the farmers in such a way that they may become the leaders in agricultural thought, and not merely the makers of the products.

Then, I am glad to have patrons here, because, when the farmers who furnish milk to cheese factories hear the discussions, they begin to discover that a cheesemaker follows a task of unusual difficulty, and then they will be willing to make allowances for some of his mistakes. Because while proper enough and necessary that the cheesemaker should be required to make good all loss on inferior cheese—(just as an obligation upon him to do his best)—I still think that no cheesemaker is able to make equally fine cheese every day of the year from the milk he receives every day of the year; and when they recognise that cheesemaker's sometimes do their best and fail to make the best cheese, because of different influences, then the farmers will not bind cheesemakers to pay for all inferior cheese; but only for such as result from carelessness or incompetency on the part of the cheesemaker himself.

And then, the cheese buyers who are here can be both useful to the convention and the industry, and receive some points themselves by coming to such gatherings as this. The men who sell the cheese do not know what the foreign markets require, and we

expect the buyers to give them information. Mr. Ballantyne asked me to impress the fact that the English buyers and consumers will have solid cheese, and let one look ever so symmetrical outside, if it be porous inside, the price will be cut down from one to two cents a pound.

I will have something to say, perhaps by-and-bye, to each of those classes of dairymen before me; but, I will speak meanwhile of the broad lines of policy in dairy farming, for the benefit of those who may study this report during the coming summer, and shape their course according to its recommendations, as well as for the pleasure of those of you who pack the hall so densely to-day.

First of all, I want to say in this connection that the very name "dairyman" and the name "dairying" have created in the minds of most farmers an erroneous conception as to the meaning of the calling that they themselves follow. If you speak of a dairyman, at once some one says, that is some one who milks cows and handles cows, and knows nothing else except about cows. Dairying has a wider signification than that and should comprise within its range everything from the tilling of the soil, up to the marketing of the finished concentrated products. As soon as dairymen begin to inform themselves in all the aspects of this wide-reaching calling which they follow, they will be able to do their work far better.

Now, the object of dairying is like the object of all farming—to find food for the people and preserve fertility in the soil, and give employment to a large number of people. Just as dairymen recognise the force and place of each of these three uses of their business will they be successful—food, fertility and employment.

When a dairyman does not know that his efforts are directed to making food, he will keep cows that give 3,000 pounds of milk a year, because he thinks it does not pay to get more. He will say, "I want to get the price of cheese up to 20 cents per pound," instead, of saying, "I want to get 6,000 pounds of milk per cow at no more cost than the 3,000 used to entail." Now the tendency of all effort is to cheapen the cost of production, and the man who furnishes from his own barn the largest supply of food for the people, has the greatest chance for getting a big profit; because it is better to have cheese selling at 8 cents per pound, from a 6,000 pound cow, than to have a 3,000 pound cow and obtain 12 cents a pound. Other dairymen are learning to produce cheaper, and the force of keen competition will leave profits only to those who produce cheapest. So every cheesemaker should try and have his factory a centre of agricultural education, in a district whence the people will send out the largest supply of food per acre, from their neighborhood; and in doing that they will be able to maintain the fertility of their soil.

Now, dairy farming must be the main industry in Ontario, and I think will be the main industry of the whole Dominion in coming years, because no sort of agriculture will elevate the people and enable them to carry on the work in this threefold way quite so successfully.

Then under this first head let me say a few things. The demand of consumers to-day around the whole world is for foods of a more concentrated quality and value. A long while ago people lived mainly on bulky and cheap food, but now-a-days the residents of the great centres of population insist upon having concentrated foods of fine quality. They eat more meat and butter and refined articles of diet. That means, you see, that the dairyman has an advantage, because he sells refined articles carrying the largest value per pound at their weight. A man sells a ton of cheese at 8 cents per pound, that is $160; and a man sells a ton of hay at $8. He has sold a ton of material from his place in both cases, and in one case he has been able to load on his ton of material, labor and skill only bringing $8. In the other case he loaded on his ton of material, labor and skill carrying back $160. Now, if a man gets $160 against $8, how much more chance there is for that man to have a profit. I will run the risk any time of getting a margin of profit out of a large sum like $160, rather than if I had only a small sum like $8 a ton.

Then, in the question of fertility, it becomes even more essential that the farmers of this country should protect their soil. The land which we farm once had in itself a good deal more strength to sustain plants than it has now. Most farms have become weak; that is their productive potency has been exhausted, and they are like a man who has been passing through a long stage of wasting illness; when he recovers he is weak.

He may measure as much in girth, but he is weak and cannot do much until he regains his strength. When people persist in cropping land year after year the fields measure no less than they would measure before, but the energy, the vim, the power is gone. They need a course of treatment to bring back the strength to the soil. Now, dairy farming will do that. For myself I have no sympathy with the people who are all the while running our country down, and proclaming that this land of ours is not the equal in any sense of any land on this continent. (Applause.) I have small sympathy with the man who says that the fertile fields of Oxford and adjacent counties will not grow as large crops as has been grown anywhere in America. The soil will grow larger crops than elsewhere, when the soil gets a fair chance, but we should not sell large quantities of grain from our farms, because it takes out of the soil its strength without putting it back again. I think Prof. Roberts made a calculation like this that with fifty years farming by a rotation of crops a farmer would take more out of his land per acre of the substances that go to furnish plant food than he could buy in any part of the world to-day for $400. We did grow, a great many years ago, large crops when grain farming, when we were taking out of the soil fertility which had been accumulating for centuries and ages and cycles before us. But a large bank account will not stand repeated checkings by a profligate liver who does not make any deposits.

Then, in the matter of employment, I find that wherever men follow dairying most intensely, there a larger number live on the farms. You may put it down this way, that a man who will keep twenty-five cows and some young cattle on each hundred acres of land, will require more help the year round than a man who keeps a fewer number. He will give profitable employment to more men, and in that way he makes the whole community more prosperous.

Dairy farming will give a larger supply of food per acre by making available many crops which man cannot otherwise use. Man cannot live on grass, but if he will keep cows he can find a larger means of support for himself and a large number of others. The corn crop is just grass. Sixteen tons of corn is a large yield to the acre, but if he have enough sense to put a cow between himself and a corn stalk there he will get a yield per acre to feed four cows during the winter.

Then, since I am to speak on dairy farming in Canada, it may be as well to introduce here a few remarks as to the status of the industry in the Dominion. For the people who are themselves engaged in dairying here, it may not be of so much interest to tell what they are doing in the other Provinces, but still to show you how people are doing elsewhere, that you may even adopt some of their better practices, may not be a misspent quarter of an hour. Now, from this map of the Dominion of Canada I would like to show you what they are doing in Ontario. We have in this western peninsula a county called Oxford, and in it a place called Woodstock—a little place close by Ingersoll. (Laughter.) In Woodstock neighborhood men follow dairy farming, mainly in the making of cheese, and they supply their milk to factories which run about six months and one or two weeks in the year. And then the farmers go on feeding their cows the other five months and two or three weeks, and find almost no income from them for that period. So that Oxford, which once had the reputation of being first, is no longer first in regard to reputation, because the farmers are not making milk all the year around. Perhaps the reason is that they are exceedingly modest and may think shame of being always in the front, and so have stepped back to give the other fellows a chance. (Laughter.) Now, in this part of Ontario we formerly had the reputation of making cheese of the best keeping quality, but the people of eastern Ontario were not slow to learn that, and to adopt all the good practices they could transport, and whereas the eastern factories used to receive about a half cent a pound less than factories in the west, you will now find they sell rather above the average prices here. I can find you some factories in the eastern part of Canada and of Ontario, whose average price this last summer was 9½ cents. I don't say your cheese is not as fine, but you are not now half a cent a pound ahead of them, as you used to be a few years ago.

Then, down in the province of Quebec the habitans used to make cheese that sold for 2 cents a pound less than the west, and now I could name you factories all through the province of Quebec where the make is just as nice in quality and shape as any cheese

made here, and it is going into the London, Liverpool and Bristol markets, and winning a reputation for them, because the people have not been slow to take their ideas from the west and put them into practice. With all the reproaches sometimes applied to our French fellow citizens I do not find them trying, as Mr. Adams said last night, to put their feet down just where their fathers were, but they are putting them down where they will get the most fruit from their efforts, and the more you know of these people the more wholesome respect you will have for them.

I went away up the beautiful and weird Saguenay River, where there are French speaking people only, and where I went to see what sort of farmers we have living there. They are isolated and could not speak a word of English. There are about 30 cheese factories in these two counties, and I found when I went there to give one day's lessons in the art of cheese-making that one of these men who are called "slow," "lacking in enterprise," drove 60 miles over hard roads to get one lesson, and I learned afterwards that the cheese from his factory down there sold for just one cent a pound above that of the factories around him that had not got the new methods into practice, and just as high as Ontario's. He is taking in two or three young men this year to teach them how to make cheese. The Quebec provincial government has recenty made provision for paying half the salaries of not less than fifteen travelling inspectors and instructors this season. So they are not going to be so far behind. Every pound of fine cheese made there lessens the drug of inferior cheese on the market.

Then, away at the coast of Gaspé and Bonaventure I found men making capital butter, and I found that they are keeping their outbuildings as immaculately clean as they do their houses. We find sometimes in the west, you know, stables not very much to the credit of people who have been dairying so long.

Down in New Brunswick I found cheese factories and some creameries, and the people clamoring for information on every hand to aid in the development of this business. They are just awaiting the advent of some enterprising man to establish cheese factories and make that part of the country receive the advantages of a prosperous cheese factory trade.

In Nova Scotia, a land that is in some parts rough, in others most beautifully fertile, I found the "Blue-noses" most anxious to get cheese factories, and in the Antigonish valley found eight factories in operation, and more are being established every year. Down there I found that cheese factories, on the whole, are kept cleaner in their surroundings than in some older districts where the people ought to have learned the needs of their business by long observation. Sometimes in the west you can tell when you are approaching a cheese factory when it is very far off. Like the war-horse, you can smell the coming events afar off. (Laughter). It is not a good thing to have such influences vitiating the atmosphere.

I spoke of Prince Edward Island a little last night. It is the gem of our Dominion as a grass growing country and the people are anxious to have dairying. Then, across in Manitoba they are starting creameries, and across the Northwest the farmers mostly go in for stock and some dairying, and in the Calgary region they go in for dairying. They have good pasturage and good water. Then, away across the Rocky mountains, and here I think I could give you ten minutes talk and some exhortation which would stimulate you to patriotism in thinking of that beautiful part of Canada, rich in all kinds of resources that bring wealth. Out in British Columbia and Vancouver Island the people are beginning to follow dairy farming with more profit. So, from the Atlantic to the Pacific we have the best conditions that prevail anywhere for keeping cattle in good health, for growing crops, and we have excellent facilities for transportation in the west towards the high priced markets of China and Japan. We have, on the whole, just a capital country for developing dairy farming, and by making that our specialty will make agriculture profitable in the whole Dominion.

Now, just a few words as to the way we can improve this business in our own locality. I have hinted at the way in which the food supply on our farms would be increased by giving an extra value to all that is sold and by selling everything from our farms in the most concentrated state Let me give you one illustration: People in buying food are after strength, nourishment. That is served up to them in some material. Every food we have as a rule has nitrogen, phosphoric acid and potash,

and a small quantity of those things carry nourishment of some kind. Now, when a farmer puts manure on the land he puts some of these things on the land to feed the plants. A ton of that manure will cost him $2.50. A man by putting these same three things into his soil, through the laboratory of nature under his supervision, through his plant and from his animal can get the same three things; the same things so glorified and so refined that the $2.50 worth of material will sell for $25.00 in butter. So a man, you see, by dairy farming need not exhaust nature and can bring out a glorified substance carrying lots of value because of lots of *man* being laden into it. You cannot sell anything dear to-day that I know of except a man. You cannot sell a horse that has no man quality in it for more than $15, but if a man will breed a horse and break and feed it right he can be sell it for as much as he has laden in it. You cannot sell butter that has no man quality in it for more than 3 cents a pound for axle grease; but if you will load a man into it—a man's skill—you will make butter carrying a value of 25 cents a pound for the winter. Now, every man who has anything to offer to the world can get paid according to the quality of the man he offers the world, and as a man qualifies himself for doing the work of the world he can load his work with a high quality of man and get a good price, because the world is hungry for the brain products of good men.

Then I have already said that the tendency of our business is to produce all sorts of dairy products at the least cost, and that is necessary because all the trend of all markets is downwards. Then we need to have cheaper production to ensure prosperity, and we need to have it to fortify us against those low markets that are likely to get still lower. By doing that we will have a permanency that will not fluctuate. One illustration: If a man will learn to produce milk at 5 cents a gallon or 50 cents a hundred pounds—and any man can do it by putting himself to the task, with good judgment—then if the cheese sell next summer for 1[illegible]nts per lb. he will get his 3 cents of profit. Well now, if the following year if the cheese goes down to 60 cents a hundred for his milk, he still has one cent a gallon. But if he does not apply to his business a lessened cost of production when the low year comes, his profits disappear. Now, reduction in cost of production will always give permanency to profits; a large profit in a good year and some profit in a poor year.

Now, how can we make this business more profitable in reducing the cost of production? First of all by getting a clear conception of we what keep cows for. We need this first of all: a clear conception of what we are trying to do. I find this in my observation of men as well as in my own experience, that even in digging a ditch or doing the simplest of manual tasks, a man who is fortified with a clear judgment and conception of what he is trying to do is better furnished for that work than a man whose muscles only are strong and whose hands are hard. A man with a weak body who knows how to apply his strength in every case, sees what he wants to do and will do more of this work than a man who has a strong body only. A dairyman who has a proper conception of his business will see that he keeps his cow for profit, and profit always lies between the cost of production and the price of the product. A man cannot afford to keep a cow all the year round that only works a short part of the year. It won't pay to keep a cow boarding-house and not get full pay from the boarders. Still lots of farmers never think of the pay for the board. They try just to have a lot of cows, and then never look to see whether they get as much back from the cows as they give to them. Very often a cow eats more than she gives back. You never find a man who keeps a lot of boarders saying, "If I can get $20 from the lot, although one man does not pay for his share, I will let that slide." No, he wants to know whether every boarder pays his own account for his own board. If any man does not the proprietor says, "Well now, it might be more convenient for you to board with somebody else." I would rather have an empty stall in my stable any day than a cow, unless she paid for what she ate. Then it is good to have a cow pay for her board systematically. I think I once used an illustration to the effect that it was a good thing to get cows into the habit of making weekly offerings. A few years ago it was hard to get the minister's stipends paid. Then some man with good business sense thought it would be a good thing to have the people of the congregations all make a weekly offering; and it

seems a good deal easier to pay a dollar a week for the support of a church than haul out $50 all at once. If you get a weekly offering all the year round from the cows they pay better. We have eight native Canadian cows on the educational list of the Central Experimental Farm from the province of Quebec. They are being educated this winter to milk three months longer, and though they do not give enough to pay for milking them now, I am educating them for next year. It pays to feed succulent food when cows are dry, so as to encourage the activities of the milking functions. If a cow lives with a man for a long time and never pays for the food she eats, the cow becomes a discouraged debtor, the man gets discouraged too, and there is sure to be disaster.

Now, in the matter of cows, it will pay a man to make sure of what he is after. First of all I would be after milk, then after milk I would be after calves to rear and fatten. Then after that I would be after beef, and if I got this I would have so much to the good. But I would never look for beef first and then after that for milk and calves.

A cow should have five points of excellence: a long udder; a soft skin, mellow and moveable; a large barrel, with broad ribs wide apart; broad lions and long rumps; and a rather long neck, with a fine cut face. These five points will almost always reveal to you a cow that ought to pay her board. It is a good plan to enlarge her capacity by breeding in a line of her own purpose. I know one man who by breeding in that way from 10, two-year-olds, 10 three-year-olds and 10 four-year-olds, got forty-six dollars and some odd cents per head from the cheese factory during the season of six and a half months. He was breeding in a straight line to get milk and then calves and then beef. I would not cross the line of continuity of my cows that would shunt their progeny on to another line that did not mean milk and calves and beef.

I would grow the best food. In this country the corn plant is at the top by far. It is freer from disease and hardier than any plant we grow. Then in growth it is best to have the stalks fairly wide, about so as to get dark coloured leaves. The plant has a function of appropriating from the atmosphere carbon, and by taking 160 corn stalks and weighing all the leaves and stalks and nubbins I found that nearly one-half of all the food value was in the leaves, one-quarter in the stalks and the other quarter in the nubbins. It is best to have these big leaves, and to let the plant just reach that stage of growth when the grain on its cobs are in the doughy state. It seems to keep best when cut then, and the plants have also the largest amount of nutrition in the easiest form to obtain.

I need not speak of the silo, because the people around Woodstock will have silos on their farms some time before twenty-five years, and I will have lots of opportunities to talk to them between now and then. (Laughter.) In other places they have silos now. They find corn ensilage keeps the cow in a healthy constitution and gives a large flow of milk. I have not heard of a single silo this year that has failed in any part of Ontario. If any of you want information on this subject I will take your names, or you may send me letters free, and I will send you a bulletin as to the growing of corn, the construction of a silo and the filling of it.

Then it is possible to augment the profit by reducing the cost of labor per dollar's worth of products sold from the farms. If a man looks after ten cows, it would not cost much more to look after twenty-five cows. As I said yesterday, I think a farmer should make it his aim to have twenty-five cows for every hundred acres. Twenty-five head of cattle would be furnished all the fodder they required all winter from, at the very most, six acres of corn put in the silo. With that number of animals he can easily furnish manure and grow more crops. The proposal may be met with this objection:—"Where can we get the cows? We cannot go north any more and buy cows." I am glad of that, because it shows that the people in the north recognise the value of their own cows. But if the cows were calving in the winter time the farmers could raise more calves of excellent constitutions. One of the reproaches that has attached to the cheese factory business is the epithet "cheese factory calves," and when a man who does not furnish milk to a cheese factory has made that charge against a farmer's stock he thinks he has annihilated the whole business. Well now, "a cheese factory calf" may be just as good and large and healthy and serviceable as the calf of a farmer in any other business, if the

owner of the calf will only raise his calves in winter and furnish milk to the cheese factory the following summer. Then, in saying that we say nothing that will be opposed to the further extension of our cheese factory system. It seems to me that this winter dairying is an essential complement to cheese making in the summer time. It will give us more stock, and it will give us a larger income. We are circumstanced with advantage so as to make cheese all summer and butter all winter. We can make butter to advantage in the winter, because in England there is an unlimited demand, and our cold winter offers the best advantages for making fine butter, and for keeping it either in storage or transportation. And then we will be able to raise fine stock and remove the growing hostility between the live stock men and the dairymen, because this system will become the means of furnishing cattle for export to England.

Now, we send to England about 34 per cent. of all the cheese she imports from abroad. We send a little over 25 per cent. of all the live cattle she imports from abroad. We send only 2½ per cent. of all the butter she buys from abroad, and usually she purchases abroad two pounds sterling worth of butter for every one she imports in cheese. There is a butter market there, you see, awaiting our supply in the kind of supply they need. The Danes send excellent butter and get about 26 cents per pound in winter, and I have sent Canadian butter, fresh made creamery, which was so much appreciated that for three years since I have had letters asking for more. They liked it, said they had never had better, and if I had more like it they were ready to pay the highest Danish price for it.

Now, after reducing the cost of production in the cost of food and by prolonging the earning season of our dairy herds, we need to improve the quality of both the cheese and butter that are the products of our makers' skill. It would not be wise to enter upon a discussion of all the changes that are desirable towards that end, but among those subjects is this, that cheesemakers need more information and that they can obtain only I think through the establishment of experimental dairy stations and the work and instruction of instructors. They need, not only instruction, but supervision. It is given but to few men to do their best, day after day and week after week, without some outside supervision. The work of an instructor is mainly valuable, when the instructor goes around in a sort of a genial way, and when the maker expects some one around to see that he is doing the best he can. Then it is a good thing to have the patrons in an expectant mood concerning the visit of some stranger whom they would like to please, and they will receive him most cordially by letting him know how good is the quality of milk their cows produce. When they expect the arrival of a distinguished individual, you know how ambitious the patrons will be to furnish good milk just for the sake of his approval. Now, for myself, I would not like to have those men who do not send the best of milk to the cheese factory paraded before the public often. It would not be good or kind ; but their expectation of the visits of this official inspector would be helpful. The plan would be to have one man who might be expected to drop down in any part of this province, and being under no supervision except that of some central authority, the farmers would learn but little except by his movements. He could discover the men who were sending all good milk to the factory, and if he found a man who was not sending good milk he might help him a little by bringing to the assistance of his defective moral judgment and practice the operation of the Act on milk adulteration. One lesson or two to a few would help a great many. Then I would have some man go around among farmers who were suspected of adulteration, and if he prosecuted four of the worst ones he could find, and advertised the fact of their prosecution and conviction, by putting out small dodgers and sent these out, say dropping them in the milk cans, it would be rather a wholesome piece of information.

Then cheesemakers should be induced to do their work in the very best way right to the end. The great weakness in most of our dairymen and other citizens, is that they fail in perseverance unto the end and quit when two-thirds of the way through. A cheesemaker makes the best cheese he can at the beginning of the season, but after a time there are pic-nics in the neighborhood and he does not do quite so well. Then he gets gassy curds, and he "does not believe in sitting up all night" and he makes soft, open cheese

and the buyers do not want these. You will find all through life that those men only do the best who persevere unto the end ; and a man who does that in any sphere will compel success every time.

Let me conclude by saying this, that all around the world people are getting more fastidious because they are better off. In our country we are all better off than formerly, so far as I can learn. People wear better clothes, live in better houses, are more cultured in their tastes. They won't eat butter and cheese of the quality of ten years ago, and when they are more fastidious they will pay a better price for a better article. If men in present circles find this the case in marketing, there will be more difference in years to come, and since quality cannot be changed in one day it will be an ill day if we let out of existence all those agencies and factors such as inspectors and instructors who have done so much to give a better quality to our products. I think they ought to be commended and improved and enlarged in every aspect of their application. In that way I think that dairy farming in the whole Dominion can be made more profitable and will leave more profit. I have spoken of other provinces. Their success is your success, because if they make finer goods and more profits, the whole nation responds to the individual prosperity. In that way, I think, by improving the practices of dairy farming, putting into it more enthusiasm, we will make our nation what it ought to be—a nation of skilful, prosperous dairy farmers from the Atlantic sea to the Pacific coast. (Applause).

THE COST OF KEEPING A COW.

Hon. H. C. Adams read the following paper :

The cost of keeping a cow depends : 1st. On the cow. 2nd. On the man who keeps her.

A cow is not necessarily a cow ; she may be a hog, or worse yet, a dyspeptic. In any case she is a machine of greater or less power to make fodders and grains into butter, cheese and calves. She does not necessarily produce results in direct proportion to rations. In other words, 50 lb. of oats fed to one cow may make 10 lb. of butter ; fed to another cow it may make 4 lb. of butter.

Capacity to turn out butter from grass is a thing of development running along the line of heredity and stamped in breeds. Capacity to simply consume has not been bred for as a result, but will crop out occasionally among thoroughbreds, but more frequently among natives and common stock. A cow cannot "eat her head off," as the saying is, no matter how much she consumes, if she is of the right kind. By the right kind I mean a cow which makes milk, cream and butter out of surplus food. A cow which becomes more profitable as the expense of feeding her increases is the one which has the golden calf.

The smart American dairyman of to-day is not only wiggling away at the old problem of making two blades of grass grow where one grew before, but he is trying to make one cow eat what two ate before and give twice as much milk as two did before. This is done to reduce the ratio which the cost of keeping a cow bears to her gross product.

The Jersey cow "Nancy Lee," has made 4 lb. 2½ oz. of butter in one day and 95 lb. 3½ oz. in 31 days, four months after calving on ordinary food. There are a great many cows fighting flies in this country and kicking over milk pails that would not make as much butter in a year as "Nancy Lee" did in a month. They cannot help it ; their mothers and fathers and ancestors from away back where history dissolves in fiction were not trained up in the butter business.

G. W. Farlee, of New Jersey, in a statement of a year test of the Jersey cow "Signoretta" 21546, makes a clear demonstration of the importance of the individual blood and make-up of a cow to this question of keeping her. The test was made on her second calf, beginning Sept. 20, 1886, and ending Sept. 19, 1887. Although only three years old she gave during this period 7,621 lb. of milk, from which was made 680 lb. 6½ oz.

of butter. At one period during the test her milk showed 60 per cent. of cream—this was when the first flow of milk had shrunken one-half. Her daily grain ration averaged 8 lb. Certainly there was no forcing process here. The cost of keeping that cow long enough to make a pound of butter was light because her ancestry had practiced the art of making butter until it had become established as a hereditary quality.

W. R. Mowray, of Oxford, N. J., published some time ago his experience with a dairy during a term of 12 years. It illustrates forcibly how the breed may save the feed. He says: "The first three years the cows were natives; in 1878 there were 3 grade Jersey heifers three years old; in 1879 there were three natives; 3 three-year-old grade Jerseys and 7 two-year-old grade Jerseys; in 1880 they were all grade Jerseys; in 1883 there were two pure bred Jerseys part of the season; in 1884 there were 3; in 1885 there were 5 pure bred Jerseys, but feed was short and I was overstocked; in 1886 about half were pure bred and half grades.

The following statement gives the average yield of butter per cow for the herd during each of the years in the period named:

Average lb. of butter per cow in			1875	125 lb.
"	"	"	1876	159 "
"	"	"	1877	153 "
"	"	"	1878	155 "
"	"	"	1879	145 "
"	"	"	1880	187 "
"	"	"	1881	195 "
"	"	"	1882	207 "
"	"	"	1883	244 "
"	"	"	1884	250 "
"	"	"	1885	240 "
"	"	"	1886	276 "

We have average production here changed from 125 lb. per year to 276 lb. per year by the saving grace of good blood. A gain of almost 100 per cent. or a reduction in the cost of butter by more than that percentage. The tail cannot be bred off a monkey in a minute, and the butter cannot be bred into a steer masquerading in a cow skin in a generation. Every cow has her individual limit of butter production fixed at birth in her physical and nervous constitution, just as a child carries in its infant brain the limitations of its matured intellectual power. If that limit is low she is a costly cow, not in spite of fate but because of it. The man who undertakes to lift a mortgage with her is on the wrong end of the teeter, and will get lifted himself if he breeds to her kind. A corn planter is an expensive tool to dig potatoes with. A poor cow is just as expensive a machine for making butter fat out of feed. She was made for some purpose not yet discovered.

Next to the cow in the economy of feeding stands the feed. It looms up so prominently before many men that they cannot see the cow at all. They have a notion that the cow in her milk production is as flexible as the elements. Along with the battered old statement that "money makes the mare go," they ring in its companion piece "corn makes the cow go," and it does, it makes her go dry a great many times when she might be going in the "milking-way." The cow we are talking about is a dairy cow. A percentage of the food taken by every cow is undigested or not assimilated; the percentage of loss sometimes runs as low as ten, sometimes as high as sixty per cent. It is not the animal which eats the most, but the one which assimilates the greatest percentage of food consumed which is most profitable.

A cow is fed for four purposes, to repair the natural waste of her body, to keep her warm, to sustain the embryonic life which she carries, and to make milk. These purposes demand two kinds of food, the heat making and the flesh and bone forming. To understand the proper ratio in which these foods should be mixed in a complete ratio has been the object of exhaustive scientific research. The result may be stated in a general way as requiring one part of the albuminoids, or flesh forming elements, to five parts of the carbohydrates, or heat producing elements. Food so proportioned is fed with the least loss under average conditions. A cow cannot be fed cheaply upon bran alone, or hay alone, or cornstalks alone, or cornmeal or clover, for the one reason if there were no

others, that in themselves they do not furnish food elements in the proportion required. Straw, barley, cornmeal, corn fodder and ensilage make heat and fat. Bran, middlings, oilmeal, cotton seed meal, malt sprouts and oats have a much greater proportion of flesh and bone material. The art of cheap feeding consists in combining these or other foods in right proportion, and selecting such as can be obtained at the least cost. The comparative cheapness of a ton of a given feed cannot be determined by the price of it. Under certain circumstances oilmeal at $30 per ton is cheaper than cornmeal at $15 per ton, because oilmeal contains three times the digestible flesh forming material found in cornmeal, and one pound of it will go as far in restoring a ration poor in albuminoids to its proper composition as three pounds of cornmeal. Straw is almost worthless fed with corn or ensilage; fed with timothy hay and oilmeal it is quite a valuable feed. This matter of economic feeding has been forced upon the attention of dairymen by the necessities of the times. With a gradual yet constant shrinking of prices has come a vigorous and effective effort to lower the cost of production.

If nothing can be done to raise prices something can be done to reduce expenses. Thought and knowledge are as valuable applied to questions of cost as to questions of price. The manufacturer brings all knowledge within his reach to bear upon the matter of economical production in even the minutest details of his business. The farmer has been studying his methods. The agricultural press is filled with enquiries about the digestibility, or the chemical analysis, or the feeding value of this or that food. Prof. E. W. Stewart, in a reply to an Iowa correspondent, recently gave the following as a good daily ration for a large cow: 18 lb. timothy, 8 lb. oats, corn and cob, 6 lb. roller bran, 3 lb. oilmeal.

With hay at $10 per ton, corn and oatmeal at $18, bran at $14, and oilmeal at $25, we would have a daily ration costing: for hay 8 cents, corn and oatmeal 8 cents, bran 4 cents, oilmeal 4¼ cents, making a total of 27 cents. The prices given are lower than at present, but they are just now abnormally high. Upon the Wisconsin basis of average prices, which has been assumed, the "big cow" would be an expensive creature. She is provided in this ration with 17 lb. per day of grain feed, 12 lb. per day of grain properly fed is sufficient for the ordinary Wisconsin cow; this would reduce the daily expense to 22 cents. A much cheaper ration, which would be approximately correct in its nutritive ration, can be made with—

10 lb. fodder corn, costing		2 cents.
10 " hay,	"	5 "
5 " bran,	"	3½ "
5 " middlings,	"	4¾ "
2 " cornmeal,	"	2 "
Total		17¼ "

or $31.05 for the 180 days of the year which constitutes the feeding period. Pasturage can ordinarily be obtained for the balance of the year for $10, which would make the cost of feeding the cow for a year if everything was purchased, $41.05. Advocates of ensilage claim that 50 lb. of ensilage per day, and 10 lb. less of bran, will give a cow all she needs. Various estimates are given as to the cost of ensilage. It undoubtedly costs $1.50 per ton in the silo, 50 lb. would then cost 3¾ cents; 10 lb. bran, 7 cents; total, 10¾ cents. At this rate the winter feed of a cow would only cost its owner $19.40, and the total annual expense would be $29.40.

One point must not be overlooked in the question of economic feeding. Rations must be varied at times to give zest to animal appetites. A costly food highly relished is sometimes cheaper than a low priced food of which the animal has become tired. A cow is like a human being she likes and needs variety in her diet.

The perfection of the digestive and assimilative process are more dependent upon appetite and taste than is generally supposed.

The grass of the early pasture produces more per 100 lbs. of actual nutrient material than any other feed known. No other food is so relished by a cow. Cows will often leave good clover hay to eat some old rotten straw, and the hired man comes along and wonders what the old fool is thinking of. She is in the same fix as the Democrats were a few years ago in Wisconsin, and the Republicans are now. She wants a

change. It is not necessary to give her muffles for breakfast and Saratoga chips for dinner, but give her a change of grain ration every month. All grains to be fed most economically should be fed dry. We only except malt sprouts; they have a swelling power, only equalled by an American imitation of an English snob. They throw dried apples completely in the shade. They should be wet with three times their bulk of water or skim-milk. Dry feeding means more complete mixture of saliva with the food, as it is necessarily eaten slowly. Grain should be fed upon cut fodder or fine hay. It thus becomes a part of the cow's "cud," to use a common expression, and is re-masticated with the coarse feed. Only in this way can anything like thorough digestion of grain be obtained. When grain is fed singly in large rations to any animal, it passes rapidly through the digestive tract and appears in considerable quantities in the excreta unchanged. Prof. E. W. Stewart estimates this loss to be from 30 to 50 per cent. of the value of the grain so fed. It is a matter which materially affects the cost of keeping a cow. Another feature of the case is that the vitality of the cow is weakened by her imperfect digestion. The cost of keeping a cow is also dependent upon the kind of water she drinks and its temperature. Impure water in summer and cold water in winter does not pay, they cost too much. In the first case, the health of the cow is affected, and in the second, it costs more to warm the water inside the cow than it does outside, for the very plain reason that cord-wood is cheaper than corn-meal.

In a dairy of 20 cows the water can be warmed to a temperature to 80 or 90 degrees during the coldest weather of winter at a cost for fuel of $1 per cow. Experiments at the Missouri Agricultural College show that warm water saved them 10 per cent. of the feed. If feed cost $30 for the winter there is a saving of $3 for each cow. This is in a state where the charms of a Wisconsin or Canada winter are unknown. The general testimony of men who warm the water for cows, is that it increases the milk flow upon the same feed from 10 to 25 per cent. No improvement over the old system of dairying is more marked or certain than this. It has been urged that it is contrary to nature to warm water for a cow, that we are making her an artificial creation, that she is losing the hardiness of the beautiful rainbow-backed creature of the olden time, who simply "humped herself" to meet the exigencies of the weather. Of course, she is an artificial creation, and the more artificial she is, the better we like her, and the more she is worth.

Men have done a pretty good job with awfully raw material they found in the primeval cow. They have bred off the surplus bone and the surplus flesh and unnecessary hair, and the tail like a fence post, and the horn like an elephant's tusk, and the empty head that adorned the old native, and given us a cow that has brains and beauty, and can give us milk. Cows in a state of nature were milked by calves.

The men who are worried because cows are being twisted from their original bent should let the calves have a show.

Cows can be made hardy, there is no doubt about it, but it costs too much. The hardiest cow I ever saw was frozen stiff on the chilly side of a fence in December. She had risen in the scale from comparative hardy to positive hard. One thing more about feeding—except where land is cheap and labor high, soiling will diminish very materialy the debt side of the cow account. During the last season I fed 24 cows 18 days upon southern ensilage corn fodder grown upon one acre of ground. The feed would have carried one cow 432 days, or one year, two months and seven days. The cost of raising the acre of fodder corn was as follows:

Plowing	$1 25
Planting	50
Seed	50
Harrowing	1 50
Cultivating	1 50
Cutting and feeding	4 00
Total	$9 25

This is a cost per day per cow of less than 2½ cents. Prof. Henry in his annua report for 1885 gives details of an experiment showing comparative results of soiling and pasturage. From tables given, we find that one acre of pasture gave 1,779 lb. milk

which made 82 lb. butter; one acre of soiling gave 4,782 lb. of milk which made 196 lb. of butter. The acre of pasture made $20.50 worth of butter; the acre of soiling made $49 worth of butter. It cost 2½ times as much to let the cow get her own feed as it did to carry it to her. It is but fair to state that in this account the cost of handling the soiling crop has not been computed. It is reasonably certain that the old-fashion pasture will be too expensive a luxury for the next generation. Finally, with the cow bred for her business and the feed adapted to the cow, we need a man competent to handle both.

With incompetence, we have wasteful feeding, careless housing, rough treatment, and irregular habits, all active enemies of economy in the dairy.

The incompetence is usually the results of thoughtlessness, rather than absolute incapacity. When a farmer begins to think in earnest he runs rapidly to correct conclusions; but the trouble often is, that it seems to make him tired to even think of thinking, when perhaps ten minutes of thought would save him ten hours' work. A man who will not think, and think hard, has no business with a cow. She will beat him every time. She is as susceptible to intelligent and thoughtful treatment as an invalid is to changes in the weather. Make her warm and she will eat less, and give more and better milk; keep her clean and food is saved that would otherwise go to repair the nervous waste caused by discomfort; feed her regularly and we get that perfect digestion and assimilation of food never known in the hit and miss system. A good cow is well-bred; she despises rough ways and hard usage. She has no respect for the man who swears at her. She balances accounts with him by shutting down on his milk supply and raising the cost of his butter. She is not to be fooled with; she has dignity and self-respect. She is the product of brains and good nature—and it requires good nature and brains to manage her profitably.

Mr. Adams, commenting on one point in his paper, said: About the warming of water, with me it has been a very important matter. I recollect having 41 cows in one lot. The young man and myself who went into business together got into debt and had to do the best we could to dig out of it. We didn't get enough milk to satisfy us, and tried all sorts of means and manner of feeding, and my partner even used to get up at midnight to see if we could increase the yield by feeding at night: but we could not get more milk. In talking to an Englishman, he said to me, "I will tell you; go to warming the water the way they do over in England." I got a kettle that would hold 40 gallons and fixed up a place for the fire under it and we heated the water until it came to blood heat, and in it stirred bran and shorts. Well, it was just astonishing the way the cows increased their milk supply. I thought, perhaps, they would give more milk if I could get them to drink more water, and I began to put a little salt in the water to increase their thirst; but it reduced the quality of their milk, which was not the case when they got simply warm water mixed with a little bran. Our experimental station has tested and found only a slight increase by the use of warm water in the production of butter. That can be explained because the cattle have model quarters. The average farmer does not have any such surroundings, and he gets a much larger advantage, and I would say to every farmer who has a cow, if you want to increase the product give her warm water.

A VOICE.—I have listened with great interest, and I trust some profit, to Prof. Robertson and the Hon. Mr. Adams. They have made some excellent points, as far as I can judge, which if put in practice will be very beneficial; but there is one thing I noticed in both of them, that the more "man" you can put into the work, the larger amount of benefit and profit you will get, both with regard to the making of cheese and the feeding of stock. It just occarred to me that our experts want some stimulating to bring about this end and that our best men are not paid as they ought to be. I would suggest that the cheesemakers form an association and fix a scale of prices, and shape things as they ought to be shaped. Things are so ground down in our day that men merely make their positions as cheesemakers a stepping stone to something else. The lowest price men get factories generally. The owners employ cheap hands and buy cheap materials, and these things are a great hindrance to the quality of our cheese.

The convention adjourned till 2 o'clock in the afternoon.

AFTERNOON SESSION.

On resuming, the question drawer was opened.

QUESTION DRAWER.

QUESTION.—What is the best method of removing taint from curd, or can taint be removed from the milk before manufactured?

Prof. ROBERTSON.—It is much easier to puzzle a man than to give him something easy to answer, and if I were answering that question straightforwardly, I would give *Punch's* advice about getting married. "Don't get into the trouble." But the only way to remove any volatile taint from milk is to have it aerated, that that taint may evaporate; and after that, the only way to cover up taint is to develop a large degree of lactic acid. So by the aeration of milk, and the development of acid in the milk, after it is partly dried, you can first remove part of the taint and then hide the rest.

A VOICE.—Can you remove the taint entirely?

Prof. ROBERTSON.—You cannot entirely remove any taint from milk. After all, in the matter of taints, *Punch's* advice is short and to the point—"Don't."

QUESTION.—Don't you think it would be a good idea for factory men to club together and get their dairy supplies from one man? Don't you think they could be got a great deal cheaper than they are at the present by so doing?

Prof. ROBERTSON—We will suppose that I am not a government servant and that I am in the dairy supply service. If I were in the dairy supply business I would try and get all the cheesemakers to club and buy from me. But as I have at least twenty good friends in the dairy supply business I am unable to recommend one of these as furnishing better goods or offering better prices than another. I don't believe in advocating combinations for the purpose of getting good supplies. If a man will insist on getting the best supplies, he will find competition now sufficient to put the price as low as it can be.

QUESTION—I should like Prof. Robertson's opinion on the extra heating of a gassy curd, say to 105 or 106 degrees, immediately before dipping?

Prof. ROBERTSON—I would not approve of that practice. I do not think a gassy curd should be heated above 100 degrees and should not be allowed to go below 94 degrees after the acid has developed. Extra heat makes a curd rather corky. That is the effect on gassy curds, anyway, so you see you add to the evil by increasing the heat above 100 degrees.

A VOICE—At what heat would you have the water when you wash the curd?

Prof. ROBERTSON—I would put it in the water at about 100 degrees. I would never put the water directly on the curd, but on a cloth over the curd.

Mr. THOS. DILLON—I would like to know the effect on cheese of taking hogs to the station one day and cheese in the same waggon box perhaps the next day? A great many farmers in the fall of the year will get up on the boxes and walk with dirty boots, and by the time they get on their load the figures on the boxes which show the cheese are completely covered with dirt. It must have an injurious effect. I find people taking in turnips one day and cheese to the market the next day, without anything to protect the boxes from the dirt from their fields which has been shaken off their turnips.

Prof. ROBERTSON—The wrong practice mentioned by Mr. Dillon is one that does the trade a good deal of harm. It is easier to point out a bad practice than to suggest a remedy; but I think a cheesemaker's duty is to stand between the man who produces the milk and take supervision of the goods he has made up until they are put on board the cars or in the warehouse. If a patron came to a factory under my care with such a foul box as has been described, he might go home with his box and another should take his place, and he should be charged with the drawing of that cheese. The value of the suggestion is here, that the appearance has so much to do with the price that no cheesemaker should allow his reputation to be damaged by having anything done that will lessen the value of the goods.

WORDS OF WELCOME.

Mayor DOUGLAS, of Woodstock, was then introduced, and said : On behalf of the town council of Woodstock, I appear to extend to you a hearty and cordial welcome to the town of Woodstock. It gives me great pleasure to see that the interest in dairying manifested by the meeting held in Woodstock some years ago not only still exists, but has grown to a greater extent than previously. We in Woodstock are always glad to welcome to our town associations which are working for the common weal ; but more especially are we glad to welcome to our midst an association like this, which has placed itself in the front ranks of those that are working for the advancement of one of the most important interests of Canada. I desire just here, on behalf of our town, to also specially extend a welcome to the Hon. Mr. Dryden, who appears in Woodstock for the first time. It is well known that Hon. Mr. Dryden has always taken a warm interest in agriculture, and I am sure it is a pleasure to his fellow citizens in Canada that he has been elevated to the high position of Minister of Agriculture. I also desire to welcome among us our American cousins, who, at great inconvenience to themselves, are present to-day. I refer to Governor Hoard, of Wisconsin, and Hon. Mr. Adams, of the same State. I am sure it is a pleasure to us at all times to welcome in our midst our American cousins. It is a pleasure to us to know the high standing which the dairy interests of Canada have taken in Great Britain. The standing which this interest has taken over there can be raised greatly by meetings such as you have here at the present time, and by the interchange of thoughts and ideas about methods among yourselves. By this means I believe in the future the dairy interest of Canada will attain a far higher position even than it occupies to-day. We know there is always room at the top, and it is pleasing to us to feel that there is a healthy rivalry between our American cousins and ourselves as to who will take the first place. I am sure our American friends here are not selfish enough to wish that the Canadians may not be the first in getting there. There is one matter which has attracted my attention, and I do not think it will be out of place to mention it at the present time, and that is the great interest the newspapers have taken in your meetings. It is to their credit that they have paid such attention, and given such full reports. For, while to those here the meetings are beneficial, the words spoken by the press are scattered in the homes of thousands of readers, and those far away thus participate in the benefits of our discussions. I am sure I can wish for nothing better for the association than that it shall always go forward, and that the interests of dairying, interwoven as they are with the interests of our country, shall always increase its prosperity. I hope that your meetings here will be pleasant. I regret that your stay is short, but I hope that the meetings will not be of interest only to the Association, but of profit to ourselves and to those in the surrounding country who have come here to hear what you have to say. I am sure it is a great pride to every lover of his country to know that it is being developed. I express the sentiments of the council and citizens of Woodstock, when I say that in future I hope this industry may develop far more than it has done in the past. I again, on behalf of the citizens, extend to you a hearty welcome to the town of Woodstock. (Applause.)

Mr. GRANT, President of the Board of Trade of Woodstock, was next introduced and said : I have very great pleasure in being present this afternoon to meet this large and representative gathering, representing this large and important interest. I am sure any one who is at all aware of the importance of agriculture recognises that it is the first of all our important interests. As a member of the Board of Trade I know that agriculture is the interest on which all our prosperity depends, that every interest in this country is dependent upon agriculture ; and while we have among us men of various minds, we all know that the great dependence we have after all is agriculture. I am sure, therefore, we are all glad to know that the dairy interest is in such a prosperous state. I am glad to know that after all the changes of laws and tariffs, still there had been nothing unfavorable to this great interest ; but fortunately we depend for our markets on a country that does not raise tariff walls. We depend on the Old Land, where the people welcome the products of every land. We are glad of this and also glad to know that that interest is developing which we so largely depend on in this section, and that it is not affected by those evils to which I have referred. I

am glad to welcome our American friends. I had the pleasure of listening to one of these gentlemen last night, and I am sure the audience must have been highly delighted with the words of the honorable gentleman. I have no wish to take up your time, but on behalf of the Board of Trade I heartily welcome you to our town, and hope that the holding of the meetings here may be repeated, for I have heard dairymen say that one of the most successful conventions which you ever had was held here a few years ago, and I hope this one may be just as successful and just as profitable. (Applause.)

Mr. C. E. CHADWICK, Secretary of the Association, replying, said: It has given me a great deal of pleasure, indeed, to be present with you on this, I think about the 21st or 22nd of these conventions. I do not think during that period there has been more than one or two gatherings at which I have not been present, and participated more or less in the business of the meetings, and I can assure you the present one has been successful in a more marked way than any of the previous ones. We meet here men representing the bone and sinew of the country, who, with true patriotism, are only desirous of developing the interests of our country. I see with me here fellow citizens standing on one common platform, whose purpose is to gain knowledge and secure the dissemination of the success of an industry which has grown from very small beginnings to one of the most important of our country. It was with no little discouragement that the organisation was first formed. It met with those perils which are apt to affect every organisation at first. Those perils have been overcome. We have a great proof of this in the audience assembled on the present occasion, which tells us that we have grown to that degree that we can hardly find a hall large enough in this town to hold the audience. I was very much pleased, indeed, to hear the remarks of the mayor. There was a cordiality about them that made me feel that we had a Canadian sentiment, a Canadian feeling, a feeling of patriotism which to me was peculiarly pleasing. And that is what I want to see in every one in Canada who has an interest in the development of our country. If we act upon that principle, and unite upon it, there are no bounds to the success of our country. It is now more than 60 years that I have been an inhabitant of Canada, coming here when the country was a forest. What do we see now? Extensive buildings, large industries, large commercial transactions transpiring on every hand. People who were struggling for an existence we now find indulging in all those luxuries necessary to the comfort and well-being of the community at large. I was glad to hear the President of the Board of Trade, who came to recognise us. Gentlemen, this institution is forcing itself upon public notice. There was a time when we met, and but little attention was paid by the outside public to our doings. A different state of sentiment is prevailing now. We find public men where we assemble tendering a cordial reciprocity of feeling which is necessary and gratifying to us. I feel gratified to find that we have so excellent a meeting, and that we are so cordially acknowledged by the town of Woodstock. (Applause.)

ELECTION OF OFFICERS.

The report of the Nominating Committee was then read and adopted. It recommended the election of the following:

President.. ..... Thos. Ballantyne, Stratford.
1st Vice President..... .....John Geary, London.
2nd Vice-President..... .....Wm. Messer, Bluevale.

Directors.

Division No. 7.....Robert Cleland, Listowel.
" No. 8. ....Harold Eagle, Attercliffe Station.
" No. 9.....F. Casswell, Ingersoll.
" No. 10.....John Ballantyne, Pine River.
" No. 11.....Alex. McLaren, Stratford.
" No. 12.....Wm. Symington, Camlachie.
" No. 13.....John Prain, Harriston.

Secretary.....C. E. Chadwick, Ingersoll.
Treasurer.....J. C. Hegler, Ingersoll.
Auditors ....{John S. Pearce, London. / John Robertson, Gladstone.
Representative to Toronto Industrial Exhibition... .Benjamin Hopkins, Brownsville.
Representatives to Western Fair, London .....{James Carmichael, Arva. / John S. Pearce, London.

RESOLUTIONS OF CONDOLENCE.

Moved by Jas. W. Robertson, seconded by Mr. Hopkins, and resolved that: It is with sincere regret that we learn of the prolonged illness of our esteemed President, Mr. J. B. Lane, which has deprived us of the pleasure and benefit of his prssence at our convention; and we hereby place upon record an expression of our sympathy with Mr. Lane in his affliction and convey to him our earnest good wishes for his speedy and complete recovery.

Moved by Jas. W. Robertson, seconded by Mr. Hopkins, and resolved that: This Association has learned with deep regret of the sad and sudden death of the late Mr. Wm. Weld, the founder, proprietor, and editor of the *Farmers' Advocate* of London, and hereby places upon record its high appreciation of the valuable services which he rendered to the agricultural community of Canada, by his long advocacy of improved methods and more intelligent practices in the carrying on of their business, and we deplore the great loss which the country has sustained by his decease.

THE DAIRY COW AND HOW TO MAKE HER PAY.

Hon. W. D. HOARD, Ex-Governor of Wisconsin, being called upon, said: Mr. President and fellow-dairymen: We may be sure of one thing, that whether we are Yankees or Canadians, the wind that blows across the borders and gives us our breath, stops not at national lines. (Hear, hear). We may be sure of another thing—and thank God for it—that the language we speak is a common vehicle for the conveyance of a common understanding. We may be sure of another thing, that we are dairymen seeking a common knowledge for the prosecution of a common purpose, and that there are no lines between us in this pursuit. Therefore we come together as dairymen—not as Canadian dairymen, nor as United States dairymen so much, but as men seeking a better understanding and a better "reason for the hope that is within us." Therefore I do not feel that I come before you in the light of a representative of any nationality so much as the representative of a little thought. It is thought we are after. We must think, and the head must constantly precede the work of the hands, and therefore I invite your attention to a few thoughts that have been coined out of years of study and conclusion along the lines of this our common purpose and our common vocation. It is not always pleasant to be engaged in chiding, but you know what the old Presbyterian dominie said: "My freens, he says, "it will nae do for me to be speaking to you aboot the gifts o' grace, because gin I do ye'll get two over-toppin' in yer opinions o' yersels; I better be doing a little on the other side—telling ye whar I think ye must do, and maybe the Lord will bless the words I drop." So in this line—and the line of my thought will be directed as it is, for I bend towards the man who makes the milk. The factory or creamery will take care of itself, though I represent in my own person the creamery interest, but I represent in my own deep interest both of these lines. It is the man who makes the milk that must be constantly reached after. You know the pool in the Scripture account was agitated by an angel who came down every little while and stirred it up; it was not for the purpose of doing the pool any good, but for the benefit of the man who was going to step into the pool. You know the factory or creamery is a pool. We pool the milk together, not for the benefit of the creamery, but to do good to the man who is going to step into the pool.

When the yearly account of the average patron of a cheese factory in Canada or the United States is looked at in the light of good business sense one is astonished at the fact that intelligent farmers, men who call themselves well-posted as the world goes, should be content with such poverty-stricken returns. Something should be done at once to arouse these farmers to the necessity of immediate reform of their ideas and methods. I am credibly informed that the average yield per cow among the cheese factory patrons of Ontario is about 2,700 lb. of milk a year. I am also credibly informed that the average value of milk for cheese-making the past year was 70 cents a hundred. 2,700 lb. of milk per cow at 70 cents per hundred would give $18.90 as the average return per cow from the factory. Allow $6 as the amount the cow will earn in butter before and after the factory closes and you have $24.90 as the average earnings of the Ontario cows for the past year. Any man of sense knows that this sum will not pay for the food consumed on the farm, saying nothing of the cost of labor. All

we have left is the manure. One would naturally expect under such circumstances that there would be close, practical, intelligent efforts put forth to save this manure, the last earthly hope of these farmers for profit. But here again are we confronted with the same demon of waste. Go anywhere, you will find in 90 cases out of 100 the same old folly of manure piled in heaps at the sides of the stables under the wash of the eaves. It actually seems as if men really tried to make the manure as worthless as possible; to get as little out of the cow in this direction as they have in others in a word, to make as little money as they consistently can.

The strangest thing on earth is the indifference and contentment which prevails among dairy farmers on this subject of poor cows and worse methods of farm management.

The next strangest thing is the amount of pounding they will take and not stir a foot out of their everlasting unprofitable tracks. What can be the matter with these farmers? Don't they want to make money? Don't they want to conduct their business so as to have as large a margin as possible above the cost of carrying it on? When every man in the world but themselves can see that they are boarding five out of ten cows at an absolute loss, what makes them so blind to this important fact. Go to any manufacturer and show him that some of his machines are running him in debt every year, and you will see them repaired or displaced for better ones in mighty short order. What makes the average cheese factory or creamery patron hold on to the poor cows and wasteful methods with such deathlike grip when more successful men tell him he is wrong—when his own pocket tells him he is wrong? I don't know and I don't believe he does either. (Laughter.) I have been trying for the past few years to get some information on that point and I suspect that he has as yet taken no pains whatever to find out what it really costs to keep a cow, or what constitutes a profitable cow. It is not that he is lacking in brains. He has as many brains as other folk. He has simply allowed himself to become mentally lazy. It is impossible for him to know the truth unless he works for it. The truth about your business is like any other. You cannot harvest if you don't sow. A study of the truth must be had if we reach the truth.

To see how matters stood with these average cow farmers—what they had done to know the truth of their own business, I put the following questions to 1,000 patrons of cheese factories and creameries: "Have you ever set to work to know what it costs you to keep a cow for one year?" Out of the 1,000 nine hundred and eighty had made no effort to know this important fact. They could guess all over the question. From twenty dollars to fifty dollars was the average. Only twenty out of the 1,000 had seriously set to work to know something for themselves about their business in this particular. Think of it, my brothers! Should we not be ashamed of such indifference, especially when it is costing us so much? Another question, equally important, was asked of 200 average, well-to-do patrons of cheese factories: "Have you ever made any effort to know what each of your cows was producing for one year?" Out of the 200 197 answered "No." Now, that is as near as I have got in determining what percentage of dairy farmers are really dead in earnest to know what they must know or be badly punished for not knowing. It looks bad. It is the lack of this necessary knowledge that makes the beggarly showing in pounds of milk and pocket for the patrons of Canada and the United States. It saddles the hard-working farmer with the cost of keeping two poor cows, waiting on two poor cows, stabling two poor cows to do the work of what should be done by one ordinary good cow. Do you wonder he is bowed down and discontented with the business? Oh, that he would stand up and look his own deficiencies in the face!

What does it cost to keep a cow a year on the ordinary dairy farm? In the first place what is the pasturage worth? I find that it takes from three to four acres of land, as farms run, to pasture each cow,—call it three and a half acres. What is this land worth in your dairy districts? Dairy farms sell for about $40 an acre. If my figures are too high or too low adjust them to suit the fact, but this is my best information. Now, the cost of pasturage is the interest on what the land will sell for; the taxes and annual depreciation in fencing—all of them cash items. Three and a half acres at $40

per acre represents $140 invested in land to pasture a cow. What is your interest rate? Call it seven per cent, which will amount to $9.80. The taxes may vary, but may be fairly set down at this valuation, at one per cent. or $1 40. The depreciation in the value of the fencing will also greatly vary, but it cannot be less on ordinarily fenced farms than one per cent. annually. This would amount to $1.40. It usually requires the labor of one man for ten to fifteen cows, but we will allow the manure to offset that, provided you will agree to handle the manure so as to get your pay. At the estimate I have given, it costs the average farmer, to pasture the average cow, as follows:—

Interest on 3½ acres of land at 7 per cent.	$9 80
Taxes	1 40
Depreciation in value of fencing	1 40
	$12 60

Winter Keep.—To keep a cow through the winter in such condition as she will do her best the next summer is a matter of common necessity. Hence she must be well kept. This will require the value of at least two tons of the best hay, which in Wisconsin may be set down at $16. Add to this at least $3 worth of grain, to keep her in the tone and condition I spoke of, and you have the sum of $19 as the cost of winter keeping of the average cow. This makes a total for the year of $31.60. If you think the figures are so high as to upbraid your conscience too much, cut them down, but remember your pocket. Now, compare what you get from your average cow—$24.90—with what she costs to keep, and tell me honestly do you think it pays to be an avearge dairyman and keep an average cow? The only way out of the woods is to be more than an average dairyman in your understanding of your business, in the methods you practice. The moment you do that you will not be contented with this average cow. The average cow, which costs more than she gives, is always the product of the average dairyman. The dairyman was produced first.

Let me suggest a few things for you to consider: First, set about the task of knowing for yourself just how many pounds of milk each cow in your herds produces every day in the year. Don't think this is such a big thing to do. Buy one of these double-indicator spring scales. One of the indicators is stationary, as in the ordinary scale; the other is movable. Hang the pail on the hook and push the movable indicator to the upper, or zero mark. When done milking, hang the pail again on the balance. The stationary indicator will record the combined weight of pail and milk, and the movable one the weight of the milk alone. Tack up behind each cow in the stable a strong sheet of manilla paper, ruled off, with the months and days. Hang a cheap lead-pencil beside each sheet. In this way set resolutely to work to know the all-important facts of the dairy production of your cows.

Breed Better Cows.—Our average dairyman must have a better cow. That is very evident from what we have seen. How will he get her? Breed her. He can buy good thoroughbred bulls of every dairy breed at fair rates. Don't be fooled into the notion of a grade bull, get a thoroughbred. Breed your cows in January and February so they will calve in September and October. That will push you into winter dairying. Don't be afraid of it. My word for it, you will never regret it. The cheese factory will accommodate itself to your notion mighty quick. When you commence to make milk in the winter then you will commence to study the finer economies of good stabling, the production of cheap food, like ensilage and the way to handle a dairy cow. Then you will hire your help by the year and thus get your help cheaper and turn a long and expensive winter to profitable account. You will find that it costs only about 15 per cent. more to keep a cow in milk, if you have a warm stable, than it does to keep a dry cow, as she should be kept if she is to do well the next summer, while the winter milk is worth 30 per cent. more than the summer milk. Then again a cow calving in September is six months in milk when she strikes the fresh croppage of spring grass and thus enlarges the flow. When a cow calving in March or April is six months in milk she strikes shrinking feed and colder weather and naturally shrinks instead of enlarging her flow. Thus

a winter cow of the same capacity will yield more milk in the year than a spring cow. I believe the coming system here in Canada will be to have the cows come fresh in the fall, make butter through the winter, thus having the skim milk to feed the young stock. That will give them a good six months' start on skim milk, and at the end of their six months period they will get the benefit of the fresh pasturage, the same as the cows, and it will have the same effect in their growth that it does in milk with the cows. When spring opens turn the milk to cheesemaking and continue till July 1st. Then dry off the cows and give them a rest until September again. Another important gain under this system will be that both the patron and factory will have a ten months' season of business instead, as now, one of six or seven months. It is a very easy matter in these days of separators for a factory to adjust itself to both butter and cheesemaking in the way I have indicated; but remember the first move towards this end must be by the patron. He must produce the winter milk before we will have the winter factory.

In the foregoing remarks I have endeavored to indicate in the main two things, the evils of the present system, as produced by the average dairyman with his average cow and average method of doing things. He must brace up and correct his ideas, for his ideas are wrong, and as a consequence his practice is wrong. "As a man thinketh so is he." I have tried to indicate what I believe would be a profitable change in our co-operative work, viz.: winter dairying.

I wish before I close, however, to read to you as an instance of the present care of cattle in Ontario, something that was received for my paper the other day from my Canadian correspondent. Lest you should say I am exaggerating the condition of things here, I am going to give you the testimony of a man who will stand as state evidence:

THE COW'S CHRISTMAS EVE.—*Ed. Hoard's Dairyman.*—Driving across the country the day before Christmas, I passed a herd of twenty-four dairy cows. It was about 5 o'clock p.m., and the unoffending creatures stood where the teeth of a bitter northeast wind could gnaw at their vitals to the greatest possible advantage. Behind the bars of that cheerless, open field they patiently and plaintively waited for the coming of their heartless owner, or attendant, to hunt them home, perchance, with a dog. That would warm 'em up, and help let down the copious streams of milk which those shivering bovines had elaborated while they browsed around among the hemlocks and tamaracks of the adjacent swamp, or nibbled at the luscious tufts of grass, brown and stiff, that here and there cropped above the snow. This is no fancy but plain facts, without gilt or varnish, and in Ontario amid the full blaze of dairy gospel day! Shades of Arnold, and Harris, and Lewis, the men who long ago taught our dairymen to treat their cows as gently as they should a woman and a mother, can these things be! We certainly know better, but too many farmers will not learn to *do*. The heathenish owner of that herd had no thought that the Christmas gospel of "good will" applied to dairy cows. He sowed to the northwest wind—what will he reap?

I wish also in this connection, to read to you another little extract, which is the work of a progressive dairyman, Mr. C. P. Goodrich:

C. P. Goodrich, of Fort Atkinson, gives a short talk "How to make Dairying Profitable," as follows: "The only way to find out about anything is to keep an accurate account. Different cows must be tested as individuals. One must first find out how unprofitable dairying is under the old plan. The first item is to reduce the cost of production. We feed each cow $30 of feed per year, consisting of one acre of pasture, $5; 5 tons ensilage, $5; 1 ton clover hay, $5: 1 ton bran, $15; and make from each cow 320 pounds of butter, costing for food per pound of butter, say 10 cents. We estimate the cost of care and making butter at $20 per year, per cow, making a total cost of $50 per year for feed and labor. We get in return 320 pounds of butter, which we sell at 24 cents, $76.80; skim-milk worth $10; calf worth $3; a total of practically $90, or a profit of 80 per cent. on his $50 invested. Without the silo it would cost, at least, $40 per cow. Good care is a great factor in reducing cost of production. One day's exposure to a cold October rain reduced my twenty cows from 28 pounds of butter per day to 25 pounds, and I have not yet been able to feed and pet them enough to recover it. Marketing is a very important point. We first used to trade butter for sugar at the store, pound for pound, but that did not pay. We have tried getting private customers at a stated price the year around but found it unsatisfactory. When butter was higher they wanted all we had; when it was lower they did not want so much of ours. Had been most successful in shipping to a reliable commission house. Have been shipping to one house steadily every week for the past eight years; always shipped the same day of the week, and the same butter, didn't make it the way we liked it, or the way my wife liked it, but the way the consumers liked it. We averaged 24 cents through the year. A farmer could make it pay with ten cows, but more would be better. Must make butter winter and summer, about the same quantity, and always the same quality. Results were only to be attained by hard work, close observation, and persistent application."

We have in our creamery a weather account, and we discover that the milk yield slides up and down according to the weather. Accordingly, every man ought to watch the weather. Why? Because the intelligent man sees the coming of a cold storm; he does not want to pay in milk for that; the cows are brought up and put in the stable and the yield is not diminished. Mr. Goodrich, made his cows produce 357 pounds of

butter in one year. But this was the result of thinking. You may not be able to do this to-day, or to-morrow, or next year; but let us have an understanding of one thing, that if the Canadian dairyman will rise up as he ought to, he can set resolutely to work and in three years can have a better cow; and then, treat, handle and feed her according to the deductions of the best judgment of modern dairying. (Applause.)

A VOICE.—I would like to ask what kind of stock you would like to ask what kind you would introduce for the purpose of making butter.

Mr. HOARD.—The question that is asked is a hard one to answer. My friend, it is pretty nearly the same as if you were to ask me what sort of a woman a man ought to marry. (Laughter.) It is a good deal a question of taste. A man may have a peculiar taste, and he succeeds very well generally if he follows his taste; but there is a certain line of distinction which, I think, should be adhered to. Men should select a breed of cattle in the line of that which they wish to do. Now, if men are making butter, or making cheese, they need good milk; and whether handling Jerseys, or Guernseys, or Holsteins, I would always discard any one of them as a breed if they did not give me good milk, and I would know whether they gave me good milk or not. If one is adhering thoroughly to butter production, it is altogether likely that the Jersey, or the Guernsey cow is a breed that will give a larger production of butter-fat, for the feed consumed, than almost any other. There are families of Holsteins that are very superior in the daily production of either butter or cheese. There are other families which are nearly worthless. There are families of short horns that give a large return. Now, you cannot make a rule here. It needs that distinct judgment on the part of a man to guide himself in this particular. My own preference I have no business to give. That is the same as I exercised when I married a certain woman; and I didn't marry her in order to please any body else except ourselves. (Laughter.) I want to add that we must get out of our notion—that there is a butter cow and a cheese cow. There is no doubt, there are certain cows more profitable for cheese-making than they would be for butter-making, but we must get out of the notion that poor milk is profitable for either cheese-making or butter-making. Mr. Ballantyne told me, for instance, that when he was over in Scotland, while ordinary cheese there was selling for 43 shillings, some of the very best was selling for 60 shillings. He found the increased value was because there was about ten per cent. more fat in the latter. Now, the present system of cheese-making and creamery business encourages a man to make poor milk; it puts a premium on it. That system must go, and men are coming rapidly to the conviction that milk should be taken into the factory and pooled, and every man get his dividend according to what he puts in. That system will come, and I think the nearest way to get at it, is a measure of the fat in the milk. A few of the factories are doing it in our State. The only men that "kick" are the men who cannot make a dishonest profit out of their neighbors. (Applause.)

THE SAME VOICE.—The reason I asked the Governor this question is because I have heard a great many say grades are best for milk.

Gov. HOARD.—I don't think grades are as good as thoroughbreds. It would be nonsense. But I think this, we have got to take the thing as we find it. Farmers can go and work a grade up, using a thoroughbred sire. We have to use the cow we now possess. If the cow we commence with is half-blood, the next should be three-quarters, and the next should be seven-eighths, and so the nearer we got to pure bloods in that direction the better. Now, don't go to work to crossing out. I know men who produce a lot of "hash." I heard a man jump up in our farm institute who had thoroughbred sheep, and who crossed Merinos and Shropshires and South Downs, and he said his sheep "Wa'nt worth a cuss." Mark the conclusion that man came to: he said, "I tell you that them thoroughbreds are confounded humbugs, every one of them."

WORDS OF ENCOURAGEMENT.

Hon. JOHN DRYDEN, Minister of Agriculture, was then introduced. He said: It gives me extreme delight to meet with the members of this Western Dairymen's Association. I would feel like saying something about the nobility of this gathering had it not

been for the remarks of the secretary, and I am almost afraid to do so lest you might think that I was a politician, and wanted to give you a little "taffy." Now, when a man in the position of your secretary, who has looked into your faces so many years, is struck with the gathering before us, you need not wonder at many of us being struck who see you for the first time; and I can assure you it has done me a great deal of good to sit on this platform and look into your faces. You used to be taught that we must expect wisdom from the east. I had the pleasure of attending the Eastern Dairymen's convention at Brockville, and when there I found a gentleman who had come from a place still farther east, in the Eastern Townships, and he said he had come up to learn wisdom; and while I was there I heard a gentleman whom I had heard named as your future president, speaking of the way you do things in the west, and ever since I have had a longing desire to meet with you and hear for myself how things are being done by you. Well, I am bound to say the further you go west the more wisdom you behold.

It is not that you have got wise men, but you have such a large number of them. It is not only that they come from the Eastern Townships to you to get wisdom, but have sent some of our men to the mother-land in order to teach some of them there your system of cheese-making. According to the definition given by Prof. Robertson, when some one asked him what he considered a good Scotchman was made of, "He is a good Scotchman who keeps the Sabbath and everything else he can lay his hands on." (Laughter.) Now, these Scotchmen in the mother-land have laid hold of much of your system, and they are making such good use of it that now I find Mr. Ballantyne expressing some concern as to whether we are going to hold our own in that country or not.

Too much praise cannot be given to those that have made this industry what it is, but we must not forget that we cannot rest on these past laurels, and if we are going to make progress, you must have enterprise and ambition to do better than what has been done in the past. It will never do to stop where you are, and if new and better machinery and methods are discovered we must lay hold on them. I meet a good many who are real good Reformers in politics, and I like them firstrate, but somehow, as farmers, they are very stiff conservatives; and when I talk about the advantage of a silo they don't want to hear anything about it, because it is not according to the old plan. So to speak, they are like Old Aunt Peggy; they faint when anything like an innovation is mentioned. I have heard, when people did not make churches so comfortable as now, and it was proposed to introduce a stove into the particular church to which Aunt Peggy belonged, so that the people would not be obliged to sit loaded with winter clothing in order to keep warm, that Aunt Peggy objected. A good many thought it was objectionable, and it was a new thing and it was not a right thing. Aunt Peggy said: "It will get so hot I am sure I will faint right in the middle of the service." But notwithstanding her protestations the stove was put in, and sure enough when she passed up the aisles to her seat the next Sunday she spied this monstrous thing, and she actually did faint in the middle of the service. But she very soon came too; some one whispered in her ear: "There is not a bit of fire in the stove." (Laughter.) Now, there is no use of our fainting because some change is proposed. If you propose to hold the place of the best you must advance. You will need to have good cows and good feed, and mind to take care of them; and when all those things are complied with, I have great hope that the results will be that we will be able to hold our own, even with our good American friends who are able to give us so much wisdom.

Now, in all business there must be uniformity, and this must be the case with cheese if we are going to take the top place in the foreign market. It must be of as good quality as possible. If we have the best cheese I will guarantee it will make its own market. I remember going to the farm of Jas. I. Davidson, who deals so largely in cattle in this country, on one occasion, and saying to him: "Uncle Jim, that's a fine calf you have there." "Aye, is it," he said. I said, "You will be wanting a good deal for that?" "$400," he replied, "and the man is born that will buy it." So it is all around. I will venture to say if you can produce a uniform quality of fine cheese it will find its own market.

Now, every one of you—the cheese dealer, the cheesemaker, the farmer who produces the milk—has a double interest in this result. The man who is tampering with the milk

and thinks the factory owners will never know anything about it is throwing down a boomerang which will hit him just as sure as possible, and he ought to get hit. But it is not that he is hitting himself only, but he is injuring all who send milk to the factory. I am perfectly certain of this. As most of you know, I have not been a dairyman, but I have come to this conclusion, that if we are to hold our own in regard to the manufacturing of cheese and butter we will need to go forward with the system of instruction and inspection we have had in the past. You will perhaps have to make the system more efficient, and that is one of the ways the Government may assist you. I think it is perfectly legitimate for the government of a country to assist in the dissemination of knowledge by which the people will be able to produce a better product than ever before. Some of you will have noticed that I have already struck out on these lines. I have struck out in this way with a view of giving the farmers the fullest information it is possible to give them. I believe I am right in that, and that all classes of the community will stand by the department while we are trying to do that work, because every class is equally interested in the prosperity of this great industry. As has been said this afternoon, agriculture is the foundation structure upon which all the rest is built.

Now, who is to give this instruction? Nothing has delighted me more than to find so large a number of the young men at this convention. And what are they here for? Here for instruction—that they may learn—and I think it is right, fair and proper that they should be given the fullest information that it is possible to give them. We talk about the future of this country of ours, and I believe we have a grand future for agriculture. But it is yet to develop. Who is going to do it? I say it is these young men into whose faces I am looking this afternoon. These are the men who are to add to the wealth of our country. Is it those dudes I meet in Toronto who wear tall hats and twisted moustaches and carry a cane about the size of your little finger? Not at all; but these young men who are here, the sons of the farmers willing to devote their attention and brains and intelligence to this grand work and noble calling of agriculture. These are the men who will make the agriculture of this country what it ought to be. I would like to take every one of them by the hand. I would like to say "Do not stand aloof from those who are not so intelligent as yourselves, but take your brother's hand and help him up to the same plane as yourselves and struggle together until you all reach a higher and higher plane." I assert everywhere that this calling in which you are engaged is one of the most noble in any country; but there is abroad a sentiment in the community a sentiment that it is a sort of mean thing to milk cows and be a farmer; that it is a sort of disgraceful thing, and that if a young man wants to be anything he must turn to some literary pursuit, or be a lawyer or a doctor. I would like to get away with such a sentiment as that. Now, I am not a very proud man, but I believe I shall involuntarily lift my head a little higher because I have been privileged to look these young men in the face. I believe, as I work in my Department, that it will make me feel a little higher and loftier than before. You won't blame me if I do.

I came here to listen, but I want to say before sitting down, that, as the head of the Agricultural Department in this province you have in me one who is your friend, one who sympathizes with you in your work, one who, so far as possible, will endeavor to aid you in any legitimate and proper way. You need not remain satisfied with your past achievements, but it is your privilege to move forward and forward, and if we but scatter the information we hope to do in future years we will be able to keep this province in the foremost place, which it has always kept in the past. (Applause.)

Mr. CHADWICK expressed his gratification with the remarks of the Minister, which showed that he was the right man in the right place. Heretofore he had always felt that all the assistance which might be rendered by the Government to the agricultural interests of the country had not been given.

Mr. JOHN GEARY, the new vice-president, was called to the chair in the absence of the president elect, Mr. Ballantyne. Mr. Geary acknowledged the honor shown him by his election.

A vote of thanks was tendered to the retiring vice-president, Mr. Hopkins.

AN EXHIBITION OF MILK TESTING.

Prof. ROBERTSON said: In the course of my remarks last night and this morning I recommended cheesemakers to test cows as to the quantity and quality of their milk for cheese-making. The Babcock testing machine seems to make a test at very small cost. Mr. Robert Ballantyne, of Stratford, was good enough, at my request, to bring here a Babcock testing machine which they have, and I would like to have him show the farmers how it works. The total cost does not exceed one-half cent per test and the test can be made in four or five minutes. I think every factory should have a machine like this so that every man's milk could be tested each morning, and then no one could be dishonest and we would be bound to get better cheese.

An exhibition of the practical working of the machine having been made, Prof. Robertson explained the principles of its working. First of all a small portion of milk, apparently representative of the whole sample, is taken in a pipette which holds 17.6 centimetres of milk. That quantity is put into one of these bottles in the machine and a small quantity of commercial sulphuric acid is measured in this small tube; that is, put with the milk. Then they are shaken together. The mixture is then put in the bottles into this small drum, which revolves on the centrifugal principle, the idea being that the centrifugal motion will cause the cream to flow to the outside as the drum is revolved by means of this big wheel. Then, after the motion has been continued eight minutes, going 800 revolutions per minute, these bottles are taken out and filled up with water. The motion is then continued for 1½ minutes, and then you can read the per cent. of fat by the nick on the bottle, and this one reads now 3 3-5 per cent. fat in that sample of milk. By having two samples of the same milk you get a sufficiently correct test, and then you have a demonstration of the accuracy of a test to show to a farmer. The machine costs about $35 after the duty is paid.

A VOICE—Can you tell whether the milk is skimmed or watered?

Prof. ROBERTSON—You can only tell by this the per cent. of fat.

Hon. Mr. ADAMS—I wish to say just a word in connection with this test. I happened to bring along with me a record of 14 tests of 14 cows in my herd, made with this machine. We have thoroughbred registered Jerseys. I took samples of these cows, weighing and comparing them together 14 times, one way and another, and taking them up to the experimental station at Madison, and I got this list of percentages of butter fat, which I will read to show you the difference of value in the milk of individual cows:—

Cow No. 1	gave 26	lb.	of milk per day,	averaging	4.16	butter fat,	indicating a butter yield per week of	8.96
" 2	" 24	"	"		4.44	"	" "	8.82
" 3	" 17	"	"		4.87	"	" "	7.14
" 4	" 34	"	"		5.28	"	" "	14.94
" 5	" 22	"	"		4.38	"	" "	8.12
" 6	" 29	"	"		4.57	"	" "	9.94
" 7	" 30	"	"		4.51	"	" "	11.34
" 8	" 20	"	"		6.39	"	" "	10.62
" 9	" 25	"	"		5.04	"	" "	10.50
" 10	" 28	"	"		3.75	"	" "	8.75
" 11	" 36	"	"		4.57	"	" "	13.04
" 12	" 27	"	"		3.81	"	" "	7.47
" 13	" 26	"	"		4.28	"	" "	7.77

Indicating an average butter yield altogether of 11.40. I found this surprising fact that some of the cows which had the largest per cent. of milk gave the largest per cent. of fat. That was in the month of July, about the 8th of the month, when the weather was extremely hot and the cows were upon rather a short pasture and received less than a pound of shorts per day—just a handful; and I found to my surprise that some of the cows which I did not suppose were very good were ahead. It occurs to me what a grand thing it would be for an ordinary farmer who has 10 or 15 cows, and does not know anything about the value of their milk, if he could send samples of his milk somewhere and have it tested by this machine. It costs but a mere trifle to have a test made, and if this were done farmers could work with some assurance that they know actually and positively something about what they are doing.

FINANCIAL STATEMENT.

The annual report of the auditor's was then read as follows :

To the President and Members of the Dairymen's Association of Western Ontario:

GENTLEMEN : Your Auditor's, appointed to examine the Treasurer's books beg leave to report that they have duly examined and compared the same with the vouchers and find them correct, showing a balance of $222.54, for which the treasurer has presented his marked cheque.

The following is a statement of the receipts and disbursements for the current year:

RECEIPTS.		DISBURSEMENTS.	
Balance on hand	$556 16	Expenses of Convention	$200 29
Proceeds of Convention	121 00	Salaries	246 00
Proceeds of Bills Payable	781 26	Printing and postage	75 24
Contribution from T. Eaton & Co.	5 00	Sundry accounts	24 85
Government Grant	2,000 00	Cheese inspector's	1,775 00
Receipts from Factories	255 20	Board meetings	94 75
		Bills payable	800 00
		Expenses deputation to Ottawa	80 00
		Grants to Exhibitions	200 00
		Balance on hand	222 54
	$3,718 67		$3,718 67

All of which is respectfully submitted.

JOHN ROBERTSON, } *Auditors.*
J. S. PEARCE, }

Dated January 22nd, 1891.

A LETTER TO PATRONS.

MR. SAMUEL HOWARD, was requested to read a letter which he sent last summer to the patrons of the factory where he was working. He said : "There is one thing I have been impressed with ; that is the necessity of proper instructions to patrons of factories as to the care of milk. I had been accustomed to send them bulletins which Professor Robertson got out from time to time at the Experimental Farm, and found they did a great deal of good ; but these were becoming a little stale because they came from the Government Farm, and for this reason, I thought I would write this letter. I had written several times before in an encouraging way, and some of the people took note of what I said, and governed themselves accordingly ; but some of the patrons were continually sending milk in poor condition. The following is the letter :

PEOPLE'S CHEESE FACTORY.

GORRIE, August 16th, 1890.

DEAR SIR : I take this opportunity of thanking all the patrons of this factory who have tried to care for their milk to the best of their ability. I may say that I know who the successful ones are, as well as state that I believe without a doubt the reason why some of the milk sent to the factory is not so good as it used to be is because a number of the patrons either don't know how, or are too careless, to properly clean, scald and air their cans after the sour whey has been returned in them. I therefore ask all hands to try and have the whey emptied out as soon as it has been returned, and throw a pailful or two of cold water into it till noon if you cannot have boiling water conveniently before then. Make it a practice to have a large pot or kettle full of boiling water ready for the purpose of thoroughly scalding your cans after they have been thoroughly scalding your cans after they have been properly washed. When washing it is a good plan to take a handful of salt and a damp cloth and scour the can well, seams, corners and all. Then, as I said before, have your water at the boiling point, and let me tell you that you might just as well try, if you were dressing hogs, to get the hair off clean without boiling water, as to try and get the acid taint

out of the tin with water you could put your hands in. You know how the former would work. Well, having your boiling water ready, pour it into the can all around the top and put on your cover and turn the can on its side on a bench or clean board and roll it over a few times, then empty out the water and leave your can on a bench, or saw-horse, or somewhere to air till milking time, out of reach of the ducks and turkeys, and, need I add, little pigs. For if some people who think their milk is pretty clean saw it as it is emptied into the weigh can they would probably be astonished to see what I call, for want of a better name, a "ground hog." I have seen the dirt as much as two feet long from the time it would head out till the tail would slip over the lip of the can; and more than that, I have also seen the nest sometimes. If there is one, you will generally find it located near the centre of the bottom, on account of the motion of the milk, and it is usually composed of earth, or something of that nature, which would be more profitable if it were put on the land than if sent to the cheese factory. I must say, however, that there are a large number of the patrons send their milk free from anything of this kind, and have it also well handled in other respects, and can be counted O.K. everytime. And why not all? For, if I put one hundred pounds of milk that has been tainted with gas from want of proper airing, or that has been polluted by being put into a can that has not had the acid taint removed by boiling water, or has been tainted by the breath of ground hog, into a vat containing five thousand pounds, it will affect the whole mass, for it is something like the leaven that the woman took, that we read about in the Scriptures, and put in a quantity of meal till the whole was leavened.

I would also ask you not to allow your milk to stand outside in the cans when the nights get cold in the fall, but aerate then the same as you would in warm weather, and leave it where the temperature won't fall below 50 degrees Fahr. Milk that has been chilled acts much the same as yeast the ladies set for making bread if it gets too cold; and trying to make good cheese out of frozen milk is like trying to make good bread out of frozen wheat flour. I am exceedingly anxious that the cheese we are now making for the fall trade be of the finest quality and free from whey flavors, as this is most objectionable in cheese for the English markets. It can be easily avoided if all hands will but follow the valuable instructions contained in bulletins on the care of milk by Professor Robertson, which I sent you all. It will also help if you tack up this circular where you can read it frequently, and educate your servants therein, as well as teach these rules to your children, and to your children's children, for they are good, and if put into practice each day we shall have no fear of results.

I also give you all an invitation to come to the factory and see your product handled. Remember, it is your factory; so come along whenever you like, and walk right in without rapping and find out whether we are attending to business or not.

Your obedient servant,

SAMUEL HOWARD.

REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. J. M. BUTCHART, read the report of the Committee on Resolutions, as follows, which was adopted at a later stage of the convention:

Resolved.—That it is the voice of this Convention that cheesemakers should have in every county where the cheese industry is concerned, co-operative organisations through which they could work in harmony, and facilitate matters of reform, and that they should send annually three delegates to this Association. Also, that the secretary of this convention issue circulars to all factorymen and cheesemakers, calling them together at some central point in each county for the purpose of organising. Cheesemakers and factorymen in the different counties should send in their name and address immediately to the secretary; also suggesting some competent person to take charge of the meeting.

Resolved.—That the convention believes that it would add to the interest of the Dairymen's Association for the secretary to issue annually circulars to all factorymen requesting them at their milk meeting, to appoint three or more delegates to attend the Association's annual convention

And also, we recommend that some method be adopted that the cheesemakers and patrons could meet at their factories or some central point monthly, to talk over the care and proper handling of milk, to assist the cheesemaker to produce a better quality of cheese.

A VOICE—The question of dairy schools was referred to this committee on resolutions, but they have not brought in anything in regard to that subject.

It was stated that this matter would be dealt with in a separate resolution.

The convention then adjourned.

EVENING SESSION.

INSPECTORS AND INSTRUCTORS.

Mr. JOHN ROBERTSON, sr., gave an address on the above subject. He said: I wish simply to give a few thoughts on the inspection of milk and the instruction proper to be given to cheesemakers, and that opens up a very wide field. I thought in order to bring that subject before your minds in an intelligent, attractive and instructive manner it would be best to look at the question from three different standpoints, to see if we can find the necessity for inspecting milk and for appointing instructors, and if we can find that there is a real necessity then it will be for the meeting to try to devise the best plans, and adopt the best methods to meet that necessity. I thought, to condense my ideas, we would first take a view of the cheese trade in the country fourteen years ago, and, in the second place, make a little *resumé* of what it was four years ago, and, in the third place, make a *resumé* of what it is to-day.

Now, in the first place, we have to go back to what the cheese trade was fourteen years ago. Fourteen years ago our Canadian cheese was selling in the Scotch and English markets from fifteen to forty shillings a hundred weight, or less money than the higher Scotch and English cheese were selling for. When men began to study the business and put thought, and will, and power, and purpose into practice, then we began to creep up and creep up, and kept improving, until four years ago our finest fall cheese was just about on an equality with their Scotch and English cheddars.

Now, where are we to-day? The difference in the value of fine cheddars in England and the same in Scotland and ours is nearly as great to-day as it was fourteen years ago. To-day in England their finest cheddar cheese is selling at seventy up to eighty shillings, and a very common price for fine English cheddars is from sixty to sixty-two shillings, and the same for Scotch cheddars. The great bulk of the summer cheese that has been sold in the Scotch dairy counties in the last three months has ranged from sixty-two to sixty-nine shillings. What has been the range of our Canadian cheese? It has risen from forty-nine until to-day it is at from fifty to sixty shillings. It is not that ours has deteriorated either in quality or in uniformity, but it is because the Scotch and the English have gone gradually away ahead of us until they are now as nearly as far ahead of us as they were fourteen years ago.

Now, what are we to do? Are we going to stand still and allow them to take our best young men to improve their produce, and get all they like to ask for their fine produce and leave us to plod away in the cold and do the best we can? I misjudge the temper of the young cheesemakers of this country if this is to be the way. I think there is energy and brains enough in our young cheesemakers who are rising to overtake the Scotch and English yet. But you know this, that lost ground requires a double effort to overtake those who are ahead of you. Now, if we have got a long way behind there will be a greater need for more energy until we overtake them. In a race the object is not simply to overtake the ones that are leading, but to pass them. Let us get this idea into our brains, that if young men have gone from Canada to do what has been done there, could not the same young men or their equals, do the same thing here. Can it be done or can it not be done? I believe it can, but I believe it won't do itself. I believe it will take a good deal of talk and hard work, both with brains and hands, before it will be done, but I believe it can be done.

Now, if it is to be done, where are we to begin, or what are we to do? I am simply throwing out a few thoughts that you may take hold of them and discuss them. You have heard a good deal to-day about beginning with the cow, but I would prefer beginning with the man; and if you get the right form of man and get a man that is sound on the dairy question, the man will soon begin to put the cow right, and after that the manufacturing right, and that will put the markets right very soon.

Now, I find that the question of profit in dairy cows is only beginning to be thought of. It is a matter that is simply in its very infancy—the real thinking of and working out where and how the profits are made out of the dairy cow; and to bring that thought before you just in a few moments: You all know of the competition in London a year ago, and in Toronto just last summer, brought about by the prizes offered by the late lamented Mr. Weld for the cow that gave her owner the greatest profit on the milk she produced from the feed that she consumed. I think no one will be prepared to question the correctness of the tests that were made; but the way they were published did not make it very clear to my mind that an ordinary farmer would be able to comprehend or gauge the point where the prizes were made. A very strange point that comes out about it was that the cows that got the 3rd prize were actually the cows that gave the most milk. The ordinary farmer would say, there has been some gouging about that somehow or other. Another thought I want to give you is that the cows that got the 3rd prize gave the best and richest milk. I have been to the trouble to work out the figures and I think I am able to explain to you how the cows that gave the least milk got the first prize, and how the cows that gave the best milk got the 3rd prize. The secret was not in the quantity of milk or the quality of milk, but in the way in which the cows were fed. There is where the whole secret of the thing comes in, and if you will just be careful enough, or take interest enough in it, either to take a note of it or to take it into your brains you will think the case remarkably strange. The cows that got 1st prize were daily given 3.80 pounds of bran, 2.02 pounds of ground pease, and 1.10 pounds of ground corn, which was 6.92, or nearly 7 pounds, of grain food. In addition to that they had 22 pounds of cut corn stalks with the ear on the stalks, and 1 pound of hay. The total was 30.14 pounds, weight of all food consumed by each cow per day, and the food cost 9.30 cents, or a little over 9¼ cents each day. It was because that man fed his cows nearly a half cheaper that gave him the prize. The 2nd prize cows were fed with 4.03 pounds of bran, 4.33 pounds ground oats (that gave them 8.36 of grain food) and 12 pounds of hay; altogether 20.36 was the total weight of food which they received, at a cost of 12.02 cents per day. Then the 3rd prize feed consisted of 7.10 pounds of bran, 7.10 pounds ground pease, and 6.66 pounds of hay, which gave a total of 20.86 as the total weight of feed which cost 14.26 cents, or a little over 14¼ cents per day; and the reason why that man was put back to the 3rd prize was because his cows cost so much to keep. Now, to give you an idea about the quality of the milk. It would have taken far too long a time to have read the figures over, and figures are dry reading; but for the 1st prize the average was only 4.08 per cent. of butter fat; that was for one day; the average for the next day was 4.39, and the average for the next was 4.83, giving an average for the whole test of 4.43. Now, a good many people don't know what that would mean; but it simply means that out of every 100 pounds of milk there was 4.43 pounds of butter fat. Now, the butter fats were valued at 16½ cents per pound. The casein and other solids were valued at 2½ cents per pound. So they were all valued at the same value, and the food was valued at the same value. They were all treated alike, and each man was alowed to feed what he chose The first were Jerseys and the second Devons. The average yield of butter fat of the 2nd prize cows for the first day was 3.99; for the next day 4.28; and the next 4.70; and their average was 4.32. So that you see their milk was not so valuable—did not bring so much money as the 1st prize did, and then they were fed at a cost of nearly 3 cents a day more for food. Then the 3rd prize cows were another lot of Jerseys which gave far the richest milk of any. The first test gave 5.34 butter fat; the second 5.58, and the next 5.19, or an average altogether of 5.37. Now, the next point I want to give you is this—it was the profit on the milk that counted in winning the prizes. The 1st prize had $1.10 of clear profit out of the milk produced after paying for the food consumed; the second had 95 cents of clear profit for the milk after paying for the food consumed, and the third had 48 cents profit after paying for the food consumed. You see where the food counted in winning the prizes; it was the feeding that did it entirely. One thought that struck me was this—what ration of food made the greatest difference? The 1st prize cows consumed 22.22 of corn with the ears on it. You see the difference in the price of the corn with the ears on it and of timothy hay makes nearly the difference in the

price of the hay. The grain feed of these cows was bran, pease, and ground corn; of the second bran and oats ground, and of the third bran and pease alone and hay. Those were the different rations, and you can take that with you and experiment just as you have a mind to. The milk and the cows were under supervision. The milk was tested by chemical tests by an assistant of Mr. Macfarlane, the chief analyst at Ottawa; so there were no chance for underhand work. You see how much difference comes in between the breeding and feeding of cows, and again in getting a good profit or a less one just owing to the care or management of the feeding.

The reason why I took up this subject to-night was that, in order to make more money out of our dairy and in order to improve the quality of our dairy the first thing that has to be considered is cheapness of production of the raw material. You know the man in business who can get equal quality of raw material ten per cent. or even five per cent. cheaper than his neighbor is going to outrun him, and it is going to be just the same with dairying. Don't you think that man who bed his cows at a cost of 9¼ cents a day is going to make money far faster than the man whose feed costs him 14¼ cents?

Now, that brings us to the question, how are we to regain our lost ground, and how are we to overtake the Scotch and and the English cheesemakers in their own markets? In order to make this all clear to you—because you are all interested in the cheese business—what have been the special faults and defects, during the last season especially, that have been telling against us? I am not in a position to say very much from personal knowledge, but I am told that in the fore part of the season there were two things about Canadian cheese that tended to reduce their money value very much; and one was that they were too stiff and too hard, and when cut and laid upon the counter they were apt to open up and show little cracks and a rough face. They were not a cheese that is meaty, or that will cut close, and solid and sound in every way.

Hon. Mr. HOARD.—I would like to ask what it is, in your estimation, that causes that fine cracking?

Mr. ROBERTSON.—Well, it is a most important question, and I do not know that I am able to answer it with perfect confidence that I am right, but I can answer to a certain extent what helps to make the cheese crack. If you use too little rennet in setting your curd you will always have a cheese that has a tendency to be a little long in the fibre. One man, who told me he was troubled with his cheese cracking, said he used 2½ lb. of rennet, and I said "I would just double it and use 5 lb., but you are perfectly safe in using another pound, or in using 3 lb. anyway," and after doing that he was not troubled again. I know if you don't use plenty of rennet you will always have a cheese that is liable to crack when exposed to the air.

Hon. Mr. HOARD.—I want to know if you do not think they crack because they have been dried out?

Mr. ROBERTSON.—If they dry out it is because they never had enough contracting power from the use of rennet. My experience is that if you use little rennet you will always have a cheese that has a tender body, rather a weak body, and a different kind of a weak body than a cheese that has plenty of rennet but not enough salt.

Hon. Mr. HOARD.—It seems to me there is another line of thought of some service in that connection. I don't know but you may be right, but it seems to me as if those cheese were season checking; they shrink because they lose moisture.

Mr. ROBERTSON.—The cheese I was speaking of began to crack almost as soon as they were put on the shelves.

Hon. Mr. HOARD.—You state that down the face of the cut they checked and dried out. Now, I have discovered that a skim-milk cheese will always check more than one that has plenty of fat. Then the more fat there is in the milk the less rapidly the cheese dries out. The necessary moisture is retained by the aid of the fat, and the two operate together and keep the texture closed. That has been my observation, and I want to know whether there was not a deficiency of fat in your cheese the past summer? What was the state of the pasture? Did you have considerable rain?

Mr. ROBERTSON.—Yes.

Hon. Mr. HOARD.—Well, now you would have less solids in your grass. As a rule might it not have been the case that your milk ran a little lower all through last summer?

Mr. CASSWELL.—I would like to ask one question. With your experience in the Old Country, did you use more rennet there than here?

Mr. ROBERTSON.—We used more rennet, but another thing you have to take into consideration is that we set lower.

Mr. CASSWELL said it was the feeling of the meeting that Mr. Robertson's son, who had been an instructor in Scotland during the past season, should get up and give his experience to the Convention. The question is that the cheese dries out very much here. It is a disgrace to put cheese on the counter, which cracks all over its face in three days. I want to ask young Mr. Robertson, did they use more or less rennet in Scotland during the past years than we do.

Mr. ROBERTSON, jr.—Just about the same quantity.

Mr. CASSWELL.—Then I want to know why it is that the Scotch and English cheese don't crack and that Canadian cheese do, and that when you go to a store in the old country and get a piece of cheese and take it home and toast it you can leave it until cold and it is nice and soft; but in Canada if you toast a piece of cheese it is soft and nice for a few moments, but after it dries it is as tough as a piece of leather?

Mr. ROBERTSON, jr.—I find a great number of cheese do crack in both cases.

Mr. CASSWELL.—When all the cream is supposed to be left in?

Mr. ROBERTSON, jr.—No; when all the cream is left in they do not. But I think too much of the moisture is gone in cheese of the description of which you speak. You will find it invariably crack when the milk has been skimmed. Then, when cheese is cut it is always more or less apt to lose moisture. Too much moisture does evaporate in this way.

A VOICE.—Don't you think it goes too cold to press? I have noticed in the factories checks in the side, and in most cases they have acknowledged that it got too cold to press that day. Don't you think the temperature regulates the moistness of the cheese?

Mr. ROBERTSON, sr.—The handling has a great deal to do with the moisture.

A VOICE.—I think too high heating has something to do with the cracking.

Mr. ROBERTSON, sr.—Governor Hoard says skim-milk cheese always does crack.

Hon. Mr. HOARD.—That the presence of fat hinders evaporation.

Mr. ROBERTSON, sr.—That is one point on which he is perfectly correct, but one reason I claim why cheese gets short and cracky is because the milk is too old and too far developed and comparatively acidy when made up. I have seen skim-cheese that instead of cracking or being tender were thought tough in the hide. There are other things which will make cracky cheese besides that; and here is one point I want to get you at, that when you try experiments only try one thing at a time. There are a great many cheesemakers who will try two things at a time. If a cheesemaker is making too sweet he will ripen more and get more acid and add a little more salt and go a little too far the other way, whereas he might have found out what was wrong by trying only one thing. The next point I wish to mention is that in our cheese there was a lack of that creamy, pure, nice flavor which some people call the "rosy flavor," which is so seldom secured in Canada during the first three or four months of the season. I thought that was just what put our price below the English and Scotch cheddars. Now, apart from that, I will give you one reason which, I think, has a great deal to do with cheese cracking when it is cut. As a rule during a good part of our season of making you are troubled here with gassy curds. I never saw a gassy curd all the time I made cheese in Scotland, during thirteen or fourteen years. They tell me they have it there occasionally a little. If you have a gassy curd you are under the painful necessity of treating it in a different

way than an ordinary curd. It has to get more working up, and has to be turned oftener, and for that very reason the curd is drier and stiffer and harder, and it would not hang together in a solid mass, if it got less handling. Now, if we could avoid that and get the flavor that the Englishmen want and give the cheese the style of appearance they ought to have we would be on a level with them on the market. How are we to attain that? What steps are we to take in order to reach that point? You have had the subject of dairy schools brought to your notice. So far as instruction and inspection and dairy schools are concerned I think "both would be best." But one difficulty to my mind with the dairy school is that we cheesemakers, under present circumstances, and with the demands that are now made upon us, want something that will help us up more quickly than the dairy schools will do. We want something that will help us this coming summer; we want something that will enlighten and enliven our cheesemakers at once. Now, what is the best thing to do.

Mr. CASSWELL—Send good milk to the factory.

Mr. ROBERTSON—Well, that is all right. We have been trying to get cheesemakers to make each cheese factory like a little dairy school, but we know the effects of this. During my experience last summer I found 100 out of 140 samples of milk watered. Then I found 4 samples out of every 100 some how or other short of cream. Now, that is not a great many, but still 4 in 100 is always something and it is tending in the wrong direction. You are able already to judge as to the usefulness of instructors and inspectors, and that is why we want to bring these things before you. We don't want to force anything upon any man, but we want you to judge from past experience what has been the benefit to you of this system of instruction and inspection. We want to put it in this way: have you found that the testing of milk in the past has been of any benefit? and, along side of that, has the work of instruction, by which we endeavored to assist you, been of any benefit to you? It is just like this to my mind: if these two things have been of no avail in the past then we don't want them continued and we want something that will be a benefit. Now, I wish the meeting to answer these two questions.

Mr. HOPKINS—I am not going to say but that the inspectors in the past have been of service, but I think they could have been a good deal more serviceable. I think I can tell where they failed in a great measure. We expected reports from those inspectors and the reports which they left us never proved satisfactory to us. They were never definite enough, so that the great difficulty was to base a case upon the reports that we might bring before the tribunals. The report was "Well, pretty fair," "Not so bad on the whole;" the milk was not "watered," or "skimmed."

Hon. Mr. HOARD—But you had no standard!

Mr. HOPKINS—But we profess to have a standard.

Hon. Mr. HOARD—The measure of fat as a legal standard?

SEVERAL VOICES—No, no.

Hon. Mr. HOARD—Consequently you are in a fog.

Mr. CASSWELL—Some of the reports were very definite, you must admit?

Mr. HOPKINS—I say upon the whole they were not. I know that Mr. Robertson called on me and we had a meeting and a very good night of it. I believe perhaps in that way, the instructions might do good—by bringing before the patrons the necessity for cleanliness and the importance of taking care of milk—and I believe we did derive benefit in that way. But what I am speaking about is that we got into a fog when we undertook to bring people to time. In this vicinity the inspectors reported that there was such and such a percentage of watering and skimming, but when we came to think of prosecuting or getting remuneration for the loss we sustained we had to abandon all the cases. We have got to give an education to our patrons. We bought sixty aerators this year and we can hardly get the patrons to take these and put their milk through them. We have got to commence at the patrons themselves; show them the defects in a certain amount of milk which they give us. We can make prime cheese, of fine flavor, all equal aged cheese, if they give us equally aged milk in good condition.

Mr. ROBERTSON—To bring my remarks to a close, in reply to what Mr. Hopkins has said, no doubt there is quite a lot of truth in it, but so far as my reports were concerned, I do not think I put my name to them, but I had figure for figure for what I said. It is true we must have perfectly pure milk to make perfect cheese. It is true what the Old Book says, "You cannot bring a clean thing out of an unclean." Now, while Mr. Hopkins has said that the reports were not very definite, I have also found boards of directors connected with cheese factories that were not very definite either. (Laughter.) I have left reports stating that milk had been watered 15 to 20 per cent. and that I could swear to it, but those men did not think it would be wise to stir up feeling in the neighborhood. (Laughter and applause.) In order to reach the farmers we want to get at the cheesemakers, and I only get the cheesemakers when I go to the factories. I can honestly say that, for the last fifteen years, with but one or two exceptions, I scarcely ever got an unkind word from a cheesemaker in Ontario, and I have found fault with them and lectured them, and have gone into the curing room and shown a cheesemaker the defects and told him how to avoid these, and the next time I went back he would take me by the hand like a gentleman and say, "I am glad you found fault." I don't believe there is a class of men under the canopy of heaven that are more interested in their business or would like to do right more than our Canadian cheese makers. Get them educated and let them talk these things over with the patrons. Then the next thing the cheesemakers should have is a great long sheet on which to keep a record of the milk and if any man brings tainted milk tell him it has got to go in the whey tank or home, and stick to it. Then you will get clean milk and a clean market and it will enrich you all round.

Mr. CASSWELL.—I understood you to say they welcomed you?

Mr. ROBERTSON.—They almost invariably did.

Mr. CASSWELL—Did not some of them "Go for you" and kick up a row when you told the truth?

Mr. ROBERTSON—Mr. Casswell is at the wrong point. I was referring to cheesemakers, not to patrons or directors.

Hon. Mr. HOARD—I want to ask young Mr. Robertson a few questions which I think will throw a little light on Scotch cheesemaking. Do they have in Scotland this promiscuous way of bringing milk to a factory to be manufactured as we do here, or is it not true that the finest Scotch cheese are made in large dairies of 100 or 200 or 250 cows?

Mr. ROBERTSON, jr.—The milk is produced on the one farm, but the cows range from 40 up to 240. I daresay a great many of them have about 80 cows.

Hon. Mr. HOARD—Does not that eradicate a certain factor of badness? They have the question of the milk production well condensed, have they not?

Mr. ROBERTSON, jr.—Yes.

Hon. Mr. HOARD—Consequently they have no miscellaneous milk to deal with—as miscellaneous as the old woman said her descendants were. (Laughter.) She had four daughters and one married a darkey, another a Spaniard, another an Irishman, and the other somebody else—like enough a Yankee—and she said she had the "speckledest lot of grandchildren she ever did see." (Laughter.) Now, just stop a minute, you cheesemakers, and think a little. You have so miscellaneous a character of milk and men to deal with that that introduces a disturbing character in the final quality of the cheese. For instance, give me a 45 cow dairy and I control the milk, give me a 50 or 100 cow dairy, I can make finer cheese than I can if I am bothered with 50 or 100 dairies that I cannot control. Then I would like to know what is the ruling character of the water in Scotland. Is there a likelihood of their having purer water than we have here?

Mr. ROBERTSON, jr.—Yes, I believe there is.

Hon. Mr. HOARD—There are less mud pools and dung holes, etc. Now that is a most important thing, for bad water has more to do with stinking flavors in milk

than anything you have to deal with. I have traced the taint in cheese from the factory to the pond hole where the cows stood in the summer time and drank the water contaminated by the droppings of manure and urine and everything else. If you examine that milk with the microscope you will find in it the same germs as in the water. Then show this to the owner of those cows and say to him that he is endangering everything. Now, that is one thing we ought to do in Wisconsin and Canada from firstly clear up to seventeenthly. Now, another thing. A young gentleman spoke about skimming, and said he saw in *Hoard's Dairyman* a recommendation to skim to some extent, because cheesemakers could not incorporate all the fat. Well, it is true they don't all the time; we may just as well take some of the blame to ourselves as be loading it on to some other body all the time. I often go into factories and see fat wasted even in handling poor milk when there is none of it to spare. I know it is hard to incorporate this matter, but it only requires skill. The point made in the *Dairyman* was this: We need a standard; every man is working unto himself. Suppose we put the standard at 40 per cent.; that will give you, allowing for wastage, about 35 per cent. of fat in every hundred pounds of cheese. That will make you a clean cheese if it is skilfully made. But we have here, for instance, the talk of more and better cows and incorporating more and richer milk. Now, the question is the matter of skilful making, for skill is money. Supposing I have milk brought to me that has six per cent. fat and it don't pay to incorporate more than four per cent. of the fat? That was the idea that was brought out in the *Dairyman* concerning this question of skimming—the question of taking the milk down to the standard. Another thing is the question of reaching these patrons. Let me suggest to you that we have got to reform our methods a little. Why don't we consider the cheese factory more of a dairy school than we have done? Why do we waste this whole winter doing nothing? There is a cheese factory, there is a curing room, there's a stove in it, there is an opportunity of getting the patrons together. Why don't we take advantage of these little school houses dotted all over Canada and the United States? Let me say it would be very foolish to have a school house and never get anyone into it. You are standing in your own light. You ought to get your patrons together. You ought to do something in this line to inculcate a taste for dairy reading and dairy study. You should call your patrons together to discuss this question. They don't believe what you say, I know they don't, for they tell me so. They say "Them cheese-making sharps, they talk a great deal, you know, but talk is cheap." Get these men together every winter, do it even in the cheese-making season, if you can. Discuss this question with them. Go to work and read out something yourself as to the effect of these things. Write to some one and ask him to send you a statement as to what is the effect of bad water upon the milk for cheese-making purposes. Those men are ignorant of the conditions of these matters, and you have done nothing although you are dealing with men who don't come to conventions and don't read dairy literature and don't make a study of these things. Why, it is a good deal as the boy said when his throat was swelled up, "The stomach was awful hungry for water, but the throat wouldn't let it get there." The market is hungry for good cheese, but ignorance won't let it get there. I believe that the system of inspection is a good one, but I want to tell you one thing, that in Canada you have not started right yet. In Wisconsin we have started right, but we want to make a little different change in the rightness of the right. We want a legal standard for fat in milk. We started at three per cent. because the farmers said "Deal with us gently." But now how simple is our work. Our dairy and food commissioner goes to a factory and takes samples of milk. The man that brings milk to the factory that has less than three per cent. of fat catches it. It does not depend on the directors or cheesemaker to enforce the law. The dairy and food commissioners make the law and enforce it. Now, you have a legal standard to start with. It is a great help in pushing things up. Let me show you: Some factory owners are contracting to return a pound of cheese for every ten pounds of milk.

Hon. Mr. ADAMS—They ought to be closed up.

Hon. M. HOARD—Why, they are out in pocket and everything else.

Mr. SYMINGTON—What is the standard for solids?

Hon. Mr. HOARD—We have no standard for solids, because no one can steal solids

Mr. SYMINGTON—Are the solids all there in poor milk?

Hon. Mr. HOARD—No, everything is low in poor milk.

A VOICE—What is your opinion of pooling milk and paying everyone according to the quantity of fat?

Hon. Mr. HOARD—Well, you are coming to it. It is fast coming here. We have got to it.

Mr. SYMINGTON—Would there not be less solids if there were 20 or 60 per cent. of water?

Hon. Mr. HOARD—There is 87 per cent. of water in milk.

Mr. SYMINGTON—What if there were 20 or 60 per cent. of water added beyond that?

Hon. Mr. HOARD—We are not busying ourselves with that at all, because whether a man waters the milk or not the value shows in the fat, and if he skims it shows in the fat. He cannot meddle with the milk in any way. If the cow herself skims the milk it shows in the fat. Now, we are coming to that point where we will take 4 per cent. as the standard, and by using this little Babcock extractor be able to say to A, "Your milk has just 4 per cent.—that is, 100 per cent., you shall receive your pay accordingly;" and another man whose milk tests 3.75 per cent. gets his pay according to that; and if the fat tests above the standard he will get his pay then also.

A VOICE—You are in butter-making?

Hon. Mr. HOARD—No, I am talking cheese-making.

Mr. HOPKINS—Supposing my milk tests 4 per cent. and the standard is 3 per cent. Well, I say I will add 20 per cent. water and then I will have the standard. You find out that I have watered my milk and yet you let me go Scot-free because my milk is richer than another man's and I have only watered it down to the standard.

Hon. Mr. HOARD—We have a law against watering milk, but you have always to catch your rabbit before you can roast him. However, we have a standard. It is *prima facie* evidence against a man if the milk falls below 3 per cent. without any other analysis at all. You see the advantage of it. It simplifies and facilitates prosecution, but if a man can be caught or found watering his milk he is liable to prosecution.

Mr. ROBERTSON—Supposing something occurred such as Mr. Hopkins referred to, and that a patron did skim or water his milk to bring it down in butter fat to a little above 3 per cent.?

Hon. Mr. HOARD—He has no business to skim or water it.

Mr. ROBERTSON—No, but what can you do?

Hon. Mr. HOARD—Well, he should not do it.

Mr. ROBERTSON—Would you allow it?

Hon. Mr. HOARD—I would, because you have established a system which leads to that very thing. A patron says, you are not doing him justice anyway and if you don't he will himself. You compel the man to pool upon an unjust standard and you have no right to compel him to accept the results of it.

Mr. ROBERTSON—Allow me to give you a note or two here to let you see the different range of milk in my own experience this last summer. The poorest sample which I got only had 1.40 per cent. of butter fat in it; the largest sample had 5.60, and the men who furnished these samples were allowed and did continue to receive pay at the same rate. The one man was a great loser and the other was getting a great deal more than his own.

Hon. Mr. HOARD—That is just a difference of 400 per cent.

Mr. ROBERTSON—I took the trouble to figure up all the tests I had made last summer, and the average of the whole of the tests I made—something near 4,000—was 4.1 per cent. for the whole season. The year before I tested something like 9,000 samples and the average was 4.8 per cent., so that the last summer, so far as I could judge, the milk showed a little less butter fat all through the season, until we came pretty near the middle of September, and then it struck up in some cases until October.

Hon. Mr. HOARD.—Well, that was a very good average, but I want to show you what this inspection has been doing. I tell you we had a foolish lot of cheesemakers who went into the business. They were seduced into it by the patrons. They went on cutting the sand from under their feet. There were those cheesemakers getting out of pocket until they were from $1,000 to $1,300 in debt. Finally they appealed to the Dairy Commissioner; he went and applied a test and found the quantity of butter fat down to 2.50, and fined different patrons $30, $40 and $50. At once, within twenty-four hours, there was a marvellous reformation in the milk in the whole of the cheese factories. Now, we have your system of inspection borrowed from you. It has been doing our cheese a splendid amount of good. I believe that the work along this line is in the best possible shape. But you want good laws to underlie that system. There is nothing in the law that reinforces the pooling, and that is what we want to correct. I believe that the point we touched upon in the beginning is a very important one, with regard to the fat in the milk as regards the evaporation of the cheese. Now, to settle this, take a cheese that has 40 per cent. fat, made the same as another that has only 25 per cent., and see how much quicker the latter dries out. The fat does help to retain the moisture in your cheese, and the leaner your cheese is in fat I think it will show more of that feature of cracking as a rule. I think, my friends, coming back to that point of the reaching of the patrons, that the cheesemakers of every factory can well afford to take upon themselves, when they have more machinery and less labor than formerly, an effort to stir up their patrons. I can show you patrons in Wisconsin clear right up along side of the cheesemakers and buttermakers, who know just what the standard is and what they want to do. Now, it is a pleasure to do business with such men. To show you a little of the effect of this education upon your own business, in Chatauqua county there is an old German who has fifty creameries and 1,500 patrons, and he was talking about the education of those patrons. He said "The business is crumbling and what will I do?" I went home, and he wrote me a proposition. He said "I believe I will do something for these people. I find the difficulty is they are not posted on dairy thought. Thay have not been thinking or reading along those lines; will you send me so many copies of the DAIRYMAN for distribution among them; I think I will send these papers to the patrons of two or three creameries." He took them and tried that plan for a year. What is the result? He said it was worth hundred of dollars to them. They began to take an interest in their business, to take better care of their cows, to get a great deal more milk, and to make more money. He said to me "As a proposition it was the best thing I ever did." I am not saying this from the standpoint of advertising my business, for I furnished those papers for absolutely less than they cost me. I wanted to see what would be the effect of education upon the men who made the milk. Now they are holding their own meetings in the creameries, and there has been a progress among these people that is very favorable.

RESOLUTION REGARDING INSTRUCTORS.

Moved by J. S. Pearce, seconded by H. S. Lossee, and *resolved*, That this Convention heartily approves of the good work that has resulted from the employment by the Association of travelling instructors and inspectors, and recommends to the Government the desirability of making such financial provision as will enable the Association to carry on that work in a still more efficient and extended way. Carried.

Mr. HOPKINS—I just wish to have myself understood with regard to the remarks I made when on my feet before. I am not opposed to inspectors, but I believe the cheesemakers are quite competent, and I think where the reform should commence is that the

cheesemaker should test the milk. I think that meetings should be held in the factories to get the patrons acquainted with the nature of milk and that there should be a little combination among the cheesemakers. I would not have one combination for the county, because the factories are too far apart, but I say that the makers of four factories could combine, and let one of those makers be the leader and tell the best ideas in regard to the improvement of milk and the difficulties to contend with in its care. Have the cheesemaker inspect the milk. Then we want instructors to go from factory to factory, and where the cheesemaker has been a little wrong rectify his mistakes. An inspector can do more efficient work then, and he will not be kept at one factory all day. There is a difficulty about the inspector being the prosecutor. I have contended that the inspector should not be detained from other work in consequence of a prosecution. I think the patrons and the cheesemaker should attend to the prosecution. Then, I think every factory should be the same as a little school, as Mr. Hoard has said, where the cheesemaker will take the lead. Having got the inspection right, by every maker being able to inspect the milk, and the milk right, then we should have four or five men to go right through the factories and put the cheese right.

Mr. CASSWELL—Did I understand you to say the cheesemaker should be the prosecutor? Don't you think you would put the cheesemaker as a prosecutor in an invidious position? If the cheesemaker did his duty and inspected the milk as he ought, should it not be the managing director who should do the prosecuting, and not let all the blame fall on the poor cheesemaker? I may say that if the cheesemaker did the prosecuting he would soon be turned out, or else the patrons would not look at him.

Mr. HOPKINS—I did not say that. Just allow me to correct myself. So far as the test is concerned, although the owner of a factory, or the managing director, may enter the case, you must certainly at all times depend upon the man that made the test for the evidence to convict the patron.

Mr. CASSWELL—But would the cheesemaker prosecute?

Mr. HOPKINS—Well, he would really be the man who was prosecuting. You cannot get an inexperienced man to give evidence as to a test of milk. I would make the maker in every factory the prosecutor so far as the testing of milk goes. If necessary, you would simply furnish him with a subpœna as a witness.

Mr. CASSWELL—But you are well aware that where the inspector has written a letter to the directors showing adulteration they have not prosecuted. Now, I may say if they had taken up those cases and prosecuted the men they would have done the factory and cheese trade a great deal of good. I do not see that there is any use in the inspectors writing a report and then the directors declining to punish.

Mr. HOPKINS—Well, we have punished men. We have gone as far as we possibly could.

Mr. LOSSEE, referring to the resolution which had been moved, said: I advocate these county conventions. When those interested in the business in a county act together they can lessen the cost of manufacturing. We know for one thing there are three or four milk routes on every concession. That ought not to be. If the factories and patrons would act together they could lessen the cost in this way very much.

Mr. CASSWELL—Did you, Mr. Hopkins, buy testing instruments for all your factories last spring?

Mr. HOPKINS—Yes.

Mr. CASSWELL—Did they have a good effect or a bad effect?

Mr. HOPKINS—I know they were very tardy about using the testers.

Mr. CASSWELL—Did you insist upon them being used or not?

Mr. HOPKINS—We bought a tester and put in each factory and the cheesemaker was to test the milk.

Mr. CASSWELL—But did they do it?

Mr. HOPKINS—I know we found the instruments. Whether the cheesemaker did his duty or not I don't know.

Mr. CASSWELL—But did the directors do their duty if they did not insist upon the tests being used?

Mr. HOPKINS—Well, they passed a resolution demanding that it should be done. (Laughter.)

The Convention adjourned at 9.30 till Friday morning.

THE BANQUET.

A great many members, after the adjournment, repaired to the O'Neill House, where a banquet was given, jointly, by the Woodstock Town Council and Board of Trade in honor of the Association. His Worship, Mayor Douglas, presided, and the vice-chairs were occupied by Mr. J. M. Grant, president of the Board of Trade, and Mr. G. R. Patullo, county registrar, representing the school board.

THIRD DAY.—MORNING SESSION.

RESOLUTION RESPECTING INSPECTORS AND INSTRUCTORS.

The convention resumed at 10.30 on Friday, when Mr. HODGSON moved the following resolution, seconded by Mr. JAMES :

That this Convention desire the President and Directors of this Association to engage as soon as possible four (six if possible) competent cheese inspectors and instructors, such instructors to be engaged for the season, and being competent speakers, so as to attend the annual meetings of all factories possible, and giving the patrons of the factory any suggestions needed for the better improvement of our make of cheese.

Mr. Hodgson, speaking to his motion, said : I know from talking to Prof. Robertson that his idea is to have the inspectors engaged for the season. My idea is that if the patrons are met by a competent man every year so as to talk cheese over to them, we will get right at the commencement of our production. All heard last night what Governor Hoard said about the value of having meetings at the factories. I may state that the first meeting which I ever attended in this Western District was at the Sefton factory. A cheesemaker asked me to go down, and I went along with the reporter of the *Advertiser*, Mr. Thompson, and I think a great deal of good was done at that meeting. That is where really good work can be done. As to the last year we had no inspectors, and I thought I would give my ideas a practical effect in expressing the desire which I know has been felt over the whole section for their appointment this season. In the Belleville district, in some cases, this year, they have beaten you by a quarter of a cent per lb. Their cheese has been of a high quality, and I think mainly on account of employing inspectors. They have the same instructors year after year. The first year they may not be able to get acquainted with the workings of the different factories, but by two years work they get to know the factories better and do better work. As Prof. Robertson has said, I think the inspectors should be put under a close examination before being chosen, and by means of them I think you will get at the whole root of the evil in cheese making. You cannot crowd the English market out with the finest grade of cheese. What we want is uniformity, and I cannot see how dairy schools, or any system of schooling, can get uniformity of cheese outside of instructors ; because they go around among factories and see who is going forward and who is going backward, and bring those that are getting behind up to those in advance, and so secure a uniformity of good cheese.

Mr. JAMES JAMES (Nilestown).—The employment of inspectors, I believe, is a step in the right direction. I have been for a quarter of a century trying to agitate this thing, and I am very glad the step has been taken in this way. I am pleased to second Mr.

Hodgson's motion. It has come from the right place—from a gentleman like himself, who is a buyer and knows the benefits of the system of inspection and the requirements of the market. We cheesemakers cannot get the patrons to act. We claim we can make cheese as well as any makers, but the thing is to get the milk in the right shape from the patrons.

Mr. THOS. LOCKHART (East Zorra):—Is the system of inspection going to be compulsory? Who supports the inspectors? Is it going to be done at the expense of the associaton or of the factories? Now, this gentleman (Mr. James) says he has been an advocate of inspection for a quarter of a century, but it is not very long since we had inspectors before.

Mr. JAMES—I advocated the system before the inspectors were appointed at all.

Mr. LOCKHART—Of course it has been acknowledged as a good thing to have inspectors. I am not a cheesemaker, but I am connected with a factory. So far, in the past, it has been voluntary on the part of the factory whether inspectors were employed or not. I suppose if they are appointed again only some factories will have them. If that is to be the case we cannot have uniformity. If it is going to be obligatory—if you clothe these inspectors with authority to visit these factories without invitation—then we might have uniformity. I suppose we could get an Act of Parliament to bring this about. We had one inspector before who if he did not do his work with a little more discretion in the future would not do much good. He came to the factory but did not complete his work. He made certain entries in his book implicating certain persons on one solitary test. These parties' names got out through the neighborhood, and several very respectable citizens vouched for their innocence in the matter. They got somewhat into disrepute in this way, and considerable feeling was aroused. In fact for a time I did not know whether the board was going to be indicted or not for it. I am afraid if the inspector had been in the vicinity then he would have got into trouble. Now, if you send an inspector around without consulting anybody he has certainly got to have a good deal of discretion or he is going to do harm instead of good. He is simply going to raise disturbance and impute improper things to certain parties. Taking a solitary case of poor milk, you know it may be accounted for on other lines than adulteration. If inspectors go to factories they ought to see that things are so managed that no one's character is blackened unjustly, because it sticks to a man, and certain parties will use it against him. I do not believe, however, that if we have a right class of cheesemakers w need inspectors; and I believe competition in trade will bring these to the front; and I still think cheesemakers are competent to do the work. I think the cheesemakers migh prosecute, from the fact that there are very few in any company who will resort to adulteration, and instead of making the cheesemakers unpopular it would make them popular. Speaking of the old inspectors, they are not more competent than some of ourselves. Some of our makers would not submit to their instruction very well. They feel they are competent.

Mr. HODGSON—If Prof. Robertson were here I think he would say that he wants inspectors, and I find the cheesemakers are the very ones who want the inspectors to go around to the factories. I think the board of directors we have appointed will see that they get good, sound, honorable men as instructors, and, therefore, in any such thing as interfering or disturbing the unanimity of the patrons, I think it is only borrowing trouble. If the men appointed are able to get at the source of trouble I think the makers will be only too glad.

Mr. JONES.—We wanted our cheesemaker to take it in his own hand to prosecute delinquents. He said, "No; I will if you pass a resolution instructing me to press the thing as far as the law will allow." We did so. A man who kept 9 cows we fined $25. Next month it happened again that he had been adulterating. He took off cream for butter. He acknowledged it the second month and had to pay $30. Our factory is not large, but we get good milk and can make the cheese.

The PRESIDENT.—It is not compulsory at all upon a factory to have an inspector. If they don't wish to have him they are not obliged to do so.

Mr. FEWSTER.—I do not think any good cheesemakers would object to having inspectors appointed. If so, let them speak.

Mr. LOSSEE.—There is no cheesemaker who would like to take that responsibility on himself. They are too glad to have some outside inspector inspect the milk, because they do not want to raise any disturbance themselves.

The motion was then carried.

DAIRY SCHOOLS.

Mr. PEARCE.—I have another resolution which I think you will all agree with, with regard to following up this idea of Professor Robertson's :

Moved by J. S. PEARCE, seconded by J. M. BUTCHART, and

Resolved.—That this association urge upon the Dominion Government the advantage and need for the extension of the work of the Dairy Commissioner by the establishment of branch dairy experimental stations, under the direct supervision of Professor Robertson, for the purpose of carrying on such investigation into the principles and practice of improved cheese and butter making during the winter season, by fitting up these stations for that purpose, in order to educate and induce the factories and farmers to go into this branch of industry.

Resolved further, that a copy of this resolution be forwarded to the Honorable Minister of Agriculture for the Dominion.

The resolution was carried.

Mr. JOHN ROBERTSON.—We hear it said sometimes that certain individuals have certain ideas always uppermost, and whatever they may talk about these things always come up. Well, I think if there is any one idea above another that has occupied my attention through all my life, it has been cheese ; and in connection with the resolutions that have now been passed, I think, there is a good deal of uncertainty about the purposes which both the dairy schools and the inspectors are expected to fulfil. The resolution, to my mind, puts the matter in its true light. It is not intended that the dairy school should be like a day school, where everybody might go to learn the business. They are simply to be experimental stations, where cheesemakers can learn a great many things that are still very dimly known, and many things that are not known at all, as to the character and chemical conditions which often arise in milk. They would simply be stations for experiment in all the unknown features of the business. That is very different from a dairy school where people are to go and learn their business. Now, the very discussion we had last night, about the various points of weakness, and the faults and what causes the faults, and what deteriorates the value of our cheese, shows the necessity for an experimental school. Then, as to the inspectors and instructors, the way they have been doing in Scotland is this : I think the government for the last two years paid one-half the expense of the society doing the dairy work. Then the members contribute so much, I think it is five shillings a year. They, the farmers who own the cows, are assessed about six cents per cow. You can easily see the correctness of the principle ; because, if a man had ten cows he would pay 30 pence, and if he had 20 he would pay 60 pence, and so on in proportion to the number of cows he kept. Now, you take an ordinary factory in this country, say one supplied by 500 cows, and if it was assessed at 3 cents per cow, that would be $15 which that factory would contribute, and the government grant added to it would be sufficient to pay for the oversight of that factory by a competent man as instructor and inspector during a season. I know that sometimes the factory owners and dairy farmers think $10, or $15, or $20 quite a lump of money ; but if you say to them, " Would you agree to assess yourselves at the rate of 2 or 3 cents for each cow whose milk goes to the factory," I do not think there would be half-a-dozen farmers in any neighborhood who would object. I would pay twice that my self if I was putting milk into a factory, just to know what my milk was doing, and to see that the milk was honestly managed all around.

Mr. HODGSON.—I would go strongly for making all the factories have the inspectors

Mr. CASSWELL—You cannot do that. We are not in Russia.

Mr. HODGSON, that is only a suggestion; but I certainly think the owners of every factory should see that if they do not allow the inspector to go to their factory they strike a blow at uniformity.

Mr. JOHN ROBERTSON.—There is quite a little truth in what Mr. Hodgson says, but I think the difficulty is one which time and experience would soon rectify. If you are so fortunate as to get the right men for inspectors and instructors they will in nine cases out of ten lift the factories under their supervision to a higher plane. There will be a uniformity in those cheese where the inspectors' services are regularly employed, that there will not be amongst the factories that do not take advantage of their services. The consequence will be, when it comes to a question of money value, the owners who do not at first employ the inspectors will then do so. It is sometimes difficult to know how to get at people's thoughts, but about the readiest way to get at my own, and it is probably about the readiest way to get at those of most people, is to get your hand into the pocket. In that way you will soon reach the brain. I believe it is as true in the cheese factory as in any business. There are some makers in the country that would be as good men and know as much as the instructors, but they are not available. I know men whom I could recommend as the very men to fill those positions if it would be any use, but you cannot get them If a man is running a good factory and making fine cheese and his patrons and himself are working in harmony he has a permanent position and has got a sure income; and he is not going to leave it to take a position which is not quite so certain, nor so agreeable to himself. But the great idea of having instructors is to assist men in a friendly way who are not quite up to the top and to give them the benefit of further instruction and to encourage them in their arduous labour, and lift the men who are on the lower plane until we get them up to the top. All this cannot be done in a day. It took us six or seven years to lift our cheese up to near the price of Scotch cheese, six, eight or ten years ago. Now they have got beyond our reach again and it will take us maybe five or six years, with all our efforts, to reach them again, but it has to be done, although it will take a good deal of skill and brain work to do it; and neither brain power nor money power should be spared in doing it.

Mr. HODGSON.—I want to follow out the argument about this inspecting business. Who were the first last year? Were they not the persons who took advantage of this inspecting?

Mr. CASSWELL.—When Mr. Harris was employed we had a few applications for his services and we sent out notices that factorymen who required them would have to pay so much per day. What astonished me was that the factories which asked for the inspector were those which made the best cheese, and on account of the quality were able to obtain the best prices in the Old Country. In this section it is said the bulk of the cheese was not up to that in the northern section. They did not apply for the inspectors here. I think there were only eight factories here who applied and 48 or 49 up north. I know factories who stand above the average and need never offer their cheese in the market; and those factories were the first that applied for and got the services of the inspectors. It is said we ought not to charge the little factories as much as the big factories for inspector's services. It takes just as much time for the instructor to go to a little factory as a big one and teach the maker. Even if the inspectors did not do what they were expected to among the patrons the very fear that he was coming along made them give a better quality of milk. It is said the inspector should go to them in a friendly way. I don't want to be friendly with this class of people. I want to make it hot for them. If the inspectors had been a little more rigid here there would have been better results.

A VOICE—Molasses catches more flies than vinegar.

Mr. HARRIS.—I think the inspectors generally carried their point.

Mr. JAMES.—If the patrons would take it into their hands they could make it hot for the inspector.

Mr. FACEY.—I propose that the inspectors should be Government officials.

Mr. CASSWELL.—I think if there was a Government analysis, so as to test the milk, there would be no difficulty with the inspectors. Mr. Ballantyne's law is a good one—if a man does wrong expel him. A man does not like to be expelled from a factory. What I got up to say is that we paid $149,000 a year for importing cheese just about the time reciprocity was broken off, and now we are exporting $9,000,000 worth. That does not amount to any thing in comparison with the agricultural interests connected with the dairy. We lose sight of the hog. There are a good many kinds of hogs, but I am speaking of the pig with four legs. (Laughter). The first result we get from the hog industry is the manure and the next is the money value of the hog itself, and I believe we would be astonished to know the amount of money that is raised in connection with the hog and the dairy. It must be something immense, and I wish we had some way of getting at the result. For instance, I went out to see a farmer in the neighborhood of Ingersoll. He had taken in a load of cheese and came home with another load. I asked him if he had brought back a load of cheese also. He said "I have brought back a load of hogs, and they are worth as much to me as cheese. I feed them and don't keep them shivering in the cold." He told me he had already realised $800 during the year from hogs, and had fifteen more to deliver and seventy more to winter over, all off his own farm.

Mr. LOCKHART.—How much grain did he buy?

Mr. CASSWELL.—I do not believe he bought a bushel. He is a man who knows how to make a dollar and how to feed off his own farm. It is Mr. John Holmes, of Dorchester. Now, I have been astonished at factory owners, many years ago especially. You generally found their pig pens on the side of a hill where there was a creek so that the manure from their pigs could be washed away to save the trouble of carting it out. I want to say, no manure is so valuable to the farm as hog manure.

DAIRY UTENSILS.

Mr. CASSWELL read the following report which was adopted:

To the President and Directors of Dairymen's Association:

GENTLEMEN,—The committee on Dairy Utensils beg to report as follows: We find on exhibition an aerator, sold by C. H. Slawson & Co., Ingersoll, which we highly recommend to the patrons of cheese factories. We also find a press and hoops made by R. Whitelaw, of Woodstock; and also cheese hoops made by C. Lewis, of Salford, well made and well adapted for the business. The milk tester, the invention of Dr. Babcock, of the University of Wisconsin, for the estimation of fat in milk, we would confidently recommend to the convention.

C. SCHRAGG,
E. HUNTER,
JOHN FULTON.

CLOSING PROCEEDINGS.

A resolution was passed, thanking Mr. W. H. Huston, Principal of Woodstock College, for the cordial invitation extended to the Association to visit that institution.

The CHAIRMAN then said: The time has now come when we must part I cannot allow the occasion to pass without thanking you very heartily for the orderly and business-like manner in which you have conducted your business. I may say I never had the honor of presiding over a meeting where the order has been better and where those present evidently had a greater determination to transact their business in a proper way, or to try by means of discussion to improve their position in life. I now bid you all good-bye, and hope to meet you another year.

The convention joined in singing "Auld Lang Syne," and then adjourned.

III.—CREAMERIES' ASSOCIATION OF ONTARIO.

OFFICERS FOR 1891.

President	D. Derbyshire, Brockville.
1st Vice-President	John Hannah, Seaforth.
2nd Vice-President	Aaron Wenger, Ayton.
Secretary-Treasurer	R. J. Graham, Belleville.

Directors:

Division No. 1.—John Croil, Aultsville.

Division No. 2.—Ira Morgan, Metcalfe.

Division No. 3.—T. J. Miller, Spencerville.

Division No. 4.—J. Sprague, Ameliasburg.

Division No. 5.—Robert Philp, Cadmus.

Division No. 6.—James Davies, Toronto.

Division No. 7.—David McCrae, Guelph.

Division No. 8.—W. G. Walton, Hamilton.

Division No. 9.—J. S. Pearce, London.

Division No. 10.—E. Miller, Parkhill.

Division No. 11.—Frank A. Walden, Ayton.

Division No. 12.—Arch. Wark, Wanstead.

Division No. 13.—J. N. Zinkann, Wellesley.

Executive Committee:

D. Derbyshire, John Hannah,

J. S. Pearce, Prof. Jas. W. Robertson.

LIST OF MEMBERS

FOR 1891.

NAME.	POST OFFICE.	NAME.	POST OFFICE.
Abrams & McLennan	Camerontown.	Johnston, Chas.	Athens.
Aird, John	Seaforth.	Johnston, Geo. R.	Athens.
Balkwell, Geo	Walkerton.	Johnston, David	Seaforth.
Bisnett, A. L.	Blenheim.	Jordan, M	Seaforth.
Brill, S. R.	Teeswater.	Kendell, John	Cedar Springs.
Brown, Thos.	Holstein.	Kinsey, S. V.	Guelph.
Brubacher, W. H.	St. Jacobs.	Knox, Robert	Harlock.
Caloren, Geo.	Iroquois.	Lackner, J. L.	Chesley.
Carmichael, Jas.	Arva.	Laidlaw, Wm.	Ayton.
Cheesman, Jas.	Boston, Mass.	Lennie James	Guelph.
Collet, J. K	Wellesley.	Lindley, H.	Cedar Springs.
Cooper, C. R	Toronto.	*Live Stock Journal Co.*	Toronto.
Croil, J. H.	Aultsville.	Macfarlane, Thos.	Ottawa.
Crosby, John	Marden.	Malcolm, F. S.	Innerkip.
Davies, Jas.	Toronto.	Miller, Jas.	Spencerville.
Derbyshire, D.	Brockville.	Miller, E.	Parkhill.
Dom. Dairy Supply Co.	Quebec.	Miller, Archie	Picton.
Eureka Salt Co.	New York.	Miller, T. J.	Spencerville.
Fairly, J.	Seaforth.	Morgan, Ira	Metcalfe.
Farmers' Advocate	London.	Moyer, M. (life member)	Toronto.
Fuller, V. E. (life member)	Hamilton.	McCartney, Hugh	Brucefield.
Gilchrist, Duncan	Arkell.	McLean, M. Y.	Seaforth.
Gladstone, Wm.	Owen Sound.	McFarlane, D.	Aberfoyle.
Graham, R. J.	Belleville.	McIntosh, Alex.	Mosborough.
Gunn, Flavelle & Co.	Toronto.	McKechnie, Hiram	Elmside.
Hannah, J.	Seaforth.	McLennan, D. F.	Camerontown.
Harcourt, Geo.	O. A. C., Guelph.	McMillan, J., M.P.	Constance.
Herbison, W.	Clinton.	McPherson, Alex.	Cedar Springs.
Hillborn, Isaac	Elmira.	McTavish, J.	Seaforth.
Hughes, John	West Stockholm.	Pearce, J. S.	London.
Hugh, Fred	Golden Lake.	Pilow, Joseph	Camerontown.
Hunt, Harry	Belleville.	Petrie, W. T.	Holstein.

LIST OF MEMBERS—*Continued.*

NAME.	POST OFFICE.	NAME.	POST OFFICE.
Philp, John	Dromore.	Stewart, Peter	Park Hill.
Philp, Robert	Cadmus.	Struthers, Jas	Owen Sound.
Ramsay, R. H	Toronto.	Swan Bros	Toronto.
Randal, David	Athens.	Taylor & Williamson	Cedar Springs.
Rodgers, T. C	Durham.	Walden, F. A	Ayton.
Roke, Henry J	Owen Sound.	Walton, W. G	Hamilton.
Ross, Jas. T	Seaforth.	Wark, Arch	Wanstead.
Rutherford, W. D	Iroquois.	Watt, Geo	Harlock.
Sloan, J. B	Leamington.	Wenger, A	Ayton.
Smith Bros	Churchville.	Wilson, D. D	Seaforth.
Sprague, J	Ameliasburg.	Zinkann, J. N	Wel'esley.
Sprague, Mark	Ameliasburg.		

SIXTH ANNUAL CONVENTION

OF THE

CREAMERIES' ASSOCIATION OF ONTARIO.

The sixth annual convention of the Ontario Creameries' Association was held in the town hall, Berlin, on the 13th and 14th of January, 1891. The meetings were among the most successful yet held by the Association, both in point of attendance and in regard to the animated nature of the discussions which took place. The authorities of the town, through their chief magistrate, Mayor Jansen, who was assiduous in his attentions throughout, extended a cordial welcome to the Association, presenting the members formally and in felicitous terms with "the freedom of the town." In addition to addresses by prominent persons specially interested in the supporting of creameries and the manufacture of butter generally, speeches were made by the Hon. John Dryden, Minister of Agriculture, Mr. I. E. Bowman, M.P. for North Waterloo, Mr. E. W. B. Snyder, M.P.P. for the same place, Prof. Robertson, Dominion Dairy Commissioner, Mr. Thos. Macfarlane, Dominion Analyst, Mayor Jansen, as already indicated, and the Mayor-elect, Mr. J. M. Staebler. Through the kindness of Mayor Jansen the proceedings of the evening meeting on the 13th were interspersed with music furnished by a local orchestra and glee club, and on the morning of the 14th such members as desired to go were treated to a drive through the town and a visit to various factories and public institutions of interest.

PRESIDENT'S ADDRESS.

The president, Mr. D. DERBYSHIRE, of Brockville, occupied the chair, and opened the convention with the following address:

I congratulate you on having this convention in such an enterprising town as Berlin. I thank you on behalf of the Association for the kind way we have been received. We hope to have a pleasant and profitable time, and to be able to take another step in advance of all our former efforts.

Our exhibit at the Industrial Exhibition, in September last, was the best ever made in the Dominion by far, and I would call your attention especially to the Ayton creamery. Mr. Wenger has been exceedingly enterprising in putting up his butter for local use. We should cultivate our home trade, and see that fancy butter is placed within the reach of all. I feel proud of the good work done by our secretary, Mr. Graham, and also by our inspector, Mr. Sprague.

The creamery business may be divided into two natural divisions, the men who produce the milk and the men who manufacture the butter. Both are equal partners in the business; both must be honest and skilful in doing their share of the work or failure in securing a good price and fair profit will be the result. Both are working to please,

not themselves, but a third party, the consumer. The kind of butter he wants, the flavor that suits him, must be the law that governs them. Therefore, as dairymen and creamerymen we have a common interest in throwing away all of our stubborn and foolish notions. We must measure everything we do by the market standard, or we will be punished by incurring loss rather than gaining profit.

As the dairyman produces the milk he is the first one to be considered. As "Hoard's Dairyman" very truthfully says, he is the real manufacturer of the butter; the creameryman only separates it from the milk, salts it, packs it, and sells it. I want every farmer who sends his milk to a creamery to take this thought in, and sleep with it, eat with it, and live by it as long as he has anything to do with a creamery. In the first place the farmer must produce good rich milk. He must think hard and long on this point. He must strive to improve the quality of his cows; he must constantly weed out the poor ones, breed in or buy better ones. He must do this for his own sake as well as the sake of the combined institution, the creamery. The biggest humbug on earth is the notion that the creamery patron can cheat the creamery with poor cows, bad water, irregular care, and not end in cheating himself the worst of any man in the lot. "As a man thinketh so is he." If he gives himself up to such a standard of thought, he will end in poverty and disgrace. Therefore as patrons we must have a good high standard, to measure ourselves by, for the sake of our own success. Every patron should strive, just as quickly as possible, to know what constitutes a good cow; how to breed her and how to care for her. The average patron shows just what he knows on this question, by the returns he gets from his cows. That tells the story and there is no way of dodging it Visit any creamery you choose in Canada or the United States, and you will find a few patrons who are getting fifty per cent. more from their cows than the great majority.

It will pay you to ask the question, "What manner of men are they?" For it is the man that makes the cow. Every time you will find that they do not belong to the great general average. They say it does not pay to breed and care for a cow as the average dairyman does. Invariably you will find they are making a study of their business. You will find them subscribing for the best dairy paper they can get, buying the best dairy sire they can find, stabling their cows in the most comfortable way for the sake of the cow, cutting their hay at the time it will make the most milk when fed, building a silo and storing up all the sweet succulent food their good sense can devise, feeding a good liberal grain ration every day, in short trying by every means in their power to become first-class profit-making dairymen of themselves. That kind of a patron will not allow his cows to drink foul, stinking water; he is intelligent enough to know that foul water makes foul milk, and poor butter. That kind of a patron is a "joy forever" to the creamery proprietor and a blessing to dairy progress among his neighbors. He is the kind of a man to learn from, for he is a student himself. I am sorry to say that such men are mighty scarce, but, my friends, they are the only men who really make a good profit. Every patron in Canada can become just such a patron if he will only have pluck and sense enough to adopt the same methods himself. Remember, the foundation of the whole business rests on the patron. If he is foolish, stupid, unthinking, and negligent, no power on earth can make the business profitable in its best sense to him. We read every day of creameries here and there failing, because they were established in communities of farmers who will not become intelligent enough to do their work so that profit can come out of it. W. D. Hoard, Fort Atkinson, Wis., editor of "Hoard's Dairyman" and also proprietor with his son of one of the finest creameries in Wisconsin, gives a clear illustration of the value of a good sound dairy education among patrons, for the sake of their own profit. He stated in our meeting a year ago that he had one patron with a herd of thirty-five cows to whom he paid in cash sixty-three dollars per cow, as the earnings of that herd for the year, besides returning to him all the skim milk. Another patron, with a herd of twenty cows, got only forty dollars each. The cost of keeping the first herd was forty dollars apiece, leaving twenty-three dollars profit per cow to pay for labor invested. The cost of keeping the second herd was about thirty dollars, leaving ten dollars to pay for labor invested. The first made his cows produce nearly six thousand pounds of milk each, and considered the skim-milk worth fifteen dollars per

cow. That is, he possessed intelligence enough to feed it so it would be worth that amount to him. It is doubtful if the second made his skim-milk worth to him more than five dollars per cow. There are thousands of such comparisons to be found in Canada to-day. The object of our Creameries' Association is to bring up this discouragingly low average, thereby benefiting ourselves and our country.

I am convinced more than ever that our creameries must turn their attention to the production of winter milk and butter. We are making butter in the summer when everybody is doing the same thing, hence prices are clean down below zero. I find that the most successful creameries in the United States are those which make the largest amount of butter in the winter. It is not a difficult thing for a farmer to change his herd over to a winter dairy, if he but once resolutely sets about it. The increased cost of keeping a cow in milk in winter is not fifteen per cent more than what is necessary to keep a dry cow as well as she ought to be kept if she is to do good work the next season. The profit on winter milk is over thirty per cent greater than is obtained on summer milk. The creamery can run just as well in winter as in summer, and if the farmer will provide warm, healthy stables, properly prepared food, such as ensilage and corn, he can in this way get much better pay for his time and labor.

Every creamery proprietor ought to consider that his creamery is a dairy school, and bring his patrons together several times a year to discuss all these questions that so vitally affect their mutual welfare, he ought to take advantage of every opportunity to disseminate useful dairy information among them. He must not forget that he owes a duty to the men who have trusted him, and he must discharge that duty to their benefit whenever possible. I wish it were possible to take the proprietor and patrons of every struggling creamery in the Dominion, and set them down by some of the most successful ones; they would learn more by comparison, in one day, of the true road to success than they would get by grumbling, in ten years. We need more comparison. This convention is for getting you together so you may learn all you can by this method of comparison. I desire that you should ask questions, compare notes, and generally make yourselves at home. I believe the day is at hand when all milk delivered to creameries will have to be paid for by butter fat contained in it, which is the only fair way. Then every man will receive money according to skill exercised. It is certainly no injustice to any one to get pay for the butter contained in his milk. We know some that furnish milk with five per cent. butter fat, while others have only three per cent. in theirs. I want this fully discussed, because it must come into operation here. With all that has been said about making fine creamery butter, and all that has been said about the poor dairy butter, ninety seven per cent. of all the butter is still made on the farms, when we all know that creamery butter is worth four cents a pound more. We must change all these things, or else we will go to the wall. In short we must have better cows, better stables, better food, with a silo on every farm, better educated men, who are determined to push forward or sell out, because we cannot live the way things are going on. Let us be alive to the necessity of getting more and better knowledge, and have it said that we creamery men have not met in vain; that we are fully alive to our interests, and that we will commence another season's operations with renewed vigor. I thank you for your patient hearing. (Applause).

Mr. JOHN SPRAGUE, (Ameliasburg)—Do you recommend to the people of this country the idea, when our cheese factories are closed, of making butter in the same buildings. As already remarked, the country to-day seems to be flooded with a poor quality of butter. The price for dairy butter is only fourteen or fifteen cents a pound, while that of creamery in the wholesale market is twenty-three cents, and the idea strikes me that by adopting some method whereby we could put separators in our cheese factoriess in the autumn the milk could be gathered in say three days in the week through the cold season and we could make butter through the late fall and early spring and in fact all winter, and on account of this favorable season for shipping we could export large quantities of butter. This has occurred to me, and I think it is a matter that should be brought before the people of the country.

The PRESIDENT—I would say a large creamery was started near Athens, which is about sixteen miles from Brockville, on the Brockville and Westport road, this last year,

by Charles Johnston & Son, right in the heart of the finest dairy section in Canada, not that the soil is any better, but I believe that they put more skill into the business, and in the selection and stabling of the cow and get more money from her than in any other part of Ontario. They manufactured butter and put it up for local consumption, except about two hundred tubs that I shipped late on in the season. They sold it all through the summer for twenty-two cents. Then after the close of the season four cheese factories centred in his vicinity, the patrons of these, in place of furnishing milk to these factories just took the cream to the creamery. The result was that this factory was making ten pounds after the regular factory season closed for one it did before. So any one who had good sense enough to do so continued to furnish cream in this way, and yet there were right within the sound of the bell in Brockville, where we ought to be leading in dairy thought and everything else, men who would make butter and sell it in Brockville at sixteen cents a pound in the face of the fact that their neighbors were delivering it at the creamery to be made into butter which was selling at twenty-two cents. I offered Mr. Johnston twenty-two cents a pound for all he manufactured after the regular factory season and he made a large quantity and got his money for it. Now, it cost two and a half cents for manufacturing, and they did their own drawing. In other words, they got nineteen and a half cents and had no labor and received their skim-milk back, and at the same time the factory men made some money and that gave them some tone, because it put $100 in their pocket at the end of the season. Take every cheese factory section in Canada and the same thing could be done. Have one factory which is centrally located, put in a separator and make butter right along after the cheese season is closed and by squeezing the cows to get all the milk you possibly can out of them and building them up you will be doing a good thing for yourselves and your neighbors and your country, and will be saving a lot of money that is now literally wasted.

Mr. R. J. Graham, Secretary-Treasurer.—I would just say in regard to the Belleville section, that most of the cheese factories close the end of September, and after that the price of butter goes down in Belleville. I have been selling all season for twenty-two to twenty-four cents, but at the close of the season the price of dairy butter went down to fourteen cents and the consequence was that the Belleville market was flooded with number three butter at fourteen or fifteen cents a pound. Just outside Belleville there is a large cheese factory where they could make butter from the first of October throughout the winter. At present there are a great many patrons that have cows, and as the price of butter goes down after the factory closes they do not care for making butter in very large quantities as they have not the proper facilities and the consequence is that those cows are allowed to go dry for four or five months. If they could send their cream to a butter factory and get twenty cents a pound they could afford to feed their cows well. I think this thing could be adopted in all cheese factory sections. I hope and trust that in our section after this where there are three or four factories they will combine and one of them make butter of the milk product.

Mr. Macfarlane—Mr. President, you seem to be the object of all our questions and it has occurred to me to propound one, viz., as to what manner of men these were who could not manage their own business properly. It has occurred to me to ask when the dairymen about Berlin seem to take so very little interest in the business of the Association—judged by the number assembled—whether there are butter factories in this neighborhood and whether the proper relations of confidence exist between the two classes you have referred to, viz., those who produce the milk and those who work it up into butter. There is no doubt the farmers here are certainly intelligent, thrifty and wealthy and ought to understand their own business. They ought to be entrusted with the ability to make out of their land all they can, and the question arises whether they have the proper confidence in the people managing factories for them. We all know the thrifty character of the people of Denmark, where this whole matter has been worked through. The manner in which the Danes worked their factories I brought up at the last meeting of the Association at Seaforth and I tried to emphasise there the manner of their working. The result of all their experience is this, that they found the best system for butter factories to be that those supplying the milk should also be the proprietors of the factory and get

all and every advantage that the working up of the milk provided. They wanted in fact to get all the profit that was going from the beginning to the end. That they were able to do by the partnership system; that is to say that an equitable division of the profits was made with every supplier of milk to the exact extent of the number of his cows. This system I brought forward last year more for the purpose of bringing it before this Association, but it has occurred to me to ask whether such a system might not pe capable of gaining the confidence of the furnishers of milk in the neighborhood of Berlin, so that there might be a great deal more of it taken into the factory than seems to be the case at the present moment. I would like an expression of opinion from you as to whether that system would be likely to awaken more interest and get more patrons than the present system pursued in Western Ontario.

The PRESIDENT—Of course the experience that I have had would not exactly agree with that. We have had what we call union cheese factories in our vicinity and invariably they have not been successful—not for want of patronage, but it seemed to be everybody's business and nobody cared to touch it. My idea is that a creamery, managed by some skilful hand who has an interest in the business, as well as in the money invested, is more likely to exercise the greatest skill possible, to get the best patronage, to handle his creamery in the best way, and make it successful for himself and his neighbors. That is what I desired to deal with more fully in my address, that is the idea of the patron running the cow ten and a half months in the year, so that she will know that she is constructed on purpose to give milk and will keep right on giving it. You know that if one of your neighbors begins to play a game of pool every day that practice grows on him until he is perfectly worthless as a farmer. Now, what we want is to to take the cow; she begins to think if she is not milked right on in the fall that she has done her work inside of four and a half months; and she will dry up at the same time next fall, but those who have practically taken hold of the matter—I refer to Bissell and MacCrae—and watched and weighed their milk, have been successful because they have milked their cows right on. These are not thoroughbred cows, but half Holstein, and they have been milking them ten and a half months. The very first year by breeding and care they got a heifer to give twice as much milk as her mother did at her best. The man makes the cow, and it ought to be the greatest study and desire of everyone to see his own idea expressed in the cow and her capacity for giving milk.

His Worship, Mayor Jansen, who had come into the hall at this point, took the platform and said he desired to extend to the Association a cordial welcome to Berlin, and to present the members with the freedom of the town.

The President on behalf of the Association replied, thanking his worship most heartily for the cordial welcome he had extended, and assuring him that it was exactly what they expected to receive in such an enterprising place as Berlin.

Mr. John HANNAH (Seaforth) resumed the discussion on the President's address: I would say as to the advisability of adopting the system of Denmark—of co-operation or partnership—that I think there are a few difficulties in the way. I do not know what the general intelligence is in Denmark, but I know in Canada and Western Ontario it is a little difficult to get farmers to go into any partnership I know that they are doing it in the cheese factory, but looking back to the early days of the cheese factory system it was nearly all done by private individuals, such as Mr. Ballantyne, Mr. Farrington and Mr. Lossee; and that system was worked up and all the difficulties overcome before co-operation took place. Of course there is a great deal to do in getting the farmers to take part in the creameries. I think where joint stock companies have been successful there has been one moving spirit that has done the principal part of the work. That is the position I think you will find it in at the present time in Western Ontario. After this stage is passed I dare say it is quite possible to run on the co-operative or partnership system, and I think in the majority of instances when the farmers get so far educated it is perhaps the best way; but in the early stages when everything is in doubt, when they don't know whether it is to be successful or not, it is impossible to get them to form together and stick together. I am very much pleased with the points brought out in the President's speech. I think all the work we will be able to accomplish has been foreshadowed in this masterly address.

Some of the points alone would form the subjects of discussion sufficient to engage the whole of our time. Take for instance the treatment of cows. There is no doubt a great lack of knowledge with regard to that. The President spoke of patrons that are only getting $14 from a cow throughout the season. There is no money in that and these are the hardest kind of patrons to give satisfaction to. It is the poor patrons, it is the parties that are making the poorest returns from the cow, that are dissatisfied. You cannot satisfy these men when they are only getting $14 per cow and every cow will eat $10 worth of hay in three months. Now, if this Creameries' Association, by its meeting here can do anything towards weeding out that class of patrons it will be quite a godsend to the creamery; and I think those are points that want to be looked to by farmers particularly. By comparison of their returns from the creamery with those made by making the butter themselves you can get them to come, but sometimes we have almost to try and shield the returns of some patrons from themselves, or else they would say the factory was trying to cheat them, or taking from one and giving to another, but it will have to be told and seen in the end.

The PRESIDENT, appointed His Worship the Mayor, Mr. Wenger and Mr. Moyer a local committee to arrange a programme for the speakers during the convention.

Mr. MOYER—The idea was suggested of turning cheese factories into butter factories in winter. I have always been a strong supporter of the creamery business, and I am afraid that would not do justice to the creameries. We all know that milk from grass in the summer is better than that from feed in winter, and I think in this way you will never establish a reputation for butter on a level with cheese. It will lead people to go into the cheese business in summer altogether. The President referred to the inferior butter we get. He should be very careful in talking about that point, because he knows that nobody makes it. (Laughter). I have had a good deal of experience in running a creamery, and I have always been of the opinion that a creamery business should be run by some enterprising person instead of by co-operation. I know I am not backed up in this altogether, but experience teaches it. Here is a creamery which has been run in this county by an incorporated company, and it has just been sold out to an individual. I think it is settled that the creamery must be run on the same basis as any other business. We would laugh at a farmer grinding wheat and taking flour to the market in order to get the most out of it. If a man puts his whole time into his business he is more likely to pay attention to the details. Everybody's business is nobody's business. I never saw a creamery operated by farmers from its start. After it had been got into good shape by some individual I have seen the factory taken over by the farmers, but it generally stood there; it did not make any progress.

The PRESIDENT—I think Mr. Moyer has made a small mistake with regard to the cheese factories. My idea was that we should extend the operations of our creameries as far as possible for the whole year, but in sections where cheese is now manufactured I believe we should start a separator in the best one of four factories, to continue to get all this milk together and manufacture butter out of the cream of these parties whose milk had made cheese all the rest of the year. I would not interfere with our creameries. While ninety-seven per cent. of the butter is made by the farmers, our reputation will never be better than at the present time.

Mr. MACFARLANE—I would like to say, in regard to the question of co operation, it seems to me I have been fairly sat upon. I certainly do not see any prospect of the adoption of that system in Canada. I should like merely to ask those who are interested in this question to read what has been stated on the subject at the last meeting of this Association, and gave due weight to the facts and figures gained in Denmark. If they do not get any argument to convince them of the advantages of the co-operative system they may perhaps get at a great many that will assist them in ordinary business.

Mr. GRAHAM—Just before closing I would like to add a word or two on this subject. The largest cheese factory in eastern Ontario, which has been twenty-five years in operation, was this last fall sold to a private individual. The reason was that right on the same street was a factory built by a private individual, and the man that run the factory paid $5.50 per standard of three thousand pounds of milk more than the factory run

on the co-operative system. In our county, of sixty factories about one-third were run by private individuals, and I gave this as an instance showing that the factories run in that way paid more.

The convention then adjourned till 2 o'clock.

AFTERNOON SESSION.

The members having re-assembled at 2 o'clock the President called attention to some exhibits made by E. J. White & Co, of Belleville, in the shape of butter boxes, adapted for the local trade and suitable for holding from one pound up to ten pounds, and manufactured of wood with parafine lining, which is caculated to keep the butter pure and free from the taste of the wood and exposure to the air.

COMMITTEES.

The following committees were then struck :
Order of Business—Messrs. A. Wenger, M. Moyer, and Mayor Jansen.
Nominations—Messrs. A. Wenger, J. Hannah, R. J. Graham, and J. Sprague.
Dairy Utensils—Messrs. M. Moyer, E. Miller, and M. Sprague.
Resolutions—Prof. Robertson, Messrs. D. Derbyshire, and P. E. W. Moyer.
Finance—Messrs. M. Moyer, J. H. Croil, and Mayor Jansen.
Legislation—Prof. Robertson, Messrs. M. Moyer and D. Derbyshire.

FERTILISERS.

Mr. Thomas Macfarlane, Dominion Analyst, Ottawa, being called upon, was received with applause. He said : At the last meeting of the Association in Seaforth he had read a paper full of facts and figures, but observing that an address seemed to receive more apprehension he now undertook to speak to them without notes, although he felt pretty much like a man handling a new horse, not being very sure whether the result was going to be a break-down or a runaway. However, I will start to give you a talk which may interest those who usually come to such meetings as this. On former occasions I have brought before you subjects more immediately connected with the testing of milk and the manufacture of butter and cheese, but as our worthy President said this morning, the matters that come before you for consideration can be divided into two classes ; those which concern the manufacture of butter and cheese, and those which concern the production of the raw material, namely, the milk. He stated that matter very well, and my subject on this occasion shall refer more to the production of milk than the manufacture of butter or cheese. The manner in which cows should be treated, the proper food for them and many others, are subjects of great importance in dairying, but I would go deeper down and say that a farm in good heart ought to be considered to be quite as necessary for the cheap production of milk. A good farm ought to be like an account in a bank, or rather like capital laid out at interest ; it should be able to support the farmer from the interest alone, and the capital—that is to say the richness of the soil—ought to remain unimpaired. Connected with this very matter is the question of artificial manure (fertilisers) with which we in Ottawa, especially in my branch, have a great deal to do. Now, I am not here for the purpose of advocating the use of artificial manures ; certainly not until the farmers are better aware of how to take advantage of the natural manures on their farms. Artificial manures I consider to be very much of a nature parallel to medicine. The doctor when called in merely uses medicine to assist nature. He does not expect that his patient is going to fatten on it.

So it is with fertilisers ; these are only of use to the farmers for the purpose of helping nature in her efforts to feed the plant. Now, besides having to do very considerably in the Laboratory branch at Ottawa with the testing of food and other preparations—milk included—we have also to do with the analysis of these same fertilisers, and in doing our duty with regard to them, in examining them and finding out all that is possible to know about them, in order to be in a position to advise other people concerning their manufacture and use, we have very frequently to post ourselves with regard to what is doing in connection with them in other countries. We think this is advisable ; we have to do it ; it is part of our business ; and in thus studying what takes place in other countries and in reading the journals published in other countries in regard to the application of these fertilisers, and in regard to agriculture and its interests generally, we acquire a great deal of information which the ordinary farmer or dairyman cannot be expected to collect, and it is for us who are in the position of being able to gain this information and who are the servants of the Government and the people to place ourselves at the disposal of the people and lay that information before them. It is this I wish to do on the present occasion, and I may mention that I am not here of my own motion. When asked by the secretary of this Association to attend the present convention I applied to the Hon. Mr. Costigan, Minister of Inland Revenue, for permission to do so, which was readily granted, and it is by his consent that I am able to be here and give you the benefit of any information I have gained in the execution of my duties. I shall not say very much in regard to the operation of the Fertilisers' Act in Canada, although I am ready to answer any questions any person may ask on that subject ; I shall merely advert to the fertilising constituents which are present in all those artificial manures and their values, in order that if possible, farmers and dairymen may realise the actual market value of substances that they are daily handling, and in order that they may learn to appreciate these. There are materials passing through their hands, sometimes carefully, sometimes carelessly, which if they had to buy in the open market would cost them large sums of money. I may mention that according to the operation of the Fertilisers' Act, passed at the last session of parliament, we are now bound to give in our reports a statement of the relative value of each of these fertilisers for the information of the public. Now, this value has to be calculated per ton for all fiertilisers offered for sale in Canada, and it is computed by taking the quantity of fertilising constituents in pounds which they contain, and multiplying it by their ordinary prices in the market. The valuable constituents are three —potash, phosphoric acid, and nitrogen. That is not a large number to remember, and I shall not trouble you very much with two of them. However, I would like you to remember that the relative values are something like this: phosphoric acid is about twice the value of potash, and nitrogen twice the value of phosphoric acid. That is to say, if potash stood at four cents per pound you would have to pay eight cents per pound for phosphoric acid and sixteen cents per pound for nitrogen. These are very nearly the prices which the farmer has to pay if he wishes to buy in the open market such fertilising materials. Nitrogen is the most costly, and it is about that particular fertilising ingredient that I wish to talk to-day, because, while it is of great interest for the general farmer, it is also of great interest to the dairyman. Now, with regard to this one element, nitrogen, you will all say, "Well, what is this nitrogen ?" I answer, it is a very important constituent in foods and fodders, and especially in those foods which contribute towards the formation of blood and muscle. It is one of the essential constituents of casein, of cheese, in which you are all interested. It is not, I am glad to say, present in butter at all. Therefore, if you produce butter and sell it off your farms you may pride yourselves on one thing, that you are not selling away any nitrogen, and, therefore, the farmer who sells only butter is certainly not impoverishing his farm. But I want to call your attention more particularly to a source of nitrogen which the farmer, if he is aware of its existence, certainly does not take advantage of. Like the famous McGinty, we live at the bottom of a sea of nitrogen. The atmosphere that we live in and breathe consists, four-fifths of it, of nitrogen. Now, that may be very strange to you, that four-fifths of such a common thing as air consists of a substance worth as much as sixteen or seventeen cents a pound—worth as much as ordinary butter in your

market. Therefore, you will see that it is a very great advantage to get hold of that element in some way or other, and when you have got hold of it to keep it. Well, we have got it surrounding us everywhere. It there were any school boy here I am sure he could tell me the pressure of the atmosphere upon the earth's surface. I dare say many here know that it presses at the rate of fifteen pounds on every square inch. It follows then that if there are fifteen pounds of air pressing upon one square inch, and if four fifths of the atmosphere consists of nitrogen, there must be twelve pounds of that nitrogen resting upon every square inch of our earth's area. Twelve pounds of nitrogen at seventeen cents per pound make $2 04, and this is the value of the nitrogen that lies upon each square inch of the earth's surface. What does that come to per square foot? There are 144 square inches in a foot, which makes about $288.00 worth of nitrogen resting upon every square foot of the earth's surface. If we went on calculating in this way we would come to see that on a hundred acres the amount is something over one thousand millions of dollars. That would be a very valuable farm indeed if the owner could convert the nitrogen resting on it into pounds, shillings and pence. If he could convert a very small fraction of it into cash he would be a very rich man. I mention this to show that nitrogen has a very great value for the farmer or any one who can fix it. This fixation of nitrogen has long attracted the attention of chemists. They have for years back—half a century at least—been exerting all their ability to convert that nitrogen of the atmosphere into something they could sell. They have been trying to get it converted into cyanogen, which makes up a great part of the substance known as Prussian blue. They have also tried to get it used in making saltpetre. They have also been trying to get it converted into ammonia in order that they might realise something handsome from the enormous wealth of nitrogen stored in the atmosphere. They have been able to do it to a certain extent but never in such a way as to pay them for the attempt; and yet all this while there is one man, I don't know whether he is a tradesman or a professional man, to whom it is given to convert the nitrogen of the atmosphere into something of value, and that man is the farmer.

Mr. DERBYSHIRE.—Call him a professional man.

Mr. MACFARLANE—Well, when we consider all the advantages at his disposal and the skill required to take advantage of them, his ought to be the first of the professions. But to return to our subject. Priestly was, I think, the first to state that certain plants have the faculty of being able to take nitrogen from the atmosphere and fix it in themselves and in the soils connected with them. This has long been maintained, but only within the last ten years has it been proved to the satisfaction of every man, scientific farmers and scientists included, to be the case. It is now a well established scientific fact that plants of a certain class, which the farmers raise every year, have the faculty of converting nitrogen into a shape in which it is realisable at the rate of seventeen cents per pound. It is well known that such plants as pease, beans, lentels, lucerne, vetches, clover, lupins and others, have the faculty of enriching the soil. These plants do so because they have the property of fixing nitrogen. If you choose to raise grain or corn they cannot thus procure their nitrogen from the atmosphere. It has got to be supplied to them in the shape of manure if they are to be able to take advantage of it, but those other plants or crops that I have mentioned, the pease, the beans, the clover, etc., or what the botanist calls the *leguminosæ*, have the property of being able to take that nitrogen from the atmosphere and appropriate it to themselves. As I said before, the fact has long been known or suspected, but it was not until quite recently that a certain farmer, who was not a scientist, named Schultz, who possessed a farm called Lupitz, in the north of Germany, went to work and proved it practically and gave such an explanation of what took place as excited the attention of the scientific men of his country, and then scientific controversy began, and it has rained pamphlets on this subject ever since. I will try to explain what it was that farmer Schultz did, and I will relate the facts as they are given by thoroughly reliable practical men. Mr. Schultz owned, or bought, or acquired a farm in north Germany, which consisted almost wholly of a light sandy soil, and I suppose you all know how hard it is to make money on a farm of that description. It was so poor that he could not raise anything to advantage. He tried raising a fodder which is commonly grown in the north of

Germany, namely, lupins. He could not even raise them at a profit. He was able, by spending money for large quantities of artificial manure, to raise something, but not to pay. Just about the same time as he was struggling with his difficulties, the salt mines of Strassfurt were discovered in North Germany. You are all aware that though the bore-holes were sunk to obtain rock salt, they discovered, besides it, other minerals containing potash. This was an accidental discovery. It was made about the time that Schultz was engaged in working his farm. It was not long afterwards until shafts were sunk into the deposits, and various minerals and salts containing potash varying all the way from twelve to twenty per cent. in their natural state, were opened up. Mr. Schultz heard that they were of great value on account of their potash, agriculturally. He thought he would try them as a last resort. He purchased the quality known as kainite and used it at a rate of about something less than one hundred and fifty pounds per acre. He sowed it upon the land which was yielding lupins, and to his astonishment he got a larger crop than he expected, and more remunerative. He was able, by applying these potash salts alone, to get large crops of lupins and peas and beans and clover, at the same time, he applied no nitrogen. There was none present in his sandy soil, and yet the resulting crops were highly nitrogenous. He thus obtained a practical proof that these plants stole their nitrogen from the atmosphere. He proved further that by growing these leguminous plants he gave the grain crops which followed them in the rotation a supply of nitrogen which assisted their growth, and he had as large grain crops as his neighbors. He did not, in order to supply nitrogen for raising these grain crops, plough in the previous ones. He harvested his peas or clover and made use of them, and he found that the roots of those left in the ground contained sufficient nitrogen to sustain the grain crop afterwards. He characterised wheat, barley, oats, etc., as crops which consume nitrogen, and he characterised the clover crop and the crops that are analagous to it as those which collect the nitrogen. He therefore settled down to conducting his farm in this way, raising first the clover and pea and bean crops, etc, that were necessary for grain crops, and he succeeded perfectly. He found that by putting a grain crop after potatoes, for instance, he got no result at all without nitrogen, which cost him money, but if he sowed grain after the clover was off the ground he succeeded perfectly, and his rotation thereafter consisted in sowing first nitrogen collectors and the second year nitrogen consumers. In this way he was able to go on making his farm pay and enriching it at the same time. He happened to be a man of considerable intelligence; he published the whole of these results, and ever since the discussion has been going on in Germany. The subject was taken up by two German professors whose business was that of agricultural chemists. Their names are Wagner and Hellriegel. Independently of each other they set to work to get the scientific demonstration of what Schultz had shown to be a fact, and carried on experiments underneath glass jars or domes on plots of ground, and in vessels resembling large flower-pots, but the particulars of these I need not give and it is quite sufficient to say that these proved to the satisfaction of scientific men in Germany and elsewhere that it is possible for the farmer to acquire nitrogen from the atmosphere and that he does not require to purchase it from any other source. He can get that which is an essential food for wheat, barley, etc, by the intervention of such crops as I have mentioned. I suppose it will be said that there is nothing new in this, that many farmers here and there have done the same thing. It is well known that clover has an advantageous effect, and possibly also some of you may have had experience of that sort; but it is one thing to have the experience and another to have the explanation as to the reason why the sowing of clover is to the farmer's great advantage. I believe that an explanation of the cause will come before him with redoubled force and induce him to widen his experience and take advantage of those circumstances of which he knows the effect has been demonstrated. He may follow Schultz' example and be perfectly sure that by employing the same means he will get the same results. Nature is the same everywhere, the same in Germany as here. At any rate, the atmosphere is the same and what they have taken out of the atmosphere in Germany may also be taken advantage of in Canada. Of course, in a new country you have to consider the climate, but in this matter I do not think it is neces

sary. It is simply necessary that the farmer should make up his mind to apply the same principles here that have been applied in Germay and elsewhere with great advantage. The chief thing is to remember that nitrogen is essential to the growing of his most valuable crops; that nitrogen to be presented to those crops directly in fertilisers will cost a large amount of money, seventeen cents a pound, but that you can acquire it from the atmosphere by growing in advance of the grain crop a clover or bean or pea crop, without its costing anything. Now, I think that it is, perhaps, as well not to occupy too much of your time in talking upon this subject without allowing some one else to get in a word edgeways, and I would much rather be questioned on the subject than go on saying over and over the same thing. I do not know whether I am preaching above the heads of my congregation or not, perhaps I have been preaching beneath the capacity of my audience. I am reminded by this of an incident which occurred in my own experience. I am a Scotchman and a member of a St. Andrew's Society, and on one occasion I got a letter from the secretary telling me that I was in arrears to the extent of seven or eight dollars. Well, I had not been in the place more than one or two years and I could not understand how I could be so much in arrears, and wrote to the secretary asking him information on the subject. He gave me an account showing that there was one dollar due when I lived in such and such a street, and one dollar when I lived in such another street, but I had never lived at any of those places, and so I wrote back to him to say that he had "got the wrang soo by the lug." (Laughter.) Now, this is not the joke. The joke is that the secretary did not understand and wrote back to ask me what I meant. (Laughter.) I give you that as an instance of preaching beneath the capacity of an audience.

Mr. Moses Moyer—Do I understand you to say that the fertility of the soil can be kept up by raising a crop of leguminous plants without supplying fertility by manure or in any other way?

Mr. Macfarlane—Yes, provided you supply the inorganic constituents; that is the result of the experience I have been speaking of. One particular element, nitrogen, can be supplied from the atmosphere in this way. But it is not thereby meant that nothing else is required for a particular plant. I have mentioned that potash and phosphoric acid are advantageous for the growth of most plants. They have got to be supplied. These the farmer must get and apply under certain circumstances and conditions, but I was going to call your attention to the fact that those are the cheapest among our fertilising materials. They cost you less money and you can very easily procure them. There is very little of these fertilisers sold in Canada compared with the population, and the reason is because manufacturers of the fertilisers are obliged to put in nitrogen at the cost of seventeen cents a pound to supply that which the farmer might himself procure. We will take, for instance, a compound fertiliser, that is to say, one that not only contains the inorganic constituents, potash and phosphoric acid, but nitrogen to such an extent as to be appreciated by the grain crops to which it is applied. That must usually amount to five per cent. to be effective at all. The manufacturer must buy dry dried blood or sulphate of ammonia, or nitrate of soda, in order that the nitrogen shall be supplied. We will take a fertiliser containing five per cent. of nitrogen. There are twenty hundred weight in a ton. That means that every ton must contain one hundred pounds of nitrogen. Well, one hundred pounds of nitrogen at sixteen or seventeen cents a pound increases the cost of a ton of these fertilisers by sixteen or seventeen dollars. It makes a great difference to the farmers whether the fertilisers cost twenty-six dollars or only ten dollars per ton. If the farmers would only do their duty, that is, take advantage of the natural store of nitrogen all around them in the atmosphere, they could very easily purchase fertilisers containing phosphoric acid and potash. Now, the fertilisers which Schultz supplied was one containing potash—principally kainite—and which was produced at a low price. Now, you take wood ashes; if to-day you want to buy wood ashes on account of the potash they contain, you will have to pay probably at the rate of six cents per pound for the potash. But the potash in such material as kainite probably does not cost more than two cents in Germany. Therefore, Schultz was able to use them in large quantities, and by growing leguminous plants was able to steal the nitrogen from the

atmosphere. Opinions may be divided as to how these plants really do this and why it is that grain crops cannot. It is, indeed, a very curious thing that barley or oats or corn have not this faculty, and the controversy is still raging as to the means by which the leguminous plants effect the transformation. People are now theorising and have called in the microbe to explain. Certainly scientific people who are bound to explain go to the roots of everything, have gone to the roots of pease, and found excresences on these roots and believe, that in these lies the machinery, whereby the transformation is effective. They say that the little bulbs on the roots are little houses in which dwell the microbes or bacilli by which the nitrogen is assimilated. I merely mention this point as the farthest that has been reached by Hellriegel in explaining how beans, pease, clover, etc., exert their power of taking from the air that material for the use of the farmer which costs him as much as he gets for his butter.

Mr. Moses Moyer.—This is certainly very interesting to me. Farmers here are in the habit of plowing down their clover. Do I understand you to mean that some nitrogen is stored in the roots?

Mr. Macfarlane—Yes, sir. That is certainly the result of Mr. Schultz's experience.

Mr. John Philp (Dromore.)—I had a field of clover and in the fall I was plowing it down when a neighbor came along and asked me what I was doing. I said "I am going to plow in this crop." "Well, he said, that is not giving the land a chance. Why, you have only meadowed it one year." I said "That is all right." The next season the same gentleman came along and I had a fine field of wheat there. He said "That is the best field of wheat I have seen." I just clapped the old man on the back and reminded him of what he said about not giving my land a chance. I said, "The cost of the clover seed would not be so great as the hire of a man to put on manure." I agree with the Professor's speech very much.

Mr. Samuel Hunter—I understand the Professor to say that there were several things requisite to enable the farmer to produce a good dairy product; amongst the first was a good fertile farm. I would ask if the best way of adding fertility is to commence dairying and especially winter dairying. Could a farm not be enriched in that way?

Mr. Macfarlane—I am much obliged to Mr. Philp, who has given practical reasons for agreeing with the theories I have brought forward. Mr. Hunter has adverted to something I proposed to go into after disposing of the first part of the subject. I did not, however, exactly understand his question.

The President—He wants to know if going into winter dairying and keeping more cows and raising less grain would not tend to enrich our soil and help the farmer to make more money for himself.

Mr. Macfarlane—I believe there is no doubt about that. I was going to say something about that in tracing the further history of nitrogen, and if no one has any further questions to ask just now about the fixation of nitrogen we shall go on and try to follow up this nitrogen. It is quite an interesting history. When a boy I used to read all sorts of trash and among other things something which is not trash, namely, the Waverley novels. One of them, called the "Fortunes of Nigel," I found very entertaining, but I now think that if farmers and other people properly studied the 'fortunes of nitrogen" it would probably result in their making their own fortunes. We will suppose by one means or another, but especially by stealing it from the atmosphere, the farmer has got the nitrogen lodged in the soil. Well, we will try and trace what becomes of this nitrogen. We will suppose you have raised, by means of nitrogen, a crop of clover and one of grain. Well, the grain you cut to realise on it. The nitrogen has found its way into the ears of the grain. It forms the most important constituent of the gluten contained in the grain, and that you want to sell off and convert into money. You are realising that which you took with the good permission of kind Dame Nature. Well, if you would go on in the same way and grow more grain you have got to produce more nitrogen on your farm or purchase it. You do otherwise with the clover. The clover is cut and taken into the barn and it is fed to the cattle along with other valuable fodder. Part of the nitrogen that is fed to the animals is used by them in order to build up their frames, their muscle, their flesh, and a certain portion of it passes unappropriated through the

body. A certain part of the phosphoric acid goes into the bone, and that along with some potash and nitrogen is contained in and sold with the animal, but the nitrogen thus sold is a very small fraction compared to that which passes through the animal. By far the greatest portion, at least 80 per cent. is to be found in the manure that is collected in the manure heap or what I think the farmer should call his "treasury." Now, I must tell you that nitrogen is a very unstable element. It seems to unite with other elements under protest and is unfortunately always wishing to return to its original condition. It is always striving to outwit you, always striving to get back to the atmosphere again, and it will require all the intelligence of the farmer to retain it. There lies the art of the farmer. He must first catch it and then keep it. I am sorry that this is not very well attended to. The President gave you an instance of bad farming when speaking of wintering cattle in referring to the man who neglects his cows in winter. Well, you have got a parallel to that man in the farmer who pays no attention to his manure heap. Almost everywhere I have travelled in Ontario I have seen the manure thrown out and exposed to the winds and rains of heaven, and all the time the nitrogen is escaping. It is very sensitive, takes the huff easily, and if not fixed goes back to the air and careers over your head and laughs at your folly. By intelligent action the farmer can retain the nitrogen which he has acquired from the atmosphere. "Well," someone asks, "how are we to know when we are losing this nitrogen?" In the first place very many of you, I have no doubt, in going into a stable, more especially a horse stable, have often been met by a very pungent smell. What is that? It is called ammonia, and in that form the nitrogen is flying away from you. Then, in another part of the barn you will see trickling away from the manure heap or the stable a little brown stream of liquor. That is the nitrogen in company with the potash oozing away. These are the leaks that the farmer allows to go on in his establishment, and he must suffer from it. Just as great leaks take place there as if when taking sacks to the mill he allows the grain to trickle out on the road. There is no difficulty in preventing this nitrogen from running away. The smell I have spoken of can easily be prevented by means not at all new. It has been talked of for fifty years. Here in Ontario you have inexhaustible supplies of common land plaster. It is cheap enough; I do not believe it costs over six or seven dollars a ton. By simply sprinkling a little ground plaster in the stable under and behind the animals the smell disappears. The sulphuric acid of the plaster takes hold of the nitrogen and puts it into a condition in which it cannot possibly escape and it is swept away with the manure into the manure heap. Not only so, but the plaster has the faculty of preserving that manure better than you possibly could in any other way. I do not mean preserving it if it is thrown out of doors. It must be kept in a covered shed. To have manure exposed to the air simply shows an utter want of intelligence; the farmer who allows this is working against the interests of his own pocket. If it is thrown out of doors what happens? The first thing that happens in this climate is that you have got a layer on the ground and then comes a layer of snow. Then out comes another heap of manure and then snow again, and so the manure is kept in quite a cold, miserable condition and cannot ferment and get into the condition the plant likes. That is the first result. The second is this, that when that snow melts it simply dissolves out of the manure anything that is good. The ammonia and potash go in that way and the resulting manure is scarcely worth the trouble to you of carting out to the field. There is then a perfectly easy system whereby by the use of plaster and proper care valuable constituents once obtained can be retained in the manure heap. In answer to Mr. Hunter's question as to winter dairying, it may be said that is by far the most profitable system of using up farm produce. As I said before, at least 80 per cent. of the nitrogen of the fodder finds its way into the manure heap. If, however, you sell your milk to the cheese factory you are certainly taking away a large quantity of the nitrogen which you have acquired with so much trouble. The milk contains about four per cent. of albuminoids, mostly casein—the constituent containing the nitrogen and used in the manufacture of cheese—and when you sell away the milk to the cheese factory you sell away part of your nitrogen which you have obtained with so much trouble from the atmosphere. On the other hand, if you sell to the butter factory and so arrange that the skim-milk is returned to the farm to raise young

stock upon, you receive all the nitrogen back and it is replaced on the farm again. In that way, if you choose to get money by butter rather than by cheese, you do so much the more to keep your farm richer and in good heart. The butter contains no nitrogen, and if you take the proper means for fixing and keeping the nitrogen which are at your disposal by means of nitrogen collectors and land plaster, your farm must inevitably year by year be getting richer. I have only good words to say with regard to the keeping of stock and the getting of manure from it. My principal object was to show in addition that you could acquire more of this valuable stuff, nitrogen, by a certain course of cropping, and if adopted there is no question that the farm must increase its yield and get richer as time goes on. Much of what I have said today has been said before. It is thirty years since I first read that old old story as to the use of land plaster, in a book written by a German agriculturist, entitled "A pound of nitrogen for a penny." That book, published many years ago, gave actual, practical demonstration that by the use of plaster you could retain the nitrogen of barnyard manure. It is an old story, but, like many another story, it is none the worse for being twice told. I tell it again in the hope that some may believe it and endeavor to practice it. (Applause.)

The PRESIDENT—What Mr. Macfarlane really wants is that we should raise a great deal more to the acre; have more and better crops; feed more and better food to more and better cattle and realise more and better results from those cattle. I think it ought to be the aim of every dairyman to have a better dairy cow fed by better methods; utilising all those things which have been given for his benefit; feeding strong, healthy crops; feeding them to strong and healthy cattle, exactly adapted for making the best quality of cream suitable for manufacturing the finest quality of butter, and in this way making money for himself and being an honor to his neighborhood and his country. It is a great and worthy aim and one which will help to secure for man enlarged influence.

Mr. HUNTER—I think, if I understand the Professor, he is not an advocate of taking out the raw manure and spreading it on the land. I understand he prefers ripening it in a heap.

Mr. MACFARLANE—Yes, that is so far as my small experience goes. If carted straight out to the field the chances are greater for having it leached out by snow and rain. Of course, in that case the leaching is done on the land and the soluble matter is not quite lost if you get it at the place you want it. I know this, that when plaster is used in the stable and the manure is kept from being exposed to the atmosphere it benefits the manure very greatly. I have seen it dropped through a hole in the stable into a space below, and in fact that is a common custom which prevails in the province of Quebec. I do not know whether you will approve of that or not, but down there they set great store by it. We are in the habit of supposing that the French habitants have no great intelligence, but they have intelligence enough for that. (Laughter.) When plaster is used at the same time moderate decomposition takes place, sufficient just to rot the straw, and bring the whole to the consistency of soft cheese and put it in the best possible condition for the plants outside on the fields to take advantage of.

Mr. ISAAC HILLBORN—Part of my manure is under cover and part of it is not. Is there not often a loss for want of water by too much heating.

Mr. MACFARLANE—There is no doubt that when you keep it away from the water altogether a lot of nitrogen goes off, but that can be prevented in two ways. You can keep the manure moist. That is one of the best ways to prevent what is called "fire-fanging" The introduction of plaster prevents the same thing. I know of no instance of it occurring when the manure was plastered.

Mr. J. B. ASHLEY—I would like to know whether Mr. Macfarlane thinks we, as farmers, have room to stow all our manure under a shed without at sometime during the winter taking it to the fields? We cannot possibly stow all our manure under a shed. We must eventually take it out on the land before spring comes.

Mr. MACFARLANE—If the necessity exists for taking the manure into the fields I should say let it be done, but by all means see that nothing escapes from it in the shed. Any loss that takes place in the field, if plaster has been used, is from leakage and that is kept on the soil to some extent. Any escape of nitrogen into the atmosphere is impossible with plastered manure.

Mr. H. G. CLARK—What effect will sprinkling wood ashes on the stable floor have, and what kind of stable manure would you recommend on mangels?

Mr. MACFARLANE—I should think the scattering of wood ashes would have a bad effect. It would have a tendency to liberate the nitrogen in the shape of ammonia. Some people have also thought that by using common caustic lime they were doing just as well as using plaster. The result of its use also will be to liberate valuable constituents from the manure. In regard to the second question that the gentleman has just put, there are a great many things to be considered, such, for instance, as the condition and nature of the soil. I do not think that I am sufficiently wise to give a short answer to that question.

The PRESIDENT—I would not, until we stop the leak in the stable floor by the use of land plaster, buy a single ton of fertiliser. I believe that if we got the manure to the field in a proper condition there would not be any fertilisers bought. I don't say anything against them, but I think it is a great mistake to buy constituents which we have already, and see thousands of dollars wasted through improper care of our stable manure.

Mr. MACFARLANE—What the president has said in regard to nitrogen I fully endorse. We would never require to buy it if proper care were taken with the natural manure, but if you are selling produce off the farm that takes away phosphoric acid and potash you must do something to replace them.

The PRESIDENT—I have to thank the Professor very warmly for the able address we have received. It has been exactly what we desired. I have now great pleasure in introducing Mr. Sprague, and I hope he will devote a large portion of his time to the silo, because that is the most important question we have in this country to-day.

ENSILAGE AND WINTER DAIRYING.

Mr. JOHN SPRAGUE (Ameliasburg) was next introduced. He said: I am very much pleased with the address of our president this morning. It was a very practical one. I think he foreshadowed what would be sufficient to occupy a meeting of this kind for several days without entering into other matters as should be done. I was also pleased with everything else which has occurred to-day but one thing, and that is being called upon to speak to you this afternoon. I am like the man who got married, and after the ceremony said he felt very despondent. His best man asked him as to the cause of his trouble, and why he was not more cheerful, "Well," he said "the day would come sometime—he did not know how long it might be—when his wife would die, and then there would be the expense of the funeral." (Laughter). I do not think I have taken in what has been said as I would have done if I had not been aware that I would have to speak. I anticipated the end from the beginning. Now, our President has introduced me to you as an old dairyman from Prince Edward but I may inform you from the outset that I am no public speaker; that is not in my line of business. It is very easy to sit and talk about these questions, but it is a different matter to get up here and speak, and the effect is to produce a sort of weakness in the knee, and the voice does not have the natural sound in your ear, and all these things tend to make your own position very unpleasant However, I hope you will bear with me this afternoon remembering that I am not a public speaker.

I have given the dairy industry my attention for twenty-three years. My first experience was with the co-operative system. I think we had about the first factory east of Toronto. That factory was established on the joint stock principle. It languished under the management of many men and eventually became defunct. Immediately after that catastrophe occurred I myself established a cheese factory in our neighborhood on my own farm, and during all these years I have been "boring" away in that direction to a certain extent. Five years ago—1885, I think it was—I introduced a Laval separator. Since that time we have conducted our operations both in the manufacturing of cheese and butter, something on this line in the early part of the season to make butter,

receiving the milk from the farmers, taking the cream from it and manufacturing it into good butter. Good butter is our forte. We return the milk to the farmers. This continues till the first of May, and we run cheese through the hot season until, say about the month of August, when we commence skimming again and making butter. We usually continue making cheese until the factory season closes. At the close of the factory season we buy all the milk we can from the farmers. We have been paying last year—we are paying now—a cent a pound for milk. We are making butter that we are getting twenty-two cents a pound for. Well, I can go to hundreds who get from sixteen to eighteen cents. The fact is that the relative loss is so large that we as farmers cannot afford to face that loss. I think it has been something like four or five cents a pound on butter. The loss is actually greater than that. I believe that we in this country, by adopting a system a little different to what we have at present, could make up our minds to continue dairying operations the year round. It is astonishing how quickly certain modes of operation become natural to you when you once adopt them. Years ago we considered that when the factories closed the operations of the cow ceased. We acted as the dry nurses to them. When milk was cheap in the spring we had plenty of it and when it was dear in the winter we had none to sell. Now, to a certain extent, we have changed that line of action, and it is quite pleasing to us as dairymen that we have adopted a means whereby we can get continual cash returns from our herds. I have an address written out here and may as well read it in case I forget it later on. When we consider the immense capital invested in the farms of Ontario, and are told that for the last four or five years the income of our farms has not been enough to repay the labor and other expenses employed to conduct our farming operations, to me it is apparent that no other branch of industry could have withstood such a lengthened period of adversity. Had it been possible for us as farmers to have withdrawn our capital from this line of industry our numbers to-day would be largely on the decrease. But this change with us seems almost impossible, and from the very necessity of our situation we continue a branch of industry yielding a loss, *i. e.*, if the market value of our labor is considered. Admitting those facts to be substantially correct we must next admit that there is something wrong in the manner in which we conduct our business or some other cause for this bad state of things. We are told by some that to succeed as farmers we first must abandon many of the luxuries of life that we now enjoy; dispense with fine clothing, fine carriages and return to cheaper modes of living. By others, we are told that to succeed we require more protection, that cheap corn, oats, other grains and other farm products be excluded from competition in our markets. Now, we have somewhat abandoned our luxurious modes of living and to a certain extent have tried protection, and, not yet having obtained a better position in the field of labor, it is high time we changed our line of action in some respects. The dairy and its products being the object of this meeting it is to be hoped that our discussions may tend to knowledge in this particular line. At our annual convention in Guelph on January 17th, 1888, I gave an address on the silo and ensilage. 1887 was my first year growing ensilage and at that time I believed and advocated the introduction of ensilage to our farms as being one of the most important steps in the direction of success. To-day, after four years practical experience, I again call the careful attention of those present, and also the farmers of Canada, to this method of providing cheap and good food for our herds. The last four years have borne testimony to the correctness of my assertions. I claim the honor of being among the first, if not the first, to construct a silo and continue the same in practical use. I need not enter into a detailed statement as to the best methods of construction of the silo nor give directions as to the growing of corn feed, this information, given by me to the farmers of this country in 1888 being practically correct, experience having proven most conclusively to me that no farmer can afford to do without the silo for a single year. The time has gone by when it is required to show that ensilage is one of our best foods for cattle; also one of the very cheapest. By the use of it the extent of our dairy production can be increased tenfold and even more than tenfold beyond our present production. We as farmers in Ontario have now a wide field opening to us, and it now is time that we avail ourselves of the opportunities set before us. Let us be quick to abandon pursuits in our business that get for ourselves

loss, and quick to adopt some branch of our calling that will result in a gain. With the use of the silo and careful attention to the details of our dairies we can, and surely will, succeed.

Mr. Sprague, in supplementing his paper, said: Almost any farmer is aware how he can construct a silo, although I warn all those who attempt going into this arrangement to carefully observe the modes of growing and harvesting the corn feed for ensilage. I think there has been a tendency to carelessness in this respect. I know of one silo that was built in our vicinity on the "cheap," and a large quantity of silage was spoiled. We have no more apprehension as to our silage keeping than we have with regard to our hay when it is got into the barn properly cured. There is no doubt about it whatever; it is a sure source of cheap food. The cheapest source of production is the one on which you have got to depend. These observations should be by us well attended to. There is no doubt that this country is well adapted for the growth of corn and many other cheap foods—particularly corn; and we are highly favored as a dairy country. Now, my friend (Mr. Moyer) objected to winter dairying, and said that our butter then would lose its prestige in foreign markets. We all know that September, October and November butter is always very fine, and by good feeding and proper ventilation of the stables we can produce good milk through the winter months, and if we get the milk, we have men who can make the butter. We have in Ontario, men who can make as good butter as can be made anywhere in the world. We may make not so much of it. But we have an idea in this country that we want a good cow to make beef when she gets too old for milking. Well, she will not make good beef. There is a good deal of the butter made in the dairy just about right to fry that beef in, and when they are both fried they are not worth much. (Laughter.)

Mr. HUNTER.—I would like to ask a question. At the outset, Mr. Sprague said that in buying his milk it cost about ten cents a gallon; that would be a factory gallon. Do you apply any test as to the percentage of butter the milk is composed of as the farmer offers it?

Mr. SPRAGUE.—We take it generally as it comes. However, we are careful to observe the quality of the milk.

Mr. HUNTER.—You would not give more for milk containing four per cent. of butter-fat, than for that containing three-and-a-half.

Mr. SPRAGUE.—Oh, yes.

Mr. HUNTER.—Coming back to the silo, we have got to feed cheap food before we will have anything for our labor, and though I am fond of a little work, I like to get paid for it reasonably well. Would you be pleased to state about what profit that butter you realise twenty-five cents for left, after the labor and money expended on it?

Mr. SPRAGUE.—I could not tell you exactly.

Mr. HUNTER.—Will Mr. Sprague's son tell the yield of butter to the hundred pounds of milk?

Mr. MARK SPRAGUE.—Five pounds and one ounce to one hundred pounds of milk.

Mr. HUNTER.—Leaving that point, Mr. Sprague passed over the method of planting corn. He spoke very strongly and emphasised the condition of corn cut for the silo. There are a great many who do not know how to plant to get it to grow profitably for the silo, nor how to put it into the silo.

Mr. SPRAGUE.—I hardly thought it would be necessary to deal with that. I took for granted that you knew how to fit the land. You all know the kind of soil.

Mr. HUNTER.—Bear in mind that each of us has a different soil and we cannot just change that.

Mr. SPRAGUE.—You all understand very well where you can grow corn. We do not change our field annually. We have grown our corn for ensilage on the same field from the commencement.

Mr. HUNTER.—What is the method of planting?

Mr. SPRAGUE.—We fall plow. In the spring we gang plow when nearly time for planting; pulverise the soil well; and use an ordinary seeder, using two drills set from nine to eleven inches apart. We plant in rows north and south, and use about three pecks of corn to the acre for seed. As soon as that corn is up we cross drag it a little. Later we cultivate it and continue cultivating until the corn becomes pretty large. That is the process of our growing corn. I was of the opinion before we commenced growing ensilage, that a single crop of corn upon it destroyed the productiveness of a piece of land, but my experience is that our soil is in better "tilth" than ever before, and last year we raised the largest crop we have ever done except the second season after we commenced. That was a season when there was a large amount of rain.

A VOICE.—Did you manure the land each year?

Mr. SPRAGUE.—We started on that principle; we manured the higher parts of the field three years; we drew out the manure in winter and put it in the field about where we wanted it and spread it. We could not produce enough manure to cover the whole field; but even where there has not been a single load of manure the corn has been very good.

Mr. MOYER.—What is the idea of growing on the same soil all the time?

Mr. SPRAGUE.—The principal reason is, that the corn crop is a pretty heavy crop to handle, and the nearer you can grow it to the silo, the cheaper it is to harvest; therefore, we use the nearest fields to our silo. Another reason is that seemingly that field has been in better "tilth" for corn than any other, being more porous and open; and again, there is another reason, less cultivation through the summer will do.

Mr. HUNTER.—How many acres do you usually sow?

Mr. SPRAGUE.—The first year we had thirteen acres, but we put four acres into field corn for fear the ensilage would not succeed. The second year we used the whole field and had so much corn that we could not use the whole of it.

Mr. HUNTER.—How many head of cattle had you?

Mr. SPRAGUE.—Thirty-five head over winter.

Mr. HUNTER.—Is there any grain given to the cattle?

Mr. SPRAGUE.—Well, if you are milking a good deal you give grain. You must not run away with the idea that you can do everything with ensilage.

A VOICE.—What kind of a soil have you on the field?

Mr. SPRAGUE.—There is a limestone, gravel knoll on one part of the field; small clay knolls on another part, and then on the other part a black loamy soil. We find corn grows well on the whole field. Prince Edward is a fine corn county.

Mr. ISAAC HILBORN.—I have been a convert to the silo and have just tried it this one year. Wouldn't it do just as well to plant east and west?

Mr. SPRAGUE.—We planted three seasons north and south and then east and west for a change. Have the corn so that the sun can get nicely in about the ears. I found that during showers the corn seeds were sometimes inclined to run down the gullies when planted east and west, part of the field being a hill.

A VOICE.—What kind of corn do you sow?

Mr. SPRAGUE.—Except the first year I never sowed anything but Mammoth Southern and Red Cob Ensilage.

A VOICE.—I do not find my ensilage in good condition. It comes out of the silo acid.

Mr. SPRAGUE.—There is a possibility of making two kinds of ensilage; that is sweet ensilage and sour ensilage. Sometimes it is soured by making it too green, and then another cause is that we put it in too fast and too large and do not allow it to acquire the proper temperature. What I mean is that the corn heats of its own natural action.

The PRESIDENT.—The point is how to plant this ensilage corn. A sandy loam is the best soil if lumped with plenty of manure and when so advantageous as to have ashes spread them and change the field each year. Have the corn three and a half feet apart, the kernels dropped in the drills eight inches apart, taking eight quarts instead of three pecks to the acre of corn. First cultivate with a harrow. If you plant lengthwise of this room you would go cater, with the teeth of the harrow a little back slanting. The next time go back the other way and keep on doing this until the corn is about four inches high. Then take the cultivator, going lengthwise. It keep the crows out of the corn, and the boy out of mischief. (Laughter). And it raises the greatest crop in the world—thirty tons to the acre. Then get it to the silo when nearly matured—when the corn is perfectly glazed. It will make sweet ensilage, just like a bottle of preserves which our wives and daughters know so well how to put up. In the feeding of your cow, supposing hay is worth $8 and ensilage only costs $1.50 you at once have a considerable saving, and along this the line of profit lies. Don't hang on ten or fifteen years to find out about this matter. We tell you that we know that you can raise thirty tons to the acre; we tell you that it will make more milk food in conjunction with other foods. What you want is some ensilage corn; a grain ration; and feed hay once a day. This gentleman wanted to know of Mr. Sprague how much it cost for this milk in the winter time. Now it will cost you thirty per cent more in the winter time for feed to make milk than it will to feed a dry cow. The product is worth nearly thirty per cent. more in the winter time than in the summer, and the consequence is that you get yourselves at once right in line by having butter to sell when everybody has not got it to sell, and you have not got so much to sell when everybody has got plenty of it to sell.

Mr. HUNTER.—Mr. Sprague speaks of growing his corn repeatedly on the same field and without manure, while the President speaks of changing the field and manuring very heavily. Let us reconcile these statements.

Mr. SPRAGUE.—We all must admit that the better land is manured the better the chance is for a good crop. At the same time I maintain that we can grow on the same field and get a good crop. We have instances where people have grown it for thirteen or fourteen years, of course putting on the manure. The quality is in the soil for growing corn.

The PRESIDENT.—The idea is the cultivation of the soil. We summer fallow a great deal. I do not believe in it, you know. Summer fallow by means of this corn crop. Keep the boy going and if he sees the farm growing in value from time to time, and, through cultivating the soil getting enriched, he will begin to take an interest in the place.

ENSILAGE CORN.

Professor ROBERTSON was received with applause. He said: I am very sorry indeed that I was not here when friend Sprague was giving his address on corn, because any man who has gained very large practical experience is able to express an opinion of much service. I will likely cover some of the same ground, and I want to speak very compactly and touch only some of the main features which present themselves to my mind. This chart was made to represent the results from growing corn at the farm near Guelph, so you have it suitable to conditions around Berlin. I want to say that the farmers of Ontario should grow corn because it is a very hardy plant, because it is subject to very few diseases and because very few parasites attack it. You cannot cite any other plant that is so free from these ailments and attacks.

Varieties vary as to height of growth. Some of them are two feet high when matured; some are seven feet, and I have seen corn growing to all heights from two feet up to eighteen feet. The stalk may have any number of joints or nodes, and it may grow an ear at any node, or may have three or four or five or seven on the same stalk. The ears themselves always grow an even number of kernels. You can always divide the

number by two; I have never saw thirteen or fifteen, although I have seen up to thirty-two around the same cob. Just a word as to selection. On the Brandon farm this year we had planted rows of Squaw corn. You know the Squaw corn has white kernels and red kernels and variegated kernels. The yield from the white kernels was twice as large as that from the red grains of the same corn. From this point, by a careful selection of Squaw corn, it may be learned that growers can raise Squaw corn eight feet high and have early maturity. I need not detain you longer upon that aspect of the question.

Let me come to another practical aspect—the question of the soil and its preparation. Now, if you can make a crop mainly feed where no other crop can get its food then that does not exhaust the productiveness of the soil. If you have a crop of wheat and a field of oats and barley, all of which feed near the surface, and then grow corn which feeds down lower, it will loosen the soil below and take little from the soil at the surface. If you take the roots of the corn plant, by washing the soil from the fibres and having them measured, you will find that these fibres are very often from fourteen to eighteen inches long. Thus, because it feeds deep, it is not an exhaustive crop in the ordinary farming sense. These fibres loosen the soil by digging down through and liberating more of the mineral matter.

The best way to prepare the ground for receiving the corn crop is to plow very deep in the fall, that the frost may act to liberate the particles of soil. Then cultivate early in the spring, because that will kill the weeds, and corn must have clean land to do its best. After an interval of ten days cultivate again. Another interval of ten days will give you a fresh crop of small weeds. Then give the ground another cultivation, and in ten days it will be ready for the seed. I would put back the planting three weeks, and thus I would keep my field clean and in better shape for the following crop. Plant the corn in drills from three to three and a half feet apart. I would drop the seeds four inches apart in the drills, and would take eighteen to twenty-five pounds to the acre. I have sown fourteen pounds, but still I think I have got better results when I have sown rather more. After the plant is high enough to shade the soil it still requires to be stirred up. If loosened it acts like a mulch and breaks the capillary movement of the water from below. I like to have the corn wide apart also for the sake of getting a larger growth of leaves. A good many men have said that the leaves do not contain much nutrition for animals. I notice, however, that they eat the leaves first. When I come to give a theory for that there are those who say that a man who is theoretical is not so strong as a man who is practical. If he has a safe, sound theory and understands what he is doing, then he can with more safety assure himself of the right way of doing it. It is a good thing when a man can render a reason for the faith that is in him, and also for the practice he follows. Then I find the green coloring matter is the peculiar principle in plant life which secretes the carbon from the atmosphere, and the broader and more healthy the leaves are and the darker the shade, the more carbon they will appropriate from the air. Well, if the farmer can get carbon in this way it does not cost anything for the support he gets out of the air. He can never appreciably lessen the store of plants. Leaves are most active collectors of the valuable constituents. By analysis of one hundred and sixty stalks of corn, grown at the Ontario Experimental Farm, we found that nearly one-half of the nutritive properties rested in the leaves, one-quarter in the stalks, and one-quarter in the nubbins. For that reason I want abundance of leaves. As to the stages at which the corn plant should be cut for filling the silo; first of all let me say this: I find that when you grow it broad-cast you can often, in a moist season, get a rather heavier weight to the acre, but the weight is largely water. Then the man who grows corn broad-cast will find that he has the most trying crop to harvest that he ever found within the fences of his fields; and the man who will harvest such a crop in an average of seasons in Ontario will have to bite his lips or say something he does not want his wife to hear. (Laughter.) I find that when you get the corn in rows, it is neither so tiresome nor expensive to harvest. Now as to the stages at which the corn should be cut. You have the stages of tasselling when the tassel or plume comes through—the silking stage. Then you have another stage. When the kernels begin to have the juicy quality of the milk stage.

When the juice becomes gummy, you call that "the late milk stage," and after the glazing period, you call that "the ripe stage." The very best stage to cut corn is at the glazing stage. If you cut it before, it does not acquire all that it would take unto itself. Its structure is weak. As ensilage it becomes acrid and partly sour. For both reasons therefore, let it reach the glazing stage. Let me give you the exact amount of nutriment got from corn cut at these two stages. In one field, corn of the King Philip's variety was cut "at the tasseling stage" on the 30th of July, and yielded nine tons to the acre. The second was cut on the 9th of August at "the silking stage," and it gave twelve tons seventeen hundredweight, the next was cut at "the milking stage" on the 21st of August, and weighed sixteen tons six hundredweight; the next at "the glazing stage" on the 7th of September, and it gave sixteen tons two hundredweight; the next at "the ripe stage" on the 23rd of September, and it turned off fourteen tons four hundredweight per acre. In the above that cut at "the milk stage" gave the greatest weight, sixteen tons six hundredweight. Let me show the solids of these stages. At the tasseling stage it contained ninety-one per cent. of water, at the silking stage eighty-eight per cent., at the milk stage eighty-five per cent, at the glazing stage seventy-seven per cent,, and at the ripe stage seventy-two per cent. So, while there was less weight to handle at the latest stage, there was more substance in the crop and it had more feeding value. After all when a man is growing a crop he is not after water for his cows that he could give them more easily through the pump. (Laughter). People have ridiculed feeding turnips because they have so much water in them. Well now, they have a great deal of feeding value, mainly because they have a stimulating principle. People say stimulants are of no value. The turnip has an effect which has a peculiarly stimulating action upon the cow's digestive system, but still I would not water the cows with a corn crop. With respect to these experiments, there were 1,619 pounds of dry matter per acre at the tasseling stage. Then at the silking stage, there were 3,078; and at the milk stage, 4,643 pounds; at the glazing stage, 7,202 pounds, and at the ripe stage, 7,918 pounds to the acre. So that the value of the crop is not to be judged by the weight of the green plants.

Let me show you another matter. A corn crop was treated in three ways. Part of it was not matured when it was put in the silo; another part was put in the silo when in the glazing stage, and the third part was kept in the field in stooks. Now three animals were fed on these three different preparations of corn. Two men stayed with the cattle night and day, and saved all the voidings and put them into tanks. Analyses were made to see what was kept by the animals. This was not done at our station, however, but at the New York experiment station. Now I might analyse saw-dust, and find that it contained so many carbo hydrates that it would seem to be just what the cow wanted, but the cow would pass it by. Now in these three treatments, the animals digested of the ensilage put in an immature stage sixty-six pounds out of every hundred pounds of the solids. That is, thirty-three pounds per hundred pounds were voided that the animals did not digest. Of the ensilage put in in a more mature stage they kept sixty-nine pounds per hundred pounds of solids eaten, and of ensilage cured in the fields, they kept sixty-two pounds per hundred pounds. So that the animals digested the larger proportion of the corn when put in the silo, and of that put in the silo they digested more of that which was put in a matured state than of the other which was immature. Everything points both in science and practice to the beneficial effect of growing the corn till it comes to the glazed stage. But let me say just a few things more which will help you in your practice. I find this, that if put in the silo direct from the root without any wilting or drying, that the acid formed is lactic acid and smells like sour milk, and that is why some ensilage simply stinks. Now if the corn be allowed to wilt for one or two days, a peculiar fermentation is started. That is the first stage of hay curing. You can all smell that delightful aroma that floats across a hay-field after it is cut down. It has nothing offensive whatever. Where lactic acid is in ensilage, it is apt to start a sourness in the milk because the atmosphere becomes filled with the germs that make lactic acid. It is a fermentation starter, and for that reason the people blame the silo, when merely a little thing has not been attended to—to have the corn plant wilted. If grown to near maturity and then wilted and filled into the silo, and the sides and corners trampled, you will have

good ensilage every time; and every cow fed will give you nearly one-third more milk on an average than the same cow fed on dry food all winter. People do not think that this is an important thing. We have been feeding in a way not merely expensive, but in a way that thwarts the animals from giving us the largest results next summer. Let me say this in conclusion to these remarks. I put it this way, that if you begin by having more stock on the same land and the land is abundantly manured in a favorable season, you may get 30 to 40 tons of corn to the acre—but *that crop* is hardly within the reach of every man. But every man under ordinary conditions can get sixteen tons to the acre of those kinds of corn that will ripen. That will enable him to feed four cows all winter from each acre. If a man has a hundred acres of land he should keep twenty-five cows. Now six and a quarter acres of corn will winter twenty-five cows. If he wants to keep more cattle, let him put on more acres of corn and keep more cows. Every acre feeds four cows during the winter, and the manure makes more corn. I do not know of a better practice than to begin growing corn and having a silo, and then adding to that practice, the making of milk the year round by having cows coming in in the summer, winter, spring and fall, and having an income the year around and raising stock the year around.

Mr. E. MILLER (Brockville).—What kind of corn would you recommend?

Prof. ROBERTSON.—First of all on general principle, I would get a corn that matures early. Pearce's Prolific will mature anywhere in Ontario; the other varieties are King Philip's, Flint, Thoroughbred White Flint, Longfellow, Wisconsin White Flint, Michigan White Flint, Minnesota White Flint, and Selby's Pride of the North. Pearce's Prolific does not yield so much to the acre, but it is the earliest to ripen of all the common corns I know.

Mr. HUNTER.—I understood you to speak about wilting corn for a few days previous to siloing it. Supposing you were caught in a frost, what would you do then? Have you ever had experience of adding moisture in the silo?

Prof. ROBERTSON.—I have had no experience of adding water. I once had corn frozen very badly but put it into the silo before it was so dry as to need moistening. If too dry I would add water. I have never seen ensilage without some acid, but I have seen some with acid that smelled nice. The difference is whether the acid is ascetic or lactic acid.

Mr. HUNTER.—I have had experience and met with the best success, but by your reasoning that dry corn should have had no acid, and I have found just as much acid with dry corn as with moistened. I siloed it and my cattle are eating it just as well but I do not think it has the same feeding value.

Prof. ROBERTSON.—Why don't you think it has so much feeding value?

Mr. HUNTER.—I do not think the yield of my cows is so good as what they have given when it is not soured so much. We will be overtaken by an early frost now and then. It is a mistaken idea to think in that case the corn is worthless for feeding. You need not look upon it as first class food but it is much better than attempting to feed out of the shocks. In case of not being able to get access to the ensilage from the top of the silo would it be possible to commence at the bottom and cut a passage through the ensilage without injuring it to any extent?

Prof. ROBERTSON.—Wherever air is admitted on its face we have mildew of from two to six inches.

Mr. HUNTER.—I understood Mr. McMillan to say that he was feeding in that way and his ensilage took no injury.

The PRESIDENT.— It will injure.

Mr. JOHN FENNEL.—Is it ever proper to keep the ensilage uncut? Will you be good enough to give us any information respecting clover as an ensilage?

Prof. ROBERTSON.—We have always felt that if we put it in uncut it would be at the expense of the contents. It has to fit close where the butts are or the air will get in and destroy it. The corn stalks if put in whole must lie in a uniform direction or they won't fit. Then it is not so handy to take out the corn stalks. At present I have no experience with clover ensilage. It is sometimes fed to swine with advantage.

The convention then adjourned till eight o'clock.

EVENING SESSION.

At this session the President gave up the chair to Mayor Jansen. The addresses and discussions were interspersed with music by an orchestra and the German Glee Club, whose efforts contributed to the enjoyment of the large audience.

Mayor Jansen repeated his welcome of the morning to the Association. It had been correctly stated, he thought, that agriculture is the foundation stone upon which all other industries of this province must rest. If the farmer is prosperous the merchant and manufacturer cannot be otherwise.

The Mayor elect, Mr. J. M. STAEBLER, was called upon, and in felicitious terms joined the retiring Mayor in extending a welcome to the Association.

The PRESIDENT replied in appropriate language, thanking the gentlemen who had just spoken for their cordial and hearty reception. He said that in the prosecution of their duties as an Association they experienced very few things that were pleasant. The talk all the time was about the poorness of goods. They were here to-day for the purpose of talking to the people as to the means of putting more money into their hands and in this way help the general prosperity.

THE DUTY OF FARMERS.

Mr. E. W. B. SNYDER, M.P.P., was next introduced. He said this dairy industry was a question which ought to be a subject of more reflection. I may say that in listening to the several professors who addressed you this afternoon I was very much pleased to hear them discuss the question of our creameries. There is no doubt in my mind, after listening to what they have said, that a very great improvement can be made in that direction by our farmers, and I think I can say on behalf of these farmers that they can say the same. Now, when matters of this kind are discussed, and discussed with advantage to the people who are directly affected by them, then of course it must lead to an advantage to the community at large. It appears that the creamery business so far in our country has not been so successfully carried on as might be desired, and for that reason apparently our governments have interested themselves in trying to educate our farmers in this direction. There is no doubt in my mind that so far the subject has not carried the weight that it really deserves, or that it should have carried, but I believe the more the matter is brought before the people the more interested they will become and the more they will study up; and in fact it is necessary to study at present. The farming community we know are not in that state of prosperity we would like to see them. It is not owing to the creamery alone, but at the same time when a matter of this kind is discussed, being of such importance, our farmers should take an interest in it, and I am glad so many of our farmers are apparently taking an interest in it and are coming out to establish it. Living as I do in the village of St. Jacobs, where a creamery has been in existence for some years, I have taken more interest in the subject than I would have done had this not been the case. In 1882, I think it was, a company was organised for carrying on the business. Prior to that a company was trying to run a butter factory and cheese business in connection with it, They did not make a success of it and the farmers took hold and formed a joint stock company; but the difficulty apparently is that the farmers when they join together seem to lack enthusiasm to carry on a thing of this kind to success. At least our experience was that the business was lagging along and doing a fair business for two or three years, and then they concluded to sell out again, and I understand this creamery was sold out quite recently. To farmers from that neighborhood I would say, you should put forth better efforts, in fact now that you were doing for yourselves you can plainly see that you were not able to make a success of it. When you see other men taking hold of the business and making a success of it help it along as far as you can. This is not the only creamery in our county, and possibly there are not many coun-

ties where there are as many as three creameries, and the fact of having three creameries established here shows that some interest has been taken in the matter heretofore. Well now, none of these should be allowed to go to ruin again, because it has been shewn by speakers at this convention that the creamery can be made a paying business. If they can be established, I hope that the farmers will give their assistance and make the industry as successful as possible. A creamery business of three factories such as we have at St. Jacobs, ought to be able to make an output of from thirty to forty thousand pounds a year. If a better product of butter can be made in the creamery than by the farmer, he is just merely wasting labor and money by continuing the old system. That is a matter which ought to be prevented, and I think, if people will only allow themselves to be educated in the proper direction, this money can be saved.

One subject that was brought up and discussed considerably this afternoon I thought was of very much importance to our farmers, and though, no doubt, a number of them had heard of it before, they are not working in that direction; that is utilising the fertilising powers they can draw from the air. I suppose there are very few farmers who have given that subject the attention it deserves. I take it that a very large amount of fertilising matter can be drawn from the air and utilised without any cost to speak of. It is not a matter that requires to be understood. There should be no difficulty about studying it out, bnt by the growing of certain crops the farmer should in that way so utilise this fertilising power that he can steal from the atmosphere so very cheaply. It is really too bad that such a valuable assistance should be left lying dormant, so to speak. There is no doubt in my mind, from the way the discussion was carried on this afternoon that in a great many cases farmers are making a serious mistake and losing money and labor just through lack of knowledge. Now, when our Government are assisting you in this way, by sending out men to discuss these subjects who have made them a life-long study, then surely the farmers should not be derelict in their duty. If the farmers do not choose to take advantage of these things, then they cannot blame the Government for an expenditure without any fruit in return for it. I do not believe that any money should be spent without bringing forth fruit, but it lies with the farmers themselves whether they will avail themselves of these opportunities, or whether they will allow them to slip by without getting any benefit. The farmers now require, and should be assisted, in all possible ways that the Government can aid them. At the same time the Government may aid them probably too much. They may aid them so much that the people will not relish it so much as they should. If there is too much given to anything, why, of course, it falls flat. But I do not think that our people consider that there has been too much money expended in this way. I, for my part, think that the Governments are fully justified, and I think the people will bear them out in going on expending money as long as it bears its proper fruit. I have not made it my study, but I know this much, that if worked up, the same advantages would arise in this as in any other business. I remember, when a young man, I happened to strike on a certain line in my own business that was quite new at that time, and launching out on the views that I then held, and that I thought were right, and being one of the first of those who went into a certain system of mill-working at that time, we had the advantage of all others. Now, this is a question that has advantages in the same way. If you start it in advance of other sections, you can reap the cream of the business, but if you allow yourself to lie low and others to get ahead of you, of course, you will have to be satisfied with the poor results that you will achieve. (Applause).

THE BUTTER TRADE AT HOME AND ABROAD.

Mr. Moses Moyer was next called upon, and said: I am sure there are a good many reasons why I should feel proud. One is that I have the honor to address the people of my own native town, which has been spoken of so highly to-day. I am now living in the best city on this continent; at the other end of the business which I have been doing here. Those that are acquainted with me know what part I took in this dairy business

years ago. One particular friend of mine once stated that he believed if one of my veins was opened up butter would run out of it. (Laughter). I was then in a country store taking butter in exchange for goods. I have handled it as a storekeeper in exchange, and am now at the other end handling it out for the consumer's table, but before I got to the other end I had to learn a great deal, and I have learned a great deal more there, and I would just like if every farmer in this country could serve an apprenticeship of six months in Toronto "dishing" out the butter we get, for I think it would result in the greatest improvement of anything that could be introduced. When I was taking in tons and tons of butter here and a customer wrote me from Toronto for choice butter, I had very often to say I hadn't it. I looked upon this as a business that had to be remedied, and I worked in this direction until I had lost nearly all my money and heart too. However, when I come around and see people taking up the matter just about on my line, only with some improvements, I think my time was not lost. So I suppose through my work the country has been paid, whether I was paid or not.

I always held the opinion that butter could be made best in the factory, as well as cheese, and I am of that opinion still. You all remember what a terrible time we had getting the cheese industry started in our country. Factory after factory failed, and only years of struggling brought it success. To-day we stand first in the English markets. Why can we not do the same with butter. I am thoroughly convinced that we can make as good butter as is made on the face of the globe. My principal difficulty when I first started the creamery business was that I could not get a sufficient support from the farmers to make it pay. So many held back and let me do the experimenting to see how the thing would work and then if profitable they would come in. That was like the story of the boy who was told by his mother never to go near the water until he first had learned to swim. (Laughter). How could I make it profitable if I had to go all over the county of Waterloo to get as much cream as I should get from three or four farmers. That was one difficulty. Another was that every farmer thought he was making butter so good himself that it could not be improved. It is natural only to suppose that what I have is better than what some one else has. I found that every woman in the country made the best butter, and that led me to say what I did say to-day that the butter that is not very good is not made by any body. (Laughter). A great difficulty was that some cream was better than others. Experiments have been made since which have overcome this, but the greatest difficulty at first was to know whether you were getting cream or milk. When it came to the factory we often found that we had really got more milk than cream from some, while others who sent good cream were not satisfied in getting the average prices. We have now a system by which we can tell the quantity of fat contained in the cream. Now, when that can be done, and everybody is paid according to the value of his cream, the creameries are ahead of the cheese factories. The cheese factories pay for the milk on an average. Now, we all know there is a great difference in milk. We know there is milk where seven pounds make a pound of cheese and other milk where fifteen and eighteen pounds won't do it. The cheese factory system is like the story of the sailor who went across the ocean. He was told when he went over the first time that any one who brought a boat over safely was entitled to a suit of clothes. He got the suit and put it in his bill. The owners asked him what that was for, and he said, "Well, they told me over there it was the custom. That the captain always gets a suit of clothes at the expense of his employers;" but they told him "they could not do that." The next time he put in a little here and a little there in his bill to make up the amount of a suit of clothes, but did not mention what it was for. They said "It was all right now." (Laughter).

If people don't see a thing, they are easy to please. I would like, however, that the creamery business should be started all over the country, and what I said before dinner was, not that I am opposed to winter dairying, but that I am opposed to this, that the cheese business should re eive all the encouragement through the summer, when milk is the best, and then the butter-making should be taken up in the fall when the milk is not so good, because I think it will have a tendency

to keep butter down as flat as possible all the time. It has been said by one of our speakers to-day that he can take five pounds of butter from one hundred pounds of milk. I always counted twenty-five pounds of milk to a pound of butter, and even with that proportion butter-making pays fully as well as cheese-making. It has been proven that it pays you better, and that it saves a great deal of work for your women who are overworked on the farms to sell your cream than to make butter yourselves. Make your homes comfortable and let your butter be made up in creameries where they have the appliances to make it much better than you have at home.

Well, as I said, now I am down in Toronto selling to the consumers. Since I have been in Toronto I have learned more of the quality of butter than I could possibly have learned anywhere else. Little children come to the store and nine-tenths of them know more about butter than the farmers throughout the country. Farmers get used to their own butter, and think it is all right, but we sometimes have a dozen different qualities, and by comparing and tasting it, the customers get to be such experts that it is easy for them to tell the quality. Why, sometimes I have seen farmers come in with butter and with a smile give me to understand "there is something good, now." I don't like anything better than to put their butter on the counter and wait until some of my customers come in and in their presence say, "I don't like that." It almost "takes the wind out of him." I say only about one pound out of every hundred pounds we dare offer to the best of our customers. Good judges of butter can tell the extra flavor of butter as readily as an artist can point out a beauty in a picture of which you never thought. That is where butter making becomes profitable; just when you learn to put on the best finishing touches. We put down butter that we know is from the best makers, and we give twenty-three cents a pound and it always goes first, and we have butter we are paying five and six cents a pound for and cannot move it. Nobody wants it. There is the milk produced by the honest cow made into that stuff. Why it would make the cows cry if they could see it. (Laughter). It is something abominable, and if the farmers won't stop it, I hope the Government will put a penalty on those who send to the city such butter and offer it there. We handle different things there. Sometimes apples are sent down. Now, a farmer goes to work and plants a tree and after it bears fruit he will shake the apples down because it is too much trouble to pick them. After taking care of the trees for years, in order to save a few hours time, he will send them down to market to sell at half price? After the expense of raising a cow, to save a little time or extra pains the butter is to be sold at half price. Is that reasonable?

Now, I would just say a little about the market in England. We have no market there for butter. Why? Simply because we sent them such miserable stuff, except the creamery, which is so little that it did not amount to anything. You hear people say that they are afraid of over-stocking the market, but there is no danger of that. The more cheese we make the more seems to be wanted, and so it will be with butter if we make it good. At the table to-day at noon at the hotel I was ashamed of the butter. (Laughter). I thought that the people of Berlin would get the very best butter that could be bought for this Association, and at the table I sat to-day three of the members turned up their noses and never touched it. I am ashamed of that. I thought the people of Berlin would give them something nice and I know if there is any good dairy butter made in the Dominion of Canada it is made by the farmers in the county of Waterloo, but to-day they gave us miserable stuff.

The German butter stands very much the same in relation to our home market as the Canadian butter does to the markets of England. While I say again, some of the finest butter in the Dominion is made by them, there has been enough wretched stuff made by them to get the credit for making all the bad butter, which is commonly styled "Dutch butter." All the bad butter in England is "Canadian butter," even if it had come from China. You see therefore, that you can get a bad name through your neighbor, and the importance of your assistance in raising him to your level, which can only be done by the co-operative creamery system. It is a mistake to suppose that you get more for your good butter, if others make it bad. Every pound of poor

butter has a tendency to pull down the price, and when butter is sold at 5 and 6c a pound, every farmer, to some extent, will have to suffer. Look at our cheese market. Since all its cheese is made good, we make ten times as much as we did a few years ago, and yet it is all wanted. As the quality improves, so the demand increases. This also holds good in butter. So many farmers feed turnips to their cows, and when they do that, it is impossible to make good butter, and for the little butter they make more, it does not pay, as it depreciates, the value at least five cents a pound. It is encouraging to see so many farmers attending these meetings, it shows that they have made the discovery, that they can learn something about butter-making. A few years ago they knew all about it. Prof. Macfarlane told us to-day how the skilful take plant food out of the air into the soil. A few years ago we found out that we can utilise electricity. It has always been around us, but we did not know how to use it, and so there are many things within the grasp of the dairyman, which come to his assistance to make dairying profitable, if he only opens his eyes and looks for them. This is, I think, the best attended meeting the Creamery Association ever had, and I hope the good seed which has been sown, will bring forth the best fruit. (Applause).

Mayor JANSEN.—In reference to feeding turnips to cows, I can corroborate that statement of Mr. Moyer's. I have sometimes tried to make myself believe that I could not taste turnips, but my wife invariably afterwards said she tasted them in the butter. I think Mr. Moyer is quite right, that it is impossible to feed turnips and at the same time get good butter. I was raised in Wisconsin and had more or less experience there of these things. I do it on a smaller scale now, and manage to keep but one cow, and invariably in the winter time have better butter than in the summer, and it is all because we have a kind of feed that makes the highest class of butter, and what we usually feed is corn stalks and carrots—not the common white field carrots; that is not the article for first-class butter; you want the table carrot. You will grow just as much of it as of the other if you go to work right, and when you get a bushel of it it is worth three bushels of the white carrots for butter purposes. Now, in fact you not only get a high feed, but also a coloring. You do not require an ounce of coloring matter in any shape or form in your butter if you feed these table carrots. (Applause).

AGENCIES FOR THE EDUCATION OF DAIRYMEN.

Prof. ROBERTSON said: I am very glad to be in Berlin to-night. I know that the townspeople are not so much interested in the dairy question, yet I want to speak of the education of farmers and dairymen, and if any good is done by what I have to say, they are welcome to put it into practice without paying any royalty to the speaker. Let me refer first of all to the educational value of the Ontario Creameries Association. Just five years ago this month the first steps were taken to form the Association at a convention in Woodstock, at the suggestion of Mr. John Hannah, who was persistent and persistent and again persistent in advocating the need for having the Ontario Crameries Association organised. I do think that the work of this Association is far more valuable to the Province of Ontario than that of others which are much more pretentiously named. We have the mayor of the Island City in Canada as our President, and I once heard him say in one of his moments of exultant exaltation that he would rather be president of this association than Governor-General of Canada. (Laughter.) My friend is always judicious in consoling himself; there was less chance of getting the other plum even if he wanted it.

This is along the line of melancholy history in Canada, that a few years ago our butter abroad had a fair name in England and elsewhere. It has not captured any markets in recent years. It is not because it has lost any of its strength. It seems to "go on from strength to strength continually." (Laughter.) Notwithstanding that, we have been beating a steady retreat from the position we once held. The history of the

cheese trade is quite different. It is more than twenty-five years ago since we opened up that trade, and it has grown to be very large and profitable. I think it has won for Canada the greatest name that has been given to us in response to any of the products we have sent abroad. Why the difference? Just this, we have been continuing to make butter of every conceivable variety. The shape and size and color of the package have been assorted. People do not like too much variety in butter. In our cheese factories we have been making ninety-nine per cent. of all our cheese up to a standard of uniformity, and we have taken on an average the highest place for excellent cheese in the world. England has no customer that sends so much good cheese; and she has no customer who sends so little good butter and so much strong butter as does our Dominion. (Laughter.) No doubt if we could put into practice in our butter making what we have done in our cheese-making we might win quite a superior place. England imports from us more cheese than she imports from any other country. She takes from us one-third of all the cheese she imports from abroad, but only two per cent. of the butter.

More education, more knowledge and more skill, and the putting into practice of the advantageous methods which are employed by the cheese trade, would help us to do as much for the butter trade as they have ever done in the past for the cheese. That leads me to speak to-night of the educational value of Experiment Stations, because I believe that through them we will lead the buttermakers of Canada to make butter so excellent that it will stand first. If we can make it as good as anyone else, we can have the longest line of profit, and if so we can afford to sell cheapest, and so command the markets. There will come a time, I believe, when butter will sell in England for less than the present prices, but the present price would leave us about twenty-six cents a pound for fresh-made creamery butter. Denmark sends over twelve million dollars worth of fine butter, for which she realises that price, and there is no place in Denmark that can compare with Ontario. Indian corn from the silo, fed with bran and pease, is the best combination feed we could have for butter making.

Very often farmers think that education is one thing which they do not need, as it will not help them in their calling. One says: "Oh! education will hurt my boy; it will stunt his desire for work, and make him seek the life of an idler." Now an education that will do that is of a wrong sort. Education is for the training and development of all the faculties and powers, and such help is as necessary for a man who works on a farm as for one who labors elsewhere. A mistaken notion measures the effect of education according to the use of big words, but that is not a sign of education. The man who does that at once proclaims his lack and need of literary skill, and skill is always a product of education. I will tell you a story about that. A very learned man in his own estimation, following one of the learned professions, came to see a sick boy. This man was a doctor. He seemed to think that education was proven by the use of great long words; so he said, "Boy, extend your lingual organ." That boy was never before aware that he was guilty of having a lingual organ. But the doctor would not come down from his high pedestal, to tell the boy what he meant. The boy's mother had good sense and was educated even in the use of big words; so when the doctor said to her "Madam, will you convey to the unilluminated consciousness of your youthful offspring the meaning of my language." "Yes!, Yes!," she said, and turning to the boy, "Johnnie, Johnnie, open your goblet and run out your lollicker." (Laughter.)

Now, farmers should first of all try to do more thinking before they do their toiling. Of all the things in the world which some men seem to dislike to do, that one thing is sober, honest, original thinking. Let me shew you; somebody's clear thinking underlies every rational act that brings success, and the more a man does the thinking for himself, the more he will be able to control his business for himself. When a man stumbles along and works toward no object, he may get some money, but farming is no speculation. Then farmers need not only to do more thinking, but they require to have higher aspirations. Why, farmers go through life often and complain that everybody looks down on them and nobody has any respect for them, and that they have to bear all the burdens, that they have to pay all the taxes, that they do all the drudgery, that they are the beasts of burden for other people. I would have the farmer believe

that his occupation is the noblest, in a material sense, of those followed by men who walk the face of God's earth. When a man feels respect for his calling his brother farmers will respect him and he will respect himself all the more. As soon as a man learns to do a little good thinking for himself he begins to find the dollars coming in, because then he puts himself into his work. No man can put himself into his work without getting well paid for it. A man gets a great block of marble and goes to work with chisel and mallet and says, "when the bell strikes five at night I will stop." So he goes on and does no thinking and has no aspiration. When he has finished, he can sell the whole thing for so much a ton to be broken up for paving the streets. Another man goes to work upon a block of marble and does some thinking. He starts by saying, "Is there anything I can bring out of it? I will strike with a purpose and will realise my aspiration to excel; I will bring out of the dead block a thing which will look back upon me as though it had life. If it does not reach my ideal I will be tempted to smash it into pieces as one man did because the lips which he had chiselled would not move." He can sell that statuary for any sum he likes to ask. Just as the farmer puts himself into the work and raises calves and cows and horses and gets back dollars in proportion as he applies the skill of a man. Then farmers ought to exercise more self-reliance. I find farmers saying the Government ought to do so and so. A Government can never legislate good times. You cannot find a case around the whole globe. Any good times that come in agriculture are from self-reliance and the favors of Providence in sending good weather. Self-reliance leads them to put themselves into their work by adjusting themselves to the changes that have come about. Then men need a little more self-reliance *to the very end.* I will give you an instance again. I find a man grappling with an undertaking and it is all discouraging; everything seems to be going against him, and by and by his courage weakens, his heart fails, he lets go on purpose. Such an one cannot do much. I never knew a man employed in any enterprise *that would persevere to the end,* who could not win success. There is no class who so often fail to do things right up to the end as the farmers. A farmer thinks it is all very well if he can get one cent a pound less than somebody else. It is just this little thing of persevering to the end that gains the big price and the permanent profit. With more aspiration, more perseverance unto the end, good times will come. And if an occasional poor season intervenes a man will have enough to lap over a season when the weather is not quite propititious.

Go across to Denmark and look back twenty years and you will find the people poor because farming would not pay, and they were discouraged. Somebody did something. If they could make winter butter to send to England and raise hogs and steers, that would make them money. Denmark is the most prosperous agricultural country in the world to-day, because of somebody's thinking and somebody's persistence unto the end. You wonder why I am not coming to these Experiment Stations. Now, these stations have been established for the sole purpose of directing and assisting farmers to do these four things, and then to furnish them with knowledge and conclusions which they could not reach otherwise so quickly and certainly.

Their occupation is a threefold one, a trade to handle tools; a business to buy and sell with profit, a profession to adjust themselves to the laws of nature and make these operate for their gain. We have no need to teach a man how to plow. The best place for education of that kind is at home on somebody's farm. I say there is no need for helping farmers to a business knowledge for buying and selling with advantage. The home and home training should fit every man for doing that in the best way, and the farmer who excludes his boy from doing business until he is twenty-five years old has done his boy a great wrong. They should have their boys on the farms transacting the simplest of the business at first, and giving them experience in all buying and selling required on the farm. If the boy, the first time, loses ten cents a bushel on the grain don't be afraid to give him another chance. He will take good care not to do it again and it will be a better lesson to him than if he had made five dollars. In that way give lessons at home. But in the profession of agriculture a man needs some outside help. Let me show you how we are trying to give that from these Experimental Farms. First of all we are trying to show that nature is very generous; all the time trying to bestow

blessings on her children when they follow the paths she has laid out for them. One illustration. In sowing two-rowed barley it will give you a larger yield as feed for cows when sown on well-prepared land and in good time. Last spring she gave us back for barley sowed on the 22nd of April forty bushels to the acre, and when we sowed the same kind of grain one week later, on the 29th of April, she gave us back twenty-four bushels; and of the same kind of barley sowed just one week later, on the 6th of May, she gave us back sixteen bushels to the acre; and of that sowed on the 13th of May, fourteen bushels; and on the 21st of May ten bushels; and on the 28th of May, eleven bushels. Some men complain because they cannot grow enough grain for their cows while good Dame Nature is waiting to throw it into their laps. In the same way she gave us back of oats sowed on the same dates, with intervals of one week, in the first instance thirty-seven bushels, in the second thirty-three, and the third thirty, and the fourth twenty-seven, in the fifth twenty, and in the sixth seventeen. You see how gradual the shrinkage goes on when men have not enough business knowledge, professional skill, to make nature serve them in the best way. Then besides that we are trying to show farmers how to feed in the most economical way so that the feed will cost less than the product of the animal will sell for afterwards; how to best combine the growing and feeding of crops so as to have the best value in butter at the least cost. People somehow or other don't like to pay twenty-five cents a pound for butter that has only one good object in the family, that of saving bread. (Laughter). Now, butter that is made from turnipy milk will save at least half the consumption of bread among people whose taste is at all delicate, and the effect of half the bread being saved would be that half the flour would be saved and only half the wheat would be in demand. Then the wheat would go down from one dollar to fifty cents at once. (Laughter). Let me give you another illustration showing how the improvement of our butter will help every single product of the farmer to fetch a higher price. A young man got married and after his wife had got through saying nicely buttered things to him she noticed with an economical eye that he buttered his bread very extravagantly. She said "John don't you know that butter costs twenty-five cents a pound." "Yes, my dear," he said, and with that he folded the slice and buttered the other side, "and I think it is worth it." (Laughter.) He was not going to reduce the consumption for any such reason as that.

But to show you how we do this work in connection with the Experiment Stations, let me give you a very short outline of the area we attempt to cover and of the different lines we attempt to take up. First of all you have here at the centre of the Province of Ontario, an Agricultural Experiment Station in connection with the Agricultural College at Guelph. For fourteen years that Experiment Station has been trying to shed its light out into the homes of the farmers of Ontario, and some of have welcomed its beams, have accepted the teaching and are now grateful for the help. But many of them have screened and shut their eyes while their neighbors around them were reaping these advantages and they have looked upon it with suspicion because it was a Government institution. The first summer I spent at that Experiment Station I began to test the effect of salting the milking cows. They were salted every day and gave fourteen and a half per cent. more milk than when salted once every ten days. Fourteen and a half per cent. means a great deal on the herds of Ontario. Your good friend, the chairman, introduced me as being connected with this institution, I was proud to work in the dairy department there, because of the useful work it has done, and there has been appointed to succeed me at Guelph Mr. H. H. Dean. Mr. Dean's whole heart is in this work. He has been a popular and successful student, and he will leave nothing undone which he can do to make his work valuable. I hope the farmers throughout the Province will give him a fair chance, and I am sure he will render the farmers of Ontario abundant service along the line of his own department. Now we have other stations. We have at Ottawa a station called the Central Experimental Farm. There we have nine breeds of cattle; we grow all kinds of grain and grasses and roots and fruits and trees. We grow scores of things for the sole purpose of finding out for the farmers things they cannot discover for themselves. I went to Nova Scotia starting down the beautiful old St. Lawrence river, that most magnificent, noble stream. I then went up that weird river called the Saguenay. I may tell you that one man drove sixty miles to get one day's education in cheese-

making. Some months afterwards I heard that he had been able to sell his cheese for one cent per pound relatively more than he had ever done before or than any other factory in the county was doing then. Then away around from there past Riviere du Loup I went down to the Bay of Chaleur and away up around to Gaspé Bay. The people from Jersey, Ireland and Scotland are making butter and selling little else but that and oats. In New Brunswick I found a few cheese factories prosperous and paying well. Across the Bay of Fundy up the Annapolis valley, the people have no cheese factories. You know there are always laws of compensation. The finest fruit grows there and the owners of beautiful orchards have an excellent reputation for their apples. Then around to New Glasgow and down the Antigonish valley where Mr. Archibald started a cheese factory some years ago. There are now eight factories and they are building more this year. Then I came back to the Nappan Farm, and what we expect from that is to show the most skilful way of carrying on farm work including the making of butter and the most skilful way of making it through summer and winter. Then a journey was made to Prince Edward Island, that gem of the provinces of the Dominion, with its softened contour and deep beautiful colors with the soil as rich as its products, grass as green as the slopes of Ireland and a sea as blue as the canopy of heaven. It is the best place you see (except Brockville) for getting fine cheese. (Laughter). About fifteen years ago one started a cheese factory and because some people had not done enough clear thinking, the whole thing fizzled out, but now we hope to put an experimental dairy station there, and we have applications from several persons to get one summer's education in factories in Ontario. They will go back taking knowledge to those people. Then I returned to Quebec, a wonderful province. Four years ago the cheese of Quebec was sold at one cent a pound less on an average than that of Ontario, and now I can find factories that are out-selling even factories not far from Brockville. (Laughter). The Government of the province of Quebec has arranged to pay half the salaries of fifteen travelling instructors to educate the people. Then across the province of Ontario. I could show you in this province people who will persist in boarding 200,000 dry cows all winter for the fun of it. They should make butter then when it can be made just as fine in body as when made from the best June grass, and have it sent across to England. Then out in Manitoba we have an Experimental Farm doing work for that province similar to the work that is being done here. In this province with its capacity for sustaining two millions at least, we are trying to find out what things will grow and what kinds of farming can best be carried on. And far across the plains we have a farm at Indian Head. Coming across here we come to a settlement of Icelanders apparently contented with their conditions of life up there. In most of their homes there were two shelves of books —these are men who do their thinking, men who are self-reliant, men who are persevering and must always win success there or anywhere. People who are make-shifts have hard times of it anywhere. They have built a church, and have one of their own clergymen from Iceland. One said "Vell, we are almost as enterprising as the English people ; our church is built and painted outside and inside and paid for, but we haven't put a mortgage on yet." (Laughter.) So that this is self-reliance and perseverance to the end. When I was coming to this place I went up to inquire my way at a house. I could not see any curtains on the windows or flower plants, so at once concluded that no woman lived there. Then I saw a clean churn standing at the door, and I thought a man would not clean it so bright. Then afterwards I thought there must only be a man, because the whole week's washing was strung on the clothe's line—just one collar (and that barely clean), in the middle of the line. (Laughter.) After all, these people in Manitoba who have to do the dairy work themselves as well as the outside farming, are all the time crying out for creameries. The men all over that country want to make butter and cheese to be safe against the disaster of frost.

Away out here is another Experimental Farm, just beyond the Rockies. Then down here in Vancouver Island they are selling butter at fifty cents a pound the year around. So from one end of Canada to the other the people who keep the most cows make the most money, and where they keep them milking the year around they make the most money from the cows they keep. So the whole trend of the work of this Association is to help the farmer to do more thinking, to have more ambition and a little

more self-reliance, and to make from his own business not merely more money for himself but help to make times better all around. I have this to say in conclusion. If any one at all wants help from these Experiment Stations, they exist for the purpose of helping the farmers. It is not counted trouble to answer letters of enquiry, and as the farmers get their eyes quickened, their intelligence enlarged and their judgment strengthened they will be fortified in their efforts to make this country from shore to shore the best in the world, and when our farmers are prosperous then everybody will have good times. (Applause).

The PRESIDENT.—I may say that I am perfectly delighted with the meetings, not only to-day but this evening. I was glad to hear the addresses. The last man that has spoken is a gem in himself, one that this great Dominion may well feel proud of. There is no man stands on the continent, no professor, that has the same knowledge in the dairy business that he is now trying to educate the people so thoroughly in. Our good friend Governor Hoard did his very best to transplant this man to the Wisconsin soil in order to educate his people in the best dairy thought of the land, but on the urgent solicitation of his friends he was induced to stay here to educate the people for this great dairy enterprise we have in hand.

Votes of thanks having been tendered to the speakers and chairman, the convention, led by the orchestra joined in singing the national anthem, and then adjourned until the next day.

SECOND DAY.—MORNING SESSION.

The President said he must apologise for the delay which had taken place in opening the convention this morning. Through the kindness of the Mayor they had been driven about the town and taken through several of the large manufacturing establishments. "We thought we could see all the institutions of importace in Berlin and be here ready to go on with the work by ten o'clock; but notwithstanding all possible haste, you see the delay that has taken place, and yet we have not visited half the grand institutions in this locality. I am perfectly surprised at the large and interesting industries located in this town."

AUDITORS' REPORT.

Mr. R. J. Graham, the Secretary-Treasurer, then read the Auditors' report, which, upon motion of himself, seconded by Mr. Robert Philip, was adopted. It is as follows:

Receipts.		Expenditures.	
Membership	$82 00	Expenses of directors at board meetings, etc.	$254 45
Balance on hand as per last audit	524 50	Expenses of instructor and salary	596 65
Grant from the Ontario Legislature	1,500 00	Premiums awarded for butter at exhibitions	175 00
		Printing account	86 00
		Reporting Seaforth convention	50 00
		Secretary-Treasurer's salary	100 00
		Postage, stationery, etc.	29 15
		Lecturers and expenses of Seaforth convention	50 00
		Balance on hand	765 25
	$2,106 50		$2,106 50

We the undersigned auditors have examined the Treasurer's accounts with the vouchers produced and find them correct and a balance to the credit of the Association of $765.25.

J. M. MORGAN, J. S. PEARCE, } Auditors.

Berlin, February 14th, 1891.

ELECTION OF OFFICERS.

Mr. AARON WENGER presented the report of the Nominating Committee as follows :

President : D. Derbyshire. *1st Vice-President :* Aaron Wenger. *2nd Vice-President :* John S. Pearce.

Directors : John Croil, Aultsville ; J. M. Burgess, Carleton Place ; T. J. Miller, Spencerville ; John Sprague, Ameliasburg ; Robert Philp, Cadmus ; M. Moyer, Toronto ; Geo. Harcourt, Guelph ; W. G. Walton, Hamilton ; John Hannah, Seaforth ; Erastus Miller, Park Hill ; J. N. Zinkann, Wellesley ; T. Brown, Holstein ; Arch. Wark, Wanstead.

AARON WENGER.
JOHN SPRAGUE.
JOHN HANNAH.
R. J. GRAHAM.

Mr. WENGER moved, seconded by Mr. A. MILLER, of Brockville, that the report be adopted, which was carried.

The PRESIDENT.—I take it as a great honor to be elected to the position of President again. There is no position in the province of Ontario that I would sooner have, because I believe it is the most important position that any man could aspire to. It has such great possibilities that I feel I can devote a great deal of time to the duties and in this way do something for the great province of Ontario. I thank you for this kind treatment here amongst strangers, and I shall always remember it with the greatest gratitude. I will now introduce to you Professor Robertson, who will speak to you on the subject of dairy farming.

WINTER BUTTER-MAKING.

Prof. ROBERTSON : Mr. President, ladies and gentlemen, I have been very much gratified this morning in being driven around the streets of this thriving town of Berlin. We people, who spend most of our thought and nearly all of our time in trying to provide food for the working people who in turn furnish other things that we need, too often forget that the prosperity of our country depends not alone on the success of our farmers but on the thrift and enterprise of those men who even make the buttons for the farmers' coats, the shirts for his back, the shoes for his feet and all those other things which we have seen in process of manufacture this morning. Yesterday I told a friend of mine that the population of Berlin was about six thousand, and I felt that I had almost been stretching, but now I find you have nearly eight thousand people, and that your throbbing manufacturing enterprises enable you to make every township and county in Canada pay their tribute to you, because your goods go clear across from our shore of the continent to the other. I want to say in this connection that the closer the bond of sympathy between people working in towns and people working on farms, the more will we be able to help one another and to enjoy even privileges. Very often the countryman thinks the townsman is a man who waits to take advantage of him at every turn, and the townsman often thinks that the countryman is a fit subject to be skinned right down close every chance he gets. When we know each other better we will be able to work together more harmoniously for the advancement of the many interests of our one Dominion. This morning I will speak to you upon one aspect which will promote our common happiness and prosperity, that of making more and better food in the winter time. The task and occupation of the farmer is to devote his talent and strength to solve these problems that face him in such a way as to bring back from nature as much as possible all kinds of food which contribute to the support of the race to which he belongs. Now, a man who follows dairy farming and provides food for the people during the summer months only is like a man who owning a button factory shuts it up for the winter saying, "Closed because the winter is cold." With all the plant idle, all the hands discharged, no income throughout the winter months he could never compete with another button manufacturer up in Port Elgin that runs all the year round. No more can a farmer in

Waterloo compete with a farmer over in Wisconsin or in England who keeps going all the year round and has an income all the year round. Now, winter dairying has nothing in itself that is hostile to summer dairying any more than shirt-making in winter has in it anything that is hostile to shirt-making in summer. Perhaps you make a different class of goods, that is all. At the same time business should run the year round in both instances. Farmers have come to this experience in their calling, that their profits are threatened with annihilation. Times are hard — there is no question about it—and times are hard upon the farmers whose occupations lasts only half the year. Times are not hard with farmers in Ontario who keep their business going and sell products in the summer time and fatten and sell steers and other stock products in the winter and spring. These men have been doing well during these past ten years when times were hard. Now, a dairyman who has no fat steers to sell can do something else. The point is, can we begin winter dairying without much further outlay? A Creamery Association is just an organisation which takes hold of this new problem and helps the farmer to solve it. A man who runs a creamery for only five months in the year will find his patrons becoming thoroughly dissatisfied with the receipts from their cows. It cannot pay a man to feed cows for twelve months from which he obtains cream for only five months; and the man who runs a creamery can never afford to make a profit out of the losses of his patrons. Put that down as a solid fact. And the man who furnishes skill and turns around and helps to make the profit of his patrons larger will get a larger share for himself. Now, if a man running a creamery will try and extend the season for a few months more he will find he will get so little cream that the running expenses will run away with the profit. You need not begin to advocate winter-dairying until you educate the farmers to feed their cows so that they will give milk during the winter. You want to begin at the foundation, educate the farmers to feed their cows so that they will give milk and send it to the creamery. Then when they have abundance of pay coming in regularly all winter, they will have money to pay their current expenses and it will not take them all summer to pay the accumulated grocery bills of winter, but they will be ahead and the summer will leave them more profit. I have said that much by way of preface to try and remove any misconception that winter dairying has any hostility in it to summer-dairying. Now, put this down as my second proposition, that the price of butter in the summer time is one factor in a farmer's business over which he has almost no control. A man, twenty men, fifty men, five hundred men, can never, by any manipulation, raise the price of creamery butter in summer by one cent a pound. But creamery butter fresh made will sell on the average throughout the winter for about a half more per pound than it will from June to September. A man has exclusive jurisdiction over that factor. He can make creamery butter from June to September and take the prevailing price then, or he can make from September to June and get the prevailing price then. Then put this down as my third proposition, that the man who lets his cow go dry for seven months of the year will get less during the other five months of the year and will get less during each of these seven months when she does milk, than will the man who makes his cows milk not seven, but ten months in the year. Men say if they milk their cows all winter they will get a smaller flow in summer. As a matter of fact, they will get a larger flow during the summer months. A cow that goes dry in the winter time that is fed upon dry food will have her system so ill-adjusted for milk-making that she will give less milk in the summer. Take these charts now. I will take the Jersey cow, not because she is the best cow, but because the ideal form is easier described on this contour. The form of a cow's body will reveal both its capacity and power for making milk to the eye of the skilful judge. She is a milk making machine, adjusted even in regard to the economical contrivance of her body for appropriating bulky food, here (the mouth) coming out in the concentrated form of milk at this end (the udder). Now, if allowed to become dry, she may not be so well developed here (the udder), and in a short time you will find that she drops off in her milking because she is not developed into the form for giving milk. In your heifers, the first season develop these parts of the body and thus make your means better adapted for carrying on your work. Let me give you the points of a cow and show how she can be assisted for the enlargement of her capacity for winter dairying.

Beginning at the most valuable one, you know a large udder is desirable and the points of excellence are first length, then breadth, and then elasticity—softness of quality. This is a very peculiar and mysterious laboratory wherein the cow changes the blood of her system into the milk she gives the dairymen. The next point to look for is a soft mellow skin. Any one knows that a steer will thrive better if he has a soft mellow skin. A man who feeds his cow well through the winter on succulent food discovers that the cow has a skin more mellow and soft and unctuous. The skin is a most important organ which goes around and through the cow's body, the only interruptions being in the stomach. The digestive action depends upon the activity of the internal lining of this canal, in pouring juice upon the food in the stomach and then in assimilating the food after it is partially digested. Any treatment that will make the outside skin more mellow, more movable, will give you a better cow. The next point is a large barrel with ribs broad and wide apart. By the use of bulky and nutritious feed you will develop and conserve the digestive power and augment its potency. A cow that lives all winter on straw will find, in the spring, that she has been reduced so much in her productive capacity by having to wrest nutrition from this straw that she has got into the habit of wasting things. That cow won't give you so much milk all summer. Then a cow needs to have broad loins and long rumps. You cannot change this, that is born in the cow; but you can do this, if you keep on developing the milking qualities of any cow, you will find that her progeny—her calves—will very soon have the long rumps and broad loins. Then you will have better bred animals for giving milk. The cow should have a rather long fine neck, fine quiet face, with large eyes. Did you ever see a cow with a short neck that milked a long time? I do not think I can ever recollect a beefy-necked cow that gave milk for a long period. The object simply is to show that a man by giving a cow some chance will develop in her just the form that will help her to give the largest possible quantity of milk for the longest possible period. It is a good practice, because it is in accordance with a man putting himself into harmony with the laws of the universe which, when he does that, will shower blessings on him every time. The cows that milk through the winter, or ten months in the year, will give more milk per head than a cow that only gives milk for six or seven months, and when a man gets more milk per head he will find that he has larger profits and then he will keep more cows. I will repeat what I said yesterday, that I think every dairyman who has a hundred acres of good land should keep, at least, twenty-five good milk cows. Now, how will he get the cows? The trouble is if he milks only in the summer time he will not raise many calves. You will find this all over the country, the man will raise the winter calf seven out of eight times. I would not advise a man who has twelve cows to buy thirteen more, but by having winter calves, if he will rear these, in three years' time he will have twenty-five cows. I would have things adjusted to feed those cows, by growing corn and filling silos. In that way I would put myself down as saying that every cow would bring me in each year, at least, $50 on an average. One man down near Brampton, for three consecutive years, by making butter and selling it in Toronto, had receipts averaging $73 per head. He had $72 one year and $75 another. This was from twenty-eight cows. He had private customers and sold at twenty-eight cents per pound. Then not merely will you have more cows for milking. Half of the calves are bull calves. Well, why should the farmer kill his bull calves when all the year around people are clamoring for beef of good quality. I remember a story of a man who suggested that the beef should be graded as they grade wheat in Manitoba. This man got a piece of an old ox and tried to cut it, but the knife and the beef seemed to be ill-adapted to each other to the end of bringing about separation. He suggested to the proprietor of an hotel that if they graded their beef as they graded their wheat this should be graded as number one hard. (Laughter.) If calves are raised through the winter they can be fattened rather more rapidly, coming into the market in capital shape when they are two years old, and the dairyman who grows lots of corn can fatten lots of steers and add income in the spring in this manner to summer and winter dairying. I want to say this also, that the man who sells butter through the winter will get for that butter *a constant demand* at a good price. He will have some trouble at first, but there is an unlimited demand for excellent butter in

large centres of population. Mr. Moyer stated they were paying twenty-three cents in Toronto for butter which is adapted to the want of their customers and that they get a butter which they could not sell at five cents, or even give away. Meanwhile if we could send across a weekly shipment of butter to England, we would get the Danish prices netting now twenty-six cents per pound. In 1886 I went to the Colonial exhibition. I had some butter from the Ontario creamery. It did not get there very well, and was kept at the exhibition until it was unsuitable to be sold as first-class butter, and yet I think it sold for 108 or 110 shillings; but a capital shipment was sent through afterwards and that was sold at the price of Danish butter, and every year since I have been asked by the firm who bought that shipment to send from three to five hundred tubs and I could charge what I had to pay to get it. There was no limit. Now one point more. It is very hard to get farmers to go into this business so I will tell you what my own view is of the best way to go to work about this thing. You will find first of all that the farmers will hardly make their cows milk through the winter and send milk to the creamery at first unless they have positive proof that creameries run in winter are to be a success in our country. Farmers are rather timid in going into anything they do not understand. If a man comes along with a first-class humbug they will go into that straight, but if a good thing comes along they are the most conservative class of our population. The farmers say, "Well, we don't know exactly how well the Canadian-made butter would sell in England; it might only sell as second-class." Farmers don't believe that winter dairying by supporting the creameries would pay very well. They say that "we don't know that England would pay us high prices for our butter." I would like to see in Ontario, at two points perhaps, and in each province throughout the Dominion such an experimental dairy established as would endeavor to discover the best methods of making of cheese; to find out how to solve those problems in that difficult process of cheese-making. Then I would propose to have these same buildings used for making butter all winter, and having the farmers in those sections send their milk to the factory to be made into butter and taken to England. This butter might be shipped every second week or oftener, and if at first it does not sell high I think the Government has resources enough and interest enough in the dairy business to be able to stand all the loss on weekly shipments of fresh made butter for four or five or twenty weeks until we establish a reputation in England and let the people know that our butter is excellent. The whole thing will not come at once, but when people see how this will take then I dare say twenty more factories will start up and this will become a source of influence to help the farmers throughout the country. Now I do not see why we should not do that this coming winter. If to the men whom the farmers send to Ottawa to vote their moneys, to make their laws, to help to develop the interests and resources of this Dominion they would say—"We want that, we are going to have that"—the members of parliament would say, "Yes, you will have it." We have in this Creameries Association with all the power behind it an organisation which can say "that has to come this year." So I would like to see you pass a pretty stiff resolution, if you want that, if you are bound to have it. And if you don't get it, then I suppose you will have to do as the good old woman said when she was in trouble. She said she always got some consolation when everything else failed by trusting in that promise: "Just grin and bear it for a while." Let me say a few things as to how this winter dairying presently can be carried on advantage in the farm home, because in connection with that same scheme of helping with farmers to make butter in winter by furnishing milk to creameries I would like to see the farmers helped in some practical way to make more and finer butter in their own places. Notwithstanding the importance of the creamery industry and the advantages that grow from its development I think one half of the butter will be made in home dairies for some time to come—in my lifetime anyway. From isolation of settlement, from various causes, about one-half of all the butter product in Canada will be made in private dairies. Now I think that the farmers' wives are eager to learn when they get a chance and I think the farmers' wives are able to make the very finest butter when they get a fair chance, but I think the trouble has been that the men have had all the good things. They had to have the horses and the reaping and mowing machines and the driving sheds and everything else they wanted while their wives had to get along with

one pantry for keeping the milk, the butter, the cold vegetables, the pies and everything else. There the cream took in the mixed flavor. Now if the farmer would give the wife a small milk house I will warrant that it would be kept far more tidy than his driving shed, and she would take such a pride in it that it would make a man look after his own business. Then go around and see this woman struggling with an old-fashioned churn, working twice as long in churning the butter as there is any need for, and until it is not so nice as it would be if churned more rapidly, all because this man had to buy a new top-buggy and to build a new driving shed, etc., never thinking that his wife should have her strength spared and the needs of her department provided for. Get rid of these old-fashioned churns and milk houses and you will revolutionise the butter trade at once. I am not in favor of strikes, but if I could reach the ears of the good women that are such an ornament and joy to the households of Canada I would have them strike and say "We won't do anything until you give us new milk-houses and churns" Men would likely stand out for a while, but they would have to give in. (Laughter.) I would like to see a scheme inaugurated throughout all the provinces and clear across our whole continent whereby one man or two men in each province with a capital equipment of dairy apparatus loaded on a travelling waggon would go right to every township and spend one day at one end of it and another day at the other end of it (letting the people know beforehand that they were coming) and show the nicest butter prints and other dairy appliances and practically illustrate and demonstrate the best way of making butter. How much would that cost, do you suppose? Each man would cost say $800, and for two $1,600. In this province there are about 200,000 farmers somewhat interested in dairying. How much would that cost? Less than one cent apiece. I think this would induce the farmer to get his wife a new milk house and a new churn. I find if one woman gets a nice, attractive, cheap dress twenty more women want to get the same thing, and if one woman gets a nice, new milk-house and churn twenty more women give their husbands no peace, night nor day, until they get that new milk-house and churn also. This would bring very much good to the dairy business. Now a very few facts about the making of butter after it has got that far. The cow elaborates the milk in the udder. You have blood coming in by the arteries at the top of the udder, which is composed of two glands lying lengthwise. Peculiar cells line the inside of the lactiverous ducts down which the milk trickles to the milk cisterns at the tops of the teats. In each cell a formation grows that is almost like a tiny bud. That bud by and by drops off and trickles down with the liquid milk. These buds are the globules of fat from which all butter is made. They float in the milk. Milk is practically all soluble except these globules and these are held in suspension in the liquid of the milk. They come to the top when the cream rises because they are lighter than the serum, but if a person after milking leaves the milk in the stable until the temperature goes down to sixty degrees these globules do not get through quite so quickly. Changes occur which make it almost impossible for these fat globules to gather to the top, either so completely or so quickly as if the milk were set in cold water immediately. To give an illustration. A man gets into the habit of doing nothing for an hour after breakfast every day. He will by and by want to take an hour and a half and by and by will become an unskilful, lazy man all day. Get into the habit of setting down the milk pails for half an hour after milking and these globules follow his example, since the man whom they are trying to serve is not trying to hurry. So in that way you will just find that inanimate nature always responds to man's activity or to man's slowness. The centrifugal machine is meant for the same purpose of separating the cream. It swirls around very fast and the heaviest parts of the milk are thrown to the outside and the lightest parts to the inside. Meanwhile if a man cannot use that—and for some time it will not be in common use—every man through the winter time can get plenty of cold water, as ice is very easy of access. Cold water can be gotten very easily, and if you put the milk pail into cold water you will get off the cream very quickly.

What about this bad stable flavor that never comes in milk from a cow that is fed on wholesome food? If you feed a cow in the winter time on turnips you will

have a turnipy flavor. Every man should have a well ventilated stable, but not two well ventilated, not so well ventilated that in January those winter zephyrs will find their way across the cow's back ; but a fairly well ventilated stable that keeps the cow healthy. When the cow gives the milk it is warm—between ninety-seven and ninety-eight degrees. At that temperature milk will evaporate and nothing can settle on it so long as it is steaming, but if you leave it until cold it will absorb the stable flavor. If you attend to this matter of quick setting you get two gains, more cream and butter and a better quality of both. A man never does the right thing without getting two or three consecutive rewards for it. Unmeasured are the advantages of doing what is right. Then a very few words about the effect of churning. In making butter at home one can all through the winter churn once a week only if need be, and have the butter of exquisite flavor. Thus, you see, there is a great deal of labor saved by churning one day a week instead of three. That can be done in this way: if the cream is quickly cooled until it stands at forty degrees and is left cold until one day before churning and then warmed up gradually to seventy degrees, and has added to it a small portion of sour cream or sour skim milk, the cream will churn easily and save all this trouble of churning and washing of utensils three times a week. Keep the cream at a temperature of forty degrees, raise it to seventy degrees one day before churning, and add about two per cent. of sour cream or sour skim milk. No man can afford to churn without a thermometer. He might as well shut his eyes and try to guess the color of the neck-tie of the next man. This plan of trying to tell the temperature with the fingers is no use. If you will do these things we will find that dairying in our country will begin to take the place it should have in our agriculture. It will be the one thing to which all the rest of the farm work will mainly tend, and the selling of concentrated products will pay far better than hay and coarse grains. A man can concentrate more skill and labor in a ton of better which at twenty-five cents a pound, is worth $500 than he can load into an equal weight of hay. Besides he need not load into $500 worth of butter one-tenth as much of real hard manual labor as into the hay required to fetch as much money. It will leave more time to think, and thought always sells dear in products. So instead of going on blindly grinding out blind results by merely following the men that have gone before us, we will find Canada certainly the best place to make milk and butter—summer for cheese mainly, winter for butter mainly. The raising of stock in winter and the fattening of swine in summer can be combined, and then along with these sheep and horses can be reared. The more of these products and animals, and the less hay, grain, and straw we sell, the richer we will keep our farms and the farmers will become wealthier than before. Along that line I believe winter dairying will come, and when it does come we will wonder why we have been foolish so long. (Applause).

Mr. Moyer—The farmers around this part of the country all raise turnips, and seem to think they connot get along unless they feed them, Now, when we go into winter dairying I think this should be stopped. There is one other point which I think is of very great importance, which has not been touched upon at all yet, and it is a very simple one ; that is the salting of butter. I find many people use common barrel salt, and very often you will find lumps of it in the butter. That depreciates the value of the butter at least two or three cents a pound, and fine salt can be got costing very little more a barrel. People should use nothing but the very best of salt for butter-making. The ordinary barrel salt is not fit to be put in butter, and by saving a fraction of a cent on salt they loose from two cents to four cents on their butter. I believe that three-fourths of the butter that comes to Toronto is still salted with this common salt. Now I want a little light about ripening cream in the winter time. I think that at about forty degrees it will keep in perfect condition for a week, but after it stands three or four days there is a change. There is not the same change as in the summer time when the heat makes it sour. I learn from experts every day that if we let that cream stand for three days and then use it on the table it has not that nice sweet flavor when fresh, and if that is the case it must certainly injure the quality of the butter. Now, I do not know whether the idea of putting in sour cream before churning will work, because this sour cream must have been injured by some chemical change which I cannot explain to you, but I know it takes place. I have suggested to several of our makers the idea

of ripening quickly by heating the cream right straight to a temperature of over sixty degrees. It will then get acid in a very short time and perhaps the butter will have a better flavor. But I would like to know what chemical change goes on in the cream, when it is kept so cold, after standing for two or three days.

Prof. ROBERTSON—As to feeding turnips, the volatile oil in them seems to find its way into the milk and give the same taste in the butter, and it cannot be smothered or gotten out only in a very limited measure. So the safest way is to never feed milking cows on turnips. In the matter of salting, any salt that is pure, that will salt to the taste but which you cannot discover in the touch is all right. You want to have the butter taste of the salt, but never to feel it, because it should be all dissolved, as it will be if you use a pure velvety salt. In the matter of cream, after standing a while it will taste old because of certain changes from certain fermentations that go on at low temperature. They make old cream lose its freshness, but the butter from that is the fat mainly, and the fat seems to be unchanged. I find you can have as fine butter from cream which has been kept a week in the winter time as from fresh cream. Now a word about fermentation starting. It seems that there is in cream a certain amount of what is called the sugar of milk. Now there falls into cream from the atmosphere some of those spores that you see in a barn when a beam of light is striking throngh a crack. These things are falling into the cream all the while, and many of these start fermentation just the same as when yeast is put into bread. Now the sugar becomes changed by the activity of these germs. But that kind of fermentation does not work very well except between sixty and ninety-eight degrees, and then if above that temperature does not work so well. If your cream is kept at one hundred and fifty degrees it will not go on at all, so that if you kill these germs and protect it from receiving more of them you can keep the cream as long as you like. It will keep for a year if sealed, so far as sourness is concerned. Other fermentations would cause it to spoil and decay in other directions. Now, if you have it exposed in milk pans, there will be going on in the milk when at sixty or seventy degrees, lactic fermentation. Then it gets sour fast enough. If you keep it at forty degrees it does not go on at all, and if you increase the temperature up to sixty it goes on slowly. Therefore, in the winter time I put in a small quantity of sour cream because the quicker you can sour the cream fit for churning after the souring starts the better.

Mr. HUNTER—Is it not possible that the butter extractor may revolutionise the whole and do away with the exploded theories as to the handling of cream carefully so as not to burst the globules of fat. We have had a machine placed in our factory. Scientists are opposed to that upon the ground that the butter globules are injured, and advocate a revolving churn of some sort without any dash whatever. Now, how are we to get into the right position amidst all this. I am using a centrifugal machine in my own work and my experience is that there is no necessity for waiting for the cream to ripen. I would like to ask what is this ripening? Is it not the first stage of decomposition. We have run the fresh milk through the machine and churned it and have got a first class quality of butter. Some of this put by in August in tubs we are using in our families. It was put up in butter tubs, not quite salted sufficiently for tub butter, and though it is not quite like fresh butter made yesterday, it is what would reasonably be considered good butter. Now, why this waiting for allowing any taint or anything else to affect the good flavor of the cream. I am satisfied that we will gain by any shortening of the distance from the milk pail to the consumers.

Mr. WENGER—Have you not found that you did not get as much butter from the sweet cream as from the sour?

Mr. HUNTER—Yes; I would say that. We have by churning the cream at a reduced temperature.

Prof. ROBERTSON—My experience is this, that when the cream is sour I get rather more butter from churning sour cream than from churning the same cream sweet. One illustration: At the creamery at Guelph we put parts of one lot of cream into five bottles and churned these at different degrees of acidity. We had the buttermilk

analyzed in all cases and I found that there was recovered by churning sweet cream only seventy-seven per cent. of the butter fat. In another I got ninety-seven pounds out of a possible hundred when churned far too sour to make the butter nice. You can strike the mean and get the most and the nicest butter from cream slightly sour. There was some difference of opinion as to the method of churning with regard to the bursting of these globules of fat. So far as I know, they merely float in the milk and all we require to do is to get the cream in such a condition that they will come through and strike and stick. The acid seems to facilitate this object. Then, another point is this ; it has been said that these globules of fat are injured by slow or fast or some other kind of churning. They are so small that I have never known any kind of mechanical movement to injure them. Fifteen hundred of them would lie together like a row of marbles and measure less than one inch. But the least change of temperature will change them very much ; so that the grain of butter is nearly always spoiled by the temperature and not on account of the movement. Then, while the souring of milk is in a certain sense decomposition, it is not what you would call putrefactive decomposition, and the lactic acid which is formed is itself a germicide which will destroy certain other spores. For instance, if a man makes a cheese sour it will keep for two years without decaying and will keep so long and be so hard that he is allowed to keep it all the time. (Laughter).

Mr. THOMPSON—What is the effect of light on color ?

Prof. ROBERTSON—Light will always make it brighter. At the same time more lactic acid germs get into the cream. Rather than brighten the color by the action of light I would put in a little coloring and make it yellow or brown as my customers preferred. (Laughter).

Mr. S. C. CLARK—Would it do to use buttermilk instead of sour milk or sour cream ?

Prof. ROBERTSON—In buttermilk you have something you have had through the churn before, then if you put it through the churn and have it in the buttermilk again you will find other fermentations which are apt to produce a peculiar smell which buttermilk acquires after standing for a long time.

Mr. THOMAS BROWN—You refer to the temperature being lowered by the milk standing for some time. Would raising the temperature of the milk to its normal state cause the cream to rise equally well. In regard to that there is another thing that is recommended, that we add from one-third to one-quarter of water, and there seems to be a contradiction about this.

PACKAGES FOR THE HOME TRADE, AND TESTING CREAM.

Mr. AARON WENGER was next introduced. He said : There are a number of packages in the market. First of all you know the old-fashion firkin used in this market, with both ends loose. Then there was the old-fashioned hand-made tub. Subsequent to that there was the spruce tub, made by machinery in Quebec, and subsequent to that again we had the tin-lined tub. Now, these are all good packages for the export trade. For the export tub, however, I prefer the tin-lined and the firkin. There is no soakage, and, with a good salt paste on the top, it will keep the air from the butter. Then some makers prefer the spruce tubs to suit some of the English buyers. They have been in the habit of receiving the butter in this shape, and the English market is very conservative, but I find the tin-lined tub keeps the butter better than the spruce tub. Now, as to the home tub, some of these are good. Some people want a small package of butter to last two or three or four weeks, and many of the dealers want those tubs. Outside of that we have a little package brought before the public by Mr. White, of Belleville. These are made of white wood and tin, being lined with paraffine inside which renders them perfectly odorless and tasteless. These are good packages for the home trade. Then we have the pound prints. But the trouble that I have found in my trade is in making these prints. It is a very nice way of putting up butter, but the additional expense of keeping men to make these prints and of sending butter in that shape to the market means a good deal of expense and loss of shipping cans.

My experience last season was that if I had packed my butter and held it for later sales I might have made more profit. My creamery is run on the cream-gathering system. In place of paying for the cream as it comes to the factory I was led to the discovery that there was a great difference in cream, for this reason that no two farmers' cream would rise under the same conditions. I believe under the same conditions you will get precisely the same cream, but habits vary very much and the cream varies with them. For instance, a farmer had five or six or eight inches of cream and we churned by a test and paid for the next two weeks on that basis. If found short I deducted, and if there was a surplus I added a little to make the thing uniform. I found that the shortage was too great to make anything out of it. Then I got a cherry tester, but this I found impracticable in many cases. Then next we heard of the oil test. The oil tests consist of small tubes about nine or ten inches long. You put in about five inches of cream. The tubes are all numbered as well as the samples of cream, and by this means the manufacturer is protected and the patron is likewise protected. There can be no possible mistake by which the patron will not receive exactly what his cream is worth. The samples of cream are brought in during the day to be sour next morning and rocked in this little churn until they are churned. They are then taken out and put into a water bath, hot enough to melt the butter in these tubes, when the oil will rise to the top, and the depth of that oil is measured and from that we arrive at the conclusion as to how much the cream would yield per inch. If there is a surplus of butter in the cream you should arrive at a conclusion as to what it is worth and add that percentage, and if there is a shortage deduct the percentage. But to get the proper value, these tests should be made every day, because one day a farmer may have twenty inches of cream testing eighty and the next day he may have only ten inches testing one hundred. For every twenty inches of cream he would have twenty-six pounds of butter, taken on an average, and on the first test he might only be paid for two pounds of butter. The patron should be paid exactly for what his cream yields, because we find the cream supplied by very few farmers to the creameries is exactly alike; but I find where proper care is taken the cream will vary very little from day to day. One of the largest patrons I have sets his milk in a spring, flowing right out of the rock, so far down that it is not influenced by the hot weather of summer. The temperature of his cream is kept the same year in and year out. It has stood regularly at one hundred on a test as to the value of the butter fats from the opening of May till September, showing that under proper conditions the cream will always test the same; but I find that under varying conditions it will vary from time to time.

Then, in regard to testing in the centrifugal creameries, Mr. Sprague, our creamery instructor is a buttermaker and can give some information. A great many patrons have the idea that if they send sour cream they will get a higher test, a higher percentage and a higher yield. It is wrong where the cream is taken out of the water and soured. Those who do it are injuring not only themselves but the creamery. There is a certain amount of whey in the lower cream and the upper cream is richer, and when patrons send it to the factory in this shape it is so sour that the buttermaker cannot get the article he should get. We want the ripening and handling of cream done entirely by the buttermakers.

CREAMERY INSTRUCTOR'S REPORT.

Mr. MARK SPRAGUE was next called upon to present his annual report which is as follows :

Mr. President and Gentlemen : It is gratifying, I assure you, to present this Board with the Instructor's Annual Report. There were thirty-nine creameries under supervision the past season throughout Ontario. The daily average make of these thirty-nine creameries was 14,500 lb. of good A No. 1 butter. Of these 39 creameries, 11 are milk gathering and 26 are cream gathering. I secured 27 members. Tested 1,064 samples of milk, and I take this opportunity of congratulating the creamery proprietors on having such an honest and upright patronage, as there was only one conviction, out of 1,064 samples. It was necessary in a few cases to give warning, and the warning in each case was sufficient.

I will embrace this opportunity, Mr. President, to ask the assistance of this Association to be given the cream gathering creameries, by way of their patrons. There seems to be an idea prevalent that their cream must show a test of 15 or 16 ounces to the inch or there is something wrong, and in order to get this large test the cream is placed in a warm place, and in too many instances is injured if not made unfit for human consumption, especially in the hot days of August and July. Now, these patrons should, and must be educated before the desired high quality can be attained. It is true there are localities in which these troubles are greatly modified.

But if you look into this matter you will find an enterprising creamery proprietor. At the Ayton Creamery there was a marked improvement in the quality of the cream received. On enquiry, I found the proprietor was sending out among his patrons printed dodgers or circulars, on the care of their milk, as to straining, care of cream, etc. The creamery patron must be educated as well as the butter maker. Hoping this Association may never tire of its good work, and not wishing to occupy too much of your valuable time,

I am, yours obediently,

MARK SPRAGUE,
Instructor.

Mr. Sprague explained that although there was only one conviction out of 1,064 patrons he did not mean to say that this was the only man who was found wrong. He further said: Now, I find creameries where there is a marked difference in the cream. In one case I found the proprietor had gone to the trouble of getting out dodgers and have the cream gatherer place one in the hands of each of the patrons, giving directions as to the care of milk and cream and this plan worked well, and in those creameries where this has been done I can show the evidence of the good work, especially in Mr. Wenger's Ayton creamery, and I saw when I was there the best of cream, calculated, in my estimation, to make the best butter in the cream gathering creameries. Mr. Wenger deserves great credit for the enterprise he has shown in this direction, and I say this to stimulate a desire in others to do as Mr. Wenger has done.

Mr. J. WILFORD.—Mr. Sprague has given great praise to the Ayton butter and of course he may have tested it, but I imagine in Crosshill we made as good butter as was made in Ayton, and I think we demanded as good a price as any place in Canada and we got it.

AFTERNOON SESSION—QUESTION BOX.

On resuming at two o'clock, written questions, which had been put in the question box during recess, were disposed of as follows:

QUESTION.—How did the dairy butter compare with creamery at the last Industrial Exhibition, Toronto?

The PRESIDENT.—I was a judge at the Industrial Exhibition on butter and I never was so thoroughly struck with the importance of our creamery business as I was at Toronto examining this butter. The finest exhibit of creamery butter, I may state, that was ever made in the Dominion was made in Toronto last September—put up in the finest way. Really it was a great credit to the Creamery Association. You know the Association gave something towards inducing the Industrial Association to give a prize worthy of the Creamery Association and the dairy interest of the country and the exhibit was very nice indeed. The dairy butter, on the other hand, was fairly good butter, but there must have been at the least calculation six cents a pound difference in the value of the average creamery butter as compared with the average dairy butter. So I feel very proud, and hope we will be able to make the difference still wider between dairy and creamery butter. Of course the idea has been talked about considerably of educating our farmers to make better butter at home. If it is to be made on the farm I would like to

make the best we can, but there is five per cent. of the very best farm houses lose money on account of unskilled people trying to manufacture butter without proper facilities and without proper accommodation to manage this particular business. Now, we know that the farmer will get a self-binder and all the other conveniences for himself, while he will have an unsuitable milk room and churn for his wife, who is without ample conveniences and often without skill. So we find out by these things and careful inspection that there is five per cent. or $1,500,000 a year lost through not having proper butter. If we put it at the modest difference of four cents a pound between them, it would make $2,700,000 lost this last year in consequence of not having all the butter we make made in the best way by the best men and with the best facilities.

QUESTION.—(1) Will salting cows regularly improve the keeping qualities of butter? (2) Should the milk be aired before setting for cream? (3) Will salting improve the keeping quality of butter?

Prof. ROBERTSON.—(1) Yes, increase the milk and improve the quality of the butter. (2) I would just air very slightly to prevent the milk from being cooled down. (3) Up to a certain point it will. About one ounce up to a pound is the proper proportion for packed or tub butter.

QUESTION.—What is the best grain ration for improving the color and quality of butter.

Prof. ROBERTSON.—A grain ration should be given with economy. In Ontario two-and-a-half pounds of pease, two-and-a-half pounds of barley and two pounds of bran with one pound of either oil cake or cotton seed meal per cow per day.

QUESTION.—Will you please say which breed of cows are most profitable for butter making and also how much salt we should give per pound?

The PRESIDENT.—Governor Hoard was asked that question by a persistent inquirer and he answered, "My dear friend, you may as well ask me to tell every man in this room what kind of a wife he should keep."

Prof. ROBERTSON—I may tell you that I would rather pick the man's cow than his wife anyway. But if a man wants a large yield of cream or butter he will get the most profitable returns from Jerseys or Guernseys, or their grades. If he has a light farm and wants to get good average milk he will get it from the Ayrshires; but if he wants butter for the winter, and to raise calves for beef as well as milk, he will do best by the Shorthorns of milking strains, and Holsteins.

QUESTION—What is the reason that cream will rise on sweet milk after the cream is taken out of the cans?

Prof. ROBERTSON—Well, when the milk is put into a can the largest of the fat globules rise quickest and come first to the top. If put into cold water as soon after the milk leaves the cow as possible, nearly all the cream will come up. About ten per cent. of it may be left in the milk. If that skimmed milk is set in a can small fat globules may come to the top for two, three, four or five days, but all the cream that comes up after the first skimming is made up of smaller globules. It does not make such good butter. The globules vary in size from the fifteen hundredth down to the seven thousandth part of an inch perhaps.

QUESTION—Would you advise farmers to add water, and if so at what temperature, to milk in the fall and particularly to the milk of stripper cows, to overcome the viscosity of the milk, for the purpose of raising all the cream.

Prof. ROBERTSON—These fat globules of which I spoke have some difficulty in passing through the serum. In the autumn and winter that is more gummy and sticky and will hinder their movement. Therefore, in the fall of the year I would add about 25 per cent. of water to the milk of strippers. I would raise the temperature of the milk to about ninety eight degrees and it will make the cream rather easier of churning.

QUESTION—Can turnips be fed to cows so as not to be discerned by tasting in the milk or butter? If so in what manner can they be fed?

Prof. ROBERTSON.—Well, the feeding of turnips to cows will always affect the flavor of the fat in the milk. Some people may not discern the flavor but it is still there. But if people must feed turnips to cows the best way is to feed immediately after milking, so that by breathing they will eliminate this odor to a certain extent, and then if they will add a small portion of saltpetre to the milk when it is set it will lessen the effect of feeding turnips. It will still be discernible, but this will lessen it as far as possible.

QUESTION.—Do you say that your experience is that by churning sweet cream say at a temperature of fifty-five degrees you get more butter out of it than by churning it at sixty degrees? I have found by taking cold, sweet cream and by heating it up rapidly and churning it only about two-thirds of the butter comes off. Can you explain why it is so?

Prof. ROBERTSON.—In the first place I did not say so, but two or three in the hall said so. But even if you heat up such cream rapidly to seventy degrees you will get just the large globules to stick where they strike and the small ones go with the buttermilk. An analysis would shew about one-fifth of these globules remaining in it. But on the whole if you will cause the cream to be a little sour before churning you will get more butter and that of a rather finer flavor.

QUESTION.—If I understood Mr. Wenger rightly this morning he said that he placed test in warm water to start the ripening process. Now, the half of those tests were ripe when he got them and by placing them in the way stated there would be a part of them over-ripe, and as I understood some of our speakers, the over-ripe gave the most butter. Now, what I want to know is how to come at the test in the best possible way to give each patron his right.

Mr. WENGER.—As those who are familiar with the oil test understand, we use from twenty-five to forty tubes in the crate. Some of those put in first at six o'clock will be sour; some put in in the afternoon will still be sweet. It would be impossible to delay testing those that are sour for the sake of ripening those that are sweet. We put those that are sweet into water at probably sixty to sixty-five degrees, so that they will be sour the next morning. The difficulty is we are not getting the butter itself; we are simply getting the oil to measure, and we must have all these tests sour. Now it makes very little difference as long as they are sour and will churn. After being churned the tubes are put into water at 140 degrees temperature so that the butter will melt and rise to the top through the butter-milk. If properly done there will be two distinct parts. The upper part oil, the centre almost pure water, and the lower part casein or curdy matter. If we do not get that clean separation at the first which we desire we put the whole curd right back into the churn and do it over again, until we think it is time to treat it with the hot water bath, so that the second churning will give us a clean separation. The moment we have a clean separation all the oil will lie on the top.

QUESTION.—Are we likely to over-work or under-work our butter?

Prof. ROBERTSON.—In packing butter in tubs the danger is that people will over-work it, but in putting butter into prints, if the butter be kept cool enough, there is little danger of over-working it.

SKILL AS AN ESSENTIAL TO SUCCESS.

Hon. JOHN DRYDEN, Minister of Agriculture, having been welcomed in fitting terms by the Mayor on behalf of the town, and the President on behalf of the Association, said: I am sure I am very grateful for the kind words that have been spoken by both the gentlemen who have given me this formal welcome in your midst. I am very glad, indeed, to mingle with the citizens of this town and vicinity and to be present at this convention, because I am not merely mingling with the dairymen in this neighborhood, but I find men who are old friends from different sections of the country. We have them from the east and from the west, all interested in the work of the Association. I

ealise that the name which you bear indicates to my mind that you are desirous to improve. Association means associated effort; it means co-operation; and I cannot impress this thought too strongly upon the minds of our farmers everywhere. It is too true that they are compelled to lead isolated lives, and if there is any class that needs to be associated in co-operation it is the farmers of this country, and yet they too often stand aloof when called upon to "stand and deliver" by other organisations which are formed for the purpose of endeavoring to foster one industry and another. Now, we are all working for the good of the common people. We are producing the same products and sending them to the same markets, and when we think of this we must all feel in this regard that by association we are helping one another. By associated efforts you will be able to economise the cost of production of the different products you are bringing to the market.

But I believe, notwithstanding all you may do by the help of this Association in the way of establishing creameries in this country, it will be true for a long time to come that a large proportion of the butter will after all be produced in private dairies. Now, what I feel is that we need to devise some scheme by which we can reach these people, because their products go on the market and mingle with yours and affect the sale of yours to a certain extent. I have been thinking this over, and I want you to assist me in devising some plan which will raise the quality of the average butter in this country. I think I have a right to ask you to help me, and I promise you I will have no difficulty in inducing the Government to assist in this matter when a proper plan can be proposed.

Now, if you are to produce a better article you are to use better skill. Professor Robertson has talked to you about the necessity for the employment of skill in the production of articles which we agriculturists are placing upon the market. Now, I submit that skill is based upon knowledge. Suppose some of you in the summer time should fancy to take a trip down the St. Lawrence and you took your place upon the deck of the vessel; I apprehend you would not go very far without feeling some alarm. Why? Because you see an obstacle ahead which the ship is bound to strike and wreck the vessel and cause the loss of a great many lives; and the cold chills run down your back; you forget just for a moment that there is a man at the helm who has a perfect knowledge of all the obstacles, so that when the proper time comes, by means of the wheel, he is able to guide the vessel so that she turns past the obstacle safely and bye-and-bye draws up to the wharf. It was the skill of the man that saved the vessel from disaster, but that skill was based upon knowledge, and he could not have done it if his skill had not been based upon knowledge. And so your skill must be based upon knowledge as well. You must know what you are seeking to do—you must know what you have to do—in order to bring about the very best results, and therefore it comes to pass that although associations like this cannot directly, they can indirectly, help you in this matter. Knowledge itself is not skill. There is a decided difference. We may give testimony of the knowledge we possess, but if the parties interested do not lay hold of that knowledge they will never be able to use it in this skill of which we speak. We as agriculturists need more study, more thought; we need, so to speak, more originality. I like to see a neighbor copying his neighbor, but I do not like to see our agriculturists mere copyists; and some of these gentlemen here have got that originality and are studying these questions out for themselves. We have got to do this throughout the province, and if we are to keep up with the rest of creation we have to move forward in this regard. It is not enough that we should merely exercise our muscles, but we must exercise these muscles more intelligently than we have ever done in the past. Now, Governor Hoard was down at Brockville attending the Eastern Dairymen's convention the other day, and I had a little conversation with him privately, and he was telling me what might be done by the use of skill. He said: "I apprehend you will have to be skilful in breeding, in feeding and in milking. You will have to use skill in all these three matters." He told me of a neighbor who was a patron of his creamery; this man was able to receive something like $38 per cow and he was not satisfied with it and came to Governor Hoard and said: "What am I to do; is there any way I can improve this matter?" "Yes," Mr. Hoard said, "you may improve your herd of cows. Instead

of having the herd of cows you have, you ought to add fifty per cent. to its earning power. Since then the man has gone forward, by using skill and breeding, until last year his herd of cows netted him $63 instead of $38 per head. Now, many of us are ready to say "Oh, I cannot do that." I don't like to hear a young man say that. I never say it. I say if any man can do it I can do it, and if they can do these things you and I can do them; but we don't want to stick at what they have done; we want to go ahead of what they have done. There is no use looking to governments to pass legislation to help us out of the ditch. One of the great cattle firms of Chicago, Armour & Company, are able, by working the grease taken from animals, which might be sold for five cents a pound, through their meats, to obtain eleven cents a pound for it. This is done by the use of skill. It is so with reference to all the products which we grow upon the farm, and what I have to say to you to-day is what I said to the convention at Brockville, that we need to put upon the market a better quality of butter. How much of the imported butter is consumed by the people of Great Britian? They import 20,000,000 hundredweights, but only 22,775 hundredweight of that is sent from Canada. We allow the people in Denmark to get ahead of us in this respect. We must not allow this; we must educate our people, and ask them to come forward with more skill and take a share of the market which is here open to us. I just happened to pick up a report the other day which was sent in to our Bureau of Industries, which came from Robert Reesor, of the township of Markham, giving some interesting statistics. Last year he had thirty Jersey cows. He sold the cream, which he was able to obtain from this herd of cows, in Toronto. He has shown skill, mind you, in the breeding of his herd, although I presume he has also shewn skill in the feeding, and he has shewn some skill in disposing of the product, selling it to large establishments in Toronto like the Rossin house, the Queen's hotel, and McConkey's restaurant. He has produced 3,558 gallons of cream for the year, which he has been able to sell at one dollar per gallon. I have figured this out as being a little over $118 per cow. I don't vouch for the accuracy of this, but give it simply as an example of the skill which has been referred to.

I quite recognise that I am to be followed by some other gentlemen who will talk to you on more practical topics. But I just want to say this to you that we the agriculturists of this country, should seek to help ourselves. One author says, "If you would reform our country you must learn first of all the way." I don't think we have reason to be ashamed of the results in the days gone by; but I am not satisfied. I want to go ahead of what has been done in the past. I want that "Excelsior" should be the motto. You have my entire sympathy, and any reasonable assistance which I can give in the direction of raising the average products of butter you may always count upon. (Applause.)

MILK TESTS.

H. H. Dean, professor of dairying at the Ontario Agricultural College, was next introduced and said: I do not know why I am asked to come here, but I presume it is because I am expected to say something in regard to dairying at the Agricultural College. I have not prepared anything especially to say here, so you will bear with me if my remarks are not as connected as they might be. Then I have been away at institute work speaking two and three times a day.

Allow me, Mr. President, first to congratulate you upon your election as president. It has ben said, if you want anything to succeed get a big man at the head of it, and I am sure this convention has succeeded in doing this. But not only are you big in stature but also big in brain and in heart, ready to sympathise and help. We are here, gentlemen, in the midst of the land of sauerkraut, limberger cheese and bologna sausages, and I think that if you would keep the President here for a few days he would grow even larger than he is at the present time.

I am somewhat like an Irishman named Paddy O'Brien, who had a Dutch mother. Someone asked if he was an Irishman, and he replied, "Yes I am, be gobs, by Dutch consint." So I am a Canadian by Dutch consent and hence have a warm feeling for my German cousins who have entertained us so well.

I am requested to say a few words this afternoon about milk tests. You know it is the fashion at the present time to invent new tests for the determination of the fat of milk. The chief ones now on the market are Patrick's, Cochrane's, Short's, the Beimling and Babcock. Those are favored on account of the shortness of time they require, but some of these take too long. A test to be serviceable must be accurate. If it comes within two tents of one per cent. it is accurate enough for practical work. Then it must be rapid. Creamery men have not the time to devote a day or two to the testing of milk. Then again it must be cheap; farmers and makers cannot afford to pay a large amount to get the milk tested. And it must also be simple. There are therefore four things necessary in a milk test—accuracy, rapidity, simplicity and cheapness. Now the two chief tests before the public at present are what are known as the Beimling, which is being put out by the Vermont experimental station and the Babcock by the Wisconsin. In the Beimling you use no hot water, but two chemicals instead of one as in the Babcock. The first chemical is made by mixing amyl alcohol and concentrated hydro-chloric acid. The second one is commercial sulphuric acid. By this method you can test a number of samples at the same time. The Babcock uses commercial sulphuric acid and hot water. I have had some experience with the Babcock tester this last season, and I may say that it is accurate enough for all practical purposes. Now about its rapidity. After the milk has been measured, sixty tests may be made in less than two hours. You can get a small machine, but I would advise not to get a machine with an odd number of bottles, one which has fifteen is unhandy as you require to test in duplicate so that you need an even number. Supposing you were going to test eight or ten or fourteen samples it destroys the equilibrium of the machine and it is necessary to fill it up every time. The principle upon which this machine works is as follows: You measure the milk into the bottles, add a certain quantity of sulphuric acid, set them in the machine and by means of a crank it is whirled around at a great speed, add hot water after turning five or six minutes and the fat rises to the top where the per cent. of fat may be read on the graduated neck. Milk is composed of water 87.00 per cent., fat 3.75 per cent., casein 3.90 per cent, albumen 0.75 per cent., sugar 4 per cent, ash 0.70 per cent. Now this sulphuric acid dissolves the casein and albumen and liberates the fat, and the fat rises to the top and in six or seven minutes you can tell the percentage of fat in a sample of milk, so that you have a very rapid means of reaching a conclusion. I think it would be better if milk were bought and sold on the basis of the fat value. The cheese-factory inspector, Mr. Harris I think it was, found one man's milk last summer which contained two and a half per cent. of fat, while the milk of another contained five per cent. of fat. The man whose milk contained five per cent of fat got no more for it than the other, but was it not worth more per pound than the other? Well, supposing the one containing two and a half per cent. and the one containing five per cent. were mixed together it would bring the average of the fat up to three and three quarters per cent., and from this you can get a cheese of good, creamy quality, so that before long I think we shall use some test like this to determine the fat of milk sent to cheese factories and pay accordingly. In a word I have given you an outline of the machines. Commercial sulphuric acid will cost about two cents a pound in large quantities and one test will cost about one fifth of a cent.

Butter-making.—I have been asked to say a word in regard to butter-making. All the buttermaker wants is the fat out of the milk. How shall he get the fat out of the milk and into the butter? Butter is composed of fat 86 per cent., salt 3 per cent., water 11 per cent. How shall we produce this article and get it in the best shape possible? Just a word in regard to breeding and feeding stock. For the average farmer it will be better for him to select his best native cows—those he knows give a large quantity containing a good per cent. of solids—breed them to a pure bred bull of one of the milking breeds—not one of the beefing breeds—raise the heifer calves on food that is not fat-producing, breed them again to their sire and have them drop their calves

at from two and a half to three years old; milk them for eight or ten months, and after having dropped their second calf all those that do not come up to a certain standard of excellence, say 6,000 pounds of milk in a year containing at least 750 lb. of solids, weed out, as is the practice in the dairy herd at the Cornell Experiment Station. In this way a profitable herd may be built up at much less expense than by buying pure bred cows and paying fancy prices for them, as in many cases when a farmer invests in fancy stock he loses money. It is far cheaper to improve through the male as he is half the herd.

By means of care, research and patient enquiry the Germans found that if a certain ratio of elements were fed the best results would be obtained in milk production. They say if you have a cow weighing 1,000 lb. she requires, dry matter 24.0 lb., albuminoids 2.5 lb., carbo-hydrates 12.5 lb., fat 0.4 lb. Such a ration will have a nutritive ratio of 1.54. By nutritive ratio we mean the ratio or proportion of nitrogenous or muscle-forming substances to the carbonaceous or heat and fat-producing substances. Now, I do not think that a farmer is wise to follow too closely along that line but simply use it as a guide. Some farmers say of theory that it does not amount to anything. But is there not something in it? To illustrate, I have here a couple of rations fed by New York dairymen. One was feeding the following daily to each of his cows. Hay 12 lb., corn stalks 13 lb., straw 8 lb. Nutritive ratio 1.156, or he had nearly three times as much heat and fat-producing foods as required by the German standard. Such a ration would cost about ten cents a day, and for a year $36.50. He had a herd of eight cows. How much butter do you suppose he was getting from his cows? He was getting 156 lb. a year from each, which if sold at 25 cts. a pound would bring him $39, and he would make on each cow $2.50, and on his herd of eight cows $20, that is supposing the manure and skim-milk paid for the taking care of the cows and the milk.

Here was another man in the same state that was feeding each of his herd, hay 20 lb., ensilage 50 lb., corn meal 3 lb., bran 7 lb., cotton seed meal 3 lb., nutritive ratio 1.67 which comes nearly to the German standard. This man was getting 470 lb. of butter from each of his herd while the other man was only getting 156 lb. 470 lb. at 30 cents a pound would bring him $141 for each cow for a year. I have supposed that he received 30 cents a pound for his butter because a man who puts skill in breeding and feeding will also likely put skill in his marketing, for scientific making is the hand-maid of scientific marketing. Well such a ration as that would cost for each cow about 30 cents a day and for one year $109.50, and he would make on each cow $31.50, or from the whole herd of 30 cows $945. So after all it appears that there is something in science and I think that when we have such examples as that, we can no longer say there is nothing in science as applied to the dairy. I have just selected these because they are extreme examples. Well, if you have got a good cow how shall the milk be profitably turned into butter? What I have to say is more particularly for farmers. Prof. Robertson this morning dwelt on the necessity of properly setting the milk, and I would emphasise keeping it as clear as possible because milk is extremely susceptible to impure odors. Therefore see that there is no impure odor while milking. During the process of milking you promote the secretion of milk because it has been found on killing cows that there were only one or two quarts of milk in a full udder and from that scientists have concluded that during the process of milking the milk is secreted and milking induces the secretion of milk. In regard to the best way of setting milk have a special room for it and do not set in a closet or cupboard in the living room where impurities will reach it. You cannot make a first-class quality of butter if you set it in such a place. I am glad to emphasise what Prof. Robertson said about having a special place. I agree with him that it is not wise to set milk in a damp cellar. If you can get a dry cellar I think it could be used for milk and where there are furnaces in the cellars it will require no extra heat; but where you cannot have that, have separate milk houses. In regard to shallow pans, if you have the milk in them under the very best conditions you will get as good results as from the deep setting, but there is a greater amount of labor and it is more difficult to control the conditions. In the case of any person who has a proper place, it is a good idea to set the cans outdoors where there are no foul odors and no danger of the cans being knocked over, but do not set them in a living room because

you will not get all the cream. If you are to get the best results you must have a falling temperature because the cream is of a less specific gravity or lighter than the other constituents and rises best with the temperature falling. In regard to the time to leave the milk set, you will get all the cream to rise that is worth getting by the deep setting system in twelve or twenty four hours and in the shallow pan in 36 hours, Mix the cream from all the skimmings at least twelve hours before churning, because in this way you get the cream all to the same degree of ripeness. I carried on some experiments this winter in which an Ayrshire cow's cream was churned while sweet, and the butter-milk contained 5.4 per cent. fat in it. Ordinarily it only contained one per cent. A Holstein cow's cream churned sweet, the butter-milk had 4.5 per cent., ordinarily it contained 0.25 per cent. of fat. And a Jersey cow's cream which was also churned sweet contained 0.2 per cent. of fat while ordinarily it contained 0.30 per cent. of fat. This one experiment indicated that a Jersey cow's cream gave best results when churned sweet, while the others were not nearly so good, but it needs to be verified. Do not add hot water to the cream. I have seen women do that. It will spoil the grain and color of the butter. A better plan is to set the cream, crock or pail in a vessel of water heated to not over one hundred degrees. If you warm quickly it will spoil the cream. Between fifty-eight and sixty-four degrees will give the best results. When I was a boy I had to churn until the dasher would stand on top of the butter. Well, now that is a very poor plan because by that means you get too much curdy matter in the butter in which there are elements that tend to make the butter taint. Stop the churn when the butter is in the granular state. Take a little salt water after draining off the buttermilk and wash the butter which will wash out most of the casein or curdy matter. In salting butter between half an ounce and an ounce of salt to the pound will give you good results. There has been quite a controversy during the last season with regard to the yield of butter from the different breeds, some giving the results as salted and others as unsalted butter, the former way is the better. It has been said that butter will not weigh as much after being salted as before. I tried some experiments lately, and as an average of fourteen experiments, the average weight of which was fourteen pounds six and a half ounces, the loss was two pounds eleven ounces. The greatest loss was five pounds five and a half ounces in sixteen pounds five and a half ounces, and the least loss was thirteen and a half ounces in eleven pounds. In every case the butter was drained as dry as possible in the churn, weighed and salted at the rate of one ounce to the pound, and then worked ready for market. Thus you see butter loses in weight after salting, as salt absorbs the moisture. I think it is better to work it by pressure than by friction, and by all means do not work the butter with your hands, because all the time there is coming from our bodies effete or foul matter through the skin and lungs. Suppose you have washed your hands ever so clean you cannot stop this coming off and going into the butter. In olden times people used to try and get a dairy maid with cold hands, possibly for the reason that a "cold hand indicates a warm heart," but more likely because they thought such a person would not be so likely to taint the milk or butter by handling. It will not be necessary to work it more than once if sold near home, and there is just as much butter spoiled by overworking as by underworking. In marketing put it up in a neat and attractive form. I think these packages which we see here to-day are a great advance on the old plan of putting butter on the market. I have heard of an instance where a man put his butter in a piece of an old shirt on which some of the buttons were still to be seen. A man who puts it up in that style cannot expect to get the best price. If you produce a first-class article there is always room at the top, but so long as persons make good, bad and indifferent butter, we cannot expect good prices. We have made a reputation in cheesemaking by co-operation, and if we are going to get a good reputation for our butter it must be done through co-operation. I do not see anything to prevent farmers co operating and getting their cream made up on a general plan where they are assured of a uniform article and uniform price. The greatest drawback at the present time is not because there is not good butter made at home, but because some of it is good and some of it is bad. What the export trade requires is a uniform article, and to get this it will be necessary to make it on the co-

operative plan. I am glad the Association is educating our farmers because we cannot know too much, and the more knowledge we can have regarding the art of buttermaking or of anything at which we are engaged, the more likely we are to succeed.

AN EXPLANATION.

Mr. WENGER.—I wish to say a few words to place the inspector right before you. Just before dinner there was a reply which I thought reflected both on Mr. Sprague and myself. Mr. Sprague called at my place several times last summer. I have spent in the last six or seven years thirty or forty dollars a year in putting my views before my patrons. I have attended every convention we have had; I have swallowed everything that has been said; I have read Hoard's Dairyman; I have the reports of these conventions, and from all these things I have formed certain conclusions. I put these down concisely in English and German and distributed them among my patrons. I called Mr. Sprague's attention to this and told him that the patrons had brought uniform cream during the season. This of course was in Mr. Sprague's mind, and that is the way my name was brought up. In regard to the gentleman who said he got a better price than me, that is a matter between him and his buyer.

Mr. SPRAGUE.—I can assure you that I was put under peculiar circumstances through reading the report. I wish now to make an explanation, not to retract anything I have said, but to try to make you understand the report in the way I put it. I said this, that the quality of cream that I saw this summer at Mr. Wenger's creamery enabled him to make the very best quality of butter.

THE CATTLE EXPORT TRADE.

Moved by D. Derbyshire, seconded by A. Wenger, and resolved

That whereas the trade in the export of live cattle from the Dominion of Canada has been gradually extending during the past few years and has been a source of profitable income to our farmers and carrying companies, we, the Creamery Association of Ontario, hereby record our judgment that the robust health of the cattle of Canada, their freedom from all dangerous diseases and their general excellence of quality is proverbial, and that the people of England need not fear that the health of their stock will be injured by the arrival of our cattle on their shores. We regret very much that the weather has of late been so inclement on the sea that some of our cattle have perished. That does not establish the presence of any disease in Canada, and we hope that Mr. Plimsoll will remain in Canada long enough to be convinced of this fact. It will be a very serious matter if the landing of live stock be stopped in England, as we cannot compete with the ranches in the west where they can raise cheap corn for the breeding of cattle.

A WINTER EXHIBITION OF BUTTER.

Prof. ROBERTSON: Just a few words. I examined a print of butter brought here this forenoon. It was of excellent quality. That leads me to say that I think next year the Ontario Creameries' Association should have an exhibition of butter in connection with the annual convention, and then the good qualities could be pointed out and the defects made evident. Sometimes during the summer exhibitions the weather is warm and the outside of the butter is therefore soft while the inside is good in body and flavor. At this season there would be no difficulty of that kind. Part of the money of this Association now unexpended could be used in the way I suggest. Instead of giving so much in the way of prizes at the summer exhibitions we might save the money for the winter, and have prizes large enough to attract exhibitors from all parts of the province.

I listened with a good deal of pleasure to Professor Dean, of the Ontario Agricultural College. I have a great many children over this province in some senses, and as I followed his line of treating his subject this morning I became convinced that I had a worthy pupil who would bring credit to the institution which he represents. If every farmer will give him a fair chance to do good work amongst you I am sure that you

will not be disappointed. With a little longer experience in public speaking he will be able to hold his own before any audience. My own first attempt at a public address was a pitiable exhibition of weakness compared with the capital presentation Mr. Dean made of his subject to-day.

DAIRY EDUCATION FOR THE FARMERS.

Mr. MACFARLANE: I merely wish to express my gratification at the sentiments and assurances conveyed in the speeches of the Minister of Agriculture and Professor Dean and also to say that it occurred to me that perhaps in the whole of the discussions which have taken place during these two days the farmer had not had the best "show." He was somewhat in the position of the congregation as against the clergyman; they are not allowed to jaw back. It is allowed too that since co-operation is supposed to be the best plan it is not very judicious to encourage the matter of private dairying. It seems to me if you encourage the farmer to do that thing you are bound at the same time to help him in this way. If for instance a certain individual undertakes to make a better quality of butter than his or her neighbors, and succeeds in so doing, and carries this product to the storekeeper and finds that there he or she can get no better price for it than for the most inferior quality that is offered to the said storekeeper, I think there is very little encouragement, indeed, for the farmer to proceed and do the best he can. It is not realisable in dollars and cents. His butter is made a good deal better and yet he obtains no better price for it. Now, I think something ought to be done to help the farmer in that way, and I do not see any other way that this can be done than by encouraging a co-operative system, and anything that may be done to help the farmers in this respect would be trying to establish in a good dairy district a model butter factory for the purpose of taking the manufacture entirely out of the hands of the farmers and doing it in the factory. Now, there is a difference in the values of cream, as Professor Dean has shown you. He spoke of milk being delivered to cheese factories, some of it considerably more valuable than others. In this case, too, the dairyman or farmer who delivers a five per cent. milk has no advantage in doing so. He is simply paid at the same rate as the man who has a two and a half per cent. milk, which is no encouragement to breed dairy stock. If he is to be encouraged at all it must be by giving those who produce a better quality of milk a better price. In order to do that the system of paying according to the fat in the milk must be introduced; and here it is that the Governments might do some good by establishing a creamery in some favorable district, worked upon that principle, getting the results and showing to other districts what could be done. I hope any assistance which the Governments may give will take that shape.

Mr. J. WILFORD.—I do not know Mr. Macfarlane, but I cannot afford to let what he says pass without making a few remarks. In 1886 we established a creamery at Crosshill, and what brought the matter to my mind was that Mr. Macfarlane says the farmers and farmers' wives should be helped to work in their own system. Some ten or twelve of us took out stock in this creamery. We have placed in stock at the rate of $1,600, and from 1886 we have not received the first cent benefit for our money. The farmers in that section have received the value. We propose holding our annual meeting on the 24th of the present month, and there is no dividend for us still; but we don't care a straw if we don't get a cent benefit from the money advanced if we only get farmers to send cream to the creamery to be manufactured into butter. There is one merchant up there who takes dairy butter from the farmers who trade with him, and I understand from himself he has lost between five hundred or six hundred and a thousand dollars on that stuff. He does not get a cent benefit from it.

Mr. WENGER.—We do not blame the farmers; it is the merchants. If a woman comes in and brings forty pounds of butter and buys $500 worth of goods in a year and if I can secure her trade by giving her four or five dollars more for her butter than it is worth I am going to do it and the rest of the merchants do the same. At Ayton we give cash for the cream, and then it is the same as when wheat is taken to the mill—it is examined and bought for what it is worth. (Applause.)

INCREASED GOVERNMENTAL ASSISTANCE ASKED.

Moved by JOHN HANNAH, seconded by J. S. PEARCE, and resolved, that—

Whereas the ever-growing magnitude of our dairy business is creating new problems and difficulties in he production of milk and the manufacture of cheese and butter, which dairymen in their private business endeavor are themselves unable to solve and overcome, and whereas the Provincial Government in the past has given liberal assistance to the dairymen for the purpose of assisting in the dissemination of valuable information, and the giving of instruction through itinerant inspectors to both the producers of milk and the manufacturers, and

Whereas the Dominion Government has established the office of Dairy Commissioner for the Dominion charged with the duties of carrying on investigation into economical methods in the obtaining of the finest quality of dairy goods, and whereas this Association in convention assembled heartily recommends to the farmers of the province the advisability of developing the practice of winter dairying, whereby they might add to their profits from cheese-making in summer the enlarged profits from butter-making in the winter, the Creameries Association of Ontario respectfully requests the Ontario Government to continue its financial assistance to this Association upon an increased scale so that the work of the Association might be prosecuted with enlarged vigor and success.

Resolved further that this Association urge upon the Dominion Government, the advantage and need for the extension of the work of the dairy commissioner by the establishment of branch dairy Experiment Stations under the direct supervision of Prof. Robertson for the purpose of carrying on such investigations into the principles and practices of improved butter-making during the winter by fitting up these stations for that purpose, and by the making of trial shipments of fresh-made butter in suitable packages to foreign markets in order to gain reputation there and to create a demand at the highest prices by demonstrating the excellence of its quality.

Resolved further that copies of this resolution be forwarded to the Hon. the Minister of Agriculture for the Dominion and the Hon. the Minister of Agriculture for Ontario for their favorable consideration,

Mr. JOHN HANNAH.—I would just say in connection with this, that although engaged in the creamery business altogether, I would feel that the cheese factories should pay attention to butter-making in the winter for this reason, that I notice immediately upon the close of the cheese factories the butter drops in local markets, particularly those that are in the centre of cheese districts. Even with creamery butter, we find that is a disadvantage. Instead of earning money, the farmer's wives are wasting good valuable milk, when not used to making butter, and that hurts our local markets. They come in with this rush of poor butter and the quantity deteriorates the price for our creamery butter. Now, if those cheese factories would turn their attention to making butter, we would get over this difficulty. Being in that line of business, they would find a market for an export trade, and I think that the creameries which are running as creameries alone would be gainers in the end. I am scarcely as hopeless in regard to the likelihood of the whole of the butter made in Canada being made in the creameries as some of the speakers seem about it. The Minister of Agriculture, and I think Professor Robertson, took the view that it would be a long time before half the butter would be made in creameries. As I said before, we should also then have some encouragement to work the whole year round.

The resolution was then carried unanimously.

RESOLUTIONS OF CONDOLENCE.

Moved by AARON WENGER, seconded by JOHN SPRAGUE, and

Resolved.—That whereas by the lamentable death of the late James Miller, who in past years rendered this Association good service in the capacity of director, and added much to the interest of its conventions by his genial presence, we place on record an expression of our sense of deep loss by the removal from our midst of our late co-laborer.

Resolved further, that a copy of this resolution be forwarded to Thomas Miller, Spencerville.

The PRESIDENT.—I thank the Association for this resolution, as for fifteen years Mr. Miller lived within a very few miles of Brockville; was one of the most active of our dairymen; one of the brightest minds we had in this great world; one that made his cows pay $60 a head, and one that built up and did a great deal in his own locality to uphold the hands of the dairymen in every section of Canada.

Moved by JAMES W. ROBERTSON, seconded by JOHN HANNAH, and

Resolved.—That it is with feelings of deep regret we have learned of the sad decease of the late Mr. Weld, the founder, proprietor and editor of the *Farmers' Advocate*, of London, Ont., and whereas we recognise the energy, integrity and fearless advocacy of the rights and interests of farmers throughout the Dominion, which always characterised his public life, we hereby place on record our heartfelt appreciation of the valuable services which our late highly-respected co-worker rendered to the people of Canada, and our sincere sympathy with his bereaved relatives in the irreparable loss which they have sustained by the untimely ending of his life.

Resolved further, that the Secretary forward a copy of this resolution to the office of the *Farmer' Advocate*. Carried unanimously

ADDRESS BY MR. I. E. BOWMAN, M.P.

Mr. I. E. BOWMAN, M. P., was then called to address the convention. He said: I am very glad indeed that you told the audience that I was only to address them for a few moments, because I have not a great deal to say to you at this stage of the convention. My good friend asked me to be present and I suppose he thought it was advisable in order that I should learn something about butter-making, and if so I think he was right, because I do no profess to know very much about it, although I have studied it for five or six years and have reached certain conclusions. I would just congratulate the farmers of the county of Waterloo in being so fortunate as to secure the holding of this convention in the town of Berlin this year, and I suppose you will allow me to thank the Creamery Association on behalf of the farmers of Waterloo for coming here and holding their convention in their midst. I am sure that the farmers present could not fail in learning a few things, and allow me just to say here that I think the manufacture of cheese (and now the manufacture of butter) occupies a very important position in the industries of our country. There is perhaps no other industry in which the farmers are interested so much as in the successful prosecution of the butter and cheese trade. Our cheese has obtained a reputation in England greater than butter, but I am confident that we will see the day when Canadian butter will stand as high as any other butter in the world. (Applause.) I highly approve the sentiments expressed here to-day in endeavoring to impress upon the farmers the great necessity of making the best quality of butter it is possible to produce. Our manufacturers find it important to put their wares up in the best possible style Any manufacturer who does not do that falls behind and does not succeed. It is the same with the farmer. It is not only necessary to make the best butter, but it is necessary to put it in as respectable a form as possible. That has a great deal to do with the sale of it. I am speaking of the practice of farmers in making their own butter at home. It is quite true that where a farmer has a wife and lives near a town such as Berlin or Waterloo she can perhaps get as good a price as is going, but these are isolated cases. This cannot be done by the large majority of farmers throughout the country; and in order to obtain the best results it is absolutely necessary, as one of the speakers told this convention, that it should be made at the creamery. It is impossible for a farmer's wife to have the same facilities and appliances provided with the same care as a company which runs a creamery on a larger scale. So it is not possible, under very exceptional circumstances, to make as good butter at home as in the creamery. Then another advantage which the creameries possess is that they have a large quantity of butter which is of uniform quality, and for that reason better prices can be obtained in all cases; that is inevitable. I do not sympathise very much with those unfortunate storekeepers who say they have lost money in buying dairy butter. I fully agree with Mr. Wenger that in Berlin and every town of an equal size the merchants ought to join together and have butter sold on its merits the same as anything else. It is done in the Western States and a drygoods man does not buy butter; not every groceryman buys butter, but a certain merchant makes it his business to buy all the butter that comes in, and instead of stipulating that the farmer should take it out in trade pays over the money. Well, now, if we could only impress upon the farmers the great loss which they sustain in the difference of price of a first-class article which is sent across the ocean and in some of that which is sold for grease,

I am quite sure that every farmer would fall in with the idea that it is far better to have the butter made at the creamery. I have taken a little interest in the St. Jacobs creamery; I have not taken any stock; I thought the farmers were able to look after that themselves. That creamery has been decidedly successful in turning out a good article of butter, and I have no doubt in future it will compete with Mr. Wenger. Farmers sometimes think it is a little more convenient to make the butter than to take the trouble to sell the cream. I have not had any experience and cannot settle the question, but what I should like to see is that we should produce the best results, as I am anxious to see we should produce the best results in connection with everything that our country is capable of producing. I hope that every farmer will benefit to the greatest possible extent by the discussions that have taken place and that at some future time the Creameries Association, remembering how well they were treated at Berlin, will come back to hold their convention in our midst. (Applause.)

TESTS AND MILK CANS.

Mr. J. WILFORD, after repeating what he had said as to there being nothing in the Crosshill creamery for the owners, said: Last year we manufactured 24,379 pounds. The number of inches of cream were 27,670. It took about an inch to an inch-and-an-eighth to make a pound of butter. Our cream cans are based on the Gurd's creaming system; that is they are twelve inches in diameter and twelve inches perpendicular; each inch is supposed to hold 113 cubic inches and each inch is supposed, if it stands the test of one hundred, to make one pound of butter. We commenced to manufacture on the 29th of May and sold that make at a fraction over twenty cents. We sold June, July and August at eighteen cents and September and October at twenty-two cents. Therefore after our allowance of three and a half cents for manufacturing, the patrons had sixteen and a half cents of the twenty cents, eighteen and a half cents of the twenty-two, and fourteen and a half cents of the eighteen, and up to the present time we have not received a fraction of profit, and I was going to ask the Minister if we applied to the Government would they help us poor fellows up in the west. (Laughter.) During the season of 1890 we had eighty-one patrons.

Mr. JOHN LACKNER—What is the least amount we may get this test into a creamery for?

Mr. WENGER—We have a Gurd's oil test. With the churn we paid $70. We got in something like forty-two tubes.

Mr. JOHN S. PEARCE—These churns vary in price according to the number of bottles which they contain. We have them all the way up to two hundred bottles.

Mr. LACKNER—What vessels do you prefer in gathering cream?

Mr. WILFORD—The first two years we tried pine tubs and the last two years we have cans and we find they give us good satisfaction.

Mr. LACKNER—What kind?

Mr. WILFORD—Double cans.

Mr. LACKNER—Did you have them lined with tin?

Mr. WILFORD—No.

Professor ROBERTSON—The requirements of a can are first, that is should be a non-conductor so as to keep the cream from being warmed up in transit. There are double tin cans and wooden ones lined with tin. They should have a float to keep the cream from churning and another cover to keep the dust out. This will enable you to get your cream to the factory without injury.

Mr. WENGER—I have used a tank with air spaces all around the sides. I open a tap and run the cream out through that into the cream vat. There are two spaces between the tin and the outside. We carry enough cream to make five hundred pounds of butter.

Mr. Herbison said he had introduced a wooden refrigerator can built square. They are made to hold twenty-five or thirty gallons each. They sit nice and compact in the waggon, and I have had them in use for a season and the weather does not effect the cream in any shape. There is a space of about two inches between the inside tin and the wooden case. We paid somewhere about $9 for a thirty gallon can.

Mr. LACKNER—Which cost the cheapest the square tank or the large one?

Mr. WENGER—I paid no attention to that. When I came to the conclusion that I wanted it I got it. We think the tank is preferable. You have nothing to handle. You have no cans to handle and you hear no profanity around because there has been a big spill of cream. You put on the tube, open the tap and let the cream flow out nicely.

THE LOCAL AUTHORITIES THANKED.

Moved by Aaron Wenger, seconded by Mark Sprague, and resolved, that—

Whereas the Mayor of Berlin and its enterprising citizens have entertained our members and guests with kindly hospitality, we hereby express our fraternal good wishes for the prosperity of the town and the many interests represented by its large and thriving manufacturing and mercantile concerns.

Mayor JANSEN replied in appropriate terms.

CLOSING PROCEEDINGS.

At the suggestion of Mr. Isaac Hillborn, Professor Robertson repeated a portion of his remarks of the previous day concerning the silo.

QUESTION.—Would it pay to get a separator for, say, fifteen cows, provided we were raising calves.

Prof. ROBERTSON.—I think it would pay to use a hand separator.

QUESTION.—What is the cost of a separator?

Prof. ROBERTSON.—You can get a hand separator for $125 and up to $375.

President DERBYSHIRE.—Of course our good friend Hunter has a separator but he has a lingering idea that this butter extractor which takes it from the milk at once is better, and that is exactly what we want to do.

A VOICE.—Would you advise crossing Jerseys, Guernseys and Shorthorns.

The PRESIDENT.—I would not do it if it were me, but if asked if I would cross a thoroughbred sire with a breed of grade cows I would say that it will largely influence the quantity of milk given by animals.

Prof. ROBERTSON.—If I were asked this question: "Would I cross thoroughbred Jerseys with thoroughbred Shorthorns?" I would say "No" emphatically; but if I were asked whether I would cross thoroughbred Jerseys with a breed of grade cows to improve the butter quality I would say "Yes" emphatically. The feed will largely influence the quantity of milk given by animals and will control the quality to a small extent. The quality of milk as to its per cent. of solids depends mainly on the breed. Jerseys and Gurnseys give on an average about one-half more butter fat per 100 lb. of milk than ordinary animals.

The PRESIDENT.—The first thing this gentleman ought to do is to come to a conclusion what he is to do for a living. If he is going to be a practical farmer and wants to get rich and then do something for his country he will select something that will suit his purpose. In my address yesterday I advocated the buying of milk for the value that was in it of butter fat. That is, if the milk contain under two-and-a-half per cent. butter fat he would get paid exactly what it is worth, and if five per cent. butter fat he would get paid for what he delivered. I think that is the fair way. I think that is the basis of this buying and handling of milk and that we will some to it. If a patron of the

cheese factory to-day I would get a Holstein cow and put all my energies to getting all the weight of milk I could, and if going into a butter factory I would select one adapted for butter business. If you put into practice some of the very helpful thoughts that have been expressed here, of course our meeting has not been in vain, and we have not failed to accomplish the great desire that we are fostering in our midst, and we have done our duty by the Government that has provided us with funds to do this work. I repeat that we need to change the proportion of our butter made in creameries and in private dairies so that the ninety-seven per cent. will be manufactured in creameries and the three per cent. manufactured in private dairies. Ninety-nine and four-fifths of our cheese made to-day is made in factories. They are getting better factories, better facilities, better selected cows, better ventilation and proper nutritious food. Feed your cows, because your cows cannot do anything without having proper feed, and a cow is worthless of herself. Put your cows in a proper stable, with a little plaster sprinkled on the floors every morning, and have a pure air for your cows to breathe in, and educate all the children to make more and better cheese and butter, and to grow better crops, and in this way build up your houses. Educate your children; give your boys and girls an opportunity of being educated the same as those in other lines of life, so that they can take their place with doctors and lawyers—and feel satisfied with themselves. Have men in parliament that have your interests at heart, men that are in sympathy with your work and will aid you in building up this great country and will do exactly as you desire they shall do. Make agriculturists the head and front of the nation, because upon the prosperity of agriculture the success of all our other industries depend. See to it that you make your position one that will be a power in any country in the world. And I hope you will take advantage of your opportunities. The Agricultural College at Guelph is established for the benefit of your boys. The farmers of every county of this Province are entitled to send one student there free. Get the county council to see that they are sent there. I had my boy sent there. I wanted above all things that he should be an honorable boy, and that, if he was going to be a farmer, he should be educated for it. I sent him to the Agricultural College and I went to that institution and saw Prof. Robertson and the other professors taking hold of him and building him up, and I tell you it is a positive fact that in three years that boy came back an ornament in comparison with what he was before he went there; and I believe every boy in the Province of Ontario who is going to follow farming ought to be sent there. If our young men will avail themselves of the instruction imparted at this institution and as such conventions as the present they will see that we talk exactly what is determined and what we are all aiming at—that we should be a great people—so that we may take the position in other lines which we have taken in our cheese business. They even come from the Old Country to see, and we send our young men over to show them there how to make cheese. We are the first men who sent a travelling teacher from one factory to another. We have a teacher of that kind in connection with this institution. He goes from one creamery to another in order to try to keep up a uniform quality of butter, and you should see that you get the desired instruction. We are determined to take the place that nature designed we should take in this matter. I remember when Brockville butter sold for the highest price of any butter that went to the Old Country, but we found the moment that other countries entered into the creamery business they led right off, and the consequence was that they took the butter trade from us, and we have not got any butter trade at the present time, because we have not been as faithful to our profession as we should have been. I hope after the instructions given at this convention and the intelligent addresses that have been made that every dairyman will go home and stop the leak in the stable floor, in the first place. Do not buy manure from your neighbor; do not buy from the cities artificial manures when all these materials are being wasted in your own stables. Build better stables; get the best cows; have some head for your herd from a stock that have been deep milkers from away back, and then see that the common sense and judgment displayed at these conventions are put into practice. Store up this nutritious corn food for winter and reduce the cost of milk.

This closed the proceedings, and the convention then adjourned.