

PROCEEDINGS
OF THE
SECOND ANNUAL CONVENTION
OF THE
DAIRYMEN'S ASSOCIATION
OF THE
DOMINION OF CANADA.

HELD IN OTTAWA, FEBRUARY, 1890.

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THE PROCEEDINGS
IN CONNECTION WITH THE
SECOND ANNUAL CONVENTION OF THE DAIRYMEN'S ASSOCIATION
OF THE
DOMINION OF CANADA,
OPENED IN THE CITY HALL, OTTAWA, ON MONDAY EVENING,
FEBRUARY 17, 1890.

The President, Mr. D. M. Macpherson, of Lancaster, Ont., occupied the chair.

The President in opening the proceedings briefly referred to the objects of the Association, what had been done during the past year and what the Association might be expected to do in the future. The objects and work of the Association were to foster and enlarge the dairy business, to improve the general quality to meet the demands of an enlarged market and to facilitate improved methods for handling and shipping dairy products. He spoke in high terms of the appointment of Professor Robertson as Dominion Dairy Commissioner, and said no doubt those engaged in the industry would appreciate the promptness with which the Dominion Government had acceded to the wishes of the Association in this matter. (Applause.)

The minutes of the last meeting were then read by the secretary, Mr. J. C. Chapais, and confirmed.

On motion of Prof. Barnard, Secretary of the Council of Agriculture, P.Q., seconded by Mr. Jas. Haggarty, West Huntingdon, Ont., it was resolved—

That the resolution passed last year "that Mr. W. H. Lynch be repaid all the expenses he had incurred in organizing the present convention" be carried into effect as soon as possible, and that Mr. S. A. Fisher, M.P., and Prof. Robertson, form a committee, with power to add to its numbers, and be empowered to settle finally with Mr. Lynch, through the president of this Association.

The motion was adopted.

The CHAIRMAN.—I would suggest that a reception committee be appointed, in order to welcome the delegates and make them acquainted with one another.

Prof. ROBERTSON.—I fully concur in that suggestion, and therefore move that the Secretary, Mr. J. C. Chapais, Mr. Foster, Mr. Barnard and myself be a committee for that purpose.

Mr. M. K. EVERTS, Easton's Corners, seconded the motion, which was adopted.

Mr. S. L. PETERS, Queenstown, N.B.—May I ask, Mr. President, under what conditions gentlemen may become members of this Association?

Mr. PRESIDENT.—There is no membership fee, so far as we have gone in the organisation. That will be a matter, doubtless, which will be taken into consideration by a committee on permanent organisation. The primary object in forming this Association, as I understand it, is for the purpose of enabling delegates from the different Provinces to come here and discuss matters affecting the dairy interest.

The proceedings of the session, after this, were in the nature of an informal discussion on the steps that should be taken to perfect the permanent organisation

of the Association and to frame by-laws and regulations for the proceedings of its conventions.

The PRESIDENT said: Of course, we as an Association can only be recognized as such so long as the Government furnishes us with the means of carrying it on. If we can keep the interests growing and the Government will recognize us by paying the expenses of the Association, we shall doubtless be able to do good work.

Prof. BARNARD.—Last year this question was taken up. We were here for three or four days. This was the first meeting of the kind we had had; some work was done, and the record of that work appears in the report. With our programme before us, I do not see how we can get a constitution drafted at this meeting. It would perhaps require several days, even weeks, to mature a constitution. The work could be done after this session and by men, who have thought the matter over, and who could consult with the representatives from the different Provinces. We must not lose sight of any interest. We must think of those in Manitoba and the Territories, of those on the extreme east and west, and see that justice is done to every interest. That is a very important work, which we cannot do in two days. At present we have only a temporary organisation. We are just trying to bring together men from the different Provinces and to see what good can come from an Association of this kind. That there will be real good, no one can doubt. The moment we think of the dairy interests of Canada and how best to promote them, there can be no doubt that an association composed of the best men from all the Provinces will do a great deal of good. But for us to begin with the constitution before we know the wants of the different Provinces, as presented by their representatives, would be grasping at the shadow and losing sight of the substance.

Prof. ROBERTSON.—I agree with what both gentlemen have said, and still am compelled to differ with them in some measure. I think we are organised. We have a president and officers, and a committee was appointed last year to draft a constitution and by-laws. Their report has not been prepared, and on that account I propose a committee on membership. I agree with Prof. Barnard that our main object in assembling here is to consider the best ways and means by which to promote the dairy interests of the whole Dominion, and to discuss the questions set down on the programme issued by the Executive Committee.

I have it on my paper to move that a committee be appointed to consider and report upon the basis which should be adopted as the membership of this Association—not for the purpose of trying to rule anyone out—but because I think we should have a larger membership from the Provinces than we now have. I would like to see a committee formed to report on ways and means, so that the Association might have a membership representing every section of the whole Dominion. I would, therefore, move that Col. Patten, Prof. Barnard, Mr. Black and the mover, be a committee to consider whether the constitution which was adopted last year, and which confines the regular membership of this Association to members of Provincial Dairymen's Associations and members of the House of Commons and the Senate, might not with advantage be amended. Although there are some Provinces which unfortunately as yet have no Dairymen's Associations, I fancy that next year all the Provinces will have, at least, one association, and, perhaps, several.

Mr. H. S. FOSTER (Knowlton, Que.)—I have pleasure in seconding the motion. I think it would be well for this committee to get to work before we proceed to the more formal business of the convention.

The resolution was adopted.

Col. PATTEN.—Last year the matter was talked over, and it was decided that the gentlemen who were here should go home: and, where Dairymen's Associations were not formed, that they should try and bring about their formation. No definite arrangements could be made for our meeting here this year, for the reason that the time of meeting was dependent on the session of Parliament. Therefore, it was thought that no definite plan could be settled upon then. But there were gentlemen here from different parts, and at the suggestion of some of the members, certain gentlemen were named as Directors of the Association for the Dominion. The results

of that convention have been very beneficial. We have not only got a Commissioner, but to-day we have some live men with us from Nova Scotia. We are not quite as strong yet as we ought to be, but we can yet make it a powerful organisation. I think, perhaps, it would be well to wait until next year before we finally organise, so that in the meantime associations may be formed in those Provinces where there are none at present. What is the use of delegates coming here unless they carry home something of the enthusiasm which they find at this meeting? We ought to have a live association in the North-West Territories. There is also a very important part of Nova Scotia where dairying is carried on successfully, and yet we do not seem to know much about it.

Col. BLAIR, Superintendent of the Experimental Farm, Nappan, N.S.—I have listened to this discussion with a good deal of pleasure, but I must say that I am surprised at what I have heard. Before we left home, we were led to believe that a Dominion Dairymen's Association had been permanently organized with headquarters at Ottawa, and with a President, Secretary, Treasurer, Executive Committee, &c. Who composed this Association? We were led to believe it was the delegates from the different Dairymen's Associations of Canada; and in localities where Dairymen's Associations do not exist, the Agricultural Societies were asked to send representatives. I do not think it would involve any great labor to draw up a set of by-laws, but we certainly want by-laws to put the Association on a proper footing.

The CHAIRMAN.—The organisation, as an organisation, is formed, but I understand this resolution is to make it more complete. I think there can be no objection to it. We should have a committee for the purpose of drafting by-laws and to add to what we have done already.

Prof. SMITH.—I suppose I am guilty of having brought on this discussion. What led me to do so was the remark of Professor Robertson, that there had been no report with regard to by-laws or constitution. After the discussion which we have just listened to, I move that the committee on membership be a committee on organisation and constitution and by-laws and that such committee be instructed to report for the next annual meeting.

Mr. EVERTS.—That embodies my views, and I will therefore second it. [The resolution was carried.]

Prof. ROBERTSON.—It is understood that Prof. Smith is added to that committee?

The PRESIDENT.—I think that is the wish of the meeting. [Carried.]

Prof. BARNARD.—I think it may be well, for the benefit of the gentlemen present, that I should read what was done last year in connection with this very same matter of organisation from the printed Minutes of the meeting, which appear in the Illustrated Journal of Agriculture in Quebec, for July, 1889. I read:—

"The Chairman submitted the discussion of the clauses of the constitution to the committee, and the following were unanimously adopted:—

"1. The name of the new Association shall be: The Dairymen's Association of the Dominion of Canada.

"2. The aim of the Association shall be to promote the general interests of the dairy industry in the Dominion of Canada.

"In order to become a member of this Association it shall be necessary for the postulant to be a member of one of the regular District or Provincial associations, except in the case of Senators or Members of the House of Commons, who shall be *ex officio* members of the Association.

"The Association shall be under the control of the president, a vice-president for each of the Provincial Associations, a secretary, a treasurer and three directors for each of the Provinces of the Dominion, in conformity with the Act of incorporation, all of whom shall compose the Board of Directors of the Association, and report to the said Association at its general meeting.

"The Hon. W. Rhodes, seconded by Mr. Edward Barnard, proposed that the elections of the new Association be proceeded with. The proposal was adopted, and the following officers were unanimously elected:—

"President, Mr. D. M. McPherson; vice-presidents, the presidents of all Provincial Dairymen's Associations; secretary, Mr. J. C. Chapais; treasurer, Mr. H. S. Foster.
 "Directors—Ontario—Messrs. W. H. Eager, Morrisburg, Ont.; James Haggarty, West Huntingdon, Ont.; E. Casswell, Ingersoll; Thos. Ballantyne, Stratford.
 "Quebec—Messrs. Louis Beaubien, Montreal, Que.; Colonel Patten, Knowlton, Que.; M. Bernatchez, Montgomery, Que.; Edward A. Barnard, Quebec.
 "New Brunswick—Messrs. Julius N. Inches, Fredericton, N.B.; Arthur C. Fairweather, Rothsay, N.B.; George Fawcett, Sackville, N.B.
 "Nova Scotia—Messrs. L. C. Archibald, Antigonish, N.S.; Paul C. Black, Falmouth, N.S.; John McKeen, Mabou, Cape Breton.
 "Prince Edward Island—Messrs. the Hon. Alex. Laird, Bedique, P.E.I.; H. on.
 "D. Ferguson, New London, P.E.I.; John Hamilton, New Perth, P.E.I.
 "Manitoba—Messrs. Major Boulton, Shellmouth, Man.; Hon. Alliford ———; S. M. Barre, Winnipeg, Man.
 "North-West Territories—Mr. Jos. P. Dill, North-West Territories."

There is a temporary constitution, and I think it is wide enough. Every member of a Provincial Association is a member of our Association. I think the work of last year was carefully done, and although the constitution is only a temporary one, I think it is good enough for two or three years.

Prof. ROBERTSON—I beg to move that the Chair nominate a committee on finance, and would suggest on that committee, Mr. Thorburn, Mr. McCrea and Col. Blair.

Mr. EVERETS seconded the resolution, and it was adopted.

Prof. ROBERTSON.—I think we also ought to have a committee on printing. The Minister of Agriculture has kindly arranged to furnish shorthand reporters, and perhaps the committee may give us some help and advice as to the best manner in which condensed reports of this convention can be sent to the press of the country. I would name on the committee Mr. John A. Craig, of Toronto; Professor Smith and Mr. F. H. McCrea. They would make a triumvirate of power in regard to newspaper work.

Prof. H. W. SMITH, Lecturer on Agriculture for the Province of Nova Scotia, Truro.—I would like to say a word or two on this matter. Perhaps I may get into trouble before I know where I am. On or about the 21st December last, some one, I do not know who, but perhaps it was Mr. Chapais, wrote to the Government of Nova Scotia asking them if they would kindly send some one to represent that Province at this meeting. Our Government, taking a deep interest in dairy and farming matters, besides sending their regular delegates from the Dairymen's Association, having the greatest desire to see this convention a success, so that the Province might be benefited by any information to be acquired here, saw fit to appoint me as a sort of special delegate, to do whatever good I could, without doing any injury; and, as I do not come as a regular delegate from the Dairymen's Association, but rather in the general capacity, I do not know whether I am eligible as a direct member of the Association. I thought, perhaps, as you had mentioned my name on the committee, I had better make my standing known.

The PRESIDENT.—We are heartily glad to welcome Professor Smith in our midst, and will make good use of him.

Prof. ROBERTSON.—I would move that a committee on resolutions be appointed, to whom all resolutions to be presented to this convention shall be submitted. This would simplify matters and make our convention more business-like in its transactions.

Colonel PATTEN.—If I may be allowed to make a suggestion, Mr. Chairman, I would propose that that committee consist of Professors Robertson, Barnard and Smith.

Mr. FOSTER seconded the resolution, which was carried.

The PRESIDENT.—I think this finishes our business for this evening. I would ask every one of you to be punctual in your attendance at the sessions of the convention, and do all you can to promote its success. We have come here for increase

of knowledge and information, and in discussing the many subjects that will come up, I want you to discuss them with manliness and forbearance, and with a desire to arrive at the truth. I shall endeavor to carry on the business fairly, and I hope the members will assist me in every manner that is possible.

The meeting then adjourned.

SESSION OF TUESDAY FORENOON.

The convention was opened with President Macpherson in the chair. He introduced Prof. Saunders, Director of the Dominion Experimental Farms.

Prof. SAUNDERS.—It affords me very great pleasure to be present on this occasion, and to meet such an assembly of representative dairymen as are gathered together here to-day from all parts of this great Dominion. We have the Eastern, Western, and Central Provinces represented on this occasion, and I am sure good must come out of such a convention as this is, when the object of the gathering is to further so important an interest as that of the dairying of the Dominion. This dairying interest is one of wonderful growth. If we look back a few years to the time when our exports of cheese began, we can mark, by tracing the years that followed, a marvelous increase, until now they have become the most important of all the agricultural exports of this country. They have trebled in quantity within the last ten years, and what the outcome of another ten years of effort may be, no one can undertake to prognosticate; but I think it is safe to say that we may look for a still larger extension of the cheese industry, and a very large extension indeed of the butter industry. The butter industry has languished during the last few years, for the reason that we have not had the same extent of co-operation among the butter-makers that has existed among the cheese-makers, and the product on that account has been, in many instances, of an indifferent character, so poor indeed, that we have lost a part of the reputation we formerly possessed. The loss, I have no doubt, will be recovered, and within a few years Canada, I believe, will stand as much to the front in the matter of butter-making and have as good a reputation for butter as she now has for cheese. A very large part of the Dominion is very well adapted for butter-making, and perhaps it would be well for me to occupy a part of the time allotted me this morning in giving you a brief sketch of those features of the different parts of the Dominion which have struck me in the course of my travels as rendering them peculiarly adapted for the carrying on of this important department of dairy husbandry. Beginning with Prince Edward Island, we find there is as yet no provincial organisation of dairymen; but there are several local organisations doing a good work. An interest in dairying has only been recently awakened, but it is growing rapidly. That beautiful little island, so much of which is under cultivation, has been sown with grain so often that the land has materially deteriorated in fertility within the last ten years. As a result of this, farmers are turning their attention to those lines of farming which will best maintain the fertility of the land and, if possible, add to it. That is one of the great advantages of butter-making, that it can be carried on, and carried on profitably, without drawing anything practically from the fertility of the land. The small proportion of constituents in butter which are taken from the land are so infinitesimal that they are scarcely worth noticing. Cheese-making does lead to a little exhaustion, but that is so small, and easily made up by the addition of a little superphosphate or barn-yard manure, that it may be said to be one of those departments of farming which can be carried on with very little deterioration of the soil. In Prince Edward Island the climate is very well adapted for dairying. It is cool and moist. The grasses and clovers grow there in great luxuriance, and where sufficient hay and fodder can be laid up to carry cattle through the winter, much progress may be looked for both in the production of butter and cheese. In Nova Scotia and New Brunswick—both of which Provinces are represented on this occasion—the conditions are much the same. There are large districts in both Provinces where the country is somewhat broken and where the cost of transporting large quantities of milk is

considerable, but where the butter industry can be carried on to great advantage. I confidently look forward to a very rapid increase in this trade in both those Provinces. Quebec also has advantages of a similar character for butter-making. Notwithstanding the rapid development of the cheese industry in many parts of that important Province, I think that in the future the probabilities are that butter making will take the lead. We all know the reputation which the Eastern Townships have long had for their excellent butter; but there is not nearly as much of that product manufactured as there might be, and not nearly as much as there will be when the interest that is now being awakened has had its full effect on the farming community, and brought the people to see the advantage of carrying on this department of farm work on a larger scale. It is not necessary for me to say much respecting Ontario, as that Province has already done so much and kept so well to the front by the production of enormous quantities of cheese and butter; but there are large portions of northern Ontario which are not so well known, where the butter industry might be cultivated to a very great extent with profit to the people. We have in the district lying immediately north of the more central area a large tract of country very similar in its geographical peculiarities to portions of Nova Scotia, New Brunswick and Quebec, where the winter is long and the summers are cool and moist, and where the growth of fodder plants and grasses is very luxuriant during the season. Streams of cool water are very abundant, and the water supply is all that could be desired. There summer dairying could be carried on over a large territory with very great advantage. Manitoba has recently organised a Dairymen's Association, and a very warm and lively interest is felt there in the subject of dairying. The production of butter has increased very rapidly within the past few years, and large quantities are now being sent from that Province to British Columbia. When I was in British Columbia last year, I enquired at different points where the butter which was being sold came from, and almost invariably I found it was Manitoba butter which was imported, instead of butter from San Francisco, as formerly. This work, although in its infancy there, is making an impression already, and I am sure, when the full effect of the energy of our western farmers is felt, there will be extensive exports, not only to British Columbia, but to other parts of the world, from that Prairie Province. The same may be said of the North-West Territories. There is a growing industry in dairy matters there, although, I believe, there is no general organisation yet. Cheese factories and creameries have been started at different points, and much of the home demand is being supplied by cheese made in the North-West, and there is far more butter manufactured than the people can consume. The increase in stock within the past five years is enormous, and the country that has provided sustenance for millions of buffaloes may be expected, with the aid of man's industry, to furnish food for equally large numbers of domesticated cattle in the near future. The nutritious grasses which grow on the plains afford abundant sustenance to cattle during the summer season, and by growing suitable varieties of animal fodder plants—such as early varieties of Indian corn, millet, and Hungarian grass—a sufficient supply of food could be had to carry cattle over the winter season. I see no reason why there should not be a great development in this direction within the next few years. The question of ensilage is a new one there. Farmers are interested in it, but it has not yet been demonstrated whether ensilage can be used to advantage in that country, but I think there is every reason to believe that it can, and arrangements are being made in the barn which has been built at the Experimental Farm at Indian Head, and in the barn being built at the Experimental Farm at Brandon, for a silo, so that experiments may be carried on in that very important kind of work. This will determine whether ensilage can be prepared and conveniently used in the North-West, or whether it would be better to store these fodder plants in the dry state for winter feeding. Going further west, as we approach the Rockies, the climate changes very much, the winters becoming shorter and more broken, so that cattle in many places feed out during the long winter without shelter or protection. Sometimes the winters are disastrous to them, and occasionally, as a result of severely cold weather, cattle die; but as a rule, the cattle

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on the ranches come through in a very fair condition, and cattle-raising is found profitable. Hence, while in a locality like Ottawa, people go into the lumber business, and in mining districts into mining, there nearly every one has a greater or lesser interest in a ranch. This is one of the peculiarities of the country, and I have no doubt from the knowledge we have of the ease with which stock can be fed for beef raising that it will not be many years before an important dairy interest springs up in that country. I believe dairying can be carried on there very economically and become a great source of profit to the people. Passing further west and getting into that part of British Columbia which lies between the mountain ranges, we find a large area where the climate is very dry in the summer—almost rainless, and where agriculture is carried on by the aid of irrigation from the mountain streams. Wherever water is obtainable, there is marvellous fertility. Crops of wheat of 50 bushels to the acre are as common as 30 bushels in Ontario. Crops of oats run even from 90 to 100 bushels per acre, and the productiveness of land is wonderful where an ample supply of water is available. I met a gentleman last autumn in Ashcroft, B. C., at the fair held in that town, who exhibited a very fine sample of Red Fife wheat, the only one I saw at that fair. In conversation with him I asked him where he got this wheat. He said, "I got it from you the first year the Experimental Farm was started. I got a 3-lb. sample bag by mail." I asked him: "What results have you obtained?" He replied: "Perhaps you will scarcely believe me, but I have 100,000 lbs. of clean seed, as the result of that 3 lb. sample sent me three years ago." On figuring that up, I saw that with judicious care at the outset and thin seeding, and a subsequent average yield of about 50 bushels to the acre, which is nothing astonishing in that country, such a result was quite possible. I mention this as an indication of the fertility of the soil. I found the farmers were growing Alfalfa a good deal, and that they got large crops of it. Alfalfa was exhibited in large quantities at the shows. There are districts of limited size, where arable land is found in sufficient quantities to support a considerable population, and where dairying operations might be carried on with success. At the present time, stock-raising is pursued almost entirely for the production of beef, and it is not uncommon to find a farmer who has 200 or 300 head of cattle using condensed milk. Some of them think it is too much trouble to look after the milk, and prefer to buy condensed milk to milking any of their own cattle. That condition of things will pass away in a short time, as the country becomes more settled, and although it may be looked upon mainly as a beef-producing and horse-raising district rather than a dairying section, I cannot help thinking that dairying there will become an important industry in the near future. When you pass beyond the westerly range of mountains, known as the Coast Range, you reach what is called the coast climate of British Columbia, where the conditions are again changed. Within 100 miles of travel, you can pass from what is practically a rainless district to where a climate like that of England prevails and the rainfall reaches from 30 to 40 inches. You there find river bottoms and delta lands which are exceedingly rich, and which will before long furnish immense quantities of material suitable for carrying on dairying operations. Roots grow there to a very large size; and from what I saw at the fair in New Westminster, there can be no doubt as to the great fertility of the soil. Land is not found, however, in any very large areas in any one place. I suppose the largest area on the coast, in the settled part of the Province, is in the neighborhood of New Westminster, where there is estimated to be about 75,000 acres of delta land of this rich character. Most of the agricultural districts have from 10,000 to 40,000 or 50,000 acres of land, and these districts are generally separated by mountains. They are accessible to each other by rivers, and no doubt in time, railways will be opened up through them. Through all this extent of territory, of which I have given you a very brief and imperfect sketch, extending over 3,500 miles, there is needed at almost every point, in order to make dairy operations as successful as they should be, the introduction and testing of varieties of plants for the winter feeding of stock. You all know what an interest is felt in this subject in Ontario at the present time, although Ontario is far more favorably

situated in regard to the knowledge we possess on these subjects than any other Province in the Dominion; but all are interested, and some of them very much more so than even Ontario, in this important subject.

It may, perhaps, be best at this time to say a little in regard to what is being done at the Experimental Farms to meet the wants of the community with respect to fodder plants. Most of you who have any acquaintance with the subject will agree with me when I say there is no plant at the present time which has so much promise as the Indian corn. There is none that will produce the same weight of fodder. There is none that will produce from the same area of land the same amount of nutritive matter, and there is no plant, I suppose, in cultivation, the growth of which will do the land more good in the way of cleaning it and of freeing it from weeds than a crop of Indian corn. It has many advantages, but in order to be used profitably for ensilage, you must have a variety which will so far mature itself as to form ears of corn, and these ears sufficiently advanced to be in what is called the glazed or milk stage before frost comes. When corn has advanced to that stage in its growth, it will have developed in its leaves and stalks that full amount of nutrition which is desirable in the feeding of stock. As the length of the seasons varies so much in different parts of the Dominion, no one variety of corn can be recommended for every part of the country. Varieties that succeed exceedingly well in Ontario, especially in the more southern parts of the Province, and which grow well and produce an immense weight of fodder, will not reach that period of growth in the Maritime Provinces and the North-West which is required to develop anything like a reasonable portion of the nutritive matter which that plant is capable of producing. Hence we must look in these outlying Provinces—if I may so speak—with shorter seasons, for earlier ripening varieties of corn to meet the requirements of the case. At the Experimental Farm in Ottawa, we tested last year 70 varieties of corn, including all the early ripening sorts which could be got. Some of these were Dent corns, including the large, strong-growing southern corn, and many of the Flint varieties, that were regarded as having an early-maturing character, and I propose to give you the names of a few of those varieties which were found to produce the greatest weight of fodder, and many of which in Ottawa seem to pretty nearly reach that stage I have spoken of when the ears are formed and glazed. Some of the larger sorts produced very few ears, and some of the smaller ones an abundance, and a few had reached a condition of ripeness before we were ready to cut them for the silo. A great deal has been said about heavy yields of corn and the very large number of tons per acre realized, and I want to say a word or two before I give you figures regarding the reliability of such estimates when made from small plots. There were only two varieties of corn that were grown in such quantities as to enable us to get the weight of a half acre. The others were grown in smaller plots, and although they were carefully weighed, I am free to state that I do not believe the results we got on these small plots could be got on an acre. How much discount should be made on that account, I cannot tell; but the figures given are relatively correct as to the varieties, because they were all grown under the same conditions. The best crop realized from the weighing of half an acre was 20 tons 1,040 lbs., but taking the smaller plots, the yield of the thoroughbred White Flint produced at the rate of 47 tons 380 lbs. to the acre. I believe it is a more productive corn than the Red Cob Ensilage or Mammoth Southern Sweet. It was the Mammoth Southern Sweet of which the half acre I referred to was weighed. The Brazilian Flour gave a yield of 39 tons 1,200 lbs.; Golden Beauty, 28 tons 1,860 lbs.; Virginia Horse Tooth, 36 tons 930 lbs.; Red Cob Ensilage, 26 tons 1,130 lbs. The Mammoth Southern Sweet from a small plot yielded at the rate of 24 tons 180 lbs. I think, perhaps, by taking the difference between the half acre plot and the small plot of Mammoth Southern Sweet you may arrive at some approximate idea of what should be deducted from the small plots when figuring them up on the basis of an acre yield. Taking some of the medium early sorts, we have Crosby's Early taking the lead as to quantity, with a production of 27 tons 780 lbs. Then we have the Early Adam, 26 tons 140 lbs.; the Compton Early, 22 tons 550 lbs.; King

Philip, 20 tons 920 lbs.; Moore's Early, 20 tons 590 lbs.; Amber Cream, 19 tons 930 lbs.; Hickox Sugar, 19 tons 610 lbs.; Angel of Midnight, 17 tons 980 lbs. The Smut Nose Flint, a variety that I did not expect to advance so far, had many of the ears quite ripe at the end of the season. It gave a yield of 15 tons 1,350 lbs. The Early Narragansett gave 16 tons 720 lbs. Among the very early varieties, most of which are of low growth, and yield comparatively small crops, the Extra Early Adams comes in with 8 tons 170 lbs. and the Extra Early Cory with 8 tons 170 lbs. The Northern Pedigree Sweet gave 6 tons 870 lbs. In connection with these we might place Squaw Corn, which is the only corn that ripened thoroughly on the Experimental Farm at Brandon, Manitoba, and which I believe is the original corn cultivated by the Indians when this country was first taken possession of. It is very mixed as to color, has a short ear and a very early period of ripening. In connection with that corn, I happened a few weeks ago to meet a man in St. Mary's, Ont., when attending a Farmers' Institute there, who has been trying to improve this Squaw Corn for eight or nine years, and by selection, he has produced a corn which is about double the length of the Squaw Corn, uniformly white, and he says quite as early as the parent. It is being sent out under the name of Mitchell's Improved. I succeeded in getting some to test on the Experimental Farms and shall be able to tell you more about it another year. Perhaps I have said enough with regard to fodder plants; the field is a large one, and we are trying to cover a good deal of ground.

Permit me to say a few words with regard to the experiments with cattle at the Experimental Farm, and then give place to Prof. Robertson, who I know will be able to interest you very much. The experiments undertaken with cattle are only of recent date; an accurate record of what the stock on the Central Experimental Farm was doing was begun on the 24th of November. Since then everything has been kept account of. There are five breeds of cattle, four of which—the Holsteins, Ayrshires, Short Horns and Jerseys—might be called dairy breeds, besides which we also have the Polled Angus. Most of the animals are young. At the present time there are twelve cows milking, two of which are grades, and not to be reckoned with the pure-bred animals, so that we have only ten of the thoroughbred cattle milking at the present time. Others are coming in, and in the course of a few months the number of the milking stock will probably be doubled. In selecting these animals, the effort has been made to combine as many of the useful strains as possible in each family, so as to lay the foundation at Ottawa of a class of stock for the supply of the other Experimental Farms, which will meet the requirements of the times and give to the herds of cattle which we hope to have there in the future a good reputation. As soon as the four outside farms are supplied, it is proposed that the accumulation of stock each year be sold at auction in those parts of the country where the improvement of stock is most needed, so that farmers will be able to supply themselves with animals having good strains of blood in them in different parts of the country. Account has been kept of the weight of each animal, of the quantity of food consumed at each meal, the yield of milk morning and evening from the milking cows; and the weight of each animal being taken at the end of the month, the use which has been made of the food can be determined. It will then be known whether the food has been used up in the secretion of milk or in the production of flesh. Limited as our experience has been, there is one point which has particularly impressed me as important—that is, the strong individuality which we find in certain cows. There are at the present time two Jerseys milking. I suppose it would be difficult for a Jersey advocate to believe that we have one Holstein that has produced a larger proportion of butter fat in her milk than one of the Jerseys. Again, one Jersey cow produces about 50 per cent. more butter fat than her sister cow along side—one giving milk containing 6.05 butter fat, the milk of the other producing 4.35. The Holstein which I referred to gives milk yielding 4.61, while another yields 3.76. The Ayrshires will run 3.58, 3.08, 3.83, 3.48 and 3.95—all coming under 4 per cent., showing that as far as one can judge from a single analysis, these two cows of the Holstein breed—which I may say are from among the best butter strains

known among the Holsteins—are producing on an average a larger percentage of butter fat than the Ayrshires, though not up to the average of the Jerseys. I mention these facts, not with a view of drawing any conclusions from them, but merely to impress upon your minds the importance of this particular point: that you may have a dozen cows in your barn, and five may be boarding at your expense and five yielding you a profit, which shows the importance of every farmer endeavoring to ascertain for himself what cows are doing the best for him. Having ascertained which cows do not produce a profitable proportion of butter, it will be to his interest to get rid of them and fill their places with better stock; whereas, a man who has good cows, which yield a good proportion of milk and butter fat, should take care of them and look well after their progeny. It should be the aim of the farmer to keep up those particular strains in his herd which make his animals profitable and useful to him. I must apologize for taking up so much of your time. My excuse is that there are so many important points to cover in connection with this work.

By Mr. Everitts:

Q. What breeds are doing best in your herd?—A. The question of quantity of milk is one which should be considered in connection with the proportion of butter-fat. The date of calving also is an important element in the case. I have already said that it would not be safe to draw any conclusions from the few figures I have given, as it is a matter which wants to be looked at from all aspects.

Q. The question I asked is one of considerable importance. We should like to know what the Jerseys, and Ayrshires, and Holsteins have been doing as regards butter-fat?—A. With regard to the five Ayrshires, all of which were below 4 per cent., two calved in August, two in September and one in December. The cow which calved on 23rd December gave 1,040½ pounds of milk in the thirty-one days in January. The cow which calved on 2nd October gave 614½ pounds; that on September 15th, 746 pounds; the one which calved 13th August, 635½ pounds, and that one which calved the 3rd August, 656 pounds. They all ran fairly even, except the last cow which calved which seems to be the best cow, judging from the quantity she is giving now. The two Jerseys I referred to, one gave 6.05 per cent and the other 4.35 per cent. The one that is giving 6.05 per cent of butter-fat gave, in January, 442½ pounds of milk. She calved the 14th of June and is pretty far advanced in calf again. That one which gave the milk with the lower percentage of butter-fat gave 619 pounds of milk during the same period. She calved on the 14th November. This brings up the important point of how far the date of previous calving and the smaller production of milk may account for the difference in butter-fat, and whether the butter-fat increases in proportion as the yield of milk diminishes. It must not be forgotten that these are but the results of a single analysis, and it would be unwise to give any opinions with so little experience. Of the two Holsteins to which I referred, one gave 890 pounds of milk, and of the other I am not able to give you particulars that are satisfactory, for the reason that she calved on the 3rd of January, prematurely. Her calf was born at seven months, which did not leave the cow in the condition she would have been had the birth been a natural one. Her record for the balance of the month was 504 pounds, but from what she has thus far given it is evident she is improving. I might say with relation to the Short Horns, that we have only two cows milking, the rest being heifers which have not yet calved. One calved on the 30th of December—a heifer that was purchased from Mr. Graham, of Port Perry—and she gave 1,046 pounds of milk in January and 549 pounds of milk during the first seventeen days in February, showing good milking capacity; with the butter-fat 3.97—nearly 4 per cent.

Prof. BARNARD.—The facts given by Prof. Saunders are of such importance that I think he should be requested to publish as many as possible of them, giving the weight of food consumed by each animal, so as to enable us to judge of the return obtained, and why. It would be very useful for us to study such figures.

Prof. SMITH.—It seems to me that the main point which Prof. Saunders wished to impress was, not that these figures were remarkable, beyond showing the strong individuality of the animal. If one were to make deductions from these figures, he

would draw very strange conclusions, and he would draw still stranger conclusions if he were to compare them with other figures. For instance, I purchased a cow about the 1st of last December, a common scrub cow, which calved on the 10th. From the time in December when I commenced saving her milk, she gave in round numbers something like 600 pounds. In January she gave a little over 1,000 pounds. On the other hand, I have a cow in my herd whose milk we have analyzed every month during the past year, so as to keep an accurate record—she is only a grade Jersey—but her milk averaged something like 4 and 5 per cent. of butter-fat, and she gave something like 7,000 pounds. But no conclusion can be drawn with regard to the relative merits of a scrub cow and a grade Jersey from these figures, even if I had them all accurate, except pointing to the strong individuality of the animal. That is something which I certainly think the learned speaker has dwelt none too strongly on. Every dairyman should become acquainted with the individuals of his herd. He should keep an accurate record of their produce, and know what each cow is capable of doing. It is the only way he can hope to improve his herd—by proper and intelligent breeding.

By Mr. Fisher, M.P.:

Q. With regard to these two Jersey cows, it would be well to know if they are the same age or not. If one of them is a young cow, with only her first calf, that might make a material difference in the analysis of the milk?—A. Both these cows are four years old, and this is the second calf. They were given exactly the same rations, and I think it was a clear case of one being a better butter producer than the other.

By Mr. McCrae:

Q. Can you give me the ages of the Holsteins?—A. One was three year old, the other four.

Q. Can you give me the ages of the Ayrshires?—A. They were mature cows. The oldest one is six years, and the others five and four.

THE PRESIDENT.—I should be pleased to see an active criticism on all these papers, so as to bring out the facts. This question of the individuality of the cows is an important one to discuss, and the owners of herds should know the value of each cow, the amount of milk she produces, the value of that milk, and the economy in keeping her.

By Mr. Fisher, M.P.:

Q. I would like to ask Prof. Saunders, or some other practical man, what method he would advise the ordinary farmer to follow for the purpose of comparing his cows? We cannot pretend to undertake the scientific analysis of milk; but perhaps someone could explain a simple method by which this could be done by the ordinary farmer of the country.

Prof. ROBERTSON.—If one would weigh the milking of any cow twice per month, which is often enough in ordinary practice to determine its value, the common cream-gauge would enable any farmer to compare his cows. The total weight of butter will also enable him, on the basis of the total weight of milk, to ascertain the comparative value. A lactoscope will cost about \$4; but its reliability is only to be extended to comparisons of milk. It is not always a true indicator of the per cent. of fat in milk. By weighing the milk of each cow twice a month and using the cream test tubes the information sought for will be obtained with sufficient accuracy for practical purposes.

Mr. FISHER.—Will that give the difference in the value of the cream?

Prof. ROBERTSON.—If the milk be put in these cream-gauges at the same temperature and left for the same period, there will be no appreciable difference in the butter-making value of the cream per inch or per pound from cows of the same breed.

Mr. TACHÉ.—I understand that Mr. Fisher's question is with regard to the simplest way for a farmer to ascertain the value of the milk, so as to know the worth of each cow. I really think that the most practical method is that suggested by Prof. Robertson—the cream-gauge. An analysis, or the use of any chemicals, involves a knowledge of this manipulation; and, if there be not this knowledge errors

might be caused which would interfere with correct conclusions. I really think that the cream-gauge is a sufficient guide for any farmer in estimating the value of the milk—that is, where the conditions of setting the milk are exactly similar.

Prof. BARNARD.—How much variation would there be in the butter-fat of the cream, being given the same number of inches of cream? How much variation would there be between cream that is solid and cream that is light?

Mr. TACHÉ.—The general average we can get in the cream-gauge shows a variation of 10 or 15 per cent.—I mean with different animals—even as high as 30 with Jerseys. The difference would be 10 or 15 to 18 per cent. It is clearly shown that the difference of the cream-gauges do not correspond to the butter-fat. This is proven by the use of the centrifugal machine. In that way a milk yielding about 15 per cent. in the cream-gauge will only give 7 or 8 in separation by the machine. It has been observed also that certain samples which have shown a difference in the cream-gauge will not show a difference in the mechanical separation. It shows clearly that some milk will yield more thick cream than others. There are cows of which you cannot get the same results in certain seasons. I think, however, that if comparisons are made often that a pretty exact idea can be had of the individuality of each cow.

Prof. ROBERTSON.—Cream is always a very variable commodity. I have examined cream containing 75 per cent. of fat, and in hotels I have seen cream called so by courtesy—with 5 per cent. If, however, any man wants to compare the milk from two cows in his herd, the cream from the milk is almost equal in value per inch, if the conditions are alike and the cows are of the same breed. If the cows are of a different breed, there will be a difference even under the same conditions. I want to make that point plain. A man, in setting cream in a cream-gauge, must not compare a Jersey cow with a Holstein; but if he had a herd of Holstein cattle he could compare the animals fairly in that herd. So with Ayrshires and cows of other breeds.

Mr. McCRAE.—Which breed shows the most butter-fat on the cream?

Prof. ROBERTSON.—That will depend on the way the cream is separated. Cream is only a part of milk into which a large per cent. of its fat has been gathered. Cream has no unvarying quality of its own. If I set a sample of Holstein milk in the cream-gauge, and examine the cream at the end of two hours, it may not have more than 25 per cent. of fat in it. If I allow the milk to stand for twelve or twenty hours the cream will have become more compact in its holding of the globules of fat.

The PRESIDENT.—I might inform those present that in my different factories I have adopted the cream-gauge for testing, and I have had very good success. The plan we follow is to immerse the samples of milk in ice water. I think it is essential to have the milk set in ice water; and, by adding a little salt to the water, we get most satisfactory results. It is necessary to get the cream as compact as possible. We have had no trouble in determining any milk that has been tampered with to the extent of 10 per cent. by this apparatus. In fact, I find the cream-gauge a very satisfactory method of determining the quality of milk. You must, however, have similar conditions and give due time for the cream to become compact.

Mr. EWING.—As I understand Prof. Robertson, a relatively large amount of fat would appear as between the milk of a Jersey and a Holstein than would appear in a general analysis of the milk.

Prof. ROBERTSON.—No; I do not mean that. I mean this: that a person could safely compare the milk from two Holstein cows by the cream-gauge test, but he could not safely compare the milk from a Jersey cow with milk from a Holstein cow by that test alone. There is about the same proportion of separation of the total fat of the milk into cream in two samples of Holstein milk, and there is also the same proportion of separation of fat into cream in two samples of Jersey milk; but there is not the same proportion of separation of the fat into cream by a setting method from a sample of Holstein milk as from a sample of Jersey milk.

Prof. BARNARD.—Suppose your Jersey cow was sick at the time you took the sample—perhaps it might be in a fever—would there not be a great difference in the value of the cream to the same quantity of milk?

Prof. ROBERTSON.—There would be a very great difference in the quality of the milk, both as to its constituents and as to its commercial value, from a cow when sick and a cow when well. There is also a very great variation in the quality of the milk when one cannot detect any sickness in the animal. If, however, a farmer will sample his cow's milk twice every month he will be able to arrive at a knowledge of the relative quality of each cow's milk.

Prof. BARNARD.—Is it quite sure that a cow giving a low percentage of butter-fat gives a high percentage of caseine; and is it not true that cows may give a low percentage of butter-fat and a low percentage of caseine, too? Then such milk would be nearly all water. I have seen a difference of 30 or 40 per cent. in the caseine; but there is nothing to indicate, if there is no butter-fat, that there is caseine. This is one of the points which might be developed by the Farm—that is, the relative value of milk in cheese-making and butter-making. I do not know that I have seen any experiments carried on in that way. I think it is a very important experiment, and one which would be of value in order to settle the definite value in that way. It would be very valuable in regard to cheese manufacture if the value of the milk could be determined by the amount of cream. We have no standard to know the value of milk for cheese-making from its butter value.

DAIRY FARMING.

The PRESIDENT.—I am pleased that Prof. Robertson has been appointed Dairy Commissioner for the Dominion of Canada, and I am sure we are all delighted that he has taken that post and entered upon his duties. I have no doubt that in this new and wider field, he will have a greater opportunity for the exercise of his ability in the interest of dairying in the Dominion. I now have much pleasure in introducing to you Prof. Robertson, Dominion Dairy Commissioner. (Applause).

Prof. ROBERTSON.—I am indeed glad to meet a gathering so representative as this present one, composed of delegates from each of the Provinces of our wide Dominion, all interested in laying down those broad lines of policy along which we should seek to improve dairy farming in Canada. It does not, to my mind, seem that this Association, in its convention, should be concerned so much with the details of practice in dairy work as with laying down those general plans for procedure which will guide the several Provinces in developing their resources according to their own conditions and adaptations. So, this morning, in speaking on this subject of dairying farming for the Dominion, I wish to indicate what I conceive to be the line of policy that should be followed by this Association, as well as to mention, as far as I can at the present moment, the line of endeavor I myself shall follow in my work as Dairy Commissioner—always being willing and anxious to have plans modified according to changing conditions and to increased knowledge.

The popular conception is, that dairy farming is concerned mainly in the production of milk or the handling of its products. I think that skilful dairy farming is an occupation having wider range than that. Dairy farming should certainly concern itself with having the soil in such a state of fertility that the dairyman will obtain plentifully and profitably the raw material out of which he has to obtain milk, butter, cheese, beef and other animal products of concentrated quality and value. I begin, therefore, by trying to tell you what I conceive to be the purpose of skilful farm work. It is to procure and provide food of excellent quality, to maintain and, where possible, to increase the fertility of the soil, that there may be an abundant store whence to draw supplies of raw material, and to give profitable occupation to a large population upon the farms of the Dominion. Agriculture will always be our main industry, and if we can employ people therein profitably, we will relieve ourselves from many of those difficulties incident to hard times. In this three-fold line of endeavor, I would like to present to you the adaptability of dairy farming to just meet our needs as a nation in trying to pay our way, and have something left for ourselves. In the production of food, dairy farming enables every man, who follows it skilfully and with good judgment, to get more food from the same number of acres than he could obtain otherwise. There is no occupation,

except that of market gardening, that will provide so much food of the best quality from a small area as dairy farming; so we can get more food in our Dominion through developing dairy farming than by any other form of agriculture.

Then we are enabled by dairy farming to protect the soil. A good deal of our farming has been after a prodigal fashion. We have been reckoning our substance in riotous farming if not in riotous living. We have been wasting our shipping off to England and the States, substance that we should have kept ourselves, and we have been getting no fair value back. If we would save the fertility of our land we would give the substances removed from the soil in farm products all the value they can carry, and dispose of them only that way. Dairy farming, while providing large supplies of food, will protect our soil and keep it rich, to go on sustaining this large population for which the food is provided.

Then it will give a large population profitable occupation; and, as we increase the population we carry in our own land, so do we add to the value of all property and augment the profits from every business, as population is almost the only element that gives value to property. If a man had a dozen square miles in the middle of Africa, where nobody lived, he would have no fortune in his land. If, however, he had one acre in the centre of Toronto or Ottawa he would have great value; because dense population is there. So, as we get more population, we have more value in our property.

Now, will dairy farming enable the farmers of the Dominion to follow agriculture with these results—the obtaining of large supplies of food, the maintaining of the fertility of the soil as well the increase thereof, and the supporting at remunerative rates of a large agricultural population? I think it will. I will speak a short time on the aspect of how dairy farming will increase the food supply. It will increase it, first, by giving to plants which the soil produces an increased life-sustaining value by their being transformed from the vegetable state to that of an animal product. It will also increase the food supply by making parts of some crops available for man's food that he could not otherwise eat. I have merely, in the brief time at my disposal, to hint at this matter. A man cannot live on grass, and even though we should be able to grow twenty blades where one grows now, no man could live any better thereby, except the dairy farmer stepped in and elaborated them into a product fit for man's consumption. Then a corn crop, such as we heard of from Prof. Saunders, cannot carry in itself much direct life-sustaining value for us; but if a cow be placed between the corn stalk and the man, then the man will be able to live on corn and live on the best of food. The farmer in providing food for the world is not merely a producer, but he should be a manufacturer—a manufacturer of raw materials into finished products of far more value. Let me give you one instance to clinch my argument: We had in a ton of barn-yard manure the very same substances which compose the food we consume. The substances found there would not be worth more than \$2.50; yet these same substances, when manufactured in the laboratory of nature under the skill of man, through his soil, his plant and his animal, will give him a finished product worth \$2,500. He makes 10 cents worth of material worth \$100 by the refining and enriching of that material through the processes of nature with his own labor and skill. I would like to make that plain. A man buys a ton of pig iron at a certain price. He smelts it, he casts it, he polishes it and puts it into the proper place in a machine. He has then given to that iron perhaps a ten-fold value per pound to what it formerly possessed. A farmer, however, gives his raw material a thousand-fold value by the exercise of proper skill; and he has lots of room for the exercise of that skill in the direction of labor.

Then there is a growing demand for food of concentrated quality. A great while ago men were content to live on more bulky food, not so palatable, not so nutritious. As an instance of this, let me cite the fact that in England to-day the consumption of milk is quite five-fold larger per head of the population than it was 20 years ago. The same is true of Canada. Let a man think of his own table and family's consumption, and he will see that they consume five times as much milk as twenty years ago. The consumption of cheese in our Dominion has grown quite five-fold per head of the

population within my memory, as far as figures that I can examine would tend to prove. Let me just sandwich in here this statement: That the consumption of cheese by the people who live to the south of us, in that prosperous and mighty Republic, has been increasing until now it is five-fold as many pounds per head of the population as it was twenty-five years ago. I see in that fact the promise that in a very short time we will have the whole of the British markets for ourselves, so far as the supply of cheese from this side of the ocean is concerned, and the American nation will become an importing nation instead of an exporting one. The population is growing far faster than the production of milk, and the consumption of cheese is increasing proportionately faster than the supply. I do not think we can go on making more cheese than we can find people to eat.

In the production of these foods the tendency all along the line is to make them finer and to make them cheaper, and the cheaper we can make the best class of food the more profit will we make from agriculture. When we can put fine food on the market, within the reach of every poor man, there will be no possibility of glutting the market with butter. Instead of trying to have butter very fine and scarce, so that the price would be 40 cents per pound, I would like to see our farmers able to produce the finest class at a profit to themselves, saleable at 15 cents per pound. Perhaps we cannot do it. We cannot do it now, I know; but I think within the next twenty-five years we will be able to produce butter at a profit at 12 cents per pound, and if we can get 25 cents a pound for it, so much the better. It should be the effort of our producers to insure our prosperity by reducing the cost, and if prices do go up we have so much more profit.

Then dairy farming, while doing so much in the way of providing the world's food, will maintain the fertility of our fields. That is a most important matter for farmers who expect to live and to have their successors live on this land for generations to come. I hear a great many men say that Canada is played out as a grain-growing country—that the older cultivated portions of the Dominion should quit growing grain. I have no sympathy with that advice. This northern temperate zone is the best part of the whole earth for the growth of cereals, such as wheat, barley, oats, pease, corn and grain like these; but I do think that, while we should continue to grow large crops of grain, we should quit selling so much grain from our farms. Agriculturally, we should be a grain-growing people, selling animals and their products. Thereby we will grow more grain, have richer fields and get more food. By that method we can get from our soil an ever-increasing supply of food from a never-diminishing store. Allow me to make this thought clear without going into details: Every plant that grows on a farm for the service of man requires at least three substances for its growth, which are becoming scarce in some parts of our Dominion. These three are nitrogen, phosphoric acid, and potash. Now, when a farmer having an abundant crop sells the whole crop from his farm, he removes the whole of these three things which the plants took from the soil. But when a man feeds these same plants to animals, they toll their feed to the extent of 12 or 20 per cent. So when a man sells animals and their products only, he retains about 85 per cent. of these substances which the plants took from the soil. His skill as a manufacturer enables him in every case to so increase the value of the 12 or 20 per cent. that he gets more for it than he gets for the 100 per cent. in the other case. Therefore, we should sell the 12, 20 or less per cent. at an enhanced value and not sell the whole at a low rate. In the exportation of a million bushels of wheat there is removed from our country, nitrogen, phosphoric acid and potash, which, if we had to replace by buying commercial fertilizers, would cost us \$240,000. You see that in the exportation of 1,000,000 bushels of wheat we sell out of our country substances which would cost us in commercial fertilizers \$240,000. When, however, we export to another land \$1,000,000 worth of butter, we sell away less than \$1,000 worth of these substances from our country. I would not be a traitor in agriculture, and sell my land in the former way.

In providing remunerative occupation, dairy farming enlarges the sphere of man's labor and affords an opportunity for the exercise of his skill. As a producer,

he tills his soil, sows his grain, reaps his harvest and stores it by. Then, as a manufacturer, he finds occupation at paying rates while manufacturing his own crops, and the crops he can buy elsewhere, into a product which he can sell at a profit. So I think, instead of selling these coarser grains, we should become a people buying coarse grains and selling their products in cattle and cattle products. As a producer, the farmer who lives in our Dominion has the best conditions for obtaining service from the resources and powers of nature. The old sun is the power that makes plants grow. He rolls himself into their substance and makes use of them for the storage of his own strength. We have far more sunshine, here than they have in England, and our sunshine means power for the production of large crops, when we have left raw material in our soil for the sun to roll himself into. If we have been prodigal, and wasted these substances, then we should be penitent, and not only repeat but certainly reinvigorate the land by restoring that which we took away. Then we should also finish the work of manufacturing our own products. I have no sympathy with the men who advocate the manufacture of hay and corn from the silo and grains of all kinds into steers called store cattle, to be afterwards sent in a half-finished state to another country for some other men to finish the job, and to get for their part of the work twice as much pay as we get for ourselves. (Applause.) I would finish the job at home, and instead of exporting store steers and importing dressed beef, I would finish our own work and produce all the beef we require. Cattle to go abroad will pay us best to go abroad in the finished state.

Then dairy farming will give profitable employment the whole year round. The man who confines himself to one line of agriculture is a producer only as nature will help him, and while nature does the work he does the chores; but in our country he is forced to be idle all winter, so far as increasing his resources or possessions is concerned. If he would become a manufacturer, he might work all winter, mainly as a manufacturer, using the materials of which he was a producer during the summer, when nature was generous to him. Now, the men who have made a success of feeding cattle in past years really owe their success in a very large measure to the fact that they have been able to employ themselves and their helpers on the farm at profitable rates all winter. The man who sells cattle is in a different position from the man who sells grain, in that he is able to give himself and his family or servants work the whole year around at profitable rates.

Having said so much on the fertility and occupation part of my subject, my object is to show how we can best help a farmer to follow this business with the certainty of success. A man will always work better when he has a clear conception of the work he has to do. Now, men may talk as they like about having strong hands and a willing back, but the man who has a clear head, and can see what to do and how to do it, is far better furnished for any task, even for digging drains, than the man equipped only with hands that are hard and muscles which are strong. A man should have a clear conception of his work, so as to formulate his plans with good judgment and with a due recognition of all his surroundings. When should a farmer date the beginning of his year of work? What difference does that make, whether a man say: "My year begins in January, or March, or April?" It means a great deal in helping him to have a clear conception of the nature of his calling and his ability to make good plans for successfully prosecuting it. As a manufacturer, then, he should date his year from the 1st of October, or thereabout, and then begin to sell as much of manufactured products as he can until he comes around to the end of September again. His year as a manufacturer should be from the 1st of October to the 30th of September, and not from the 1st of May to the end of September, as is too often the case. Then he will begin to recognise that as a manufacturer he has to improve all the contrivances which in his business take the place of machines in the business of the ordinary manufacturer. The cow is sometimes called a machine. She serves that purpose to the man who manufactures food of a highly concentrated quality. Therefore, a man should have a cow that will help him to provide more food from his premises than he could obtain otherwise. If a cow consumes more value in feed than she yields in product, she does not help the man to provide more

food or to obtain profit. Therefore, I would have the individuality of the cow very closely watched, to discover whether she was helping him to provide more food, and obtain more profit, or hindering him by taking more from him than she gave back.—In a sense, every cow is a boarder on some person, and a boarder who eats more than she pays for is not a profitable companion to have around the house or stable. (Hear, hear.) I believe in systematic giving to everything I try to support. I think it is much easier if you systematize your giving and give regularly. It is easier for a cow to pay for her board, if she does something every week, than if she has to pay the bill in six months. Therefore, I would have the cow paying for her board, as she eats it. I would not have her to loaf around for six or seven months during the winter, and then take her by the teat and say: "Pay me that thou owest" during the next summer. When she is deep in debt, like a discouraged debtor, she does not do so well as if she knew she was free from that disheartening encumbrance. Then I would try to understand the manner of my cow's work. If I had a fanning mill in the barn, to be used in separating the chaff from the wheat, and all the while it put a great proportion of the wheat along with the chaff, I would not use that fanning mill. It would not be adapted for the work of separation I wanted through its action. I would use my cow like that, to see whether she had the power to separate in herself this material I put into her. I would settle, first, that I wanted milk; that I wanted, next, calves at a profit, and next beef; and I would not make my cow keep herself fat to the extent that she could not make milk profitably. I would make my cow know in her own person, that it was her business to give me milk, then valuable calves, and then beef after that. If I look first for beef as an essential product of my cow I prevent her from serving me with her milk. I do not think, nowadays, a cow can pay her board in beef only. She can pay her board, if she gives me milk first, so that I can raise her calves economically, and then, if she pays her board in milk, I can afford to sell her beef at a profit, no matter what price I get. I intend that a cow should first pay by giving milk at a profit, then calves, then beef. The cow that has that power will have the evidence of it in her person. She will have—I care not what her breed may be—a long udder in most cases—that is, laboratory room of ample capacity for the making of milk at a profit. She will have a soft skin—that means economy in digestive action. She will have a large barrel—that means capacity for consuming cheap food adapted to her nature. She will have broad loins and long rumps—that means strength for maternity, and also means shape for her calves, that they afterwards may carry most beef on broad loins and broad long rumps. I have no preference for a roast of beef that comes from the brisket of a steer. I have no special liking for the last three or four cuts off the round near the hock of an animal. That may be a point with a man who is breeding for beef; but, if I am working for milk, these two points do not concern me, if the cow has the other points I have given you, with a rather fine neck and face, having large eyes that are quite prominent. The five points are these: Udder, skin, barrel, loins and rump, and neck and head. If she has these of the right sort, she has the power to serve the man well who gives her a fair chance. I do not care by what name she is known, if she has these points I would try to enlarge her capacity, and to be sure I would not break down her line of continuity by getting a calf out of her by a bull that was quite opposed to my purposes. I would try to enlarge the capacity of her progeny, so that they would be better than their mother.

Then another matter requiring our attention as dairy farmers in this Dominion is to devise some way whereby we can reduce the cost of supporting this cow. I will not discuss that in detail at all. If any man can by experiment or the exercise of superior judgment reduce the cost of feeding a cow from 22 cents to 15 cents per day, he has effected a change which makes the possibility of profit very much greater. You see it is 15 against 22. The profit lies between the cost and the price that is realised. If the price received be 24 cents per cow per day, the profit is increased from 2 cents to 9 cents. Then we must examine the possibility of reducing the cost by changing the kind of food from hay and turnips to cheaper kinds, like corn ensilage or clover

ensilage; also, by providing food acceptable to the animal. As Prof. Saunders said wisely this morning, the feeding value of the corn plant is largely modified by the stage of maturity it has reached. The stages of maturity for the highest feeding value in a hay and corn crop are alike. When the blossom is blowing off the hay stalk you have the most food in it. After that it gets harder, more woody, and has less food in it. It is the cutting of the plant when the process of preparing for reproduction is finished. There are a great many other things in regard to the combination of food that will enable us to reduce the cost of keeping cows. One is the making of the food acceptable as to flavor and aroma—the wilting of the corn stalk in the field before putting it into the soil. Take the illustration which my friend Roberts once used in my hearing. A man will have a cup of coffee offered to him at noon which he will turn from with disgust. His wife will say: "That is the very same coffee you had at breakfast, and praised so highly." If you keep over coffee from breakfast until dinner, he does not like it so well. The same is true as regards the aroma and the acceptability of cow feed, which we often lose sight of. The stabling of cattle is a very important matter. We should try to give information as to keeping cattle comfortable at the lowest possible cost. The science of all good stabling is comfort for the animal. If it is comfortable, it does its best for service, and if uncomfortable, it does not do so well. I do not care whether the stable is painted or not, or whether it has cracks between the boards. It is a good stable in August when it has cracks like that; but I never knew a stable like that to keep cattle comfortable at this time of year. One point which I wish to refer to in the management of cattle is this:—It will always help the dairy farmer to increase his profits, if he will make his cows begin their earning habits when young. I would like them to begin milking at two years old. I have an objection, in my views of all life, to keep any creature too long doing nothing. It is certainly not best for those who have to keep the creature. In manufacturing products, I would like to say, I consider our climate has a superior adaptation for carrying on the line of work I have been outlining. There is no climate I know of on the globe that will keep animals in better health than that of our Dominion. We have less disease than almost any country where these animals are kept. The cold of winter gives them vigor of constitution, and thus more power for service. Winter dairying has been sometimes condemned as being a practice unsuited to our cold climate. Now, winter weather—such weather as we are having just now—is the best season for doing two things.—For making fancy butter at the lowest cost of labor and money, and for raising calves, to have constitution and vigor thereafter for thrift, which is the kind of condition we require. So, winter dairying is not opposed to summer dairying, but complementary, by giving the farmer a good start. Now, have we any reason to fear that these products will not be wanted, from the standpoint of consumption? I think not. Take butter-making. The best market in all the world for food products is to be found in the British Isles; they centre there from every part of the earth. Now, how far are we off from England with our butter? I will not trouble you by naming the number of miles; but we are distant, with fine butter, 1 cent a pound. That is our distance. You see it is a question of profit. I would ship butter to the moon, if I could get a profit by selling it to the man there. It is not a matter of much difference how far the man is off, if I can reach him at a profit. One cent per pound is our distance from England. The winter time affords transportation facilities and conditions that enable us to send butter from here to England with no deterioration in quality. The English people import a great deal of butter. I won't even give you statistics; but we send there just now an average of only 2½ per cent. of all the butter they buy abroad. The other 97½ per cent. is open to us when we send suitable butter there. In carrying on this work we should continue to make butter in private dairies for a while, where there are not enough dairymen with milk through the winter to support a co-operative creamery. But when the time arrives, I think we should adopt the latter method of butter making. Our phenomenal success, in supplying England with cheese, is because we make 99½ per cent. of all our cheese in factories by co-operative methods. We make less than 3 per

cent. of our butter in butter factories. When we co-operate we have uniformity, and uniformity with fine goods will compel the market to yield the best prices. Then in stock raising, which can be carried on admirably in conjunction with butter-making through the winter, we have a great deal of promise in regard to the demand from England for our cattle. We send to England a great many cattle which meet with favor. But we send only 22 per cent. of all the cattle England buys abroad. There is 78 per cent. of the total importation of cattle that we might still supply. I would like to have the cattle trade of Canada developed, and developed until we can furnish to England nearly all the butter and beef that she wants to buy abroad. If we put these two things hand in hand, we will carry on beef-raising and butter-making at the same time. That will enable the farmers to have the full value of skim milk for feeding on their own places. That is a by-product that is spoken of with contempt. Let me give you one instance of its worth. In Denmark they have gone into winter dairying and what they call partnership dairying. By that plan, the farmers who furnish the milk receive the full value per pound of the butter from the factory they support. Then they are charged about $2\frac{1}{2}$ cents per gallon, or $\frac{1}{4}$ cent per pound for the skim milk that is returned. The partnership companies realize enough from that quarter of a cent per pound to pay all manufacturing expenses, and also in four or five years to pay for the building and equipment where this business is carried on. So skim milk is not an article of such despicable value, as we counted. It has a value which can be materialized when we feed it to calves and hogs in the best way. Our cheese factories, while they deserve more extended notice, shall only receive passing mention here. We need not contend against our natural adaptations. We are adapted for making cheese in summer, and in winter we are adapted for making butter for home and foreign markets. Cheese-makers can never make profits, nor can butter manufacturers, out of the losses of the men who furnish the milk. If a man furnishes milk to the cheese factories only, and does nothing else with his cow, he can hardly make any profit. If you make her pay you well during the winter, she will give almost as much milk for cheese factory purposes next summer. Then the farmer will make a profit, and he will allow the manufacturers to make their share, instead of sometimes making them out of his loss. We supply to England about $3\frac{1}{2}$ per cent. of all the cheese she imports. We might, at least, supply that proportion of her butter. In the by-products of the dairy we have very much value. I think we ought to add another branch to dairy farming, and feed far more swine than we do. In doing that, we will use our by-products to advantage. The Bureau of Statistics in Ontario gives a report showing that we have imported into this country annually during the last five years nearly \$2,000,000 worth of hogs and their products. Now, we should not do that. We should be sellers of hogs and bacon, and not buyers thereof. We furnish to England a good many hogs and a good deal of bacon, and hams, and pork; but we furnish only $6\frac{1}{2}$ per cent. of all she buys abroad. We should capture that unoccupied market, and thus increase our profits from abroad. In the work of this Association, I think we can encourage farmers to avail themselves of their opportunities. Let me give you one instance. Over in one of the American States, I happen to have the acquaintance of a gentleman who has gone into the winter dairying business. At the creamery of Gov. Hoard, who was expected here this afternoon, I found that one man received during the last two years an average of \$2,100 for the butter-fat from the milk of thirty cows—\$2,100 on an average for two years for the butter-fat of thirty cows. He was offered \$15 per cow for the skim milk; but he said he could make more by feeding it to his stock. I have been at that spot; and there is no condition there superior to what we have here. They have no better soil, no better cattle, no better men. We can get the same prices for our creamery butter as they get there. If they can make money in that way, we can. If this Association will help farmers in this matter, by intensifying their interest and showing them the profits that are possible, if they will develop their skill; by furnishing information and inspiring them with enthusiasm; by showing that our land is no mean place to live in—then our Association will do

its work well, and make us verily believe that our Dominion is the best place on the whole earth where men can follow farming, have happy homes and have all the material good that the heart of man should wish. (Cheers).

By Mr. Wood, M. P. (Westmoreland):

Q. Does Prof. Robertson say that this gentleman received \$2,100 at the creamery from thirty cows?—A. Yes.

Q. That would be \$70 per cow?—A. Yes; that was his average for two years.

By Mr. Evertts:

Q. How many months in the year did this gentleman furnish milk?—A. He furnished milk continuously. Most of his cows gave milk from ten and one-half to eleven months in the year. He had his cows coming in all the time.

By Mr. Bissell:

Q. Do you think we could have our cows do that here?—A. You know as well as I could tell you. You are doing this same thing. The butter sold for about 28 cents per lb. The prices this past summer were not so high.

Q. What did he feed them?—A. I cannot give you his full rations, but the bulk of his feed was fodder corn and ensilage, with cotton seed meal and bran. He went to the station not long ago and found his neighbor selling oats at 22 cents per bushel. His neighbor was sending milk to the same creamery and drawing a small sum per cow. He said: "I do not sell my oats in that way. One bushel of oats with me makes about three pounds of butter. In that way I get 75 cents per bushel."

By Mr. Wood, M. P. (Westmoreland):

Q. What breed were his cows?—A. They were all grade cows. If a man wants butter, it might pay him to take grades and Jerseys; but if a man wants cheese and stock, he might get as much from the Holsteins, Ayrshires or Short Horns, according to his farm conditions.

Mr. EVERTTS.—I am pleased with these results. I think we have many Canadian farmers who could do just as well as this American. We have just as intelligent men, as good farms, and should get as good results. I have paid to some of the patrons of my cheese factories as high as \$800 for the milk of eighteen and twenty cows, one-seventh being kept at home. If these men were carrying on winter dairying I think the result would be the same as that experienced by this man who has been mentioned.

Prof. ROBERTSON.—I did not state the success of this farmer to disparage our farmers; but, by taking an illustration from afar off, to provoke you to good works.

Mr. EVERTTS.—That was the idea I took from the Professor's remarks—that we could do just as much—and he was citing this case to stimulate us to action.

The PRESIDENT.—I think we can do better.

Col. RHODES (Minister of Agriculture for the Province of Quebec).—I think I understood Prof. Robertson to say he set his cows to work as young as possible. Does he leave that to nature, or does he keep them until two years old, so as to bring them in when they are three years old? Most of us know that these heifers are good and strong at one year—that is, in some of the breeds.

Prof. ROBERTSON.—I would prefer having the heifer drop her first calf between the time she was two years old and thirty months. If she is kept until she is three years old, she is apt to increase in fat between two and three years. That gives a tendency to develop the fat-making functions of the body, instead of the milk-giving functions. By having her calves between two years of age and thirty months, the only loss sustained is the reduced size of the body. If she be well reared and suitably fed until she is that age, her size will not be any objection or hindrance to her doing her work. I would rather have a small cow that gave me a profit than a big cow giving none.

Hon. Senator PERLEY.—Prof. Robertson remarked that, in order to show the value of barnyard manure, he would compare it with pig iron: but he did not go on and tell us what process of manufacture the barnyard manure would have to go through to yield this profit.

Prof. ROBERTSON.—I will not detain you long in stating the process. If a man, as a manufacturer, puts a ton of barnyard manure on his field, his cultivation is part of the manufacturing process. Then he puts the proper plant there; the plant's roots go down, the plant itself comes up, and nature enables that plant to incorporate in itself the material of that manure. That is like the smelting furnace process. Then, when the material of that manure is incorporated into this plant, the man feeds that plant to a cow. The cow takes a part of that material and re-elaborates it and puts some of it into her milk. Then the manufacturer of dairy products takes that milk and gets a part of some of the same material that was first in the manure in his cheese or butter. And a man eats that very same material which, instead of being vile, is now glorified by nature's operation and man's work and skill.

The Association then adjourned until two o'clock.

The Convention assembled at 2 p.m.

The PRESIDENT.—I have no doubt there are gentlemen here who would like to discuss the address which the Professor delivered in the forenoon.

Mr. FISHER.—I would like to emphasize and draw particular attention to the opening remarks which Prof. Robertson laid before this convention, and that is in connection with what ought to be the special work of this meeting. I think it is important that the whole broad questions of dairying in the Dominion should be here discussed, and not details. When we met here last year the Dominion convention was practically a mere preliminary meeting, and of course the convention labored under great difficulties. You will remember, Sir, that at that convention, the convention took upon itself to name the delegates from the various Provinces. Now, it seems to me that for the future, at all events, this ought not to be done, but that, on the contrary, the different local organisations in the different Provinces ought to know much better than we possibly can the men in those Provinces who are doing the dairy work there, and who would be best able to represent these Associations in this convention, and name the delegates. We wish in this convention, as I understand it, to get a thoroughly representative meeting of all the leading dairymen of the Dominion of Canada, in the different Provinces and different sections of the country, so that we may better understand the needs of our business as a whole in the Dominion, and so that we may exert our influence to benefit that business. Such a convention as this, I think, has not the time at its disposal, however interesting and valuable such discussions might be, to enter into a discussion of local details; but there are great questions in connection with the business, the markets and the laws of supply and demand, and not only the laws, but the actual supply of and demand for our produce, which such a convention as this should deal with, investigate and formulate some conclusion upon. Men then, who came here representing the different sections, may go home charged with information that they get here, charged with resolutions which this convention may adopt, and thus try to make uniform the dairy work all over the Dominion of Canada; and so only, I believe, can we do the best work for our business.

The PRESIDENT.—I think the suggestion thrown out by Mr. Fisher is a good one, that we should endeavor to deal with principles, and not details.

RATIONAL FEEDING OF MILCH COWS.

Prof. BARNARD, Secretary of the Council of Agriculture, Quebec, was called upon to read his paper on the Rational Feeding of Milch Cows. In opening, he said: I have been a practical dairyman for the last twenty-one years. In 1856, when I went into the business, there were no experimental stations, and yet questions came up, and I felt the need of careful experiments, in order to give true answers to questions in the official journal. You see before you the results of twenty-one years' work. I hope, now that we have a federal organisation, with experimental stations, I shall not have to carry on that work at my own expense any longer.

(The paper, which was a valuable one, has since been copyrighted by Mr. Barnard, and will be published by him in pamphlet form).

Mr. EVERETS—As we have a little time to spare, and as Prof. Roberts, of Cornell Agricultural College, is not present, I would like to hear a few remarks from Mr. Thorburn, of the North-West Territories.

Mr. A. G. THORBURN, Broadview, N.W.T.—Mr. President and Gentlemen:—I had no idea when I came here this afternoon that I should be called upon to make any remarks, but as it seems that we have a little time to spare I will occupy your attention for a short while. I came to this meeting expressly for the purpose of obtaining information. I had not been brought up to farming nor to dairying, but since I went to the North-West, as dairying has become a most important industry there, and will be for many years to come, without the slightest doubt one of the most important industries in the North-West Territories, I naturally take a deep interest in it. When I went to the North-West I engaged in business, and found that one of the great drawbacks, particularly when money became a little scarce, was that we had to receive produce from farmers in the shape of butter. This butter was, in very many cases, of an indifferent character. Accordingly, as my business told me that it would not do for me to continue to receive that kind of butter for which I could not find a profitable market, I set about devising means to make it profitable, both for the farmers and myself, to receive butter in some other shape. Two cheese factories had been established two years before, but after consultation with various parties, including Prof. Barre, of Winnipeg, I came to the conclusion, that in the North-West Territories, the manufacture of butter would be the best and most productive in profit, both to the farmer and the man who handled the commodity. After seeking all the information possible, I spoke to the farmers on this subject, and after some considerable time spent in talking the matter over, I got them to undertake with me the establishment of a creamery at the town of Broadview. We only started it late last spring, and as we were but little acquainted with the practical working of butter factories, we had not the arrangements properly completed for the due carrying out of our project. That is how I come to be at this convention—not as a practical dairyman, but as one who is particularly interested in dairy produce, which I believe will become one of the great factors in the progress of the North-West Territories. It does not need, among this company, that I should speak of the valuable nature of the soil and the climate of the North-West. Our natural grasses are very rich and, as in former ages, immense herds of buffalo roamed over its plains, it stands to reason, that it is well adapted for the raising of stock. The climate is especially well adapted, I believe, for carrying on dairying, for cheese manufacturing, but more especially for the manufacture of butter. It is a dry climate, cool at night and favorable in all respects for the preservation of the good qualities of butter and of milk. Therefore, it is exceedingly well adapted, I believe, for carrying on dairying during the summer months. I doubt much whether we can produce butter or cheese during the winter months, because of the very excessive and long-continued cold there, and especially, perhaps, for many years while the population remains sparse and scattered far apart. It will be impossible, I think, in that country to gather milk or cream for dairying purposes during the winter; therefore, our operations will be chiefly confined to summer dairying. That I imagine can be made profitable, even although it is continued only for six months in the year. At present we labor under considerable disadvantages in carrying on the dairy industry. For instance, during the last season I had to send upwards of twenty-five miles for cream. Two of the districts from which I gather cream are fully a fifty-miles journey, so that it will be seen that we labor under considerable disadvantages at present. Still, notwithstanding all that, and the excessive price we have to pay for the gathering, I managed to make it pay—or, rather, I should say, I suffered no loss by the transaction; and now that I have had a little experience in the matter, I consider that this year, with the practical knowledge I have gained, I shall be able to carry on the industry for the six months that I intend to operate it this season at a profit. Butter there is at a low ebb. I mean it is low in value, not because it is

not wanted, but owing to the particular kind of butter which, unfortunately, we have to put into the market, the various qualities of butter produced by different farmers spoiling the market. Butter that I might handle at 10 cents a pound, I shall now at least get 20 cents for by manufacturing it in a creamery, so that there is no question, I think, as to the profitable carrying on of dairying in that country, if it is properly done. But we need a great deal of instruction there. I am very sorry, indeed, that there are no delegates here from Manitoba. I fully expected that we should have some Manitoba delegates present, and wished to have a consultation with them, so that we might be enabled to form a combined Dairymen's Association for Manitoba and the North-West Territories. We can hardly form an association in the Territories alone, for people who are engaged in the practical carrying out of the work there, as they are too widely scattered. But could we associate with our Manitoba brethren, we might establish a good Association, and give more practical knowledge than we could by forming a dairying centre for ourselves. Prof. Barre, with whom I have chiefly consulted, and whom I expected to meet here, expressed himself as practically willing to assist in the formation of a combined Association. We are looking forward to the time when dairying in Manitoba and the North-West will assume immense proportions, as the country, as I said before, is eminently well fitted for the carrying on of dairying on a large scale. There is another question which very seriously affects us there—that is, the question of freight rates. It was stated to-day that butter and cheese cost one cent a pound to deliver in England. All the butter that we manufactured last season, I shipped to Vancouver, B. C., and it cost me \$1.95 per 100 lbs. to take it there. We may say that it was practically 2 cents a pound, because the weight of the tub added made it that. These high freight rates put us to a great disadvantage. We are situated in Eastern Assiniboia, practically at the centre of the continent, and if good freight arrangements could be made we could ship either to the east or to the west, and find our market either in Britain, British Columbia, or in Asia. Since I came here I have heard that one party who is engaged in the manufacture of butter at Qu'Appelle has made arrangements to ship his butter this season to Japan. I believe there is a great opening for us there. I have been in communication with San Francisco parties who ship to China, as I heard there was a little opening there. I learn that most of the butter for China is put up in tin packages. I do not think it would be profitable to ship to China or Japan, unless we go to considerable expense in making arrangements to carry out the trade properly. Perhaps, however, it would not be wise to go into that at present, until we see how our industry develops. But, situated as we are, having these heavy freight rates to contend with—and the question affects Manitoba as well as the Territories—I think it would be advisable to appoint a committee to make some arrangements by which this disadvantage under which we are placed, might be brought to the knowledge of the President of the Canadian Pacific Railway, to see if some reduction in rates might not be made. If we could secure a reduction, I feel satisfied that it would assist in this industry assuming very large proportions. I think the question of the packages might also be considered, for we intend putting up butter in bricks, or, at least, that is what we are looking forward to, to meet the requirements of the Chinese and Japanese markets. I am given to understand that butter requires to be put up in that form for China and Japan, and likewise for the British Columbia market. If we could make some arrangements with the Canadian Pacific Railway by which our packages might be returned to us free, when they are empty, which I understand is done by the railways of the United States, it would be a great advantage to us, and we would be enabled to dispose of our butter at local points, as well as at distant markets—good butter, fit for any table. I desire once more to emphasize the exceedingly great advantages which we possess in the west for butter-making in some directions, and the risks that there are in others, and to ask that this Association take into consideration the position in which we are placed, and to endeavor as far as possible, in the interests of the dairying industry throughout the whole Dominion, to arrange some of these matters in the North-West, that I have endeavored to point out to you.

Senator PERLEY, (N.W.T.)—Mr. Thorburn is a little in error in his statement that there are no delegates here from Manitoba. Mr. Struthers, Manager of the Industrial Farm on the line of the North-Western Railway is with us, and I think we should be glad to hear from him.

Prof. SAUNDERS.—I may say also, Mr. Chairman, that Mr. Bedford, Superintendent of the Experimental Farm at Brandon, is present.

Mr. STRUTHERS.—I think it may be for me to state how I came to have any connection with dairying at all. Two or three years ago, Dr. Barnardo started an Industrial Farm in Manitoba, and I was asked, as manager, to formulate some scheme for carrying on the work. Of course, grain farming has been the great work up there, up to within the last year or two. The difficulty I saw was to keep a large number of young men busy during the whole year in order to follow out the scheme which we had started. Dairying was in its infancy in Manitoba, at that time, and after fully considering the matter, we decided to go in for a creamery. Up to the present time we may consider that we have met with good success. We have found that there has been a great demand all through the country for young men who are able to handle stock, nearly all our applications for help stipulating that the employé must be able to milk. For this reason, we have come to the conclusion that we have adopted the right plan. I was rather surprised to hear my neighbor, Mr. Thorburn, state that there was no one here from Manitoba, as he and I do not live very far apart. But as regards the difficulties which we have to contend with up there, I think they could be nicely overcome by our having a representative Association. I think it could be easily arranged, if they could not organise an Association in the North-West, that we might take the North-West dairymen into our Manitoba Association. I suppose it would be rather difficult to form an Association in the North-West at present, as even the Manitoba Association is but small in numbers yet. I do not think I can throw any light on dairying matters. I was sent here to learn all I could from this convention and report on my return, and I may say that already I have acquired a number of pointers which I shall be able to make good use of.

Mr. THORBURN.—I may state, Mr. Chairman, that the Mayor of Moose Jaw, is at present in Ottawa, and he told me to-day that the people of Moose Jaw were very anxious to get a butter factory in operation there, and that the town is prepared to guarantee a number of cows—400 or upwards—to anyone who will start a creamery there, while the corporation is prepared to furnish a creamery to the extent of at least \$2,000. I gave him that figure as about what a creamery would cost, and he, as Mayor, is ready to undertake to give great advantages to anyone who will start a creamery.

Mr. EWING.—A question has been raised by Mr. Thorburn which frequently crops up with us in the Eastern Townships—I refer to the cream-gathering system. In the townships near St. Francis farmers have been engaged for many years in the raising of cattle for exportation. They had been trained to admire well-developed and fine looking animals, and that has been one of the reasons why they have refrained from going largely into cheese manufacture, which they consider incompatible with the raising of stock. Now, however, their attention is being largely directed to the creamery, but they have met with a difficulty in the hauling of the milk backwards and forwards—that is, hauling the milk to the separators and bringing back the skim milk; for, as Prof. Robertson has said, the value of the skim milk depends upon the condition it is in. Now, then, this question arises, taking quality and quantity into consideration, is the collecting of the cream more profitable than the separating system? I should like to hear some expression of opinion on that matter from those who have made it a study.

Prof. ROBERTSON.—The question of the comparative economy of collecting cream to a central creamery, with that of gathering milk for the use of the separator, depends entirely upon local circumstances. The centrifugal separator will always enable the butter maker to obtain nearly 8 per cent. of a larger yield of butter from the milk than the ordinary ice-setting process will enable him to recover. If there be a large supply of milk within a small area, and the cost of collecting it from the

farmers very low, it will pay better to collect the whole into the creamery and return the skim milk to the farmers. If, however, the collection has to be done over a large area it is better to collect the cream from the farms leaving the skim milk behind.

Mr. EWING.—What about the butter?

Prof. ROBERTSON.—In both cases, butter from the centrifugal separator is likely to be superior to that obtained by the setting process, on account of there being less risk of any contamination of the cream.

Mr. J. DE L. TACHÉ.—I understand that in the Townships the main objection to carrying the milk to the creamery is that the farmers are too widely separated. When the farmers are quite near together, and continuously settled, there is no such difficulty. In Europe the same objection exists. In Denmark and other European countries the settlements are more like those of the Eastern Townships country than in the other parts of the Province of Quebec. A map of Denmark has recently been published, which shows the separators of one make that are in use. The number is about 2,500, and the map is riddled with marks, just as if you had fired a shot into it at 10 feet distance. I am a separator agent, so that you will understand the position I am in. Prof. Robertson has estimated the difference between the centrifugal separator system and the ice-setting system to be 8 per cent. At the best of the season, in the month of July, which is the time for setting milk in ice, everybody who is acquainted with the business knows that the ice will give the best results in warm weather, but in the fall it is at so much disadvantage as against the other methods that in Denmark, in a number of experiments, they dropped the ice system to adopt the pan system in November and December. Then if you come down to the fall, you will find the difference in yield between the two systems of ice-setting and separating to be 20 per cent., and it is well known in practice that all the dairy authorities estimate that about 75 per cent. of the full amount of butter which the milk contains can be taken out the whole year round by the best methods, but with the separators it is now acknowledged that you can get out 95 per cent. of the butter from the milk, and a good farmer will get to the limit which Prof. Robertson has assigned. It is certain, if you compare the cream-gathering system and the separator system in practice, that you will find a difference of from 15 per cent. to 20 per cent. in favor of mechanically separating the cream, and as to the quality of the butter there is no doubt that the sooner the cream is taken off the milk the better it is for the quality of the butter.

The PRESIDENT.—This is an important matter for new sections, such as the North-West and Manitoba, as they want to know all about the new system. In Ontario and Quebec we adopted this system some years ago, and the business has grown.

Mr. TACHÉ.—In practice they estimate the cost of carrying milk to the factory to average about 5 cents per 100 lbs. If the milk yields 80 cents per 100 lbs. it would amount to 6 or 7 per cent. of the cost of carrying the milk to the factory. But if you have the milk separated mechanically at the factory there is a gain of 7 or 8 per cent.

The PRESIDENT.—The increased yield will more than pay the cost?

Mr. TACHÉ.—Altogether. The increased yield will be from 12 to 15 per cent. on an average.

Prof. BARNARD.—Are there not small separators which can be used?

Mr. TACHÉ.—There is another way of carrying on the separation of milk. In sparsely settled places a central factory is established, and in the district around that central factory there are placed two or three separators at convenient distances, so that farmers will not have to carry their milk too far. A small separator can be run by one or two horses, or by water power, and you do not need an experienced man at all to make a separation of the cream. A man can be obtained to do it quite accurately enough for \$15 a month, and in that way the cost to the man who establishes the factory is greatly reduced, because there is only one place where he has to put the entire outfit for the whole of the butter-making. At the other places he has

simply to put a small separator and to pay the cost for collecting the milk. He has only to pay the wages of the butter-maker at the central point, and at the other places reduced wages are paid to inferior help.

Senator PERLEY.—Is there not a butter machine or butter extractor in the market?

Mr. TACHÉ.—A butter extractor has just been put on the market.

Mr. CHAPPAIS.—I do not think there are any in Canada.

Mr. TACHÉ.—Not that I am aware of; they are just being introduced into the United States.

The PRESIDENT.—Have you seen it, Prof. Robertson?

Prof. ROBERTSON.—I have not seen it in operation. I have only examined the drawings.

Senator REESOR.—At what price could a separator be furnished suitable to a farmer keeping from 12 to 20 cows?

Mr. TACHÉ.—There have been hand machines in the markets of all makes for several years, but the bother of having them worked by hand has been found to be so great that up to now it has been an impediment to their going into practice. Lately, however, there have been some improvements in these separators, which make them of greater capacity. Twenty cows would give 500 lbs. of milk, which could be separated by one man, but in one hour a man would be tired.

Senator REESOR.—In the part of the country from which I come—in the County of York—and a little north of Toronto, there would be no difficulty in furnishing horse power.

Mr. TACHÉ.—The cost would be from \$125 to \$150, according to capacity. That would be for a hand-power separator which might be used for horses. For a horse machine alone you would have to pay \$260, and the next size would cost \$350.

Mr. CHAPPAIS.—There is a separator worked by the foot.

Mr. TACHÉ.—Yes; but I do not think it is as good as that worked by the hand.

Senator REESOR.—I think in northern Ontario a sufficient quantity of ice can be obtained, and there is no difficulty in using ice-setting at any time of the year. I have had some years experience both in cheese manufacturing and in dairying. I have had a farm and have kept dairy cows on it for butter-making, and found it very profitable. We are not very far, however, from a large city—Toronto. We sell the cream, and when we cannot find a market for the cream we convert it into butter. The cream realizes a price equal to 40 cents a pound, but when we sell the butter we get 30 cents a pound; it is very choice butter. If our farmers would only realize that in taking proper care of their cows, taking proper care of the milk and churning carefully, they can make butter that will realize 20 to 30 cents a pound the year round, whereas many of them are but realizing 10 to 15 cents a pound. The methods of many farmers lose them both time and money. They neither make it profitable nor pleasant for themselves, and certainly, from a national point of view, it is very far from being profitable. There is no difficulty by taking pains, I think, for them to realize 25 to 30 cents a pound, more particularly if you are near a large city, where you have the advantage of readily finding a market. The dairy that I established is now owned by my son, and he carried it on with about an average of 12 to 14 cows, and during the last two or three years he has made from \$1,200 to \$1,300 a year out of butter and cream alone. Then, as most of the cows are thoroughbred Jerseys of the St. Lambert's stock, he has made from \$500 to \$1,000 a year out of young stock. If he sent away the milk to a factory he could not raise that stock, or if he sent it to the city he could not raise the stock; but now, while he is able to sell the cream or the butter, he is able to raise the value of the stock, so that in the end it nearly—well, it does not quite double his profits, but at any rate there is an aggregate of from 50 per cent. to 75 per cent. increase in the profits more than he otherwise would realize. The farm I am speaking of was purchased ten or twelve years ago. It had been terribly run down, and people said it was not worth buying. It came into my hands by accident. I thought when I got possession of it that I would sell it, but I soon found that I could not sell it; so I put a man upon it, whose wife was a good butter.

maker and gave him instructions how to run it. The result was that it was run so well that it proved to be as profitable an undertaking as anything I ever touched in my lifetime. Of course we had the Jerseys there in the great boom, so that when we sold a cow at \$250 or \$300 we were doing very well, but of course we cannot get that price now. My son just writes me that he sold one six weeks ago for \$200. It is a very difficult thing among the farmers of that neighborhood to induce them to go to any expense for the keeping of cattle in proper order and condition giving them plenty of feed all the year round and keep the dairy running. I was greatly pleased with the remarks of Prof. Robertson. They were thoroughly practical, and so completely in harmony with my own experience that I think they cannot be too widely circulated and read by the farmers throughout the whole country. There is only one point that I do not quite understand, that was, when he said that a ton of manure worth \$2.50 would yield 1,000 per cent.; I could not understand that.

Prof. ROBERTSON.—I did not mean to say that the manure would yield 1,000 per cent. alone; but in speaking, I said that the nitrogen, phosphoric acid and potash contained in the manure would, by the growth of plants, afterwards fed to the animals, yield over \$2,500 of animal product in the form of butter, meaning thereby that there are no more of these three elements in \$2,500 worth of butter than in one ton of manure.

The PRESIDENT.—Do you not find the better that you feed your cows the more profitable it is?

Senator REESOR.—Most decidedly. Unless you feed them to a certain point, you get no profit.

The PRESIDENT.—Did your land increase in value for the treatment it received?

Senator REESOR.—You may judge something of the increased value of that land when I tell you that we have had a portion that has been cleared for about seventy years, as near as I can tell; these particular fields were high rolling land, and always easy to plough, and they have been worked nearly the whole time. As you may well suppose, they were considerably run down, but we were able to manure them well, and after establishing a dairy farm we have had three wheat crops that averaged in the yield over forty bushels of wheat to the acre. On one or two occasions when we have had it under clover seed we realized some \$30 to \$40 per acre. This year we will realize quite as well.

The PRESIDENT.—Will you give me the value of that land when you took hold of it, and its value to-day?

Senator REESOR.—The value was about \$35 an acre when I took hold of it. Its value to-day is about \$75 an acre, but if times were as they were a few years ago it would be worth about \$100. We would not care to part with it for less than \$100 now, because we have got it into such condition, and it yields us such good return, that we could not get any other farm in the neighborhood, unless we gave a good price for it.

Senator PERLEY.—How many acres are there in it?

Senator REESOR.—One hundred acres. There is a nice stream running across it.

The PRESIDENT.—Is it all arable?

Senator REESOR.—Yes. We have on it about 30 or 35 cows and heifers, and we raise a number of young bulls to sell as well.

The PRESIDENT.—How long is it since you gave this land this treatment of which you have spoken?

Senator REESOR.—About eleven years ago. We devoted all our attention to improving it, and we have got it now so rich that we would not care to make it any richer. The land produces crops so heavy that it takes them all their time to stand up. We put back on the land as much as we sell off it.

Senator PERLEY.—Is the value increased on account of the production of grain or on account of producing stock?

Senator REESOR.—The section of country to which I am referring is a grain-growing country, but, as you know, the price of grain has been so low the last few years that a good many of the farmers preferred to sell out and they did not go into

dairying. The consequence is, that it is difficult to say what is the best to do, but so far as we are concerned we are perfectly satisfied with the result. Of course, this thing must be taken into account. A farmer with \$500 or \$1,000 capital could not go to work and do as we did, because our stock is worth \$5,000 or \$6,000 to begin with. Our farm is worked up into such fine condition that my son, besides making a living for the family, sells \$2,000 off the farm each year, not counting the additions to the stock, which are greater than when he started. The object in farming in Canada now, I think, should be to aim to improve somewhat on the lines as is done in England. England to-day for producing and improving stock stands first among the civilized countries of the world. Their stock is sought for by every nation in Christendom—that is, both horses, cattle and sheep. They originate stock there, and they do it in such a way and with so much taste and judgment. Take the different breeds of sheep—the Shropshire Downs, the South Downs, the Oxford Downs, the Leicesters and other breeds, they command the attention of the whole world. As to their horses, everyone knows how they stand, and English cattle also stand uncommonly well. Of course, for a country like this, having to send a long way to market, we want to send something in small bulk and which contains a good deal of value. We therefore want a breed of cattle to produce butter and cheese. One ton of butter and one ton of cheese is worth a great many tons of wheat and barley; and if we can send butter and cheese off in that concentrated form, the freight is so much less. With the intelligence we possess and the knowledge and the enterprise of our farmers, with a school system equal to anything in the world, from our public schools up to our colleges and universities, what is there to prevent us in Canada from reaching the highest plane on which a farmer can stand, and make his farming as profitable as the most enlightened men in any country ever did? That, I think, Mr. President, is what we should aim at. We should aim at something that would command the attention of the whole world, so that people from every part could come here and purchase their stock. Occasionally you find men in the United States that do very well, and quite a number here in Canada, considering our population, are doing well in raising fancy stock. I think only a few years ago a man from Australia went to the State of Maine and paid \$1,500 for a ram to improve his stock. Some go to England for thoroughbred animals, but I ask, why should they not come here? Why should not this be the breeding ground of fine stock? It would raise the character of our farmers and pay them handsomely for their investment. This would be far better than squandering money in foolish ways and taking it off to other countries. Let them make Canada a country that is a temptation to the outside world, and they will benefit themselves at the same time in proportion.

Mr. JAMES P. DILL, Wolseley (N.W.T.)—As this is turning out something of an experience meeting, perhaps it may not prove one of the least useful sessions that we have had here. It appears to me that we are overlooking one of the most important parts of dairying in Canada, what we now have both in the North-West and in many other parts—I mean the home dairy; and the question that I would like to ask is, and I put it to the gentlemen present who are able to enlighten us: How are we to improve it? The suggestion I have to make is this: that the different Local Governments appoint men whom they might call inspectors, but I would rather term them instructors, to visit as many individual farmers as possible, and hold meetings at which they can deliver lectures and give the farmers advice as to what they should do. I cannot better illustrate the use I would make of these men than by relating as well as I can what I expect these men to do. It is told of a merchant living near Chicago that he had been shipping his butter to that city for some time and got very unsatisfactory prices. He felt completely at a loss what to do, not being a competent judge, and he did not like to turn round and tell the farmer that the butter was bad. He took a sample from one of his oldest customers to have it inspected and got a report upon it. He was asked by his customer what the report was, but he was reluctant to say anything about it. Finally, he was pressed to say what was wrong, and at last he stated that according to the report at the last churning there had been a great deal of tobacco smoke in the dairy and the flavor had been detected

in the butter. On the second churning there had evidently been some sickness in the family. Some one had been making catnip tea, as the butter had the flavor of catnip about it, and on the third churning evidently some one had been making a stew, as the butter had the taste of the carrots and cabbages in it. A great many farmers have often brought me butter, and I could tell them frequently whether it was good or not, but often I found something the matter with it, but could not say what it was. Now, if we could get experienced men to go round to the farmers' houses I think they would be the most welcome men we could send, and that the farmers would be ready to accept their suggestions, telling them where they were wrong and giving them instructions how to improve the quality of their butter. And then I would suggest that meetings be called from time to time at which dairy matters could be discussed. My object in bringing this point before you is to hear the opinion of gentlemen competent to speak of the advisability of adopting this step. I am glad we have some of our legislators here, and I would press this matter upon their attention to urge our claims in this direction.

Mr. WRIGHT (Renfrew).—I have had a good deal of experience in reference to butter making, as many of my friends here know, and I fully agree that we should endeavor to raise the standard of our butter. The only way in which that can be done in my opinion, is in the factories, but there are sections of the country where it cannot be done. I have been so thoroughly disgusted with some of the butter that has been offered to me that I am taking the matter in my own hands and running a little government by myself. I have written to the Minister of Agriculture at Toronto and to the Commissioner here in Ottawa, but they do not hand out the money as I would like. I brought the matter before our Farmers' Institute, and they told me that I could have one day at the Institute to make butter, and accordingly I made all my preparations to show how good butter could be made. I got a lady and gentleman from Carleton Place, who were good butter-makers, and they made it right before the farmers' eyes. I found, however, I had made one mistake. I told the parties who came there that they did not know how to make butter and that I wanted them to come and see how it was done. I took their names down on a piece of paper, and when the day was appointed I sent them invitations, and they came. I had women coming from over 50 miles, some of them with babies in their arms. One woman came 55 miles. Those who came the longest distance I took good care should see the best, and so many people wanted to get into the building that the place was not big enough to hold them. Another trouble was in getting the cream. When I asked them to let me have cream, they said "No; we are not going to let you have the cream for you to find fault with it, because you said that we were not able to make butter." It was with these parties that we had the greatest difficulty in obtaining cream from them, but finally we found a man who had enough cream and he let us have it. The woman who was working for him could not make any objections, because the man who owned the cream was running the institution, and not she, and accordingly we got the cream from him. The very moment we got the cream there all the women who would not sell it to us were present and right to the fore. They came up on the platform in dozens, and when the butter was made they were the ones to ask the most questions. I got a good deal of satisfaction out of one woman who would not sell me any cream. She asked me to let her have some of the butter, and I said I would only be too glad to do so, because she would not let me have the cream. Before Mrs. Yuill, who made the butter, went there, none of the farmers' wives in that locality thought that the quality of their butter could be improved, but after that demonstration in my county they changed their minds, and one of those who would not let me have cream decided to spend a week at Mrs. Yuill's place and get lessons in butter-making. We have in our section of country Poles, Germans, English, Irish and Scotch, born in large cities, some of whom never saw a cow until they came to Canada, and they have settled down on our farms, undertaking to make butter without knowing the first thing about it. They know nothing more about butter-making than the man in the moon, and with just as much reason you and I, Mr. Chairman, might set to work to

make a top buggy. My contention, therefore, is, that these people should have instructions in butter-making. The Government ought to furnish instructors in every locality where ten or more women will petition to have an instructor sent them. In that way we should improve the quality of the butter, and the country would gain by it. I contend that the Government have a perfect right to do that. If you want to educate your boy in farming, you can send him up to Guelph—the Government does everything for John, but won't do the least thing for Jane. It is the women who make the butter, but there is no place for them to go and learn to improve on their methods. From the interest which they took in our county it is evident that they begin to recognise that some improvements could be made, and I made arrangements for Mr. and Mrs. Yuill to go back to the county. We have had applications coming in one after another, and I will devote a whole week at a time to the work. I think it would be well if a little book on dairying were got out. We do not want Mr. Lynch's book, that the women cannot digest, but we want a little one of six or eight pages, and if the Government cannot prepare it, I am going to prepare it myself. We are bound to have it. I am going to run this show myself; I am not asking any one to interfere, but in my section of country I am determined that the quality of the butter shall be improved. I believe our action will be a spur to the Government to go on and give us a helping hand. I believe this is the only way we can get right at the root of the evil. We have plenty of women in this country who are very skilful, but all are not geniuses. Many women, when they make butter, hang on to it for a high price, until it is spoiled; but if you had a factory which is owned or controlled by a man, he can keep sending it away, and it is therefore good all the time. This is the only way in which we are going to make our country a great dairy country, so that it will stand second neither to Denmark, Ireland, nor any other country on the face of the earth. We have the cows, the climate and the water, and I think we ought to make Canada the best dairy country on the face of the globe.

Mr. EWING.—When Mr. Wright gets through with his instructions, I wish he and Mrs. Yuill would come down into our section, as we have a great deal of trouble of the same kind there.

Prof. ROBERTSON.—I may say that it is certainly the purpose of the Government in supporting this Association and in creating the office of a Dairy Commissioner to meet the requirements which have been indicated as existing. A good deal of our butter for a while must be made in home dairies, but I hope that as far as possible the creameries will take the work, as they can do it at the lowest possible rate. Meanwhile, it is the intention of the Government to issue Bulletins on dairy matters and among them will be one giving specific instructions as to the best way of making butter on the farm dairy, and as we do not think that the women who make the butter are the only sinners, we are going to add a chapter for storekeepers, to tell them how to handle it. Roll butter, as a rule, does not derive any benefit from the handling it receives, and in too many cases, I am afraid, it is stored down among the coal oil or near the onion bags, so that a disagreeable flavor is imparted to the butter by contact of that kind. It is also the intention, I believe, to hold a series of dairy conferences, to demonstrate the process of making butter and cheese, but especially butter. I do not see, however, that for the present we can undertake any such vast work as to send an instructor to every ten women who apply; but probably, by-and-bye, the dairy instruction of the whole country will be systematized along this line, so that we may be able to issue a statement giving the names and addresses of creameries or dairies where the best practice is in vogue, and to which persons could go to spend a week and learn the business carried on there. I think that will be the best means of overcoming the difficulty which has been pointed out. To show you that instruction is valuable, I may say that the Province of Ontario has been paying for instruction in cheese-making and practical butter-making and our cheese last year sold for \$475,000 more than it would have fetched if sold at the same price per pound as the product of the factories in New York State of the same make and at the same time. We have there not only an

instance for national pride, but in addition we have increased wealth and profit. I may say that any individual who is interested in improving the quality of our butter in Canada may have as many of these Bulletins as he chooses to apply for. Any shop-keeper or merchant who wants to have a hundred copies for his customers may have them free of expense by applying to the Department here.

Senator REESOR.—Are they sent to all the newspapers?

Prof. ROBERTSON.—The practice in the past has been to send them to the newspapers, and nearly all have used them; but it is our intention now to have a special edition prepared for the newspapers, printed only on one side. At the same time, I think it is of advantage for the farmers to have the Bulletins in the house for reference. In this way anyone who is desirous to improve the quality of butter will have all the help afforded that time and money will enable us to give.

Mr. WRIGHT.—Prof. Robertson seems to think that there will be great difficulty in covering a large area by these instructors. What I intend to do is, that we should leave, say very early in the morning, and go to some house about five miles away, all the arrangements for the gathering having been made beforehand. Then after the lecture or demonstration takes place we go on to another school-house, about five miles further, and make butter in the afternoon or evening, getting home the same night. In this way we could cover two places every day without any trouble, and go right on, so that in six days we could cover twelve places. Quite a large stretch of country could be covered in the manner indicated. If you show ten women in the morning how to make butter and ten in the evening, so that their butter will be improved by 25 per cent., we are going to realize a good deal of money for this country. If a woman does not quite understand the thing at first, and comes to us the next day to have it re-explained, we let her make the butter herself, and in this way she acquires the practical knowledge.

Senator READ (Belleville, Ont.)—I have been thinking that we should pay more attention to supplying butter for the English market. Our own market is soon supplied. It must be patent to most of us who have paid any attention to the circumstances of Canada at the present time that grain-growing is not profitable, and the question is, can we undertake a more profitable industry? I contend that we can, and I can see that industry to be in the manufacture of butter for the English market, because that market is a market that we cannot glut. The only question that would arise is: Can we compete with the different countries of Europe that send large quantities of butter to England? I happened to be in London during the winter of the Franco-German war, and on one occasion I met a man who was a large butter dealer, and learned from him that in order to get his butter on the market he had to put a foreign brand upon it, either Danish or French, so that in one week 8,000 firkins of butter were marked in that way in London alone. Now, can we produce as good butter as foreign manufacturers do for English markets? Here in Canada we have good grasses, good water, a good climate—all the elements to enable us to produce an article equal to that of any other country. Then, if we have the elements which are essential to this industry, have we the enterprise to attempt to secure a footing in the English market? It is quite evident that we have succeeded with cheese, at all events. What goes into the production of cheese goes into the production of butter, and if the milk which our cows give is all that nature can supply to produce the finest quality of cheese, certainly in my opinion, by scientific handling, it ought to produce the finest quality of butter if we apply the same principles to it that we do for cheese production. I believe we can only do this by the general adoption of the factory system. Under the factory system we can make butter uniform, and put it up into such packages as will suit the English market. In summer, by the use of a refrigerator to the seaboard and by care being taken on the steamers, we can put it into the English market before it deteriorates in value. In winter time, of course, there would be no risk of deterioration.

I think, Mr. Chairman, it is a very important matter for the farmers of this country to consider. Some of the farmers in my section of the country allow their cows to come in in October, and by doing that, under the factory

system, we could produce butter all the year round. I am no novice in keeping cows. I have kept from forty to sixty for over twenty years, and I am quite satisfied, after my lengthened experience, that I can make my cows produce nearly as much milk in the winter time as in the summer. I am quite satisfied that we should pay attention to this question, and if possible get the assistance of the Government, or make such arrangement by which we could first have the butter made by the factory system, and then obtain all the conveniences to get it to the English market, because that is the market for large quantities. I look upon it that we, as farmers, must keep more stock, and in that way the land will be kept up. I have fed all the grain that I grew this year, and it came from nearly 300 acres of land. I have built two silos, and I suppose that at this time they are feeding out of the second one. I bought 500 bushels of grain a day or two ago to fill out with. My stock are paying me a nice little sum, and I am quite content that farmers ought to keep more stock, and that stock, in my opinion, should be cows. I started over twenty-five years ago, and have watched the growth of the cheese trade from its infancy to the point it has now reached. Now, if we can build up a butter trade in the same manner as we have fostered the cheese industry, I think we shall be accomplishing a great deal for the people of this country. I tell you, gentlemen, there is money in it. Undoubtedly the country is prospering. In the county in which I live, within my time, there were only seven spring carriages, and now there are 7,000. The question is, can we continue to progress as we have done? Will grain-growing continue to pay? I do not think so, and in my opinion the only salvation for our farmers is to keep cows, and to keep them well.

Mr. WRIGHT.—That is the idea.

Senator READ.—My son said to me last year: Hay is \$15 a ton; we have lots of cows; do you not think it would be better not to feed them so much? I said to him: Never mind the cows; keep them fat, because I am a poor man. If I was a rich man I could afford to keep them poor, but as I am a poor man we must keep the cows rich. I mention this to emphasize the fact that you want to keep your stock well. If you want to get anything out of a cow you have to keep her in good condition. I feed my cows when they are not giving milk nearly as well as when they are giving milk. I say to myself, if they are not giving it to-day they will give it to-morrow, and after careful observations for over twenty years I am more firmly of the opinion than ever that you must keep your cows well if you are to get good returns.

Mr. BISSELL (Brockville).—I usually strain my milk in the stable, and then take it to the creamery, where it is cooled a little to take out the animal heat, and then as more milk is brought in I add it to the milk in the deep-setting pails, immersed in ice water. After the cream is skimmed I put it in a cream pail and allow it to remain there for about eighteen hours before I churn. My cream is at about sixty-six degrees, and after churning it about forty minutes we have it in granular form. Then I wash it and turn it out, adding the requisite quantity of salt. That butter I sell at 25 cents a pound. I am a farmer, and am making butter and selling it all the time for 25 cents. I make cheese in summer and butter in winter.

Mr. PETERS (Queenstown, N.B.).—I am greatly interested in the production of butter. I make a considerable quantity of it on my farm, and without it I should not come out right at the end of the year. I have listened with a great deal of pleasure to the opinions expressed by different speakers this afternoon, and in listening to them I find that the same complaints are made here in this larger gathering that we find at home in New Brunswick in our small Farmers' Association. I may say that the conditions of agriculture in New Brunswick, taking the Province all through, makes it almost imperative that we should be dairy farmers. The section about the head waters of the Bay of Fundy, where there are salt marshes, furnishes an unlimited supply of hay to the farmers. For the last 100 years, there has scarcely been any diminution in the product of hay on those lands, but along the tributaries of the St. John River we find it necessary to cultivate our lands and give back the lands the sustaining power which we had drawn from it. So far as my memory serves me now, I think we have nine cheese factories in the

Province of New Brunswick, and as regards the quality of cheese, I think the people of New Brunswick are in a position to take care of themselves. Ten years ago our cheese was manufactured solely by private dairies. We had no standard quality, but at the present time the cheese factories have taken the lead, and we are now able to put on the home market—I do not think we ship any to foreign markets—all the cheese that we require of excellent quality. I hope I shall not be considered vain when I say that in my opinion the cheese products of New Brunswick compare favorably with the larger Provinces. I think I am not going too far when I say that the butter product of New Brunswick will compare favorably with the butter of the Upper Provinces, for we do get some butter from you. Perhaps this is not saying much, but I do not want to overdraw the picture. In justice to my own people, I will say that there is a fair proportion of real sterling butter manufactured, but the larger proportion of it is not so good, and it is for the purpose of securing the whole product of good quality that our people are desirous of taking some action. Anyone visiting our public markets and judging of the quality of butter they find there would scarcely agree with me in my present remarks, but let it be understood that the really first-class article never reaches the public market, as it is all secured by parties who know the make, and purchase it beforehand. Just now we are suffering from the poor quality of butter placed on the market, and we are trying to make the people there believe that it would be greatly to their interest if they would produce a better article in butter. Ordinary butter to-day is worth 20 to 21 cents per pound. First-class quality of butter brings 25 to 30 cents per pound. Perhaps 30 cents would be a fancy price, but really good butter you have to pay 25 cents for. The question was discussed at our farmers' meeting as to the manner in which the whole of our butter product could be made a uniform and good article. I agree with the gentlemen who spoke to-day in favor of the co-operative principle, as I believe that to be the best method, where it can be carried on successfully. There are certain conditions, of course, which are required for the successful carrying out of that method. So far as New Brunswick is concerned, I do not think it is possible to take the whole of the milk to the factory. Our plan must be to have the cream-gathering system, leaving the milk with the farmers and taking the cream to the factory, and make a first-class article of butter out of it. When we get our people educated to that fact, I think we shall have gained an important step; but before we are able to secure that, there is considerable work to be done right among the farmers, and I was greatly pleased with the suggestion of Mr. Wright, that we should go in among the farmers to educate them. It is a quick method and I know it is an effectual method. There is great diffidence on the part of farmers to go far from home to attend a convention such as this, for instance. You can scarcely get them away from home unless they are going to make money out of it. They say, we cannot afford to go a long distance, as it will be expensive for us. This, I do know, Mr. Chairman, that we cannot afford to make a poor dairy butter. I do not care what the circumstances of the farmer may be, he cannot afford to make butter for 16 cents a pound when by proper care he can get 25 cents a pound for it. I have an idea that in New Brunswick we shall get it as cheap as 12 cents a pound, but what we want is a larger and a better product. Before this convention adjourns I want to see some definite line of action agreed upon, some course adopted for the furtherance of this very important interest. One gentleman has spoken of the very great changes which have taken place in the production of cheese in this Province. How was that change secured? By co-operation, by intelligence, by care. And the very same elements that entered into the manufacture of cheese to bring it to its present high standard, and which has made it second to none in the world, will secure to us in Canada a butter product equal to that of any other country. I want to see such butter produced, and if we cannot do anything as individuals, let us, by such Associations as these, ask for aid from the Federal and Local Governments, to enable us to achieve this object and give a character to the agricultural products of Canada which is so much to be desired.

Mr. THOMPSON (Ontario).—I have always thought that these butter conferences were of a most valuable nature. A short time ago, corresponding with a gentleman in New York State, he told me that they had been successful there in every case, by demonstrating to the people who gathered at them the best methods of making butter. The result had been to improve in a marked degree the quality of butter. It is an important thing that not only should the formation of creameries in Canada be encouraged, but we should not overlook the fact that we should aim to make the home dairies produce a better quality of butter. Any one who has had anything to do with creameries will have noticed that there is a difficulty in getting the cream in a right state from the farmers; but, by improving the home dairies we shall be able to get a better class of cream. I think great good would follow from a discussion of this question.

Mr. WRIGHT.—I want to ask Prof. Barnard a question. In the close of his remarks he said, by feeding thoroughly he had no difficulty in getting his cows to give a good flow of milk for twelve months. What length of time do you milk them?

Prof. BARNARD.—I believe that any farmer in the country can milk his herd of cows for the twelve months in the year and have about an average of milk every month, no matter whether it be winter or summer. You know what a difference there is between the summer and winter product, as a rule, and there is nothing more advisable than to try to obtain a large quantity of milk in winter. I contend that the herd should be milked all the year round. Thirty-four years ago I began selling milk, and I found half my cows would give 10 pounds of milk a day eleven months of the year.

Mr. BISSELL.—It all lies in the feeding. I have sixty cows, and some I cannot dry at all. I curry my cows—brush them down every day. I put them in in the fall and they never come out again until the spring. I shall be very glad if any gentleman here would run out to see my dairy. I believe if every farmer would adopt the same plan that I have done it would be worth millions of dollars to the country.

Mr. TACHÉ.—Senator Read spoke about the English market. The question of the package is the most important thing for that market. We cannot compete there, because we have no packages of a positive character, and until we have something of the kind that the Danes have adopted it will be impossible for us to do anything in England.

Mr. WRIGHT.—Five years ago I took 1,000 tubs of butter and sold them in the English market, and because 100 of these were in tubs similar to the Danish tubs, and were sold as Danish butter, we obtained a higher price for them. But I quite agree that we want a special package for our butter.

The PRESIDENT.—Before we adjourn I would name the following gentlemen as a nominating committee to nominate the officers and the executive:—Mr. Thorburn, from the North-West Territories; Mr. Black from Nova Scotia; Dr. Sproule, M. P., and Mr. Bissell, from Ontario; Mr. Fisher, M. P., and Prof. Barnard, from Quebec; and Dr. Robertson, M. P., from Prince Edward Island.

The convention then adjourned.

EVENING SESSION.

TUESDAY, 18th February, 1890.

THE PRESIDENT'S ADDRESS.

In appearing before you in the capacity of President of the Dominion Dairymen's Association I realise the responsibility of the position in which your kindness has placed me, and feeling that much may be expected from the incumbent of this honorable office, I have to crave for myself your indulgence.

In times gone by, agriculture has been looked upon by many as a calling lacking in those qualities of dignity and honor which would make it a fit occupation for the learned and intellectual. In the past it was generally supposed, and acted on by even farmers themselves, that farming did not call for the exercise of a high order of

talent or education, and that any one possessed of good physical powers and willing hands was well suited for following this noblest though much despised vocation. The result of such attitude and practice has shown, and clearly proved, the folly of such opinions and conclusions. Unprofitable results of succeeding years are compelling farmers in all sections to cry aloud for more returns for their labor. A light is dawning, and the misty clouds of ignorance are fast disappearing. Education and scientific knowledge as applied to general agriculture are beginning to be recognised by some, and found to be necessary by others; hence, we have a growing demand for a high order of practical and scientific attainments, whether it be in the man of letters as expert with the pen—the man of practice, demonstrating results—or the professional, by oratorical power. Not long ago in England, as well as in America, few persons standing high in political and representative positions could be found leading the cause and demonstrating the advantages of improved agriculture; but to-day we are happy to find that men of distinction and even of royal blood, are proudly leading the van of agricultural progress, and no greater distinction can be bestowed on these than to be asked to open a Royal Agricultural show or a Dominion or Provincial Exhibition. The noble and much respected consort of Her Majesty, the late Prince Albert, has left to the world an example in this respect that should never be forgotten.

We now see, from year to year, the growing interest which the Prince of Wales takes in all matters relating to agriculture, and His Royal Highness loses no opportunity to do honor to the tillers of the soil. As we can proudly refer to what has been done in the past in all progressive countries, we, here, can specially refer to the honor done the dairymen of the Dominion, in having the presence of His Excellency the Governor General in our assembly here to-night, to show his interest in the cause of dairying and his sympathy with the efforts put forth to promote it in this our great Dominion. The officers and delegates of this Association will ever remember with pride and pleasure the prompt and cheerful response which our esteemed visitor gave in consenting to attend this second annual meeting of the Dominion Dairymen's Association. I am pleased also to observe in attendance to-night a number of Senators and leading parliamentary representatives of both sides of the House of Commons, giving countenance in person and thereby manifesting their appreciation of the efforts put forth to set dairying and farming on the highest pinnacle of success, and showing in a way more convincing than by words that there is no difference of opinion as to the value and importance of the dairy interests of Canada—and confirming by personal attitude the feeling that no political bias or motives can interfere with the march of progress in the past or present. Dairying in Canada, as well as in all other progressive countries, has been a branch of general agriculture since early history, and we find by historical facts, as well as present personal experiences, that agricultural pursuits cannot be carried on successfully without the aid which the products of the dairy cow render to strengthen the circle of conditions necessary for increased and lasting success.

The selling of all plants grown from the soil of each farm has a tendency to deplete the soil of plant food and pervert the requirements for producing large and vigorous growth; hence, land becomes unproductive and unprofitable to cultivate and reduced in value. But where farmers feed the products of the soil to cattle for feed or milk production, to realize their cash products, the animals take only 5 to 20 per cent. from their food for such production and 80 to 95 per cent. of the real plant food is retained as a residue to return to the soil to make up for lost fertility. Where the judicious feeding of cattle and dairying are carried on, the land becomes more fertile each year, thereby producing larger crops, greater profits, and increasing its capital value. Dairying in Canada dates from the earliest settlement of the country, but it was not until the year 1864 that there dawned an era of great activity, rapid strides, and world-wide reputation for the industry. Previous to that time farmers made their butter and cheese at their own homes, and no butter and cheese factories were in existence in Canada. Butter was made in excess of cheese, and a large quantity was annually exported to England; but there was

not sufficient cheese made for home consumption; hence, a large quantity was annually imported from England and from our American neighbors. The value of the cheese imported previous to 1864 was over a quarter of a million dollars worth annually. A few years before this time an American dairyman by the name of Jesse Williams, living in western New York, conceived the idea of the great benefits that dairymen would receive by associated dairying, and he has the honor of starting the first co-operative cheese factory on this continent. The example of this, the first factory, was copied with almost lightning rapidity by dairymen in all parts of the United States. In Canada, the first cheese factory was started in the year 1864, in the County of Oxford, and afterwards the system rapidly spread over the whole country, until now the factories are counted by thousands and their product by millions. The export of cheese dates from the introduction of cheese factories twenty-five years ago, and has been gradually increasing from year to year, until last year it reached the enormous quantity of nearly one hundred millions of pounds, valued at about nine millions of dollars. The quality of Canadian cheese in its early history was disappointing. Much of it was poor and had a bad reputation in England, but by the persistent efforts of private individuals and Dairymen's Associations, working to educate dairymen and manufacturers, Canadian cheese stands to-day with the highest reputation of any cheese made in the world for its good keeping qualities and general excellence.

Butter factories or creameries have not increased in numbers in proportion to the increase of cheese factories, yet a steady increase is discernible, and their value and importance are being more appreciated as each year passes by. Greater effort is being put forth to encourage their usefulness, increase their numbers, and overcome all those difficulties that have a tendency to mar their progress and popularity. The proportion of butter made in creameries in Canada is not 5 per cent., whereas the proportion of cheese made in cheese factories is over 95 per cent. The quality of butter as turned out from Canadian butter factories is of the finest grade, and there is no reason why a very large proportion of butter should not be made in butter factories throughout the entire Dominion.

We ask, how have these successes in dairy progress been attained? We say education and well-directed intelligent labor have accomplished them for us. But are the dairymen of this country to stop at this juncture? No intelligent person would answer in the affirmative. He who seeks to advance in position and usefulness to himself and to his fellow-man, must be better educated and apply more skill in the following of his vocation. Such is the object of this Association in all the lines of its endeavor for the improvement of dairy methods and for the increase of profits from all agricultural pursuits.

A number of dairymen throughout Canada, for some time previous to the organisation of this Association, felt that the Federal Government should do something to assist the dairy interests of the Dominion. Promptly to the call of the prime mover—I refer to Mr. Lynch—a number of dairymen from the different Provinces assembled a year ago at this the metropolis of Canada, to organise and form an Association. A large and influential meeting was the result, and great unanimity prevailed. All present, with one accord, approved of the move to form a Dominion Dairymen's Association, and heaped the Government would recognise their claims and liberally support the work of the Association by a grant of money. It was also the consensus of opinion that a Dairy Commissioner should be appointed to take special charge of the dairy interests of the Dominion. A deputation was selected to confer with the Government on these matters. This deputation was received by the Premier, Sir John A. Macdonald, and his associates, with the most cordial welcome, and we were promised that every consideration should be given to our wishes. The prompt response of the Government in voting \$3,000 to aid in carrying on the work of the Association, and the appointment of the Dairy Commissioner, are very gratifying results of the past year's work. The Hon. Mr. Carling, Minister of Agriculture, who was entrusted with the handling of the parliamentary appropriation and the appointment of the Commissioner, has shown the greatest interest in

the welfare of the Association, and has exhibited good judgment in the choice that has been made of a gentleman to fill the position of Dairy Commissioner. The appointment of Prof. Robertson has given the most universal satisfaction. Dairymen in all parts of the country recognise that he has the ability to fill the position with honor and credit. I cannot therefore let this opportunity pass without referring to the high qualifications which Prof. Robertson possesses to fill that important office. It is generally conceded that he is the best authority on dairy matters now known, his long practical experience in manufacturing, handling, selling and shipping both butter and cheese, his natural talents of receiving, discovering and imparting knowledge—his ambition and perseverance to overcome difficulties, his becoming manner and rapid and high attainment at so early an age, leave him not much to be desired, and the dairymen of this country are proud of his ability and elevation.

The farmers of Canada as well as of most other countries are experiencing a prolonged period of small returns for their labor, especially in hay and grain-growing districts, and they also find the soil to be less productive in each decade of years, while, at the same time, land is being reduced in value and mortgages are increasing to an alarming extent. This condition of things is injuriously affecting all avenues of trade, and many complicated theories have been adduced for its cause and remedy. Wise and thoughtful men, who have given this important question due consideration, can see no chance of returning prosperity, outside of increased fertility of the soil, and by the application of superior intelligence in all work of the farm. We believe that the pursuit of well-directed dairying and Dairy Associations will inevitably bring about most of what is desired and become a remedy for existing evils. The Dominion Dairymen's Association will be a medium through which the Dairy Commissioner will largely educate the farmers and dairymen throughout the whole Dominion, so that they will learn to feed their cattle in the best form and at the least cost, having due regard, not only to the production of the best and most milk, but also to the retention of the largest amount of the best quality of fertilizing materials, in order that there may be returned to the exhausted soil those elements of plant food adapted for the growth and development of the plants suited for his purpose. The value of land is determined in rural districts largely by the value of the crops that it produces, and the value of the crops which the land produces is determined largely by its fertility; hence, we must conclude that the value of land is determined by its fertility. The average value of good arable land in the Provinces of Ontario and Quebec is \$30 to \$50 per acre, and the average crops from such land per acre are about fifteen bushels of wheat, thirty of oats, twenty-five of barley and one and a-quarter tons of hay. Land approximating the standard of fertility required to produce these averages would be worth about \$40 per acre. If the standard of fertility be increased so as to produce twenty-five bushels of wheat, fifty of oats, forty of barley and two tons of hay, it would be worth \$80 per acre, or an increase of 100 per cent. When due consideration is given to the fertilizing value of the residue of feed, and when it is properly saved, we know that well-directed feeding of dairy cattle can in a few years raise the average standard of fertility of all farms from the lowest to the highest—or, in other words, from \$40 to \$80 and over per acre. Calculating the difference from this one source alone on the arable farms of Canada the footing goes into the thousands of millions of money value, besides a very large amount received from the increased production of such fertile soil, as well as value in all domestic animals, both in regard to numbers and individual value. When land is raised to the standard of fertility referred to, the results of such an improvement will be that we shall experience a change in the condition and circumstances of our farmers. Instead of small profits, large mortgages and discontented homes, there will be pleasant surroundings, and the earth in such localities will shine forth in rich resplendent beauty, beaming forth man's intelligence and God's omnipotence. The Maker of all things ordained that man should control all things, making them subservient to his will, to give him support in life, happiness and glory. This attainment is before him, and his nearness to a realisation thereof is in

proportion to the order of his intelligence; and in degree as he rises in the application of intellect to his work and life, so he leaves the animal and approaches to the methods of the Creator of all things.

The plant and animal worlds are the farmer's kingdoms, and he who sits on the throne of wisdom receives the humble and submissive homage of his subjects. No greater obeisance can any royal throne receive than the educated farmer from these things over which he has been given dominion. The issuing of his mandates, the promptness of their execution, and the certainty of effect give him royal honor and pleasing sensations, which are not inferior to the joys found in any sphere of human effort in life. Such conditions may be a dream of the future, or long-deferred reality; yet, we hope and aspire to reach such results in the future, and our aim and exertions shall be directed in the channels spoken of, and if well followed up with liberal Government support, the goal of our expectation may be realized sooner than even we have anticipated.

ADDRESS BY HIS EXCELLENCY THE GOVERNOR GENERAL.

The PRESIDENT.—We are honored to-night by the presence of His Excellency the Governor General, Lord Stanley of Preston, and I will now ask him to address the meeting.

His Excellency the Governor General said:—

MR. PRESIDENT AND GENTLEMEN:—Your President has asked me to say the traditional few words. I demanded of him whether I might take refuge under the rule—a very wise rule—which says that after the addresses the speakers are to limit themselves to five minutes. He, with a kindness for which I am not duly grateful, declined to give me an answer on that point, and therefore, if I transgress that limit I hope you will put the blame on the right shoulders. It is with great pleasure that I find myself present at your convention. I think, in these days, the advantages of such meetings as this, and of such Associations as yours, are undisputed. In the first place, through co-operation of this kind you obtain a large range of experience under the differing conditions both of climate and of soil, and the other circumstances under which each individual farms. In the second place, you obtain better information than is accessible to a private individual; and thirdly, perhaps, but not the least, you obtain a power of collective action in all matters which affect the dairy interest, whether for good or evil. I understand the object of this convention to be the bringing together from the different Provinces of the Dominion those who are interested in matters relating to the dairy industry. As the representative of the Sovereign, I need not say that I consider such a meeting to be of primary importance, and therefore as Her representative, and understanding that there was nothing of a political character in your meeting, I readily and heartily consented to attend. It is a sincere pleasure, indeed, to me to be among those whom I might venture to call “brother farmers,” for when in England I was closely connected with what was largely an agricultural constituency for over twenty years, and I also have had, though in a minor degree to yourselves, some practical experience on these subjects which are of a common interest. I am here to-night rather as a learner than as a teacher. I can only listen to the experience of those who address you. But there seem to me to be certain points upon which even an outsider might venture to say a few words. In the first place, it is of the greatest importance that we should obtain, through the medium of this convention, better information as regards all matters relating to the dairy trade, not only as regards the practice of farm work, which applies to yourselves, but also as regards (and this applies to those who are interested in farming generally) what is going on in the outside world. Now, in explanation, I would say, for instance, as regards the information which is obtained by interchanging opinions at such meetings as this, the attention of men is drawn to such questions as the class of stock that are most suitable to be bred, what is the best mode of their treatment under different conditions of climate, and along with all, that no man can listen to what passes between practical men without picking up something which may help to inculcate those habits of accuracy, of cleanliness, of attention to details, which one and all will admit go far to make dairy farming what it is. For my part, as having

bred cattle in former days, I would lay great stress upon the first condition of breeding good cattle rather than bad. Travelling through the length and breadth of this land, as I had the pleasure of doing recently, any one must be struck with the great agricultural progress made in a limited period of time. Still, one cannot help being also struck by the very large amount of indifferent, and positively bad stock, which one sees in some places. Indeed, I have been in districts where it seemed to me as if people had collected all the points which a breeder would object to and tried to put them together in one animal. Happily that is the exception—by no means the rule; but let it be the object of your convention, among other things, to blot such a state of affairs out of existence. In the next place, I would press upon your attention the importance of the factory system. I have a few figures which will show the great importance of the trade in dairying products, and they also indicate that while the exports under the heading of cheese are very gradually and largely increasing I am sorry to observe exactly the reverse must be said of the butter trade. I think it was a pregnant remark of your President's just now, one which suggested a great deal, that whereas in the cheese trade the factory system has become largely predominant, in the production of butter it is exactly the reverse. In the days before the factory system was known at home it was said so much depended on the individual exertion of the cheese-maker or dairy-maid, that it used to be a common saying, "If you want good cheese marry your dairy-maid." It meant this: that those who were primarily concerned should be those who had a direct interest in the process which had to be carried out. But we have improved on that, on this side of the water. The factory system, so largely adopted, has tended to that regularity, accuracy and the general advantage which accrue from any process being carried on on a large scale instead of on a small one, and undoubtedly that is having the effect, among other causes, in promoting public interest in the cheese trade. I venture very humbly to back up what your President has already said with regard to the consideration whether it cannot be further pressed in relation to the manufacture of butter. I have spoken of information to the farmers themselves; I spoke also of that as between the farmer and what I may call the outside world. I think it is good for people to know, not only what they are doing themselves, but also what others are doing, and especially in these days of easy communication and extended markets people should have a knowledge of what is going on around them. If I wanted to put it concisely, I would say, especially to those in the export trade: find your market, suit your market, keep your market. A market may be near, and the higher-priced classes of butter, unsalted, &c., may find a market close at hand. On the other hand, however, for the majority of the people, and at all events for some years, it seems to me that the distant markets will be those to which we must look. It is remarkable what can be done by a little careful attention to details. Denmark, a comparatively small country, by no means a rich country, possessing over the rest of Europe no advantages of climate and soil, by great attention to details, scrupulous care and a considerable amount of science, has placed herself in a relatively high position in the European market, and I am sorry to say, to the displacement of many neighbors who should hold their own better than they do. As regards suiting your market, consider that you have to look at not only your own mode of manufacture but that you have also to suit those to whom you have to sell. Now, with great respect, I cannot help repeating what I have heard elsewhere, and I have seen evidences of it here in this country, that perhaps not enough care is taken as regards a good deal of the butter which is exported. Speaking generally, a bad article costs as much to carry as a good one; and in these days, when you have to meet competition in distant markets, especially, by a better quality than can be found upon the spot, too much stress cannot be laid upon the necessity for improving the quality of our products. Cleanliness and care in packing have a good deal to do with that. The French have gained a good reputation by the care in which, in the dairies of Normandy and the northern Provinces of France, they suit the market to which they are sending. There is a great difference in making up packages in an attractive form, and I suppose even to the wholesale purchaser there is nothing like having something to please the eye in thus

making your goods attractive. But I am sorry to say that in many cases those who are sending to market do not pay enough attention to this, the result being, for instance, in the case of a mixed sample or bad packing especially in butter, that the consumer eats bad butter and the producer eats up his own profits.

Closely allied to the question of market is the delicate question of rates on your freight. I am not going to ask you to embark in any controversy on that point. In the last office which I held in the mother country, I had occasion to deal with this question as a Minister—with the question of railway rates, especially as affecting agriculturists. I can only hope that I fulfilled my duty, that I made the best compromise that was possible, because I have always heard that the best definition of a compromise is to get yourself abused by the parties on both sides, and judging by that the compromise which I affected must have been satisfactory. But there is undoubtedly a difficulty in the even adjustment of rates. Speaking generally, I should be inclined to say what pays the farmers, in the long run, will pay the railway companies also, and I think a great deal can be done by the collective action of a convention, such as this, in bringing to bear the light of better information, and the weight of public opinion, upon those who have to carry the goods which you produce. I ought to say, with regard to collective action, what I meant by that was, that a convention such as this speaks with great authority as the mouthpiece of a particular branch of the farming interest. It speaks to the Government or Parliament; it affords you better means for dealing with large bodies, such as railway companies, transportation companies, &c., and is also able, if it uses its wisdom intelligently, to speak with great authority upon questions such as those affecting the laws relating to contagious diseases among animals, &c. On all these things there is a great work before you. As regards the importance of the question, not that for a moment I doubted it, but because I wish to inform myself fully as to the extent of the export dairy trade of this country, by the kindness of the Government statistician, and of the Deputy Minister of Agriculture, I am furnished with a list of figures showing the export of butter and cheese during the past ten years.

These figures, for convenience, I will ask you to take as read, only quoting a few of them now in illustration of what I have to say:

DOMINION OF CANADA—Exports of Dairy Products—Home Production.
BUTTER.

| Year. | Quantity. | Value. | To Great Britain. | To United States. | To France. | To Germany. | Other Foreign Countries. | B.N.A. Provinces. | British Indies. |
|----------|------------|-----------|-------------------|-------------------|------------|-------------|--------------------------|-------------------|-----------------|
| | Lbs. | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 1868.... | 10,649,733 | 1,698,042 | 544,707 | 1,015,702 | ..... | 1,496 | 14,870 | 93,777 | 26,986 |
| 1880.... | 18,535,362 | 3,058,069 | 2,756,064 | 111,158 | ..... | ..... | 24,710 | 163,290 | 2,847 |
| 1881.... | 17,649,491 | 3,573,034 | 3,333,419 | 58,522 | ..... | ..... | 30,574 | 143,935 | 6,584 |
| 1882.... | 15,161,839 | 2,936,150 | 2,135,127 | 529,169 | ..... | ..... | 32,052 | 169,270 | 10,538 |
| 1883.... | 8,106,347 | 1,705,817 | 1,330,583 | 296,154 | ..... | ..... | 29,446 | 131,341 | 8,291 |
| 1884.... | 8,075,537 | 1,612,481 | 1,395,652 | 46,618 | ..... | ..... | 16,455 | 151,224 | 2,532 |
| 1885.... | 7,330,788 | 1,430,905 | 1,212,768 | 16,795 | ..... | 15,172 | 21,473 | 161,862 | 2,835 |
| 1886.... | 4,668,741 | 832,355 | 652,863 | 17,545 | ..... | ..... | 17,577 | 142,485 | 1,885 |
| 1887.... | 5,485,509 | 979,126 | 757,261 | 17,207 | ..... | ..... | 23,789 | 180,238 | 631 |
| 1888.... | 4,415,381 | 798,673 | 614,214 | 13,468 | ..... | ..... | 5,226 | 164,329 | 1,436 |
| 1889.... | 1,780,765 | 331,968 | 174,027 | 7,879 | ..... | ..... | 22,921 | 124,349 | 2,782 |

CHEESE.

| Year. | Quantity. | Value. | To Great Britain. | To United States. | To France. | To Germany. | Other Foreign Countries. | B.N.A. Provinces. | British Indies. |
|----------|------------|-----------|-------------------|-------------------|------------|-------------|--------------------------|-------------------|-----------------|
| | Lbs. | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 1868.... | 6,141,570 | 620,543 | 548,574 | 68,784 | ..... | ..... | 891 | 1,954 | 340 |
| 1880.... | 40,368,678 | 3,893,366 | 3,772,769 | 114,507 | ..... | ..... | 170 | 5,710 | 210 |
| 1881.... | 49,255,323 | 5,510,443 | 5,471,362 | 28,509 | ..... | ..... | 14 | 10,027 | 540 |
| 1882.... | 50,807,049 | 5,500,868 | 5,471,576 | 18,436 | ..... | ..... | 242 | 8,196 | 2,318 |
| 1883.... | 58,041,387 | 6,451,870 | 6,400,859 | 24,498 | ..... | ..... | 202 | 15,480 | 1,863 |
| 1884.... | 69,755,423 | 7,251,989 | 7,207,425 | 24,896 | ..... | ..... | 188 | 19,248 | 2,622 |
| 1885.... | 79,655,367 | 8,265,240 | 8,178,953 | 68,978 | ..... | ..... | 205 | 15,899 | 1,207 |
| 1886.... | 78,112,927 | 6,754,626 | 6,729,134 | 15,478 | 80 | 90 | 156 | 9,139 | 549 |
| 1887.... | 73,694,448 | 7,108,978 | 7,065,983 | 30,667 | ..... | ..... | 211 | 11,982 | 165 |
| 1888.... | 84,173,267 | 8,928,242 | 8,894,397 | 83,153 | 5 | ..... | 828 | 9,067 | 172 |
| 1889.... | 88,534,367 | 8,915,684 | 8,871,203 | 31,473 | ..... | ..... | 1,582 | 11,208 | 216 |

Thus I find that whereas, in the year 1880 the quantity of butter exported amounted to over 18,000,000 lbs. and its value to over \$3,000,000, it had decreased last year to 1,780,765 lbs. and the value to \$331,958. That is not satisfactory. On the other hand, happily, there is good as well as bad; the cheese exports which in 1868 were only 6,141,570 lbs., valued at \$620,543, in 1880 had risen to 40,368,678 lbs., valued at \$3,893,366. In the last year the export of cheese has risen to no less an amount than 88,534,887 lbs., valued at \$8,915,684. This statement shows the satisfactory progress in the exportation of cheese on the one hand and a falling of in the exportation of butter on the other. These are figures which show the dimensions of trade, and they indicate what important work, both as regards the dairy interest itself and the future of the Dominion, this convention may very well have before it. I entirely concur in the remarks of the President as regards the advantage of mixed farming. In mixed farming you do not, as in grain-growing, depend upon one class of produce, and further, if dairy practice is intelligently carried out you are really to a great extent recouping the land for that which you take out of it, and, in fact, in many cases you may be converting bad land into good land. All these are matters of experiment and of practice. I am glad to see that in various parts of the Dominion the Government has thought fit to establish experimental farms. I look to them as being places where, in the future, much valuable information may be obtained, and where experiments, which ordinary individuals have neither time nor the means to carry out, and which, nevertheless, it is very desirable should be carried out for the public good, can be made by those who have practical and scientific knowledge combined, and who have no other object, as I thoroughly believe is the case here in Canada, except the promotion of agricultural science and the advantage of the Department to which they are attached. I join in the congratulations which may be offered alike to the dairy interests of the country in the appointment of a Dairy Commissioner and to the distinguished individual selected to represent the dairy trade in the Government Department. I am glad also to recognise the services and the personal kindness also which I have received on all occasions from Prof. Saunders, who so worthily presides over the Experimental Farms. As an agriculturist, not a politician; I may venture to add one word of congratulation to the Minister of Agriculture, Hon. Mr. Carling, for the results of the work already achieved by the Experimental Farms, which he has been so instrumental in establishing, and to join with you in wishing him a long life to continue his labors in this direction. I have not long ago returned from a journey to the North-West and to the shores of the Pacific. I have traversed the greater part of the Dominion, although I have not seen nearly all I should wish to do, but I may say that passing through varieties of soil and of climate—seeing the immense extent of country only waiting for the hand of the farmer to come and bless it with an increase, seeing the millions of acres which are still waiting to be taken up, I cannot doubt but that there will be a great future before the agricultural interests of Canada. It may take many years, even centuries, before all this present waste land is taken up; but surely, sooner or later, the time will come when your wide plains, desolate wastes, and vast forests will be supplanted by a happy, prosperous, contented agricultural community. Then I hope that those who come after us will look back to efforts of such as yourselves, who in early days have striven to grapple with the problems which lay before them, and have endeavored to throw the light of science upon the path of progress. I wish the convention every success.

Senator WARK.—May I enquire whether the 80,000,00 lbs. of cheese exported last year was all the product of Canada?

Lord STANLEY OF PRESTON.—I so understood it. The figures were given to me on authority, and they are headed "Exports of Dairy Products—Home Production."

Senator WARK.—I understand that our neighbors on the other side were sending over here large quantities of cheese to be shipped to England as Canadian cheese, not with the object of improving the quality of our cheese, but to obtain a better reputation for their own. This is a matter which cannot be too carefully looked after.

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216

ADDRESS OF PROFESSOR ROBERTS.

The PRESIDENT.—We have with us to-night Prof. Roberts, of Cornell, and a gentleman in a position to give authoritative information on dairy matters. I have no doubt many have heard him before with pleasure and profit. He is here to-night to give us an address on dairy matters.

Prof. ROBERTS, Director Cornell Agricultural Experiment Station, Ithaca, N. Y. —Mr. President and gentlemen of the convention, it is no idle compliment when I say to you that it gives me great pleasure to come over here to this meeting on this winter day. And why? Because I see that you are alert, ready and quick to grasp the idea that if you want to succeed in competing against the world there is nothing left for you but to study the sciences—not only to study but to learn the sciences that underlie and govern this occupation of ours. I see that your country is alive with Dairy-men's Conventions. I remark that instructors are travelling up and down the country giving instruction in the art and manufacture of dairy products. I see the honorable gentleman who has just taken his seat watching with eagle eye your export of butter and cheese; on every hand and on every side I observe here in Canada that you now fully appreciate the problem that is immediately before us. It is good to build railroads to the Pacific; it is far better to make wise laws to govern a country, but it is best of all to spend money, and to spend it liberally, in order to get knowledge. Millions for education, but not one stiver for the booblers! You can hardly appreciate how I feel in this matter. Twenty long years have I spent in trying to get some enthusiasm for knowledge into the minds of the young people. How well I remember when I began this work that it was, as much as a man's life was worth to be known anywhere in the western States by the name of Professor. You had to dodge round the corners and be ashamed of your calling. Do I not remember that only eighteen years ago I was hissed off a stage in the Empire State of New York—I was literally toasted in hot water in the basement of a church because I advocated that the animals should not be turned out to drink ice-cold water in cold and stormy weather. Those were hard times. So, I say, you cannot understand what a pleasure it is to come here and find that you have the same problems as we have, and that you are as earnest, yea, more so, than we are, in trying to solve them. I understand that there are some members of Parliament here; I hope that is the case. Above all things in Dominion and Provincial legislation, the first thing to be looked at, the thing above all others, is the education of the people; and at last we have learned not to educate one man's head and another man's hand, thereby making two monstrosities, but we have learned to educate head and hand together. I beg your pardon for having taken up so much time in the preface of my address. My address is somewhat different from those which I usually write. With beginners we have to go into the minutest details, but I trust that you will pardon me if I leave a good deal unsaid which you may read between the lines. The title of my paper is

"The Food of Plants and Animals."

The quality and quantity, or size, of both plants and animals are governed almost entirely by inheritance, food, climate (or, more broadly speaking, environment) and habit. It will readily be seen that in discussing the subject I have chosen, something will have to be said as to the modification of the effects of food by inheritance, climate and habit. One or all of these three factors may be so potent that the fourth, food, may have but an insignificant effect on either quality or size. In order not to extend this paper to too great a length, it will be assumed that the three factors which have been named as modifying the effect of food are always present and acting under normal conditions.

In order that a plant may be good in quality and large in quantity, it must have an abundant and continuous supply of suitable food. An abundant supply is usually most easily and cheaply secured from the soil. The cause of meagre production is

generally due to too much or too little moisture, or to poor cultivation. Where clayey lands are worth \$20 to \$25 per acre, it is far better economy to drain them, thereby setting free plant food, than to clear or purchase other lands, or go on farming them in their imperfect condition. Clay lands are made from one-fourth to one-half more productive by thorough drainage, are warmer, less liable to failures of crops in bad seasons, and are more easily and cheaply tilled. The remedy for too much moisture is easily within our reach, and he is unwise who does not avail himself of it. On all lands where stagnant water remains within 2 feet of the surface forty-eight hours after heavy rains, under-drains will furnish available plant food more cheaply than farm manures or commercial fertilizers.

On the other hand, it often happens that on certain lands and at certain seasons of the year that there is not sufficient water to dissolve and transport the food through the roots and stems of the plant. In this case, no matter how much food is present the plant will suffer and the yield will be meagre. So we not only have to provide for carrying off the surplus water but for conserving it when it is deficient. To effect the latter, two principal conditions are necessary. First, the soil must be in the proper mechanical condition, and of an ample depth to form an ample reservoir. Second, a thin layer of the surface soil must be so porous as to form a mulch, destroy capillarity and prevent too rapid evaporation.

Except on sandy and gravelly lands, deep and thorough culture gives the reservoir desired and good mechanical conditions; on the light lands shallow culture, lime and the roller, all tend to prevent too rapid leaching. To deter evaporation, the ground may be shaded by plants, or earth, or both, and the power of capillary attraction measurably arrested by judicious surface culture.

Having provided sufficient food and suitable conditions, we should next try to discover if the food is of the right character, for quality of product depends more on the quality of the food than the quantity. In New York the land has been so badly managed that while the quantity of wheat per acre remains about the same as formerly, the quality has fallen so low that the millers are compelled to send west to procure wheat raised on new lands to mix with the home-grown, in order to make good flour.

The same thing occurs with apples and pears grown on soils depleted of their fertility. At our station, during the last season, tomatoes grown on poor soil were knotty and unsaleable, while the same variety on properly fertilized land were smooth, large and altogether desirable. Competition in farm products is now so sharp that there is but little margin except on quick-selling high-priced goods. You know better than I can tell you how easily the first quality of cheese sells, even at a slight advance, and how the poorer glut the market and bears down the price.

Without good and abundant plant food, good plants, or at least the best, cannot be raised, and without good plants good butter and cheese and the best animals cannot be produced. In most soils there is still an abundance of suitable plant food, but the skill is yet lacking to avail ourselves of it, and we often endeavor to increase production by the aid of expensive fertilizers when Nature's unworked mine is just beneath our feet.

Having provided an abundance of suitable plant food, what shall it be fed to—a plant which for generations has inherited the tendency to yield a minimum quantity? Or is it the part of wisdom to grow those which have inherited through many years of careless culture the habit of yielding little fruit and that of an inferior quality? Would any sane man now start with Texan ponies, if he desired to breed either trotters or draft horses? Then why will we persist in feeding good food to scrub plants? Or would he try to maintain the valuable qualities of well bred animals already possessed by feeding them a meagre amount of poor food? He who has learned how to supply plants with an abundance of suitable food cheaply has the art of agriculture more than half learned. He who can say of his product, "It is very good," has made greater advancement than he who can say, "It is very large."

If we now turn our attention from the plant to the animal, it is found that the same general principles hold true, and are emphasized to a still greater extent. If the plant requires an abundance of food, the animal does still more so, for a scarcity not only tends to diminution of size, but to actual suffering. The problem becomes more complex as we advance and have to deal with more highly organized matter. With the plant the sun furnishes the heat direct; with the animal the first use it makes of its food is to burn it, in order to produce heat and energy. Surplus, then, can only come from the food that is in excess of maintenance. If one animal consumes twenty-two pounds of dry matter, twenty of which is used for maintenance, and another thirty pounds, and appropriates the same amount for maintenance, the latter, other things being equal, will give a product five times as large as the former—although it consumes only four-elevenths more food. In these few figures, taken from actual occurrences, which are only too common everywhere, is found the beginning, the corner stone of success. The one animal gives a gross return of 9 per cent., the other 33 per cent., for the total food consumed.

Can any words of mine emphasize the fact that we either need better animals or more digestible foods!

As an animal is the result of several causes working to produce common or divergent effects, and as the results produced by food are modified and controlled to some extent by them, it is well if we take careful account before energy is spent in producing food, the full effect of which will be dissipated or modified by inheritance, climate or environment, and habit. Inheritance may be briefly described as the power received from ancestors, which constantly tend to control, direct and dominate one or more specific qualities or organs, but always acting within the sphere or orbit of the genus. Likeness, or similarity, appears in the offspring when these powers are similar in character and energy, as illustrated in good specimens of thoroughbreds. If inherited powers are dissimilar in character, as in mongrels, wide variation from many of the original types may be expected. Energy, or prepotency, depends somewhat on the time the energy has been present in the breed, family or individual, but more largely on the strength acquired by use and sustenance and by additions from other forces of a similar character. A good illustration is that of the introduction of racing and pacing blood into the trotting families in order to increase their speed.

Inheritance, potency and similarity have their beginnings in the power inherent in the germ cells which first meet and begin the work of building a separate and distinct animal. The power of these germ cells to give direction and character to the newly created animal is so great and persistent that we may conclude that the foundation of successful breeding and feeding always lies behind the animal bred. He who attempts to run a ten-horse machine with a four-horse power boiler and engine will come to grief, and he who attempts to do a \$40 business with a cow of \$20 capacity will give but a poor account of his labors, no matter how abundant and good the food may be. There are always present other influences beside the powerful ones produced by inheritance, which assist, or hinder, the effective work due to the food. First, we have climate, which, briefly defined, is—conditions of heat, cold, dampness, dryness, light and shade, &c., which may accelerate or hinder the normal action of other forces. Habit: the repetition of a mental, moral or physical act with frequency and duration sufficient to engraft upon the parent stock the new or augmented characteristic so firmly that it becomes a true part of the animal. If the acquired habit has descended through several generations we may know that it has acquired potency, and is likely to be transmitted to subsequent progeny. Fruitful connection of the female with inferior or superior males; mental impressions, comfort or suffering—one and all play an important part in the effective energy produced by food. And last is water, the greatest of all factors in feeding domestic animals. No matter what the breed, or the inheritance, the food or habit, the mental impressions, or age, there can be no success unless this universal conveyor is present in sufficient quantities to transport the food to where it is required in the system and

to convey the unused and refused material out of the system. Then he is unwise who feeds good material to animals until he has taken most careful account of the breed, the breeding, age and potency of acquired habits, and all other factors which may help, or hinder, the efficiency of the food consumed. I trust I have not wearied my hearers by dwelling on what might be called the principles of breeding; my object has been to bring before your minds as briefly and clearly as possible the principal factors which must be kept constantly in mind when we discuss the economic and scientific question of feeding domestic animals.

Food, then, must be abundant enough to sustain the animal, and if it is expected to produce a surplus, more than this must be furnished. Then profit, or net energy, must be the result of what is consumed over and above maintenance. How can the animal be induced to consume and digest a large amount? First, by increasing the power of the digestive organs; second, by stimulating the stomach by appetizing and aromatic foods. The digestive organs can be greatly strengthened, the same as other organs, by giving them full and steady work; they can be weakened by giving them too little, or too much work. The trotter is severely trained to strengthen his powers of speed; the student is put on his mettle for hours each day, in order to strengthen his mental powers. Are the digestive organs an exception to the universal law that increase, or growth, can only come from use, or the concussion of pushing of particles of matter? The breeders of thoroughbreds, of meat-producing animals have learned this lesson well; the dairymen have almost entirely ignored it, and this to their great loss. They are keeping three animals to do the work of two, and this largely because they have not acquired the skill to feed their beasts to the best advantage. How can the animal be induced to increase its production? By stimulants. Do not let us be afraid of this word because stimulants have been used in excess. He would be foolish who refused to make a good use of fire because a bad use of it might destroy him. Nature has placed stimulants in every grass and grain, every fruit and vegetable, aromatic penetrating oils of every conceivable taste and smell, so that every animal, breed and species might find a stimulant ready at hand, without aid of brewery, wine press or still, just suited to their needs. Nature has also kindly made the animal organism so flexible that, when under domestication, if it cannot find that which it likes best it will readily acquire a fondness for other stimulants equally good, but of another taste and smell. Of all the positions for which I have to select men, the most difficult one is that of feeder. You who have tried to secure the services of that *rara avis*, a good cook, can fully appreciate my position. Animals frequently appear to have acquired abnormal tastes, eating decayed and dirty food in preference to that which is sound and good. A little investigation will show in such cases that the ration has been badly compounded, either chemically or mechanically. Animals often eat partly rotten straw because their teeth have become sore from being fed for a long time on timothy, corn stalks, wheat straw and the like, the stalks of which are heavily coated with silica. The feeding of this class of foods, coupled with insufficient water and salt, soon lower the tone of the stomach, and then salty and partly digested food, as horse manure, is eaten. Plants raised on poor soil are usually deficient in some of their elements, and as the animal has no choice but to eat them, the ration is deficient and the animal suffers, no matter how skillful the feeder. The late Henry Clay, statesman and stock breeder, always carried hay and grain enough with him to last his thoroughbreds for the entire circuit of the races, because he said the foods of other localities were inferior to those of Lexington, Ky. People thought he was a cranky old Congressman, who could make a splendid speech; but when he came to emphasize the effect of food on quality and potency they felt that he was turning the crank without having anything in the hopper. Who was right? Let us see. Last year there was sold at Lexington, a city of 40,000 inhabitants, \$2,000,000 worth of horses. The world came with its money bags to pay tribute to the discriminating judgment of the old orator and horseman. Smith & Powell have made a grand success in breeding Holsteins on the moist lands bordering the salt marshes near Syracuse.

Sibley & Miller are successful in rearing the Angora Goat on the mountain lands of Pennsylvania. Had these two firms exchanged their stock both would have failed. And why? Because the food would have been unsuited to both classes of animals. More discrimination should be observed in selecting the food, so that it will be adapted to age, breed and uses to which the animals are to be put. Little or no discrimination is made in the feeding of the hard working draft horse and the weaned colt; between the milch cow and the bullock, the beef calf and the dairy calf. The work horse requires carbonaceous foods to transform into heat and energy; the colt wants food rich in nitrogen and phosphates, that it may grow strong, and thus fulfil the object of its being. Perhaps nine-tenths of all the colts are being fed this winter practically the same as the work horses. To feed the milch cow the same as the steer should be fed will seriously injure her, and the dairy calf may be ruined before it is three months old if given the same quantity and kind of a ration as would be most suitable for the beef animal—yet how few make any discrimination whatever. How and what to feed is not a lost art; it is one which most of us have not yet discovered. Milch cows in warm stables may safely be fed a ration of one to four, but if in cold quarters and turned out to exercise three to four hours each day, then a more suitable one would be one to six; while a fattening bullock, sleeping in the straw yard, or a team in the lumber camp, would do best on a ration of one to eight. In all this study of suitable foods it should not be forgotten that less harm will come from withholding food than from scarcity of water, and it matters not whether this scarcity is due to a poor well or spring, or the unwillingness of the animal to seek and make use of it on account of cold and storm. Among the things of which I am fully convinced, the following may be named: That in these times, when competition strikes you on every side, no person can afford to keep long in his possession an animal that has not inherited good qualities of the kinds in line with the work to be done; that it is poor economy to give poor food to good beasts; that it is poorer economy to give them an insufficient quantity; and, worst of all, is the failure to provide an abundance of palatable water easily accessible. That it is unscientific and unremunerative to injure the power of the digestive organs by careless, meagre or superabundant feeding; that the powers of the stomach can be increased by the use of natural stimulants, by water and by judicious compounding of rations; that much may be done by foods to specialize the qualities of animals and plants, and direct them in the lines best suited to our purposes; that conditions and habit may be made to assist the food to do its work. That young animals should be fed quite differently from mature ones; that animals putting on flesh and fat and those giving milk and those in young require but little exercise; that the surplus product of an animal and the amount of food it consumes is governed to a great extent by the quality of the food; that a balanced ration gives better results than an unbalanced one—and, finally, no breeder or feeder can afford to ignore or treat lightly any one of these factors, because each one which he neglects will certainly endanger his success and diminish his income.

Mr. BISSELL.—I would like to ask the Professor what would be good rations?

Prof. ROBERTS.—All that you can get an animal to eat up clean, if she is producing anything. While I am on my feet, there are a few figures I would like to give you. In a hundred pounds of earth we find one-fourth of a pound of potash, one-eighth of a pound of phosphoric acid and one-half of a pound of nitrogen. In an acre of soil 1 foot deep we find 8,000 lbs. of potash, 16,000 lbs. of nitrogen, and 4,000 lbs. of phosphoric acid. Computed at 4 cents, 16 cents and 7 cents, respectively, we have \$3,160 worth of plant food per acre in good soil. And yet it is said that our soil does not produce. Do you not think it is about time that we did something with all that plant food. Just fancy: over \$3,000 worth of all these elements in every acre of good land. Take five years rotation—two years in grass, one in corn, one in oats or barley and one in wheat; in fifty years you will have removed from each acre of land \$406 worth per acre of plant food, and I imagine that less than half of that ever goes back, so that you who have been farming fifty years have already got \$203 per acre out of your farm. However, that plant food is there. There is any

quantity of it yet. We have taken out \$406 worth, and we had \$3,000 worth of it in. We have not entirely exhausted the soil. All that we want is a little more skill.

Prof. SAUNDERS.—I may state, on behalf of the Minister of Agriculture, that he desired me to tender to the meeting his sincere apologies, and to ask you to excuse him for not being present, on account of his official duties, which require his presence in the House to-night. He greatly regrets that he is not able to be with you, and to have an opportunity of saying a few words to this meeting.

The PRESIDENT.—Perhaps the convention would like to hear a few words from Prof. Robertson.

Prof. ROBERTSON.—I have no desire to speak to-night. I could say nothing that would add aroma to the remarks of those who have preceded me. I have listened with a great deal of pleasure to the thoughtful address of His Excellency. The unique diction of my friend Roberts has added to his sentences all the impressiveness which their words could carry. I cordially agree with him when he urges farmers to acquire knowledge and to put it into practice. If the shrinkage in our butter products is to cease, it can only be stopped by the application of knowledge to its production in skilful ways, so that our farmers may make only that of the finest quality. We need knowledge, and if we can get it from the schoolhouse to the farm, we shall have achieved a great work. Our Experimental Farms are one extended schoolhouse, with three millions of non-resident pupils. They offer equal privileges to the humblest and poorest farmer and to his wealthier and more favored brother in occupation. It is their object and effort to shed the kindly light of useful, helpful knowledge about their own business into the homes and lives of the whole farming community. Therefore, these Dairymen's Associations and the Experimental Farms are vying together to improve the farming of this country, to do such educational work and to impart such information as will enable our farmers the better to compete in the markets of the world, and to do their work with intensified pleasure and increased profits.

Prof. ROBERTS.—I may say, Mr. President, that I have a kindly feeling towards Canadians, but I have had one thing against you for some time. We hunted the earth over, as it were, to get a man who should be really eminent in teaching the manufacture of butter and cheese, and at last, after searching and searching, we found a man over here. We seized upon him and employed him. He came to us, and we were well pleased with his work. We got an appropriation and built a class room, so that he might have his class before him, and show them the intricacies of making good butter and cheese. Now, I understand, all our labor has been in vain. You have got Prof. Robertson back, and you are going to keep him. I do not like this at all.

Dr. SPROULE, M.P.—It is not often that we have the distinguished presence of His Excellency the Governor General on such an occasion as this. I would move, Mr. President, that the thanks of this Association and Assembly be tendered to His Excellency for his kindness in being with us this evening and giving us the very instructive and entertaining speech that he has.

Mr. ANDREW BRODER seconded the motion, which was carried unanimously.

His EXCELLENCY, The Governor-General.—It is very kind of you to say that you are glad to see me here. I think in common phraseology the boot is on the other leg. It is a sincere pleasure to me to see so many representative gentlemen present, and to hear so much of interest relating to an industry which is calculated to greatly assist in building up the country, and in which we have common interest. I only hope that it will not be the last of your conventions which I may have the honor of attending.

The convention then adjourned.

WEDNESDAY, 19th February, 1890.

The Association met at 10 a.m., the President in the chair.

ELECTION OF OFFICERS.

THE DOMINION DAIRY COMMISSIONER.

Mr. FISHER, M.P.—I think we should express our satisfaction at the appointment of a Dominion Dairy Commissioner, and that the choice has fallen on Prof. Robertson. I think it was the opinion of the Association that Prof. Robertson has shown a wonderful capacity in expressing his views and in teaching the science of dairying wherever he had the opportunity. I do not think that Mr. Carling could possibly have done better for the dairy interests of the country than in making this appointment. I feel that in this action of the Government we see the first important outcome of the work we did last year. That would justify what money has been spent, and a great deal more. I move that this convention desires to express its satisfaction at the appointment of a Dairy Commissioner, and that the choice has fallen on Prof. Robertson.

Dr. SPROULE, M.P.—I have much pleasure in seconding the motion proposed by Mr. Fisher. When the Government were kind enough to meet our request for the appointment of a Dairy Commissioner, the problem which suggested itself was to get a man at the head of affairs in whom we had the greatest confidence. I am pleased to say, that as far as Prof. Robertson is concerned, it is doing no injustice to other able men of the Dominion to say that he is head and shoulders over any man who has ever travelled through our country giving instructions in these lines of agriculture. We were pleased to ask the Government to make that appointment, and are satisfied with the choice they made. I think, therefore, it would be proper for us to pass this resolution.

Mr. A. A. AYER, of Montreal.—There is no person handling dairy products in Canada but is exceedingly pleased with the appointment which the Government has chosen to make. Prof. Robertson has a knowledge extending all along the line from the very origin of the product up to the very end or consumption of it. Having that practical knowledge all along the whole line, he is eminently fitted to speak regarding it whether to farmers, merchants, or in a convention of this kind. I cannot let the opportunity pass without expressing, on behalf of the trade I represent, our entire appreciation of this appointment.

Prof. ROBERTS.—It seems to me that I was the first one to discover this jewel. Some three years ago we were raking the country as with a fine-tooth comb to get some one to come to Cornell University to give instruction in dairy matters. I knew a little something about feeding and breeding, and I can even milk myself, but I have had no experience whatever in making cheese, and at my time of life, when my hairs are grey, I saw that with all my manifold duties it was impossible for me ever to become an expert in cheese-making, and that I should only be a bungler. So I asked our executive committee about it, and they said: "Find a man and we will appoint him." I hunted out and discovered Prof. Robertson over in Canada. It did not take a magnifying glass to find his quality after I got acquainted with him, and we immediately elected him non-resident Professor of Dairy Husbandry at Cornell. He has delivered one course of lectures, and gives another this year; but here, just as I have found him, you grab him up, and say: "You cannot have him after this year." I think your Government should give him a vacation of two weeks, just as we at our Government Station get a vacation of a month. I hope you will retract that decision, which, I understand, is not yet officially engraved on your books, and give Prof. Robertson a month's vacation, two weeks of which he is to spend at Cornell University.

Mr. FOSTER.—I think at this stage it would be well to consider the advisability of a motion expressing satisfaction with our friend Mr. Lynch, the gentleman who is responsible for this organization. I beg to move: "That the thanks of this Association be tendered to our friend Mr. W. H. Lynch, of Danville."

Dr. SPROULE.—I second the motion. I know that Mr. Lynch was untiring in his efforts to organise this Association. Although he had no hopes of doing anything in connection with it, he was just as anxious to have it organised and put on a proper basis.

The motion carried unanimously.

Mr. HAGGART.—I would like to ask Prof. Roberts if their test of a cheap silo is a success, and whether the ensilage would keep cattle in good order—that is, winter them well without any grain.

Prof. ROBERTS.—I may say that I think there is no difficulty whatever in keeping plants in a silo, such as corn, for instance. When we come to clover there is some difficulty in the way. It is more likely to mould. There is no difficulty in building cheap silos. We built one in Mississippi last year very cheaply, and very successfully. We have one at the University made of stone. I like it because it is durable. I do not like it in one respect. The walls absorbed the heat, in the corners and along the edges and sometimes it moulds a little. It is perfectly feasible for anybody to build a little air-tight box. That is what it means and in our climate two thicknesses of wood with paper between them is everything you want. These farm silos can be very cheaply built. We put our cutter on top of our silo which is 28 feet deep, and elevate the corn before it is put through the machine. The only trouble we ever had with our elevators or straw carriers was that we could not fill the silo as full as we would like; but now we can do so leaving room enough for a man to stand in there. We like the change we have made very much. The corn crop takes up a great deal from the soil. It is one of the hardest crops we have on the soil, and I think the reason why we do not discover it is that we are freeing so much plant food by cultivating the soil we do not know it. By cultivating poor soil we get a good crop of corn. I have been made to see this by taking lands in the south that won't produce cotton, wheat or oats in paying quantities, and if you put corn in and continue to cultivate it well, you will get a good crop of corn. Yet corn is an exhaustive plant. We should stop wasting the fertility of our land.

Mr. HAGGART.—Will the ensilage winter cattle or keep them in fair condition without any grain?

Prof. ROBERTS.—Well, sir, I can say that the only objection to our ensilage this winter is that it keeps the cattle too fat.

Mr. FISHER, M.P.—After Prof. Roberts grew that crop, which he said produced eighty-five bushels, do I understand that he shelled it?

Prof. ROBERTS.—We took a half an acre around from the centre of the field and dried it fairly, and then we shelled it.

Mr. FISHER, M.P.—How much ensilage did he get from the acre he put into the silo?

Prof. ROBERTS.—Twenty tons.

Mr. FISHER, M.P.—Your crop averaged you twenty tons of ensilage to the acre at the stage in which, if you treated it like you did on that half acre, it would have given you eighty-five bushels of corn?

Prof. ROBERTS.—Yes; we cut the half an acre at the same time we filled the silo.

Dr. SPROULE, M.P.—Our corn never gets to that stage of maturity that the ears are uniform or ripened, and therefore it is not as rich and nutritious food as it would be when it comes to that stage of maturity. This has reference to Mr. Haggarty's question as to whether the corn we grew and made into ensilage, which does not come to maturity, would keep the cattle well.

Prof. ROBERTS.—You are growing the wrong kind of corn. Select that variety of corn which will get ripe before there is frost. What I mean by ripe is, so that if you went into the field, cut the best ears, and hung them up, you would have good seed corn.

Mr. HAGGART.—Which variety would you prefer?

Prof. ROBERTS.—We have done two or three hundred dollars worth of work to find out. We are using the Pride of the North, because on our land we like it best. It ripens two weeks earlier. I got fully as good results from the New York or Can-

adian corn. We tried thirty-five varieties this year. It is the safe rule to take that variety of corn which is the largest and will mature in your locality, and plant it as early as you can plant it, and you will raise the most bushels to the acre. Let the stalks take care of themselves. You get the most bushels of corn, and let the straw take care of itself.

Mr. HAGGARTY.—Would you plant it in hills or in drills?

Prof. ROBERTS.—In drills. My labor I employ is high priced-labor. A man and a horse can do more than a man with a hoe.

Mr. FISHER, M.P.—In the great part of the Province of Quebec, at all events, any corn that will ripen would not probably produce more than eight or ten tons of ensilage to the acre. Do you consider—roughly speaking, of course—that eight or ten tons of such as that, is better than twenty-five tons of corn, the ears of which are just commencing to form—corn in the advanced stage of tassel.

Prof. ROBERTS.—Yes; if it is just beginning to tassel.

Mr. FISHER, M.P.—This last summer I tried experiments with twenty kinds of corn, and I found that those varieties which would ripen produced for me less than twelve tons to the acre, while of the larger varieties which would not ripen I get nearly twenty-five tons. The question I wish to have was whether an acre of this nearly ripe corn was as good to put into a silo to feed to my cattle as the unripe corn?

Prof. ROBERTS.—I wish I could carry my figures. We cut corn the last days in July, two years ago, and we have \$19 of good value per acre in the silo relatively. We cut a sample from the same field and from the same place in August some twenty days afterwards and we had \$27 of food value per acre. Then we cut on the 3rd day of September and we had \$48 worth of food per acre.

Mr. FISHER, M.P.—That is not an answer to my question.

Prof. ROBERTS.—Yes; it shows that the corn cut in September was over double the value for food of the corn cut in the July stage.

Mr. FISHER.—It had nearly doubled in weight per acre?

Prof. ROBERTS.—No, sir. It diminishes. That is a funny thing. I have cut rye when it was in blossom and got 18 tons to the acre. I cut it ripe and put it into the silo and I got $7\frac{1}{2}$ tons. Just as soon as the plant begins to gather up its forces and gets through working, it begins to evaporate water. We got in one case 90 per cent. water when the corn was in the milk state, and we get 65 per cent. usually. When you come to take an acre of corn, and take the difference between the figures 65 per cent. and 90 per cent., you will find that you are hauling a great deal of water to the silo, when corn is in that unripe stage, that you can get a good deal cheaper from the spring.

MARKETING CHEESE AND BUTTER.

Prof. ROBERTSON.—Mr. President and Gentlemen; Only a very few moments ago, perhaps within the last half hour, was I requested to take some part in this discussion as to markets and the marketing of butter and cheese. I regret very much the absence of Mr. Ballantyne, a man of very long experience and close observation, competent to speak upon this subject with authority. I will merely introduce the subject, and then as my friend Mr. Ayer, from Montreal, is at the head of the firm that exports the largest quantity of butter and cheese from our Dominion, he is specially prepared to speak upon the butter aspect of the question, and can also present more clearly and emphatically than I myself, his views with regard to the marketing of cheese. Allow me a word of personal reference. I did not think it best to make any response when you passed the resolution with regard to my appointment as Dairy Commissioner. Still, I cannot allow this opportunity to pass without saying to this meeting that while the hearty appreciation of the little work I have been able to do in the past has been always given to me too generously, that very appreciation is perhaps the best stimulant I have to induce me to work hard and harder. I do not want any kind of coddling sympathy, but I want you to look for great things from our Department, and we will try and meet your expectations in every sense. (Applause.) I hope to do all that can be done to make the Department

serviceable to every man who keeps a cow or tills the land to make a profit from dairy farming. That will be our endeavor, and that will be the scope of our work.

In speaking of markets connected with cheese-making and the exportation of cheese I need not call to your mind the fact that a portion of our own Empire affords to us the only and the best market for dairy products. England seems to be the placé where all the surplus food of the world centres. Her teeming millions want to buy the best food that gold can call from every part of the earth. The Englishman is a very fastidious eater. He has been an epicure for so long that to keep up to the days of his forefathers has become with him an ambition. While Prof. Roberts spoke last night of the influence of heredity and its effects upon food, I think the influence of heredity upon the Englishman has been exceptionally strong in the part of his being—that main organ—where vitality rests. (Applause and laughter.) So the Englishman wants to have the best on his table every day that the market offers; and he is willing to pay for it, even if he goes very poorly clad in regard to his person. When he goes with his house badly furnished he will furnish the table for himself and his guest always with the best he can command and provide, that is, speaking of the English as a whole. Then, if we are to meet their tastes and their likings in the matter of dairy products we will have to send them only products of the finest quality, of the best flavor. That will tempt them to eat more, because if you can tempt an eater to eat rather more, you increase the demand and raise the price. (Laughter.) It is a very important consideration. I leave you to observe this, that a man who sits down at a table furnished with fine butter will not only eat more butter, but he will eat more bread; you increase the consumption by improving the quality. The same is true in regard to cheese. One point more: we should send our cheese there of such a uniformly fine quality that the men who eat cheese will not be put off the habit of eating it. It is very important. Our cheese just now competes in these markets with canned meats and jams made from fruit, but if a man gets just one supply of inferior cheese he does not like that, and his wife buys some canned meat, and perhaps he does not get back to eating cheese for two or three weeks. Multiply that and you will find that thus the consumption of our products may be hindered. Therefore, we should have uniform fineness. We should have a uniform style in regard to flavor and body. The Englishman likes a great many varieties of cheese, but he does not like a variety in one kind of cheese. He does not want a Cheddar cheese to be full of holes and not of a mild flavor. So we should not only have it uniformly fine, but uniform in regard to quality, and all that; we will have by-and-by an opportunity of controlling the market with this finer class of Cheddar cheese which sells for higher prices. There is nothing in our cattle and nothing in our pastures to hinder us from making the other varieties of cheese which the English people like, and which will sell for nearly twice the price per pound of the Cheddar cheese. It will be part of the work of the Department to encourage some factories to meet this market demand by Canadian cheese of fancy varieties. (Hear, hear; and applause.) Then upon these things depends the price that we can command and receive from the consumer. The quality always regulates the price. If we can send uniformly fine goods the prices will be uniformly high. What often causes depression in the market value is a degradation in the general quality of the product, because as soon as the average quality of our cheese is lower the average price for our cheese is lessened. I will just close my remarks by a few conclusions. Since the quality regulates the price, and since the quality governs the demand, if we are bound to retain our market, and if we are bound to retain the good prices, we must continue to send and improve upon the uniformly fine quality which has characterized our cheese for years and which has won a reputation. Reputation in trade is thought by some to be a mere sentiment, and still reputation in regard to our cheese materializes itself in getting sometimes a cent and sometimes a cent and a-half per pound extra. So, if a man can market sentiment at that rate I would put lots of sentiment into our cheese as to its reputation. We have all over this Dominion a large number of excellent factories well managed; these factories have won our reputation for us. We have a few inferior factories furnishing only inferior goods. Now if we are to main-

tain our reputation we will have to improve the quality of these inferior factories up to the quality of the best, else sometimes our Canadian cheese will be characterized by the reputation of the inferior cheese and confidence in our quality will be weakened and our reputation will be destroyed. Reputation means an increased demand for our cheese. Now, it is harder to get a buyer in the London market to go down to the dock to examine cheese with the American brand on it than to go if it carries the Canadian brand. He will go more quickly to examine the Canadian cheese than the other. He expects a better quality, and that expectation makes him go to look for good points in our goods and bad points in the goods that have a poor reputation. If a man goes to examine any article of superior reputation and expects to find excellence he will find traces of excellence; if he goes to examine any article expecting to find faults or flaws he will not have to examine long to discover some of the-e. Let us maintain our primacy of reputation and then so impressed the buyer will be in our favor continuously. Last night His Excellency the Governor General in his remarks on the subject of occupying the foreign markets with our products made reference to the preparation of our products for the market in attractive styles and packages. A man does not want to eat the cheese box. Certain it is the cheese buyer buys the cheese, not calculating to see the box again, but he will pay a half a cent per pound more on a shipment of cheese in neat unbroken boxes than he will pay for the same cheese in broken and disfigured boxes. A half a cent a pound would buy two boxes, here besides the one that carries the cheese. In these respects I think I can safely claim your attention, and I can also ask that every man here will do his best to try and maintain our reputation by improving the quality, having it uniform, by keeping it uniformly fine. It is possible to make the best impression by sending it over in attractive packages. It is the first impression that has most influence on the buyer's judgment. I will leave the subject to Mr. Ayer, who, from long experience in the exportation trade, will be able to give you some particular details on this important matter. (Applause.)

Mr. A. A. AYER addressed the convention. He was received with applause. He said: Before speaking to you upon the subject allotted to me, Mr. President, I want to bear a message to the convention from the Council of the Board of Trade of Montreal, of which I have the honor to be a member, and to say to you from them that they will be glad to render you any service lying within their power or to facilitate your operations or those of your Dairy Commissioner in any way that they possibly can. They desire me to express to you also their gratification that such an association has been formed in connection with the appointment of a Dairy Commissioner, and their expectations that out of those, great good to the dairy products of our country would accrue. (Applause.) I was not aware what the nature of this convention was to be, and I certainly was not aware we were to be followed so closely by reporters as to what we may say here, and I had not prepared at all a set address to give you. Permit me to say, before taking up the subject of butter, that possibly there are two or three things regarding cheese which may be of some advantage to the dairymen here present engaged in that branch of trade which I would like to speak of. I will do so shortly indeed. I think the duty of those engaged in exporting and handling our dairy products is to inform themselves and those who are producing these articles at the earliest possible day of changes that are taking place in the wants of the market. First, let me say that the English market gives the preference to larger cheese. Manufacturers well understand what that hint means. They are giving preference to the larger cheese. Then, some years ago a cheese that was very stiff had the preference. That is changing very much. They want a fatter cheese. They do not use that expression as we do here. They simply tell you they don't want cheese "so stiff." That does not mean that they don't want them close-made; that does not mean that they wish to have you make cheese out of nine or ten pounds of milk when you ought to put in eleven pounds. I want to emphasize what Mr. Robertson said about better boxes, and I wish to emphasize it as fathers do naughty boys, especially in the Province of Quebec, with a sound that every factory should hear. I cannot compliment the cheese manufacturers of Quebec

upon their boxes. The factories are few and far between who use even decent boxes; our boxes are the poorest part of our reputation in cheese-making, and they abuse us constantly in England for the poor boxes we use. They sometimes take me to task about using everything cheap over in our country. They say: "How is it you make good cheese and use such cheap, miserable boxes? They break all in pieces. Why don't you have the boxes fit the cheese?" What is the object of having the boxes so large that a mouse can run round between the cheese and the box. We should have the box go on the cheese without difficulty, just so as to keep it from rubbing. You should put quite a strong box on. If you will have a thin, strong box it will do very well. We ought to do this thing. One or two cents per box extra will give us a first-class box and, as Prof. Robertson has said, it will give us much large prices for our cheese. One other point about boxes I have noticed, especially last year, and I suppose the dairymen will blame the weather for it. There have been a great many cheese delivered this year in wet boxes. Wet boxes are an abomination; at certain stages in some cheese they will rot the cheese. You should never take your cheese to the market in the rain without your waggons being covered. Never ship your cheese in anything else but a ventilated car, double roofed. Never ship your cheese in a close car. Do not run the risk, because it is a cool day, of it getting hot before your cheese gets to market. I am now coming to a subject that it is not nearly so pleasant to talk about as it is to talk about cheese. *Butter.* I cannot complain of a want of knowledge upon the subject, for ever since I remember I have been dealing in butter, and I want to say here that I think it is an advantage to have a knowledge of the article you are producing or dealing in from the very origin of it all the way through to the consumption of it. The more you know about it in every stage the better you will be able to produce it or handle it. Markets may be fostered by the producer and the producer may be largely helped by a knowledge of the markets. (Hear, hear.) I have had the question asked me a great many times: Who eats the stale butter? Some of my friends in Montreal very frequently, sometimes one and sometimes another, ask: Who eats all the stale butter? What do they do with it, anyway? Who wants it? Who eats it all? It is not simply bad butter, but butter that was once good, which got stale. Who eats that butter? Is there anyone here who likes stale butter? I have never been able to find a market that preferred that kind of butter. I wish I could for I could handle lots of it. Certainly it is not preferred in England. I am not aware that our home markets prefer it. Fishermen are supposed to be able to eat any kind of butter, but fishermen begin to stick up their noses. One gentleman suggests that the farmers eat all the stale butter. I have been to the farmers to buy butter. His good wife is there. She says: "This is a very fine lot of butter." There are probably twenty, thirty or forty tubs. I say: "I will buy it. When did you make the butter that you are eating?" She will reply: "I took it out of the churning this week." I ask: "Why don't you eat the first tub made"—this will be probably in September. She says: "We take a little out of the churning every week." Now, that woman preferred fresh butter, yet she tried to make us believe that that old butter is equal to the butter she was making in September or October. Now, I submit, gentlemen, that the farmers evidently have not worked this thing out logically, or they would not do what most of the farmers do. Of course, there are a great many exceptions, but the custom has been for farmers to keep their dairy butter until after the season—and this prevails in a great many creameries—and then they want a big price for stale butter. A great many times they have succeeded, and because they succeeded they say that nothing succeeds like success. They will do the same thing next year and keep the butter until it becomes stale. They try to make themselves believe that the stale butter is very good indeed, and that somebody must like it. There is no greater mistake in the world. You have only to visit the markets to-day, the foreign butter market, and find butter that was once good, and now stale, selling for 10 cents per pound, while fresh butter is selling for 25 cents, and in exceptional cases, where parties made their butter especially for certain parties, very much larger prices than these are received; and sometimes in large wholesale transactions. Just think of it:

butter, once good, selling for 10 cents! The only wonder is that it brings that. Why should anybody keep their butter until it is old? Why? I don't know any better illustration as to how it works than this: I will draw an illustration from skim cheese. A man comes to market with skim cheese, and he sells them to the wholesaler, who, in turn, sells them to the retailer, who cuts them up. He thinks they will suit his customers. The customers pitch into him and he pitches into the wholesaler, and he goes back to the man and says: "I will never handle another skim cheese." The maker goes through the same operation with other customers, until he has exhausted the cheese. He gets up a new way of making skim cheese and he starts out again to deceive everybody. The man who eats it is cheated, and it is a fraud from beginning to end. It is just the same with stale butter, where stale butter is handled. A man gets it, and he does not want to throw it out, and he uses it for cooking and other purposes, instead of getting in his fresh butter. Why keep the butter there waiting for prices? This has grown out of the fact that we once had large markets for our butter. What has this resulted in? It has resulted in a decline of trade. It has resulted in a decline of the trade in our foreign markets. They are closed to us: There is another result of this evil. I refer to the production of butterine; that came about simply because the farmer refused to sell his butter fresh, because he held on to his butter. Butterine then slipped in and took the market, leaving butter out in the cold. Butterine is false, but that is the way it came in and took hold upon the markets. In one or two cases it got the better of the foreign markets. It literally closed out the butter trade in Canada and largely closed the butter trade in other countries as well as in the United States. Now, if a wiser course had been pursued when butterine was introduced it would have been killed the first year. You don't see men in other trades do things in this way. Oh no; but the butter manufacturers kept on the same old way, and the butterine dealers had a fine time, and it has produced such alarm among the farmers that all kinds of restrictions have had to be put on to stop the manufacture of butterine. The Government has had to come in and help the individual. I see that the other day someone asked in the House of Commons if some of this stuff was not brought into Canada. They could not account for it, because some statistics showed that a quantity had been exported from the United States to Canada. I had occasion, in this very building, some years ago, to point out that some of this stuff was manufactured in the States and said to be consumed in Canada. It has been supposed that this last lot was consumed here. It is no such thing. It simply goes through Canada and is entered as being consumed in Canada. The same thing was done before, but it was not consumed in Canada. It was sent through Canada. The manufacturer enters the goods as if they were consumed in Canada. I can speak authoritatively on this subject. No butterine is consumed in Canada. The large dealers can point out where the consignments went, on what steamers and the ports, they went to. What became of the miserable stuff which was sent through our country? Our people here, although they occasionally eat stale butter, haven't been of the nature to eat butterine. Butterine has always been a miserable failure in Canada. I have never handled a pound of it myself, and I hope never shall have to. You can see by the statements I have made that the trade is in a pretty sad condition. I often look back a few years ago on the condition of the exporters in Montreal. I think it was in 1880 when I had an order from one firm for 2,000 tubs of township butter per week, commencing in the middle of June and running into October. There are not 2,000 tubs of butter made in a week now. I do not know that there is more than a quarter of that now. That was an order from one firm, and does not include all. That gives you an idea of the decline of the trade there. This is a serious question. It is a serious question for Canada; it is a serious question for this country. It is a great deal more serious to my mind than the ones discussed in the halls of our Government. They had better adjourn the dual language debate and talk about this one. (Applause.) There can be some practical result and good to the country in this subject. This is something we need to look after. What have we to do? Gentlemen, we have to turn right about face. We have to stop the miserable plans we have been following in the

past. The butter trade does not amount to anything now. What are we to do about it? Possibly I may throw out a few suggestions. I will begin at the top. I think that all farmers engaged in butter-making, and especially all who take their milk to the creameries, should commence to milk their cows on the first of June and keep on making their butter till at least the first of January. I know it is the custom in parts of the country to commence making butter in March, April and May. I think that is a mistake. It begins to accumulate then. There is no occasion for it, as things have changed now, and the first of June is early enough. There are always plenty of small dairies making butter before that date. You could not bring it about any other way. There will be all the butter you need for the earlier months. Better make butter in September, October, November and December, because butter made in May or June, in our climate, will not keep. Then there is no reason why farmers should stop making butter, as they do, in October, in these days of ensilage and food of various kinds, which can easily be obtained, so that the cows may have good feeding and give as rich butter in November and December, as they can give in September. There is no reason why farmers should go on farming that way, and that they should not get as much money in the end months of the year as in the early months. If we are to make butter for anything more than the local markets and become expert in the manufacture, we have to watch the English market and the prices there. I have in my hand here a map of Denmark. There are over 4,000 centrifugal machines of various makers in Denmark now. There are over 4,000 of these centrifugal machines in Denmark. They get into the flow of the milk in January. From January until September is the time that Danish butter becomes most plentiful in the market. Our opportunity comes between that time. We ought to be able to commence shipping in July, and on to the 1st of February, March or April, as the case may be. In the months I have indicated there will be some opportunity for us to export our butter. Possibly some of you have said during the time I have been speaking here—what about all those refrigerators put up to keep the butter? Don't make yourself believe that it is safe in them. There is something, of course, in the discovery; yet in the matter of refrigerators, there is something which I have never been able to find out. It is this: why one lot would keep well, and another would keep fairly well—the shipment being out of the same creamery in one week. It is an error to put butter away in refrigerators. You can put one hundred lots there, and probably ten will come out fit to eat in a few months afterwards, but the bulk will be poor, and purchasers will not give you first-class prices. Butter used in New York that has been in the best refrigerators in the country sells for 10 cents per pound, when you are paying 25 or 30 cents for fresh butter. That is only a proof of what I have been saying. The losses through this very thing, which is supposed to be a great evil, have been perfectly enormous. I cannot understand why merchants will follow this up, and do this thing year after year. I say it is the use of the refrigerators that causes the losses. At the same time, refrigerators are useful for a great many other things. We need to use them carefully and not use them to excess. Now, after all, with all the butter that is being sent into the English markets from places nearer by, I have often asked the question—can we export? I say yes; but I tell you frankly, if we are to export butter to the English market it is going to be a fight for it. We are not in the same position regarding butter as we are to cheese. We have the market for cheese. We have our laurels. We have simply to keep them, and go on showing that we are improving every year, and keep the place we have made; but in butter we have not got the market. Canadian butter—shall I use the expression literally—stinks in the nostrils of the British public. Until we change our way of doing things we cannot expect to export our butter successfully. What can we do in this matter? Well, I have an idea, and I think it ought to be carried out, and I hope to see it carried out. There will be an inevitable loss to any creameries or dairies that attempt to export their butter weekly along through the season to the English market, but it is the only way to get that market again. Now I ask you this question, gentlemen: Why should not this convention recommend, through your

Dairy Commissioner, the Government to take up this matter? The Government is willing to expend and has appropriated for an expenditure of \$25,000 in order that seed grain may be brought in here—that we may have a better type of grain in certain lines in Canada. Well, now, it would not need \$25,000, or anything like it, to make a proper experiment of exporting butter and getting the market to a certain degree. Five or ten thousand dollars per annum for this year, or perhaps two or three years, would carry it out successfully. (Applause.) I would pick out three creameries in Quebec, and three in Ontario, and I would say to them: Gentlemen, we want you to put up butter in just such style of tub as we shall point out to you, salt it in just such a way, and let our own expert say how it shall be, and export it, commencing with the first week of the season, until the end of the season, and we will guarantee that the net price you obtain shall be equal to the average of the ten surrounding creameries nearest to you. If the creameries have any hope for the future of trade, they ought to be willing to put themselves in that position, provided the Government stand behind them for any loss made through the experiment. The experiment is worth trying, and it is the only plan to get back our trade again. Unless we have the English market, the butter trade will be worthless in Canada. The experiment is a small affair for our large dairy interests in Canada.

[At this stage Mr. Ayer requested that a sample tub containing butter be brought into the room, for the purpose of exhibition to the convention.]

MR. AYER.—I am very often asked questions about the tub, its style, &c. Here is an illustration. Now, gentlemen, there is good butter in that tub, but look at the tub. Do you think if you wanted butter you would ask that it be taken out of a tub like that? If there were two tubs sitting there, and the other one was handsome, white and clean, which tub would you take? Well, I do not need to ask the question. The butter in that tub which is rough looking and dirty would be worth at least 5 cents a pound more if it was in a clean, neat-looking tub. If we have to export butter we will have to use for certain districts kegs instead of tubs. The favorite tub in England is a whitewood tub. A spruce tub is a good one for exporting butter to the English market. There are a number of other little things of that kind which I might speak about, but I will close with this one remark: Lower prices are to be expected. This is not very encouraging, but how is it with all the other food products? They are retailing in England to-day three pounds of bacon for a shilling—8 cents a pound for bacon. The only way to overcome this is to produce more pounds of butter, owing to the better means of producing butter than there used to be. You want to get better cows, get better milk, use more modern machinery, and produce more pounds of butter, if you are forced to take a less price. I wonder if you are aware that the value of cattle and their products exported is about \$17,000,000. Surely this trade is important enough to demand some attention from the Government. (Hear, hear.) If the export in this branch amounts to \$17,000,000, can you name any more articles that will amount to that sum? Take wheat—where is it? Wheat does not compare. Yet \$25,000 is expended to bring in seed grain. I tell you, gentlemen, it is high time that we woke up about this matter, and go to the Government about it, and see that better trade is brought about before the trade is dead. If not dead already, it will be in a very short time, unless something is done. (Applause.)

MR. A. A. WRIGHT.—I wish to give Prof. Robertson an illustration, and he can take it home with him. Our custom is to buy September cheese and nothing but September cheese for retailing in our store during the winter. Unfortunately, last year we hadn't quite enough, and I bought two cheese to tide over. Here are figures I can guarantee. It took me exactly four times as long to retail these two cheese made in June as it did to retail the cheese made in September, and then long it was before I got my trade back again. There is so much for selling a good article. Another thing—if you do not have your butter and cheese in fine, clean packages, you are going to lose your trade.

MR. DILL.—I was much pleased with the remarks of Mr. Ayer. He made a suggestion, but he did not go far enough in speaking of the importance of the markets.

I was surprised when I came here to find that the North-West took up such great attention. One remark made was that the time was not far distant when the bulk of the population would be west of Lake Superior. While that may be true, I cannot help thinking that the time will come when the bulk of the dairy products will come from that part of Canada. When the suggestion was made that a number of the creameries here should be backed up by the Government in their endeavor to raise our reputation in the English market, I was surprised to know that it was only suggested that there should be three creameries from Quebec and three from Ontario. I hold that the butter from one creamery should come from the western country. I also believe that there will be a great market in Asia for our butter, and I think we should try the butter of at least one creamery in Asia and see what trade can be worked up there. I hope the suggestion will be carried out, and I hope one creamery will be included from the North-West, in justice to that country.

Mr. TACHÉ.—I would suggest the advisability of having the Government back up Mr. Ayer. I will read you an extract respecting the shipment of butter from Australia which is taken from the "American Dairyman":

"Butter from Australia.—Last week the second of a series of shipments of Australian butter for the English markets arrived in the Thames, per the Orient liner "Liguria." This is an entirely new enterprise fostered by the Government of Victoria. The ample capabilities which the English colonies possess for the production of butter are well known, but the colonial farmers are hampered by the want of proper facilities on the part of the great shipping companies, who decline to export the commodity without heavy charges, except as ordinary cargo, a method of conveyance which resulted in the butter getting heated during the voyage and consequently arriving in a deteriorated condition. The shipping agents refuse to work their refrigerating machinery unless guaranteed a freight of 50 tons, which was too large a quantity to ensure a permanent supply. At this juncture the Minister of Agriculture at Melbourne stepped forward, and on behalf of the Government gave an undertaking by way of experiment for four successive shipments by the Orient Company's steamers, conditionally that the freight should not exceed 1d. per pound. The first shipment under this arrangement consisted of over 1,000 casks and arrived per the "Orizaba" on the 3rd inst. The consignment which arrived yesterday is about equal in quality to the former one, and an inspection of the casks proved also in every way satisfactory.—*Provisioner*."

That is one example set by a Government, but I do not say whether the Canadian Government can follow that or not.

Prof. ROBERTS.—These remarks are admirable and to the point; but it seems to me he has left a gap that should be filled. He talks about producing butter from June to January. There are four months more in the year. Are we to shut up shop during those four months? I have been advocating that a dairy should be run like a bank or a dry goods store—open the year round. There should be a constant income, with our silos and methods of making warm stabling. There is no reason, it seems to me, why the dairy should not be run the year round. I want to make one application of that, because that is as fine a lesson as we could learn. If thoroughly learned it would mean thousands and thousands and millions of dollars for Canada. On our side of the line we have a market for early lamb about this time of the year in New York city. They weigh about 30 to 45 pounds dressed. These lambs, by those who understand it, are first wrapped in clean muslin, although the skin is on them. Then rough burlaps are sewn around the lamb except its little feet and head. What for? To keep the wool clean. These lambs sold last year for \$10 to \$15 each in New York, while lambs thrown into the express trains as cordwood, with the wool all dirty, went for from \$4 to \$6 per head, or just about one-half. That is the lamb trade: and the butter trade means the same thing.

Mr. AYER.—In replying to the remarks about what you would do in the other four months, and whether we would close up, I say no, certainly not; but for this northern climate I prefer to suggest something which would be practically carried

out by the bulk of farmers. I do not expect we are going to have many farmers like Mr. Fisher and Mr. Foster in the Province of Quebec. It is not practicable for all our farmers to do it at present; but it is practicable for all of them to do the other. I would not shut up during the other four months, but by this system there would be four months—September, October, November and December—in which in this climate we are not obliged to express our butter week by week. Through the other months we are obliged to, or else there is a considerable depreciation. I believe in running a dairy like a bank. That is the ultimatum to reach; but the practical thing just now is what I pointed out.

Mr. FISHER, M.P.—There is one other factor in this trade which Mr. Ayer must know about, and which I do not think he has put before the meeting. It is true a good many farmers do not sell their butter as quickly as they make it; but I believe more butter is spoiled in warehouses in Montreal than in the cellars of farmers.

Mr. WRIGHT.—Do not fret yourself about that. The farmers will keep that butter as long as they can. We are to-day getting butter in our town that was made last Spring. How in the world do they expect we can sell it, when they cannot sell it in the shanties? They give it to the merchants, who have to dispose of it in some kind of way.

Senator REESOR.—Has there not been more or less difficulty in getting refrigerator room for the shipment of butter? Is there not sometimes a serious deterioration in going across the Atlantic, owing to the lack of cold storage? In regard to the shipment of fruit, you will find it in the official report of the Fruit Growers' Association that there was great difficulty in getting proper storage for keeping the fruit in a cool and proper condition, while going across the Atlantic. On the other hand, the President of the Fruit Growers' Association said he had better advantage in shipping his goods from New York than from Montreal. In Montreal it would be piled near the boiler, or in some place wherever it was convenient. In regard to cheese, there is not the same difficulty; but everyone knows the deterioration which results from the careless shipping of butter.

Mr. AYER.—A different class of storage is required for butter than for fruit. The same class of storage is required for cheese as for fruit. I think, for all the butter we are shipping from Canada, or are likely to ship under present conditions, we can with a certain degree of watchfulness obtain fairly good storage on board the steamer. If butter is to be shipped from interior points without anyone looking after it, it will probably go wrong. In the same way, we would meet with the difficulties in our shipping trade that the Australian butter men have met with. We would require to have the newest system of cold brine cooling, which could be worked by the engines of the steamers at a comparatively small cost. But no steamer is going to put on this apparatus when this business is so small. I think I can say, from my knowledge of steamship agents, that you have only to offer them enough freight to have them give you all the facilities for carrying it; but the trade offered for butter is so small that it would not pay them to afford greater facilities than at the present time. There is no difficulty on board the steamer of getting a temperature of say 50, by watching your opportunity and watching the time of day in putting it on at a time that would be safe for butter. I want to say, further, with respect to a remark made by Mr. Fisher, that I think I can safely say that the bulk of the butter which has been kept in Montreal during the past year or more, and which has gone stale during the summer, has been kept on account of the owners in the country, and not on account of the owners in Montreal.

Senator READ.—Does he see any physical difficulty why we should not capture a portion of the English trade in butter, just as we have captured the cheese trade? Are there any physical difficulties in the way of our capturing at least a portion of the butter trade? Because, we must make up our mind that Canada is to be a cow-feeding country. I believe that the time for raising grain in Canada is over. (Hear, hear.) We must be a cattle-feeding country, whether we like it or not. It may give us a little too much work sometimes, and prevent us sitting around at home, but to my mind it is our only salvation. And we want to produce butter as

well as cheese. When the gentleman who spoke told us that the exportation of animals and their products amounted to \$17,000,000 last year, he did not tell us just then that \$9,000,000 of that was in cheese alone. This has all come about in a very short time. In 1864 or 1865 we were selling cows and buying cheese. There was \$360,000 worth bought and consumed in Canada in 1865. If we have made this progress in the production of cheese, it shows to us that we have all the capabilities in our soil and grasses for still more extended dairy work, and if there is not some physical difficulty in the way, it seems to me that by enterprise and care we should be able to compete at all events for a portion of the English trade in butter. That, I think, can only be done by a systematic course of action. So far as I see it, we must make our butter of that style and quality which suits the English market, and then provide every facility for transportation, so as to prevent injury. I might as well give you an instance of the careless handling of butter which goes on in the country. I went some years ago to attend a meeting about some railway enterprise, and as I was driving along the road I saw a team standing in the hot sun. It was loaded with butter. When I was addressing the audience and advising the people to aid this enterprise, I remarked that possibly everyone did not know their own business. Then I told them of what I had seen on the road and the team standing there with a load of butter while the horses were being fed. I said I thought that man did not know his business in allowing his butter to remain on the road. It must have been a great disadvantage to him. I merely ask the question of Mr. Ayer, if he knows of any physical difficulty in the way of our attempting to get some of the trade with England in butter?

Mr. AYER.—I must tell you frankly that I think there are some physical difficulties, but they are not insurmountable by any means. I think it is a bad thing for any industry when there are not some difficulties in the way. When there are difficulties they call for exertion, and when we have to put forth exertion we accomplish more. There are some physical difficulties in the way of sending butter to England. What are they? Ten days against two. That is all that I know of. The difficulties are in distance and time. That amounts to something, but I do not think it amounts to something that we cannot overcome by proper care and attention. There are difficulties in other directions that will have to be overcome that will require more serious attention than that. I think I might almost venture, in fact I would venture, for a very small percentage, to guarantee the carrying of butter from port to port in good condition. So that difficulty can be overcome as one of the smallest difficulties in the way. There are a great many other difficulties. We have not gone about butter-making in as scientific a manner as cheese-making. We have not worked it up as we have worked up cheese-making. The very question which the hon. gentleman pointed out just now is one of those difficulties. I could give you dozens of instances of the same thing. I have lost my temper many a time to think that a farmer should throw away his money. The moment you let the top of a tub of butter get warm it has commenced that moment to decay. It commences to get stale—that is the ordinary expression. Prof. Robertson knows it means the same thing virtually. It commences to go bad. From the top of the tub the deterioration extends to the middle, simply because the air has got at it. The atmosphere has reached it. If you let the sun get at it it commences to get bad very quickly, sometimes at once. A sample that is worth 25 cents now, if let stand in the sun for an hour, may not be worth 10 cents per pound. Then I must say, in all fairness, that we have very few creameries in Canada—I think I can count them all on the fingers on one hand—that can compete with the creameries of Denmark. We need to be stirred up in that respect. I will tell you a curious thing, and I wonder how you will account for it. The east coast of England eats better butter than the west coast and pays higher prices. That is peculiar. All up and down the east coast of England they eat better butter and pay higher prices than they do on the west coast. There is the same peculiarity with respect to cheese. The east coast people eat white cheese and the west coast people eat colored cheese. There is one town where there is a bridge in the centre. On one side of that bridge they sell

colored cheese and on the other side of that bridge they sell white cheese. Why do the east coast people eat better butter? Because they get it. Because the Danes produce it for them. They have led out the market. Why do they eat worse butter on the west coast? Because Ireland has not kept up with Denmark; and Ireland is convenient. They have become accustomed to eat it; and then, I suppose, they have become contaminated with American and Canadian butter on the west coast, too.

The Association then adjourned for luncheon.

AFTERNOON SESSION.

The convention met at 2 p. m.

President Macpherson requested Prof. Robertson to take the Chair during the election of officers.

The Nominating Committee presented their report, viz.:—Your Nominating Committee begs leave to report:—

For President—Mr. D. M. Macpherson, Lancaster, Ont.

For Vice-Presidents—The Presidents of all Provincial Dairymen's and Creameries' Associations or their appointed representatives.

For Secretary—Mr. J. C. Chapais, St. Denis, Que.

For Treasurer—Mr. H. S. Foster, Knowlton, Que.

For Executive Committee—The President, Secretary, Treasurer and Prof. Robertson: and

From Ontario—Messrs. J. S. Pearce, London, Ont.; James Bissell, Algonquin, Ont.; James Haggarty, West Hastings, Ont.

From Quebec—Messrs. J. de L. Taché, Quebec; A. McCallum, Danville, Que.

From Nova Scotia—Mr. Paul C. Black, Amherst, N. S.

From New Brunswick—Mr. S. L. Peters, Queenstown, N. B.

From Prince Edward Island—Mr. John Hamilton, New Perth, P.E.I.

From Manitoba—Mr. E. A. Struthers, Russell, Man.

From North-West Territory—Mr. Thorburn, Broadview, N.W.T.

From British Columbia—

The Nominating Committee moreover respectfully submits that, in order to save heavy travelling expenses and loss of time, the President, Secretary, Treasurer and Dairy Commissioner have full powers to transact all the business of the Association between annual meetings, and that the full committee be requested to meet as often as needed during the annual meetings, and immediately before and after such meetings.

The report was adopted unanimously.

Report of the Committee on Membership.

The Committee on Membership begs to report:—That delegates appointed by an Agricultural Society, in any districts which have not a Provincial or District Dairymen's Association in active existence, be members of the Dairymen's Association of the Dominion of Canada, and that the President of the Association and the Dairy Commissioner be a committee to draft by-laws for the Association, to be submitted to the next annual meeting.

All of which is respectfully submitted.

ORA P. PATTEN,
Chairman.

The report was adopted unanimously.

The President said there should be some further discussion on the address made by Mr. Ayer. He also suggested that a resolution should be framed and adopted on the line suggested by that gentleman.

Mr. AYER.—I have hurriedly written out the following resolution:—

"Whereas, it is highly important in the interests of the agriculture of the Dominion of Canada to encourage the growth of the manufacture of butter for export; and whereas European countries, by weekly shipments of fresh-made butter, have secured a marked preference for their product, which would be too costly for our farmers or for private enterprise to overcome;

"And whereas, it is necessary, if Canada would compete, to export stated quantities from stated creameries or dairies weekly, and that such a course would be likely to entail a loss until our product was advertised and regular shipments established:—

Resolved, That in view of the great ultimate advantage and gain to the Dominion in the increase in the manufacture and export of butter of good reputation for superior quality, we, the members of the Dominion Dairymen's Association, do respectfully petition the Government of Canada to appropriate \$5,000 annually, until such time as this channel of trade shall be opened."

Mr. J. T. DILL seconded the resolution.

The PRESIDENT.—The resolution is a very important one, and I would like that there should be some discussion upon it, so that its importance may be thoroughly understood.

Mr. WRIGHT.—I certainly think that the manner in which Mr. Ayer proposes to deal with this matter is the only way. It is desirable that our private dairies should be improved. We have the cattle, we have the water, we have the grass and we have the intelligence, and everything. All we have to do is to set about it in the right way. We have not enough wealth to do it individually, and if the Government aids us to a certain extent I think we will be able to secure the market for butter as we do in cheese. I do not see why we should not. I do not see any other way out of the trouble other than the one indicated by Mr. Ayer.

Senator READ.—While I think we have a demand to make upon the Government, a great deal depends upon ourselves. The Government may assist us if we begin by assisting ourselves. I recollect something which has just occurred to my mind about the waggoner who got stuck in the hollow. He called for help, and he was told to put his shoulder to the wheel first, and then if he could not accomplish it he would get help. Now, I think we are peculiarly situated for the production of butter. I dare say you have noticed that the health of animal life in this country is extraordinary. It is more healthy in Canada than in any other country that I know of. In the country to the south of us they have pleuro-pneumonia. The cows are subject to abortion in many parts of that country. With us we have no disease. In England they have pleuro-pneumonia. A friend of mine in England had between twenty and thirty of the finest cows that could be produced and they took it. The disease took the whole of them. We are extraordinarily favorably situated in these matters, and nothing should prevent us from going on and capturing the English market.

Dr. SPOULE, M.P.—Mr. President, I am heartily in accord with the proposition. I think Mr. Ayer has given us some valuable information this morning, and has made some suggestions which resulted in this motion. I must say that I think it is in the right direction. From my knowledge of the drawbacks that we have to contend with in the butter line, in our country especially, it seems to me they would be largely overcome, if our people were induced by any means to ship their butter at stated periods and not keep it so long. I have had some experience in that line, because I spent four or five years in commercial business. I have three of my family in that line, all of whom have been pretty large buyers of butter from the farmers. The custom that maintains of making butter all through the season and keeping it until the fall, when it is unfit for the table, accounts very largely for the complaint of agriculturists all over the country. If we can devise some means of overcoming that difficulty, the move would be in the right direction. I, for one, will heartily support the resolution.

MR. THORBURN.—I have drawn the attention of the convention before to the interests of the west in this matter. I believe that within a comparatively short period Manitoba and the North-West Territories will become a very large exporting country, from which butter, more particularly, will be sent out, and I wish that the convention, when they take up the matter, will also see that facilities are given Manitoba and the North-West Territories to get their butter sent westward. There is a large market to be found in Japan and China, which requires careful attention. It is not a market that has been opened at all to Canada in any direction scarcely. Unless some very special efforts are put forth it will be a long time before that market is properly opened at all. They have been accustomed to special packages and a special grade of butter, and until it is made into what is best suited for the Japanese and Chinese market we will not be able to open it at all. This is a little beyond private enterprise at present. I made some effort in that direction myself last year, but I was not able to accomplish much. Comparatively little was known on the subject. I intend to go further into the matter during the coming season and see what can be done in the way of opening up a market there. I am perfectly certain it is beyond my own efforts or those of any of the other creamery men in the North-West Territories to get a fair understanding of the requirements of that market. Therefore, I hope that the Government will feel inclined to take the matter up. It is a very worthy object, embracing a very important interest to the North-West Territories and Manitoba. I hope it will receive the favorable and careful attention of the Government.

MR. H. S. FOSTER.—I can only say, in connection with the matter, that I think \$5,000 is a very modest sum to ask for, considering the work we have to do. My own idea on the subject at the start, when we first met here last year, was, that by the appointment of a Commissioner he would be able to ascertain the requirements of what we had to go through and what was necessary to be undertaken by our dairymen in order to enable them to compete successfully in the markets of the world. I certainly most heartily endorse the resolution before this meeting. The only thing about it is, that I am inclined to think that this is a modest sum to ask. I can only say that we all realize the fact that in our Commissioner we have a man who will secure these facilities and place us in a fair position. We are just now at the beginning. This is a splendid outcome of the small organization that met here last spring, to see so many intelligent men from all parts of the Dominion so thoroughly interested in this most important subject of making butter. I feel sure that we are going to have a larger sum placed at the disposal of the Dairy Commissioner, in order to promote the dairy interests of this Dominion.

SENATOR REESOR.—While it is very desirable that the Government should give aid to develop a trade of this kind, it must be borne in mind that before the Government will sanction anything of the kind they must see that there is a reasonable prospect of this being made successful. Now, it strikes me, from past experience in matters of dairy products, that there is a very much greater difficulty in getting the butter to market across the Atlantic in proper condition than there is in getting cheese or fruit across, or in getting a great many other products across, so that we must be sure that the basis upon which we stand, the manner in which we propose to do the work, will prove a success, and not raise an outcry against the Government for squandering money for no purpose, and the Association representing the dairy interest of having mismanaged their affairs. All these things must be taken fully into account before a dollar is expended. I quite agree with the suggestion which Mr. Ayer has made, and the matters which he has laid before this convention. I think his suggestions are most valuable with regard to the trade of the country, but we want in the first place to be sure that we can get enough butter to make a weekly shipment across the Atlantic, so that ample provision will be secured upon each steamer that leaves Montreal to carry it to London or some other point at tide-water. When all these arrangements are perfected, secure a certain number of factories to produce the quantity required, and have an undertaking with all the parties interested to have them ship regularly every week from the factory just as

fast as it is made, and in a condition to be shipped, because a very few days will make a difference between getting good butter in the market and getting poor butter in the market. You are in such a position now in Canada that you must have a superior article, and you must force those interested in the market on every side to admit that we can send them a good article, and one that can be relied upon. If there are two failures in the shipments made the first year it is going to damage us for years to come, and all the expenditure that has been made and all the interest taken in getting up our butter factories will be in a great measure lost to the country. All these things must be most carefully considered, if we are to make the trade a success. It is true that in the future, as my friend from the west has said, there may be a market in Japan. There may be a market now in Japan, but I think our western friends are in a hurry. They are too fast, and want to ship to Japan before they get enough to supply their own market. Manitoba and British Columbia will take all they can make for a few years. They want to ship it across the Atlantic with ours.

In shipping to Japan you must remember that you are shipping to a warm country and the butter will be on shipboard a long time. Before you make any shipments there, if you are wise you will ascertain the conditions in which the butter should be shipped and the manner in which it should be packed. We can learn something nearer home. Those who send butter from the United States to the West Indies, if they want to get a good article in the market, they take their butter and melt it, running it into glass jars, as they would put up fruit. In that way they get the butter in as perfect a condition as it is possible to get it in a warm country, and it is very palatable. But send butter to these places packed in the ordinary way, and it is not fit for white people to consume as food. It is really unfit for food. Whatever course we take in looking for a new market after the market has once been ruined, we must be doubly careful in taking these steps properly and get the article in a good shape for a time. Then you will soon get a position in the markets of the world that is worth having. You must remember that the English people require all these things. England is the greatest commercial country in the world. They buy from all the other countries, and re-ship their products to other countries. They take mixed cargoes, suitable to the port at which they intend to sail, and they will often take some Canadian cheese. They would take Canadian butter just as well and just as quickly as any other butter. You must look to all these things. They have ships and the men who are willing to do it. Now, let us try to get the whole of this market, and send our goods in such a shape that they can consume what they please, and what they cannot consume they can ship somewhere else.

Mr. AYER.—I am delighted with the remarks of the Senator. I would almost think he was in the butter trade from his talk. All he has said is thoroughly practical. Of course we have to work out all the details of this plan. Let me say that I will only be too happy personally to place in the hands of the Dairy Commissioner such information as I have, and I think I have sufficient information to place in his hands to put the thing into working order. You must not imagine that I have been in the trade for twenty-five years without knowing every point in the English market, and knowing what is wanted at every point. I think I have some idea what ought to be done and when it ought to be done. We will be happy to put the country in possession of information, so as to work the scheme out successfully. I don't think it is impossible at all. I am gratified to find the Senator talking of these things and supporting all these things, which are certainly very necessary and very practical, indeed, on the question especially of securing creameries which will send in their butter weekly. I do not think there is any difficulty about securing creameries, provided they are secured against loss; but the question naturally comes up to any one who would undertake this matter—which one of us is going to sacrifice himself? Which one is going to sacrifice itself in the meantime? The benefit will not be simply for the creameries in that section of the country where the few to take the lead are, but the benefit will be to the creameries and dairying interests throughout the whole of Canada. So our friends of the North-West will have a market open when they

produce these immense quantities of butter. I agree with what Mr. Foster has stated about the modest sum that has been asked for. We had better commence modestly with the Government, and if they grant us this amount for this year, we can grow. It is better to grow than start high and come down. Regarding China and Japan, there are very peculiar markets there. There are large butter markets there, but they are peculiar markets. They are entirely different from the English market. They want to have things laid down correctly as they want them, and if they vary one-thirty-second part of an inch they won't have the articles. They must have it just their own way. That market is a difficult market to capture. If we capture the English market it is very much plainer and clearer sailing. Denmark has this market, as it has most of the good markets in butter in the world. They have simply outstripped ours and the world in their butter manufacture in supplying to the various markets of the world everywhere. (Applause.)

Prof. SMITH.—Of course I do not wish to have any of the remarks which I make interpreted as intending to discourage this resolution. I know it is a loyal thing to go to a Government willing to assist a trade, but it struck me that we had forgotten something about the subject of markets. From all I hear regarding the Canadian people, it seems to me that the greatest market for good butter is right in the Dominion of Canada. Here is where the good butter is needed, and it seems to me that instead of attempting to compete with the best butter in the world in the English market we ought first to supply the Dominion of Canada with good butter, and when we have done that, and when our people learn what good butter is, and what it is worth, the dairymen will be compelled to make good butter, and then we will have butter which can be sent across to compete with the butter of the other countries. Of course it would appear, at first sight, that it is extremely foolish to say anything which would look towards not obtaining the grant from the Government, but it seems to me that after all that is not what we are after. What we are after is to teach our farmers and urge our farmers to bring about the production of first-class butter. Now, there is a vast market for good butter right here amongst us, perhaps not in Ottawa; but I must say this, that in the short time I have been here I have yet to see a sample of butter which I can stand. I have had, in my experience in travelling throughout the Dominion, the same result wherever I go, not that I have not come across good butter by any means. There is lots of good butter produced, but there is not enough of good butter produced to supply our markets. I believe first-class butter can be sold in the Dominion of Canada at a paying rate. Now, with that market, it seems to me there is enough legitimate encouragement for the manufacture of good butter. When we have supplied that market, we will have trade enough; and we will be able to produce enough good butter to ship it across the Atlantic. The paltry sum of \$5,000 from the Government would make scarcely an impression one way or the other as to our shipments. It would have no beneficial effect at all. On the other hand, it seems to me, although our honored Professor, who is to take charge of our dairying interests, is very worthy, and is capable of doing a great deal, you should not put on his shoulder more than one man can bear, and certainly not more than any one man can accomplish. If we propose to make dairying possible in this country, it must depend on the farmers themselves and on the dairymen themselves. If this manufacture of good butter is of a paying nature all we have got to do is to prove it, and the farmers and dairymen will take heed of it and make good butter. If it is not a paying thing it don't pay to encourage it. I believe it is paying; I know it is paying. I know that first-class butter can be sold anywhere if there is no trouble about the price. Very well, then, it seems to me that the want of a market is not the thing we are after at all. It seems to me that the deficiency lies somewhere else. I do not hardly think we are altogether without the intelligence. There is where I believe a screw is loose. We are not after the market across the ocean. We have a market at home. Let us learn to make butter, and more of it.

Dr. SPROULE, M.P.—If I understand at all the object of organizing this Association, it was directly on the lines that have been suggested by Mr. Ayer. We have at the

present time Provincial Governments and Provincial Dairymen's Associations, who are endeavoring to educate the people on the lines that will enable them to make good butter. This is the great object, and this has been largely accomplished in the Provinces by the Provincial Governments. In addition to that, we thought it wise to establish an Association here in the centre of the country in connection with the Government of the country, who had under control trade and commerce, and find out profitable markets for disposing of the products that we raise in the country and devise means to get these markets. It was anticipated that this Association would do this and that the Government would put at the disposal of the Association any reasonable amount that would be required to accomplish the object. I think we will have no difficulty in inducing the Government to grant what the Association requires to carry out the aims of the Association. These aims should be encouraged by every member of this Association. (Applause.)

Mr. EWING.—One of the reasons why we made bad butter is from the fact that there is not a sufficient guaranteed market for the production of good butter. Probably the butter which our friend Mr. Smith has eaten since he has been in Ottawa, is butter which ought to have been eaten three, four, five or six months ago, and would have been eaten had there been a market established where we could send the first-class article. That certainly would be the means of bringing up the quality of the butter of this country—if the people learned that if they produced a first-class article there was a market where they could sell it at a profit. If we can sell it and get it shipped at prices for a good quality, it will be produced in Canada to meet the demand of the market.

Prof. BARNARD.—I think the aim of the motion is to secure thereafter Government assistance, which is indispensable for the advancement of dairying in Canada; and if there is a question more important than another, it is the advancement of a motion which will secure a better market for our produce. I heard the Professor from Nova Scotia affirm that we had a market in Canada, an ample market for our produce, and he set as an example the fact that we had bad butter at the hotels charging such high prices. I don't think that that is proof. Our people will not force hotel-keepers and members of good families to know what good butter is. We have exported at one time millions and millions of pounds of butter and we have lost that trade. We have lost several millions of money every year from the fact that we made bad butter. There is only one unimportant objection to the resolution, yet sometimes an unimportant objection may disturb matters so as to prevent the securing of the result aimed at. Last year we came here and we went to the representatives of the country. We came here at our own expense. We were interested in a work which is of great national interest, and we said to these representatives: "We would like you to help us to make the country richer through dairying." What was the result? The Committee on Agriculture were unanimous, and they went to the Government and said: "We want to help these men." They said to us: "How much do you want?" We said: "That is not for us to say. It is for you to find out how much money you can afford to put in the matter of the greatest interest." What was secured? The House voted \$3,000. We then explained that what was of more importance to this Association was the appointment of a Dairy Commissioner, who would take hold of the subject and, from an intelligent point of view, advise the Government as to what should be done. They asked how much this would cost, and we said: "Gentlemen, that is your business; if you cannot afford to pay a first-class man, take a second-class man." Someone expressed the idea as to how much it would cost, that it would cost between ten and twelve thousand dollars before twelve months were up. We have one of the best Commissioners there is in the country, and now the Commissioner must have the means of carrying out what is necessary. I would advise my friend Mr. Ayer not to mention the sum. Leave that to the business capacity of our Legislature. If the idea is good, let them pay what they can afford to pay. I heard Senator Reesor a moment ago. I am quite of his opinion. We must not ask for the spending of a single cent without value, if we want our Association to be as national as we intended from the first.

We want every cent to carry its dollar's worth. We must have results from every cent of expenditure. We want the country to prosper. We want our representatives in the House to do what they can for us, and no more. We ask no more. I have no doubt, if my friend has no objection to leaving out the figure, allowing the Government to do what is necessary through its own officers, we will carry our point. We want the foreign market; we are all agreed upon that. We have lost the market. We have sold millions and millions of butter we cannot sell now. Perhaps my friend is not aware of the fact that we were producing an oversupply of bad butter, a very large oversupply, and there is no market for bad butter. Oleomargarine, bad as it is, some people say is better than our poor stuff, and, therefore, we must fight oleomargarine by making good butter and lowering the prices, if possible. I, therefore, respectfully submit that we leave out the sum, and leave the matter in the hands of the Government, who will see that not a cent is spent uselessly.

Mr. PETERS.—I would not like this discussion to close without expressing some of my views with reference to the matter. I find that the upper Provinces are laboring under the same difficulties that we are in New Brunswick. My remarks will be confined more to New Brunswick than to the upper Provinces. At our annual session of the Farmers' Association held in Fredericton a few days ago, we dealt with this very matter. We asked the Provincial Legislature for a certain sum of money to aid us in establishing creameries run on the co-operative plan, to see if we could get butter perfect. I understand this is the same difficulty you meet with here, that while a portion is good the larger portion is not up to the standard. To secure that point is the object of this Association. The Government of the Dominion can well afford to give this body support, to so important an industry. We desire, therefore, to secure some assistance from the Government. I make this point and I desire to emphasize it. If we can get a first-class article of butter manufactured, either by the co-operative system or the private dairies throughout the length and breadth of this Dominion, you will have no trouble in securing the markets for it in any country. I take the question that if you get the article required—the first-class article—we will find a market for it.

Mr. JAMES HAGGARTY.—I am in favor of the resolution so far as it goes, but it does not go far enough. The Ontario Legislature is giving the dairymen about \$6,000 a year. Last year they gave them about \$5,000 to aid them in employing cheese instructors, so that we could manufacture the article of cheese and have our cheese go into the market in better shape than in the past. The money last year was not sufficient to employ cheese instructors and send them through Ontario, to saying nothing about the Dominion. We are talking of Ontario now. We have not enough money to send a sufficient number of them to the factories to instruct them in the proper mode of making cheese fit for the English market. Well, then, I think that this Dominion Association should not only ask for money for the butter interest, but we want more money in the Dominion for the cheese interest. I have nothing to say against butter; I say it is all right, as regards the improvement to butter. The cheese is now the principal industry. Why, we have \$9,000,000 worth of cheese going out of the country, we have never asked the Dominion Government to give us a cent towards the production of that commodity. I think that \$5,000 is nothing. We ought to ask for \$25,000. When the Ontario Government gives us \$6,500 last year, we ask the Dominion Government for \$5,000 for the two things—butter and cheese. I favor the resolution, but I think we should have at least \$25,000 from the Government.

Mr. M. K. EVERTS.—I have been very much pleased with the discussion, and I have been greatly interested in it all through. I will just say here that the sum asked for is certainly very modest, when we take into consideration the fact that our neighbors to the south of us give \$15,000 each to thirty-two States. We only ask \$5,000 for the whole Dominion. The people to the south of us are doing all they can to take the first place in the butter market. They have first place in the butter trade and they want first place in the cheese trade.

Mr. FISHER, M. P.—Mr. Ayer made a suggestion as to the way in which assistance might be given by the Government, proposing to ask the Government to guarantee the shipments against loss, or something of that nature. I see by this resolution of Mr. Ayer that he does not state the way in which this money would be expended. I need not say, as a member of the Parliament of this Dominion, that I would be glad to have a grant given for this. I don't know any way in which the Government could better advance the interest of the people of this country. One or two things have been said since I came into the room which will have to be taken into consideration in such a work as this. The question to-day is with special regard to our butter exports. As I understand it, our cheese export is in a thoroughly satisfactory condition and has been so put by means of the exertions of the Ontario Dairymen's Association. About twelve or fourteen years ago the cheese export was practically in about the same state as the butter export to-day, and in consequence of the efforts of the Dairymen's Association in Ontario to-day our cheese exports stand at the top of the list. It seems as if our butter dairymen have to do the same kind of work that the cheese men did. We have to overcome the prejudice against our butter in the market to which we will send it, and the way to do that is a question for discussion. A gentleman stated a few moments ago that there was an abundant market for all the good butter we could produce; but I would like to qualify that by saying that there is an abundant market, but the price of that market is not very high. Last winter I spent some little time in England and in London. I looked closely at the dairy product put upon the London market and I found that first-class butter was being sold in the west end groceries in London at retail at just about the same price that I am getting for my butter in the city of Montreal. I found that good tub butter was being sold in London—and there was a superabundance at that time—for 3 cents a pound more than tub butter was being sold in the city of Montreal. You, therefore, see that the margin for profit and expense in sending our butter to England is small indeed, and while there is no doubt there is an abundant market there for first-class butter, the competition in first-class butter is so great that we will have to produce our butter more cheaply if we are to get any opening in that market at all. I think myself to-day that there is a very large amount of butter being produced in Canada, which will make no show at all in the English market. I don't want in any sense to depreciate our butter manufacture, but I venture to say that a number of creameries in Canada to-day are making butter that would not be accepted by the English market at high prices. We have to improve the product of our creameries, as well as our dairies, and when we do so I feel that we will have to keep down the price until the butter that we are going to export to England gains a footing. The suggestion was made this morning that the Government should aid in sending our butter to England, and bear a certain portion of the loss, if loss there was. I see the Minister of Agriculture here. I dare say he will have something to say upon that before the discussion is ended, but I wish to draw the attention of the dairymen to the fact that for years past other industries of the country have asked for something similar to this, and I want to warn the gentlemen present, that if it is right for the Government to guarantee the dairymen against loss in their business the other industries in the country might ask the Government to guarantee their export against loss. I don't think the Government of this country would be willing to take the responsibility for all the industries. Undoubtedly, I do not think it would be wise that they should do so. I think perhaps there are other ways than this by which this money might be used to advantage in improving our dairying interest. I quite grant that there is a great difficulty in capturing the control of the foreign market, but I want especially to point to the fact that in that foreign market the question of price affects our exports just as much as the quality of our goods does.

I fully believe there is a greater difference in the price in England in the summer time than there is in the winter, but I believe that our dairymen are going into winter dairying. The price I get to-day in Montreal for my butter is not going to be sustained for any length of time. I have warned, frequently, the dairymen in Quebec that there are a few who get extremely high prices in the Montreal market.

When that market is just about in the turn, if we send a few hundred pounds a week in there the prices will come down. The point I wish to emphasize is this: the very small amount of margin that there is and the fact that we must not only improve our product but we must also lower the expenses of producing that product and sending it through in the best way that we possibly can, otherwise we will not be able to compete in the English market.

Mr. McNEILL, M.P.—Will you say what the price was when you were there, Mr. Fisher?

Mr. FISHER, M.P.—Some of it went as high as 1s. 6d. per pound.

Mr. McNEILL, M.P.—That is 36 cents per pound?

Mr. FISHER, M.P.—I may say that my own butter was selling in Montreal varying from 35 to 40 cents. I was getting 30 cents a pound for it, and my butter was not the only butter, by any means, selling at that price.

Mr. McNEILL, M.P.—Do you think there would be a market of from 30 to 36 cents in England?

Mr. FISHER, M.P.—That is for print butter?

Mr. McNEILL, M.P.—Yes.

Mr. FISHER, M.P.—Yes; there would be that if we could send it through in the same condition. This butter was Normandy butter, being sold at that price. It was put on the London market when it was made—the same day or day after.

Col. PATTEN.—Then we are beginning at the wrong end. If it is necessary to reduce the cost of manufacture before we can hope to take possession of the European market, I think it would be proper for us not to do that, but to ask our friend Ayer to allow an amendment or an addition to his resolution, intimating that the attention of the Government has been called to the fact that the raising of pork has been entirely crushed out by the importation of pork and so-called lard, and that some additional protection should be given to that industry. It is a well-known fact that over 15,000,000 lbs. of pork and 8,000,000 lbs. of so-called lard were imported last year. I think that in order to have that industry encouraged the Government should afford some protection.

The PRESIDENT.—The resolution just moved by Col. Patten would read as follows:—

“That the raising of pork has been entirely crushed out by the importation of pork and so-called lard, and some additional protection should be given to that industry.”

I think that is an independent motion. One is the case of butter and the other is the case of pork.

Col. PATTEN.—Everyone knows that the raising of pork is almost indispensable in connection with dairying, in order to reduce the cost. The two go together.

Prof. BARNARD.—I have an amendment to move, but before I do so I would explain it in a few words. I am exactly of the opinion of my friend here. There is, however, the question of limitation. In fact, I heard one of my friends suggest that \$5,000 would carry on all the work that the Department would do in this connection. Why, it is more than \$5,000 now. Then if we ask for \$5,000 for just one part of our work, the Government might say we would ask \$40,000 for all our work. Our claims have taken so thorough a hold of the country that His Excellency the Governor General came here to countenance us. We say we are part of the country: that we are representing the most important part of agriculture. By improving dairying we are improving the agriculture of the country, and that is by far the greatest interest we have. No other industry can come near to what agriculture represents. Therefore, if we merely ask the Government for what is fair and just, and according to their means, I am perfectly sure the Government will not stop at \$5,000 or more; but do what is right. There are two propositions. One was that if we make enough butter we can have an ample market: but practical men know how it is. There is a market for cheese and it sells at reasonable prices; but who is going to start a butter factory when there is no arrangement for shipping our butter? Our butter must not only be first-class when it leaves the factory, but it must be taken proper care of. It might spoil

in two hours after leaving the factory. If it is turned out into the sun, it will never reach the market in good shape. That shows the difficulties there are in the way of reaching the English market with produce of the very best quality, and having it placed on the table of the consumer just as good as it left the factory. Some experiments are necessary. Some say that if the dairying industry is to be protected in that way then all industries must be protected. Where is the industry which, as soon as the Government knew was in need of protection that did not receive that protection? It strikes me that the sentiment is strong on both sides of the House to have Canada for the Canadians, and whenever an industry, small or great, comes and asks for due protection it is sure to have it. How does our industry require fair protection? What do we say we want? The same as the Danish Government gave sixty years ago—no more than that. The butter made in Denmark was the worst made on the continent. The dairying of Denmark and the agriculture of Denmark was as bad as the worst in the Province of Quebec. I do not speak of other Provinces, because I do not know them. Now we see Denmark at the very top of the ladder, where it cannot be followed by France, or Normandy, or any other country. Why? Because the Government took up this question and protected the industry right through, and protects it yet. What do they do? They have a staff of professional men, competent to go about the country and teach people how to make good butter, who take hold of it and see that it reaches the English market in the best possible condition, so that it will be as good the day it is eaten as the day it left the dairy. Now, if we want our butter to reach the English market in good shape, must we not have an organization that will enable us to compete with Denmark? We can compete with Denmark, although several days further away from England, because we have advantages that Denmark has not. Those who are acquainted with that country know that it is a low country, lying nearly on a level with the water, and cannot be equal to ours in that respect, or in many other conditions. I think I may be forgiven for bringing up these facts which cannot be proven to be wrong. In view of these facts, and the fact that several other countries are making efforts to secure a fair share of the English market, and in view also of the fact that we have lost the market we had in England for millions of pounds of our butter, the Government should be respectfully requested to take all necessary steps to secure again that market for our Canadian butter, both by educating the farmers to make better butter and by having our butter reach the market in the best condition. I would put that in the form of a motion.

Senator REESOR seconded the amendment of Prof. Barnard.

Mr. PETERS.—I would like to second that motion as a second resolution. It seems to me preferable to the first.

Prof. BARNARD.—I am afraid we would put the Government in a bad position in limiting them to \$5,000. It might take \$10,000, but we do not want them to spend one cent more than is needed.

Mr. AYER.—I am quite willing to withdraw the sum of money mentioned in my resolution. It is going into details, perhaps, more than we ought to. At the same time, there is nothing like having a resolution definite, because it brings out all the views. It is easier sometimes to take off than to add on.

Mr. HAGGARTY.—Perhaps the Government will only give \$2,000 or \$1,000. This is a Dominion Association, and we want the Government to give us as a Dominion Association and not as to the Provinces. Of course this \$5,000 is not sufficient, but I would not care to go against the resolution, because I think the Government would give us what we require.

The PRESIDENT.—I think if the sum of money be taken out of the first resolution these motions would then cover the same ground.

Prof. BARNARD.—My amendment covers more ground. The Dairy Commissioner cannot teach all the farmers of Canada, and we go so far as to call the attention of the Government to the fact that bad butter is the rule in Canada to such an extent that, as our friend from Nova Scotia mentioned, he cannot get butter to his taste at the hotels. Why? Because we have not educated our palates to good butter. This

amendment goes further, because it asks the Government to take the necessary means to have our farmers educated in making better butter.

Mr. F. H. MACRAE.—I think the first motion covers the question better than this.

Mr. DILL.—I must agree in the main with Prof. Barnard, whose resolution I believe would voice the sentiment of most of the gentlemen present.

Dr. SPROULE, M.P.—As I understand it, one of the objects of this Association is to facilitate as far as possible the exportation of our produce in a fit shape to reach the foreign market. That is a matter directly under the control of the Dominion Government, and I take it that this Association, represented by its head, the Dairy Commissioner, will endeavor as far as possible to follow out these lines. While I agree that it is not wise to ask a definite sum for that specific purpose, I take it that the Dairy Commissioner may be able to accomplish a good deal in that direction. Still, I think where we have such a large representative Association drawing the attention of the Government to the suggestion thrown out by Mr. Ayer in his speech this afternoon, it is not necessary that we should name any sum of money. The suggestion is, that it would be wise to indemnify a certain number of creameries who would engage to ship butter weekly to the foreign market, as one of the best means of getting a substantial foothold in that market. That was the aim of this resolution. I think it well that the attention of the Government should be called to the matter, but I do not think it is necessary that we should state any sum of money, because the Dairy Commissioner is here listening to this debate, and will turn it to good account in the arrangements he may make for the future. His object will be to accomplish the very aim we have in view. He might endeavor to do it along some line we have not in view; and in the Minister of Agriculture we have one who will endeavor to carry out our wishes in that particular.

Mr. AYER.—By way of closing, I would like to remove one or two misapprehensions, because I would be very sorry to have some of the ideas given here to-day accepted as the exact state of things in regard to the manufacture of butter in Canada. I venture the assertion that three-fourths of the bad butter you see in Canada was once palatable and fit for food. If you find bad butter in hotels, that was once good and got stale. Here is a proposition you can work out for yourselves: Given 100,000 tubs of butter in Canada, with home consumption 50,000, and no export, what is the price of butter? Two cents per pound, someone says. Given 100,000 tubs produced, with a consumption of 50,000 at home, and you export 50,000, what is the price then? Your prices go up to 20 cents or 30 cents per pound. You have a market. I am rather surprised that my position was put as it was. My idea never was to export poor butter, as suggested. I believe there are creameries in Canada that can make first-class butter, but it wants to be put up in proper style and sent to the proper markets and at the right time, and put into the right parties' hands, and presented to the English table in such shape as to give us a name for butter. Another point lost sight of is that the taste for butter has undergone an entire change in even conservative England. They do not eat the same kind that they did ten years ago. We, however, are going on making the same kind as we did ten years ago. The cheese trade is entirely different; but we have grown with the trade: we have led the trade. We have not been following along one line. Unfortunately, in the butter trade, Denmark has led. In cheese, Canada has led, and other nations have had to follow. I do not know anything about the political aspect of this question. I am not a politician; but I venture to make this suggestion: If the dairy industry dies, the other industries of Canada will die soon. This is the natural home of cattle, and we can compete with—yea, outstrip—most of the nations of the world. (Applause.) Denmark and Sweden may be similarly situated for climate; but putting that aside for the moment, there is no nation in the world that can compete with Canada in cattle and their products. The Government needs to bear this in mind in giving the assistance we have asked for in this resolution.

The amendment was then withdrawn, and the sum of money struck out of the resolution, which was then put to the convention in this form:—

"Whereas, it is highly important in the interests of the agriculture of the Dominion of Canada to encourage the growth of the manufacture of butter for export, and whereas European countries, by weekly shipments of fresh-made butter, have secured a marked preference for their product, which would be too costly for our farmers, or for private enterprise, to overcome :

"And whereas, it is necessary, if Canada would compete, to export stated quantities from stated creameries or dairies, weekly, and that such a course would likely entail a loss until our product was advertised and regular shipments established ;

"Resolved, That in view of the great ultimate advantage and gain to the Dominion in the increase in the manufacture and export of butter of good reputation for superior quality, we, the members of the Dominion Dairymen's Association, do respectfully petition the Government of Canada to take the necessary means to facilitate and aid the export of butter until such time as this channel of trade shall be opened."

The resolution was carried unanimously.

ADDRESS OF THE MINISTER OF AGRICULTURE—HON. JOHN CARLING.

The PRESIDENT.—We have the honor of Mr. Carling's presence this afternoon, and I am sure we will be pleased to have him address us.

HON. MR. CARLING.—I need not say to you how pleased I am to be present here to-day, and to listen to the discussion which has been going on. I was very kindly invited to be here to-day and make a few remarks at the opening of the Fruit Growers' Convention, and you will excuse me if I say something respecting fruit while I also speak of the dairy interest. (Hear, hear.) I propose to present for your consideration some figures which I have collected with reference to the exports from Canada to Great Britain, of fruit and dairy products, and the imports into Canada of similar commodities. I think it is very important that, as Canadians, we should be able to produce what we need in this regard, instead of importing from the United States or elsewhere. I find in looking over the official returns that we imported something like \$433,774 worth of fruit from the United States, which I think we should have produced in our own country. (Hear, hear.) We imported 109,528 lbs. of dried apples, valued at \$7,487; 70,921 barrels of green apples, valued at \$121,782; 4,278 quarts of currants, valued at \$363; 92,863 quarts of cherries, valued at \$9,333; 643,153 lbs. of grapes, valued at \$38,649; 3,327,317 lbs. of peaches, valued at \$138,270; 24,122 bushels of plums, valued at \$18,431; 1,741,507 lbs. of blackberries, cranberries, gooseberries, raspberries and strawberries, valued at \$99,459. Now I think it is very praiseworthy of our friends in the different Provinces to come here for the purpose of attending this convention, and to discuss matters relating to the growing of fruit and the production of butter and cheese that will command the home market and enable us to export to the English and other markets abroad. At the Centennial Exhibition in Philadelphia I believe that our fruit was very highly spoken of and appreciated, not only by the Americans, but by the people who came from other countries. The fruit display from Canada at the Colonial and Indian Exhibition, some three or four years ago, astonished not only the people of Great Britain, but the people of the world. Ours had been looked upon as a cold country, where fruit could not be produced, and when we sent them over our fine display of apples, pears, peaches, plums and grapes, the old world was astonished. There are gentlemen here who had charge of that display, and who can endorse what I have said in relation to the Colonial and Indian Exhibition. I have met persons who have emigrated to this country during the last year or two, who told me they would not have come but for the information which the magnificent display of fruit and other products gave them. They had not believed, up to that time, that this country could produce such fruit. There is, unhappily, an impression in the minds of many persons in Great Britain that we cannot produce

fruit here to advantage, and this Association may be able to do a great deal towards removing that mistaken view. You may be able to get such a large market and excellent reputation for our food products as to bring hundreds and thousands of persons here who do not know what the country is capable of producing. (Applause). For this reason I am glad to see so many gentlemen here who are connected with the business of shipping our produce. We have a great variety of climatic conditions in the Dominion. In the far East, in Prince Edward Island, I believe excellent fruit can be produced; and we know there are no finer apples than those from the Annapolis valley. We also know what is grown along the St. Lawrence—the famous Pomme Grise. No apples can excel those in the Niagara district and along the shores of Lake Erie. There is perhaps no finer country in the world for producing fruit than in Ontario. We have, indeed, all those conditions which may be regarded as favorable for the production of fine fruit. On our Experimental Farms we are endeavoring to see what can be done for Manitoba, the North-West Territories and also British Columbia. We hope to succeed in introducing hardy varieties of fruit in the colder climate of the Dominion—fruits that will, to a certain extent, meet the requirements of the people who are now settled there or who may in the future make that part of the Dominion their home. It is possible that we may not be successful; but we are trying, and if there are fruit trees grown in any part of the world that will succeed in that section we are bound to experiment with them and have them. The same is also true of British Columbia. I suppose there is no finer country than British Columbia, so far as the production of fruit is concerned. Prof. Saunders, who has been visiting that section of the Dominion, thinks there is no finer climate in the world for the growing of fine fruit. So that, taking it all together, I think we are able to compete with any other country in the world in the growing of fruits of fine quality. Apples and peaches and pears and plums and all the different varieties of small fruits, may be grown here to perfection, and I think we can grow them not only for our own wants, but we should be able to export considerably larger quantities than we now export to the British markets. A great deal depends upon those gentlemen who have charge of the railways and steamboats. I had an opportunity last year of observing the character of our steamship service. We had something like 1,000 vessels pass up the St. Lawrence last year. They are increasing every year, and with the prospect of having a faster line of steamers plying across the Atlantic, and with our excellent railway facilities, I do not see why we should not be able to successfully compete with any other country, so far as our fruit and dairy products are concerned. I hope our friends in Montreal, as well as those who are connected with the railways, will consider that it is most important for their interests and for the interests of the country, that they should cut down their rates as low as they possibly can. Because while we may be exporting millions of dollars worth of these at present, by opening up better trade communications with Great Britain, we may be able to send twenty millions or forty millions of dollars worth in a few years. There is practically no limit to the market in Great Britain for fruit and dairy products such as we can produce. I hope these gentlemen will consider that question, as it is important for the general trade interests of the country. It is important for you who are fruit men, and it is most important for you who are dairymen. It is of the greatest importance that you should be able to see your way to getting your products to the market at as cheap rates as those which are available to shippers in other countries. We certainly have the climate for producing these articles to a degree of perfection not enjoyed by any other nation. There is nothing to prevent our taking the lead in the English market. The market is there for us, and I am sure that there is a strong disposition to assist our commercial interests, and that up to the present time our products have been more highly appreciated than those of foreign countries (Hear, hear.) The question of fruit growing in its relationship to agriculture was brought before Parliament last year, and your demands were considered and acceded to. You asked that we should give a grant for the purpose of defraying the expenses in connection with this convention. The Govern-

ment were also requested to give a grant for the dairy convention, and when I brought that request forward it was cheerfully granted. It is also true that these appropriations were cheerfully voted by the House. You also asked that we should appoint a Dairy Commissioner, and in the appointment that we have made I think you will say that we have selected a gentleman who will in every respect fill the position creditably and with satisfaction to yourselves. (Applause.) We have been careful in establishing our Experimental Farms to see that we got the best sites available, that we got the most suitable land, and that we constructed buildings that would fully meet the requirements of such institutions. We have also selected the very best men we could find, and put them at the head of these respective farms. I am sure there are no men who work harder or are more desirous of meeting the wishes of the farmers and furthering their interests than the gentlemen who compose the staff of our Experimental Farm system. (Applause.) Having done all this, I am sure that the result will be satisfactory to you and to the whole country. There is one point which I might call your attention to now, and although I have mentioned it before at public meetings, I hope you will excuse me if I mention it again. I think you ought to urge upon your educational authorities in each province the propriety and advisability of having agriculture taught in our public schools. (Hear, hear.) The most successful way of teaching any subject is to begin with the child. I remember a great many years ago, when I was living with my father on a farm, that I heard nothing about the raising of cattle or the principles which lie at the bottom of agriculture, in the school. It seems to me, that if the teachers in our schools were obliged to pass an examination in agriculture before being qualified, they would be able to give very useful instruction to the children in their charge. If the teacher would appoint one day in the week, or oftener if you like, and have diagrams on the wall and other forms of illustrations, which would deal with animal life and forest trees and fruit and other objects, he would be able to give valuable information to his pupils. It would give the children an interest in agriculture. An impression would be made on the mind, and these children, many of whom, in the very nature of things, must become the farmers and the farmers' wives in the future, would start with an advantage in life. The boys and girls after they come home from school will talk over these matters with their fathers and their mothers. They read about agricultural matters and talk about them, and if in after life they should happen to be lawyers or doctors it will be a pleasure to them to know something about farming—the chief industry of this country. We have over a million of children in the Dominion between the ages of five and fifteen years going to school, and if they had a lesson once a week in agriculture how soon would we make our Canadian people the most intelligent agriculturists in the world. (Applause.) I do hope that you will impress upon the educational authorities of your different Provinces the need for having text books on agriculture provided in all the schools, and urge them to see that each teacher is fully qualified to impart instruction on this important subject. Having said so much on a subject which may seem irrelevant, I desire now to return to the consideration of our export and import trade. I have recently looked over the figures of imports of certain articles from the United States into Canada during the year 1889, which, I think we could very well have produced ourselves. I observe that during last year we imported from the United States 43,255 sheep, valued at \$81,863; and we also imported 174,944 lbs. of mutton valued at \$13,555. It does seem to me that there should be no necessity for importing sheep and mutton into Canada. I also find that we imported from the same source for home consumption 3,907 swine, valued at \$37,002. I find also the following list of articles:—Pork, 15,205,972 lbs. valued at \$992,423; bacon, hams, shoulders and sides, 3,652,758 lbs. valued at \$335,159; beef, 3,795,105 lbs. valued at \$160,624; lard, 8,287,761 valued at \$635,889; tallow, 615,962 lbs. valued at \$35,061; butter, 492,482 lbs. valued at \$77,228; cheese, 55,497 lbs. valued at \$11,209; wheat, 15,121 bush. valued at \$12,623; barley, 6,581 bush. valued at \$3,263; oats, 62,817 bush. valued at \$21,540; pease, 7,996 bush. valued at \$8,567; corn, 2,894,838 bush. valued at \$1,266,910;

cornmeal, 153,023 bbls. valued at \$368,495; flour, 257,391 bbls. valued at \$993,227; potatoes, 43,106 bush. valued at \$24,469.

I regretted to notice that during the year there was imported, cheese to the amount of 7,032,272 lbs. Of course, there was only 55,497 lbs. of that entered for home consumption; but that American cheese must have gone to the old country by way of the St. Lawrence and perhaps to the detriment of the Canadian product. (Hear, hear.) Our cheese stands A-1 in the English market, and the Americans would like nothing better than to palm off their cheese as the Canadian article. We ought to prevent that. The corn to which I have referred was chiefly imported and almost wholly used by the distillers.

I propose now to give you some statistics with regard to articles that are imported into Great Britain and in which we could be able to compete with any country in the world. I shall have to refer wholly to the year 1888, for the reason that I have not yet been able to get the figures for 1889. It seems that we sent 155 horses to the British market in 1888; yet they imported altogether 11,500 horses. There is no country in the world better able to raise good horses than we are, and we should see that they are of the very best kind, so that our reputation may improve. We also sent in that year 60,977 head of cattle and the Americans sent 143,495 head. We have an advantage of 1 cent per pound in sending cattle to the British market. The American cattle are scheduled. American cattle arriving in England are obliged to be slaughtered immediately on being landed. Our cattle are not so treated. We are able to send our cattle through the country to be slaughtered wherever it is thought proper. This advantage is estimated to be worth 1 cent per pound. These cattle, so it has been reported to me by Dr. McEachren, our veterinary in Montreal, averaged 1,300 lbs. One cent per pound on that, you will see, gives us an advantage of millions of dollars during the course of years, as against the Americans. If there is anyone in particular who deserves credit for the position which our cattle trade occupies in this respect it is the High Commissioner, who, when an endeavor was made to schedule our cattle, succeeded in saving them. I see further that there was imported into the United Kingdom in 1888, sheep to the number of 956,210. We sent them 45,339. They imported 25,417,616 lbs. of salted beef, and we sent them 1,318,576 lbs. of fresh beef they bought abroad 93,705,808 lbs., of which we sent them but 10,416 lbs. Of canned meats they imported 60,739,616 lbs., of which we furnished 7,414,848 lbs. Of all other meats they bought 6,383,776 lbs. and we sent them 54,320 lbs. They imported 54,807,546 lbs. of pork, of which but 367,584 lbs. came from Canada. They imported 402,551,744 lbs. of bacon and hams, of which only 17,649,296 lbs. were furnished by Canada. Their importations of mutton amounted to 110,657,120 lbs., and we sent them the nominal quantity of 3,024 lbs. Of tallow and stearine they purchased abroad 128,343,936 lbs., of which we sent them 532,784 lbs. The butter imported during that year amounted to 187,200,496 lbs., of which we sent them the comparatively small quantity of 1,042,384 lbs. They imported 214,772,992 lbs. of cheese, of which 74,853,520 lbs. came from Canada. Lard was imported to the extent of 99,124,032 lbs., and we sent them 4,103,344 lbs. They bought 3,484,990 bush. of onions and we sent none; nor did we send them any of the 4,449,772 bush. of potatoes they imported. Of apples they imported 3,796,592 bush., which we supplied to the extent of 875,863 bush. They imported 93,899,390 doz. eggs, and we sent them but 1,710 doz. They purchased abroad 61,832,848 bush. of oats and we supplied 84,293. They imported 4,544,168 bush. of pease, of which we sent them 867,703 bush. They imported 106,887,878 bush. of wheat, and we sent 2,033,963 bush. They purchased from various countries, 49,712,483 bush. of barley, of which we sent none. They imported 9,469,847 bbls. of flour, and we sent them 439,631 bbls. We sent them no flax, although they imported 178,525,088 lbs. dressed and undressed, as well as 20,270,720 lbs. of flax-seed. Now, I think that all these articles I have mentioned are such as we should be able to export to the British market, and in the sale of them compete successfully with any other country. There is not an article, taking the horses, cattle, sheep, swine, meats, tallow, butter, cheese, lard, onions, potatoes, apples, eggs,

oats, pease, barley, wheat, flour and flax, which we do not produce; but we cannot expect to get a good place in the English market unless we send articles of fine quality. (Hear, hear.) If we want to get that market for our butter, we must produce as good butter as any other country. It has been stated here, what is quite true, that some years ago Denmark produced very inferior butter; whereas now the country leads in the British market. What Denmark has done I am sure Canada can do. (Hear, hear.) Canadians will not be content to take a back seat. We have a climate equal to that of any other country, and we have men equal to the men of any other country to take hold of this industry and see that our dairy produce is made of the very finest quality. It may be that we shall want soon to send barley there. That is an important matter for our farmers. The Americans have purchased large quantities of barley from us, but we find that the demand from that source is falling off. They are producing larger quantities of it than a few years ago, and are using substitutes as well. We have grown six-rowed barley in the country heretofore, which is not the variety desired by the British maltster. We have, however, sent our six-rowed barley to England. I had a bag of No. 1 six-rowed barley sent to England two years ago, and asked that it be submitted to the maltsters and brewers, and brewers chemists. It was pronounced fair barley, but it was said that it would not compare favorably with the two-rowed variety which they used for malting. Russia sends some 17,000,000 bush, to England; but their barley is of an inferior quality, and is used very largely for grinding and feeding purposes. If you want to get a first-class price for barley you must raise a first-class article. Attention must be given to the purity of the seed, and to the cultivation and condition of the soil in which it is planted. It is somewhat astonishing that you cannot get more than 50 to 52 cents per bushel for No. 1, malting barley in Toronto to-day. If, however, you had No. 1 two-rowed barley, of the class that is used in England and which we can produce, it would be worth a good deal more. I shall be pleased to show any of you at my office a sample of two-rowed barley that was grown at Medicine Hat, which is equal, if not superior, to the barley we imported from the old country. The impression has gone abroad that grain of that character could not be successfully grown in that district; but this sample of barley gives a contradiction to that idea. If we could raise such barley generally, we could get the highest prices paid in the English market. At the prevailing price there for No. 1 barley, reckoning it at the rate of our bushel, it would be worth \$1.17. It could probably be carried from Toronto and delivered in England for 17 cents per bushel, so that the price realized would be the same as \$1.00 at Toronto. That is one of the prospects before our farmers in Canada. Denmark produced very inferior barley a few years ago. They appointed a Commission to look into the matter. They went to England and other countries, and the result of these special efforts is, that whereas they were then raising about half a million bushels per year they now raise something like 16,000,000 bushels every year. The Danish barley stands very high in the English market. It is the same with everything. If we want to succeed as agriculturists in Canada, we must make up our minds that we will have everything of the very best. As stated here by His Excellency, it costs no more to take a pound of good butter to the English market than a pound of bad butter. It is a most important thing that, without delay, we should seek to give all our products the very highest quality. We have men of intelligence, and facilities equal to those of any other country; but competition is keen. Denmark, Normandy, Germany, Russia and France are pushing their trade most vigorously, and they have men of intelligence and enterprise as well. They are all catering for those 40,000,000 people of the British Isles, and that is the market we also are aiming to occupy. Those who make the best article will naturally get the best price. What has been accomplished with our cheese may be accomplished with our butter. I feel sure that if the people are appealed to and are properly instructed—and I trust the time is not far distant when the teaching will begin with the children—we shall have our products of the finest quality. I fail to understand the people of Canada, I fail to understand the gentlemen before me, I fail to understand the spirit of our young men and young

women, and farmer's wives, if they are not now determined that we shall not be behind any country in agricultural products. (Applause.) I can only say to you that the Government and Parliament have always responded cheerfully to any request made in the interest of our farmers. I hope this Dominion Dairymen's Association will continue its useful operation and that men from all parts of the country will meet for the exchange of ideas at its conventions. With this Federal Association and the Provincial Associations actively disseminating information, it will not be long before Canada will be able to stand against all countries in all that appertains to her dairy and fruit interests. (Applause.)

MILK INSPECTION.

Mr. J. A. RUDDICK, Lancaster, Ont.—It is not my intention in this paper to deal with the different methods of actual testing of milk, but rather to show, as briefly as possible, in my humble way, what has been done in the direction of preventing the adulteration and skimming of milk supplied to cheese and butter factories.

I shall be obliged to confine my remarks chiefly to the work in Ontario, as I cannot speak with authority on the subject where it refers to the other Provinces. I think I am safe in saying, however, that Ontario is the only Province that has made any real or substantial progress in this matter. Therefore, what may be said about the work in that part of the Dominion may fairly be taken as representing the whole.

Previous to the time when the plan was adopted of employing inspectors, whose special duty it would be to look after this thing, very little progress had been made along the line of thorough and systematic testing of milk. The cheese or butter-maker is not in a position to carry it out successfully, for various reasons. In the first place, there are a great many who do not understand the proper use of the instruments, even if they are provided with a set, and it very often happens that they are not. In the second place, the maker does not have the requisite time at his disposal for attending to the testing and his other work at the same time. The testing has to be done during the time that the milk is being delivered at the factory, and, as this is about the busiest part of the day, it is impractical for the maker to test milk at all, to say nothing of the question of doing it properly.

There is another thing which tends to render the testing very unsatisfactory, when it is done by the maker or anyone else connected with the factory, and that is the fact that any parties who may be caught tampering with their milk are very likely to be personal friends, whom he dislikes to offend, and besides there is the constant fear that every cheese or butter manufacturer has of his patrons leaving and going to a neighboring factory upon the slightest provocation.

Certainly no manufacturer should hesitate in a matter of this kind, for his duty is plain. I am pleased to say that there are a great many men running factories who are doing all they can to make their patrons deliver the milk in its best possible condition.

To your President, Mr. Macpherson, is due the credit of inaugurating the present system of inspection in the year 1881. Other combinations have since followed his example. In the year 1885, the directors of the Eastern Ontario Dairymen's Association resolved that the men then employed as instructors in cheese-making should also test milk as a part of their duty. The Western Association commenced on the same line in 1885, sending out four men on the road for this purpose, instead of two, as formerly.

These eight men last year visited 285 factories, which, added to the combination factories where inspectors are employed, made a total of 360, or less than one half the factories in the Province.

I was appointed one of the inspectors for Eastern Ontario last year. The milk had never been tested thoroughly at several of the factories I visited. I found 8 per cent. of the samples secured at these factories to have been tampered with, while in

those factories where the inspector had been a visitor before, the samples showing either skimming or watering amounted only to 2 per cent.

One of the inspectors in Western Ontario reports that at the time of his first visit around last year he found 4.08 per cent. of the milk watered or skimmed, 2.71 per cent. at the second visit, and 1.83 per cent. when making the third round. The reports of the other inspectors agree so nearly with the foregoing as to be practically the same.

For seven years previous to the time when I was appointed instructor and inspector by the Eastern Ontario Dairyman's Association, I held a similar position with Mr. Macpherson in connection with his combination of cheese factories. My experience during that time was very similar to what has been already stated, inasmuch as it was very rarely indeed that I did not find considerable adulteration or skimming upon the occasion of a first visit to a factory. I remember two extreme cases, which I give to show to what extent the pernicious practice is sometimes carried. At one of the factories in question there were 50 patrons, and 18 of them were sending milk either skimmed or watered; in the other case there were 32 patrons, and 11 were following the same practice. These men were all promptly dealt with, and better milk could not be found than that which they afterwards sent.

Mr. Soper, of the Eager Combination, writes me that they do not find nearly as much to complain of as he did a few years ago. He has inspected the milk closely, and punished those caught doing wrong, with the result that last year he found only half of 1 per cent. of the samples he tested that were adulterated or skimmed.

Mr. Macpherson's men report a similar state of affairs in his combination—in fact, they say that in a great many of the factories they never find anything wrong just now. Yet they are just as vigilant as ever in their work of inspection. This is quite necessary, for I have not the slightest doubt that if it became known among the patrons that there would be no testing in the future the old order of things would prevail again in a very short time. It is nothing but the fear of being found out and punished that prevents such people from following their inclinations.

I would not like to give the impression that many of the dairymen of the country belong to the class just described, for, be it to their credit, there is a vast majority of them up in arms in this matter, and they are crying out for justice against those neighbors who are robbing them in this way. As may be supposed, milk inspection is very popular among this, the better class of farmers.

It will be noticed that the work of inspection in the combinations seems to have been more effective than that done by the Association men. Now, I don't want any one to think for a moment that I wish to cast any reflection on the latter, for I believe they have all been very diligent and faithful in discharge of their duties. But the reason for the difference in results may be safely attributed to a circumstance entirely out of their control, viz.: The patrons of the combination factories know for a certainty that the inspector will visit their factory at least once or twice during the season, while in the other case the patrons do not know anything about the inspector, and even if they do, they are not sure he will visit their factory, so they are prepared to take greater chances.

I argue from this that if there were inspectors enough to cover all the ground, and take in all the factories, once or twice during the season, there would be very little trouble.

The patrons then would be expecting the inspector all the time, just as they are in the combinations.

Besides, if this were the case the sections for each inspector would of necessity be much smaller than they now are; consequently, considerable time would be saved, much less travelling, and the present expense in connection with the work very materially reduced for doing the same amount of work.

To illustrate: The section over which I worked last year embraced nearly the whole of seven counties, lying in the most eastern part of the Province.

There are over 200 factories included in this territory, and, as I said before, I was only able to visit 52 factories in my capacity of inspector.

These 52 factories are scattered all over the whole section, and it will readily be seen that there would be long distances to travel between factories very often.

To make this matter more clear, I might explain that the Association, owing to lack of funds, have been obliged to charge a certain fee for the services of the inspector. Therefore, it is obvious that only those factories making application for help are visited. If these applications were all filed at the beginning of the season, every one could arrange his trips to better advantage; but as it is they do not usually apply until they have evidence that something is wrong, and when they do come to this conclusion the inspector cannot get there too quick. The result of this is, that the inspector is obliged to run here and there all over his section and lose valuable time. The factories being so far apart, I had to travel a great deal by railroad, and as every traveller knows, they do not always suit his convenience in the matter of time, &c.

There is another thing which retards the present inspector in his work. It must not be forgotten that he is also an instructor in cheese-making, and in order that the best results may accrue from his work it is necessary that he should remain at the factory for the whole day, or at least until the work is done. Thus it very often happens that when he is ready to depart he finds himself miles away from his next appointment, and no means at hand for getting there until some time during the next day, and of course too late to test milk.

If a man had all the factories in a certain section to look after he could easily get from one to another, because they would never be more than five or six miles apart, as a rule.

I hope to see the day when the Government will take this matter up and put on enough men to cover the whole ground in sections, and visit every factory at least one or twice during the working season. An inspector of this kind, who would be a Government official, could accomplish more than any private individual, because the very authority with which he would be clothed would be of itself sufficient to strike terror to the hearts of evil-doers.

We have Government Inspectors of Weights and Measures and various other officers of this kind. Why not have Government Milk Inspectors, if by such a course this great dairy industry will be fostered?

In conclusion, I beg leave to say that I have endeavored to lay before this Convention a few facts in connection with the important subject of milk inspection, with a hope that they may be useful to the Association, should it be deemed advisable to urge the Government to take up this work.

BUTTER-MAKING.

BY PROF. JAS. W. ROBERTSON.

The time for the discussion of butter-making at the convention was so short that Prof. Robertson agreed to prepare a paper on the subject, to be printed in the annual report. The paper has been issued as Bulletin No. 3, from the office of the Dairy Commissioner, Central Experimental Farm, and is as follows:—

BUTTER-MAKING.

BY JAS. W. ROBERTSON, *Dairy Commissioner.*

FAT GLOBULES IN MILK.

While her milk is being elaborated by a cow, the ends of the cells which line the inside of the milk-ducts and vesicles in her udder seem to enlarge. Each one

forms a small globule, and when that is perfected it drops off into the serum of the milk. Each bud or globule, so formed, is a globule of fat; from them is made all the butter from cows' milk. These tiny buds of fat seem to grow on the surface of the cells, partly by the destruction of the cells, and partly by conversion of some of the substance of the blood into fat. They trickle down in and with the milk, and are held in suspension, not in solution, as are the other solids in it. They mostly come during the latter part of the milking, probably because they do not move so quickly or easily as the liquid part of the milk. The fore-milk is thinner than the strippings, because the globules of fat do not free themselves from the internal linings of the milk ducts so quickly as the liquid of the milk. If one finds, sending milk to a cheese factory, a man who is of so modest and retiring a disposition that he will not keep at home for table use a quantity of the average milk given by the cow, but always and only the last quart, his modesty should not be respected or trusted too far; such modesty may not be found compatible with honesty. The condition of the cow's blood and her nervous system very largely affect the quality of the milk she gives. Bad feeding, foul water, or the absence of salt, will induce in the cow a condition in which she will not yield good milk; a similar condition, with its consequent effects, may be caused by neglect, exposure, abuse or excitement. A cow has a peculiarly delicate organization, and must be handled with kindness, and any man who abuses a cow beats out the profit, for she will pay him back by giving less milk, and that of a poorer quality. The globules of fat, before mentioned, are so numerous that in a thimbleful of milk there will be found millions of them. It is estimated that there are at least one thousand millions of them in every cubic inch of milk. From these specks of fat the butter is made.

CREAM SEPARATION.

To get them out of the milk is the task of the butter-maker; they are too small to be strained out with the finest sieve; fifteen hundred of the largest of them placed side by side, like a row of marbles, would not measure more than one inch. If milk be left at rest they will rise to the top, because they are lighter than the liquid in which they float. The heavier parts of the milk are drawn down by the force of gravitation, and as the serum of the milk, composed of water, caseine, sugar, albumen, &c., moves downward, it displaces the cream globules and forces them towards the top. There are two methods of separating these fat globules from the milk—a natural method and a mechanical method. In the natural method the power of gravitation is used to pull the heavier portion of the milk down, with the effect that the lighter part, the fat globules, are pushed upward. In the mechanical method, centrifugal force is applied to attain a like result. When a quantity of milk is put into a rapidly revolving vessel or cylinder, the heavier parts will be forced outwards against its resisting side or inner surface with sufficient pressure to push the lighter particles, the globules of fat, towards the centre of revolution. In that way the water, caseine, albumen and the other heavier constituents of milk find their way to the outside of the quantity being treated in a revolving cylinder, while the globules of fat are collected in concentric form on the inside surface of the quantity being treated. This is the law, that the cream, mainly composed of fat globules, travels in a direction opposite to that of the force exerted upon the milk, whether the force be centrifugal or centripetal.

EFFECT OF TEMPERATURE.

If ordinary milk in a deep-setting pail be left at a temperature of 60° Fahr. it would take these small specks from three to six days to get to the top at the rate at which they would move. They can be helped to move faster. The milk at a temperature between 90° and 98° is slightly enlarged in bulk, and by putting it into deep-setting pails at a higher temperature (90° to 98°) the advantage of a falling temperature from above 90° to 40° or 45° may be gained. That treatment will expedite and facilitate the upward movement of the globules of fat. The rapid cooling

of the milk is also believed to prevent the formation of a delicate mesh of lacto-fibrine in the milk, which would hinder the globules from rising freely.

CREAM.

The cream itself is only that part of the milk into which the globules of fat have been gathered in large numbers. Cream has no regular or constant per cent. of fat; the range is from 8 per cent. to 75 per cent. In one hundred pounds of cream there may be only eight pounds of butter, or there may be seventy-five pounds, according to its quality of richness. The globules of fat have no skin or organic coverings distinct in constitution from their own substance. Like drops of quicksilver that have separated from each other, they have no pellicle. But sometimes the serum of the milk becomes so viscous that a quantity of it will adhere to the surface of the globules, and, like a coating of gum, will prevent their movement upwards when the milk is set, or their movement inward when the milk is treated in a centrifugal machine. If a quart of warm water be stirred into every pailful of milk when it reaches the dairy room from the stable, the separation of the cream will be facilitated. The water may be at a temperature anywhere between 150° and 180° Fahr., and should be warm enough to raise the temperature of the milk to above 90°.

CHURNING.

In the winter season especially, difficulty is experienced sometimes in churning the cream. The addition of water at a temperature of 70° to the cream, while it is still sweet, to the extent of 25 per cent. of its bulk, will cause it to yield its butter in less time and more completely. The water should be added before the cream is sour and at least 20 hours before the churning is commenced. The next treatment required is the development of lactic acid. If a quantity of *sweet cream* be churned and an equal quantity of *sour cream* of the same quality as to composition be also churned, there will be obtained on the average from the sweet cream only 77 pounds of butter out of every possible 100 pounds, while there may be obtained from the sour cream 97 pounds of every possible 100 pounds. There are thousands of pounds of butter lost in the Dominion annually from the churning of the two qualities of cream in the same churn at one churning. The only safe plan is to have all the cream for each churning thoroughly mixed from twelve to twenty hours before the operation begins. It should be kept at a temperature of from 60° to 70° Fahr., according to the season of the year, to permit it to become sour. The higher temperature is required during the winter season and for cream from centrifugal separators during the summer season also. The churning is performed for the purpose of causing the globules of fat to strike on to each other and by impaction to unite. If two globules strike each other at a suitable temperature they will stick together; when large numbers of them unite in that way it is said that the butter has "come," and the particles may be washed and removed. All that is required in the churning of cream is that the serum or medium shall be properly treated,—(1) by the addition of water if required, as already described, (2) by the development of acid, (3) by the temperature being kept at from 57° to 59° in the summer time or from 62° to 66° in winter. It is imperative that a thermometer should be used to reveal the temperature.

GRANULAR BUTTER.

When the butter particles are half as large as clover seed, 10 per cent. of cold water may be added to the contents of the churn. After they are gathered to be half as large as wheat grains, the churning may be stopped. The buttermilk may be removed and replaced by pure water at a temperature of from 50° to 55° Fahr. It may thus be washed in the granular state. When the water runs off free from a milky appearance the granular butter should be left in the churn for half an hour to drain.

SALTING.

It may then be salted in the churn or removed to the butter worker for that purpose. Pure salt of fine velvety grain only should be used. The rate of salting should be regulated to suit the taste and requirements of the customers. From three-quarters of an ounce to one ounce per pound will be found acceptable to most of those who purchase Canadian butter. The preparation for the market should be made with a view to giving the butter an attractive appearance, whether it be packed in tubs or firkins, or finished in prints or rolls.

At the risk of repeating a little of what has been already presented, I have gathered into paragraphs some further hints and advice, which may be helpful in attaining the end that is being sought, viz, the improvement of butter and the butter trade.

PREPARATION OF MILK FOR CREAMERIES.

1. See that the cows have an abundant supply of good, wholesome feed. Supplement the grass with bran or grain. Corn and pease make firm butter. If the grass be dry or scarce furnish green fodder. The quality of the food determines to some extent the quality of the fat globules in the milk. Fine butter is mostly composed of these. Green fodder is fed with better effect on the quality of the butter after being wilted for a day or two.

2. See that the cows have a liberal supply of cold water. As well might a cook expect to make good palatable porridge out of musty oatmeal and stagnant water as to get pure, sweet-flavored, wholesome milk out of musty feed and foul drink consumed by a cow.

3. See that the cows have access to salt every day. They know best when to help themselves.

4. Let the cows be saved from annoyance and worry. Any harsh treatment that excites a cow lessens the quantity and injures the quality of her yield.

5. Where practicable, let the cows be milked regularly as to time by the same person.

6. The udders should be well brushed and then rubbed with a coarse towel before milking.

7. All milk should be carefully strained immediately after the milking is completed.

8. Thorough airing of the milk for a few minutes by dipping, pouring or stirring will improve the flavor of the butter.

9. When set for the rising of the cream, milk should be at a temperature above 90° Fahr.

10. When deep-setting pails are used the water in the tank should be kept below or as near 45° Fahr. as possible.

11. The tank should be shaded from the sun.

12. When a flowing spring is not available, the cooling power of the fresh water may be used more economically if it be carried to the bottom of the tank and the warmed water be caused to run off from the top. If water be scarce the overflow may be carried into a watering-trough for the stock of the farm.

13. Milk cans should be washed in cold or tepid water first, and then rinsed in boiling water before they are exposed to be aired. The addition of a little soda and borax to the hot water will increase its cleansing properties.

QUALITIES OF CREAM.

14. Since managers of creameries have adopted the plan of paying for cream according to its butter-making qualities, some dissatisfaction has been caused among the patrons by the differences which comparisons have made evident. In most cases the trouble arises from an erroneous idea that the richest cream is the best for butter-making and the most profitable to the patron. It is not the patron who supplies the cream which yields the greatest number of ounces of butter per inch

who always obtains the largest returns from the milk which has been set. Milk which has been set in deep pails at a high temperature and has not been cooled below 60° Fahr. will yield a cream very rich in butter-making quality; but there will be a smaller quantity of cream obtained from the milk and a less quantity of butter than where the milk is cooled as low as 45° Fahr. The longer the time cream stands on milk after practically all of it has come to the top the less space will it occupy. As it shrinks in bulk it becomes richer per inch, but the total quantity of cream from the milk will not yield any more butter than it would have made before it became compact by long standing. (A creamery inch of cream is equal to 113 cubic inches, or to 1 inch in depth of a cylindrical vessel 12 inches in diameter.) When the milk is skimmed every 12 hours the cream will not yield as many ounces of butter per inch as when it has been set for 24 hours or longer, but the extra quantity of cream that may be obtained by 12 hours setting in ice water will permit as much butter to be made from the milk as by setting it for a longer period.

15. Skimming should not be delayed longer than 24 hours after the milk is set. Cream should be removed from the milk before it is sour. Its value to a creamery for butter-making depends not alone upon its richness in butter-fat; purity, sweetness and fine flavor are qualities it should possess.

THE OIL-TEST CHURN.

16. The oil-test churn is used to determine the quantity of churnable fat in each supply of every patron's cream. The requirements for its successful use are:—

(a). Careful sampling of the cream, which should be poured at least twice from one vessel to another before the sample is taken for the test tube;

(b). Accurate measuring;

(c). Souring of the cream;—(to ensure a uniform degree of acidity in all the samples of cream they should be warmed to 70° Fahr. and kept at that temperature for 24 hours before they are churned);

(d). Heating of the samples to a temperature of 135° Fahr. after they have been churned;

(e). Subsequent cooling to 65° or 70° Fahr.

(f). Churning, reheating and cooling.

17. In a case where the butter-oil on any sample does not separate to show a clear line of demarcation between itself and the other constituents of the cream, the cooling to 70°, the churning and reheating should be repeated.

BUTTER-MAKING IN DAIRIES AND CREAMERIES.

18. When shallow open pans are used for setting, the surrounding air should be pure; a damp, musty cellar is no fit place for milk.

19. The cream for each churning should all be gathered into one vessel and kept cool and sweet. A good practice for fall and winter is to mix 25 per cent. of pure water with the cream before it has become sour.

20. The whole of it should be well stirred every time fresh cream is added, and half-a-dozen times a day besides.

21. Two days before the churning is to be done, about one quart of cream for every four pailfuls to be churned—(or a quantity equal to 2 per cent.)—should be set apart and kept as warm as 70° Fahr.

22. One day before the churning, a small quantity of cream, called a fermentation starter, which will then be sour, should be added to the quantity which is intended for churning and be mixed therewith.

23. It should afterwards be kept at a temperature of 60° Fahr.

24. During summer the best churning temperature is 57° or 58°; during late fall and winter 62° to 64° are found to be preferable.

25. The agitation of churning should be kept up till the butter comes into particles larger than clover seed.

26. The buttermilk should then be drawn off, and pure water at 55° added in its place.

27. By churning this for a minute or two the butter will be washed free from milk while it is still in a granular state.

28. The milky water may then be drawn off and replaced by a weak brine at the same temperature.

29. After a minute's churning, the butter may be left to drain in the churn for half an hour before it is removed to be pressed and salted.

30. Pure salt of medium fineness and with a body velvety to the touch should be used.

31. Three-quarters of an ounce to the pound will be the right quantity for most markets for immediate consumption, and one ounce to the pound for packed butter.

32. The butter should be kept cool during the working and also during the few hours while it may be left for the salt to dissolve.

33. As soon as the salt is dissolved the butter may be worked the second time to correct any streakiness which the first mixing of salt may have caused.

34. It should then be put up neatly and tastefully with as little crimping and beautifying as feminine fondness for these will permit.

STORE-BUTTER.

I venture to add a few hints to the merchants who take butter in trade at stores in towns and villages. I wish to be understood, not as writing anything that will encourage the practice of packing store-butter, but as trying to contribute a little to the lessening of the losses which will continue to result from that method of handling it.

ROLL-BUTTER.

1. Butter is susceptible to odors or flavors in the surrounding air; it should be kept in a place where the air is pure.

2. If it is to be forwarded to the consumers' market in rolls, it should be handled as little as possible; every handling adds "mussiness" to the appearance and consequently depreciates its value.

3. Each roll should be wrapped in a clean butter-cloth, which has been soaked in a strong brine made up from 16 parts of salt and 1 part each of white sugar, saltpetre and borax, dissolved in water.

PACKING BUTTER.

4. Butter which is being collected for packing may be kept in fair condition in a clean box. A better plan is to have it immersed in pure, strong brine.

5. In assorting it, more regard should be paid to similarity of body and flavor than to likeness in the shade of color.

6. The mixing table, or butter-worker, needs to be kept particularly clean. After it has been thoroughly washed with borax water, it should be scalded and then cooled with cold water.

7. The butter should be worked at a temperature which will prevent it from becoming greasy. The temperature at which it is worked or mixed has more effect on the grain and body of the butter than the movements to which it is subjected can have. The cool atmosphere of early morning and a supply of cold water in which to float the butter will meet the needs of the case.

8. Only such packages as have a clean, neat appearance, should be used.

9. The top of the butter should be covered with a clean butter cloth, prepared in the same way as that for the wrapping of roll-butter.

10. A covering plaster made of wet salt should be put over the cloth to a thickness of half an inch or more.

11. Butter in tubs and kegs should be brined frequently; the salt-covering should not be allowed to become quite dry; a brine similar to that which has been mentioned for use on butter-cloths may be used freely with good results.

Storekeepers and others may obtain copies of this Bulletin for distribution by applying to the Dairy Commissioner, Experimental Farm, Ottawa. They will be furnished free in English and French.

CLOSE OF THE CONVENTION.

Prof. BARNARD suggested that in future the convention should meet during the second week after the opening of Parliament, before the Committees of the House were formed, so that the attendance of many of the members of Parliament might be possible.

The convention adjourned.