REPORT

—OF THE—

DAIRYMEN'S ASSOCIATION

—OF—

BRITISH COLUMBIA

—FROM—

1896-1897.

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

VICTORIA, B. C.:
Printed by RICHARD WOLFENDEN, Printer to the Queen's Most Excellent Majesty.
1897.

REPORT

—OF THE—

DAIRYMEN'S ASSOCIATION

—OF—

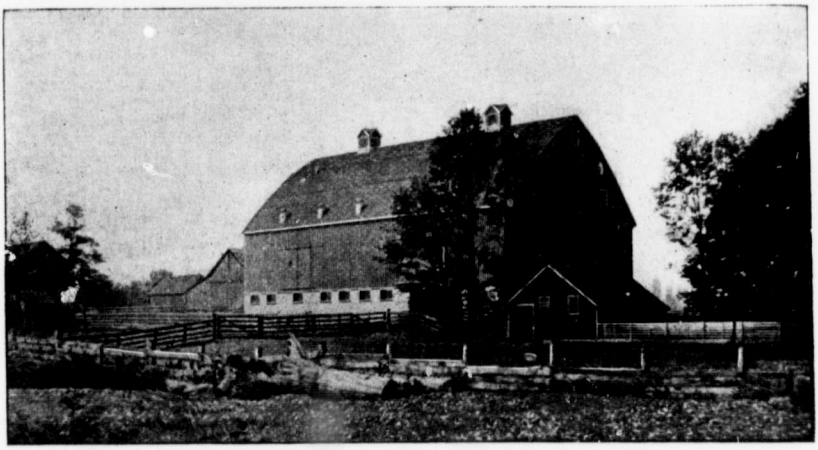
BRITISH COLUMBIA

—FROM—

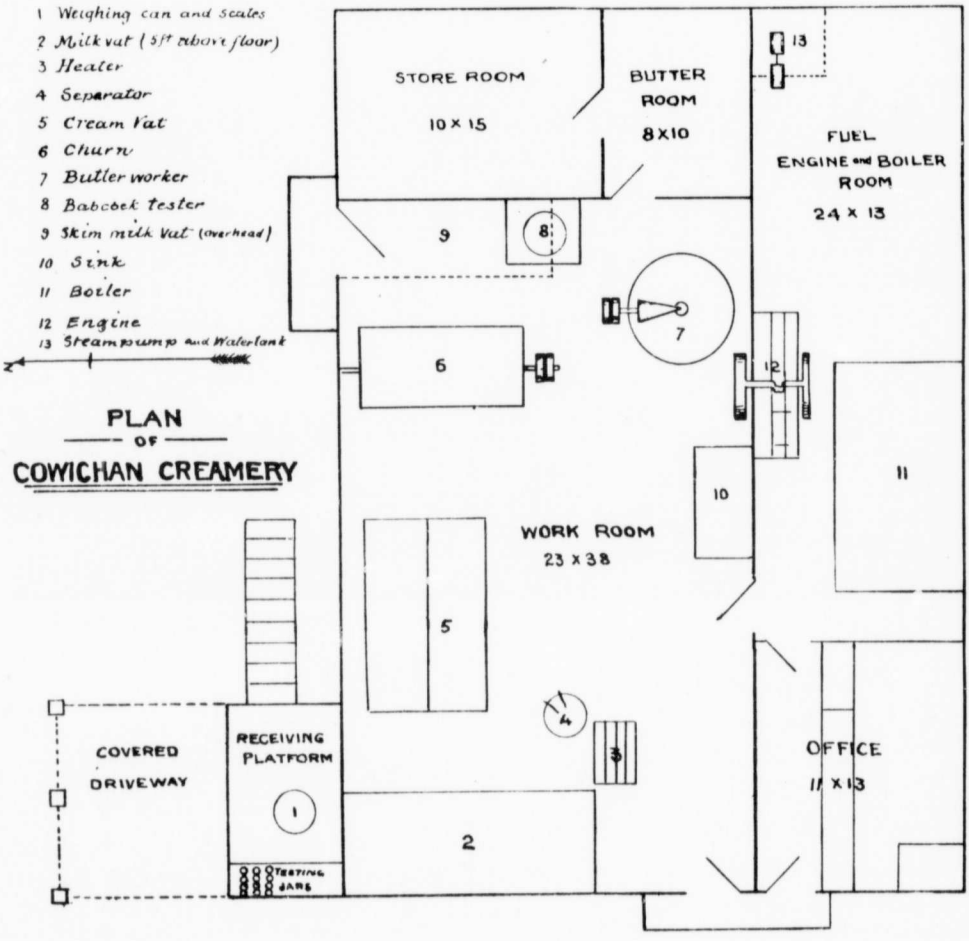
1896-1897.

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

VICTORIA, B. C.:
Printed by RICHARD WOLFENDEN, Printer to the Queen's Most Excellent Majesty.
1897.



BARN OF A. C. WELLS & SON, CHILLIWHACK.


1 Weighing can and scales
2 Milk vat (5ft above floor)
3 Heater
4 Separator
5 Cream Vat
6 Churn
7 Butter worker
8 Babcock tester
9 Skim milk Vat (overhead)
10 Sink
11 Boiler
12 Engine
13 Steam pump and Waterlank
N
STORE ROOM
10 x 15
BUTTER ROOM
8X10
FUEL ENGINE and BOILER ROOM
24 x 13
WORK ROOM
23 x 38
OFFICE
11 x 13
COVERED DRIVEWAY
RECEIVING PLATFORM
TESTING JARS
PLAN
OF
COWICHAN CREAMERY

OFFICERS FOR 1897.

—o—

President.

W. H. Ladner ..... Ladners.

Vice-President.

W. P. Jaynes ..... Duncans.

Secretary-Treasurer.

G. H. Hadwen ..... Duncans.

Directors.

J. T. Collins ..... Salt Spring Island.
W. R. Robb ..... Comox.
H. F. Page ..... Matsqui.
R. Balfour ..... Langley.
Thomas Kidd ..... Lulu Island.
A. C. Wells ..... Chilliwhack.
Thomas Robertson ..... Ladners.
W. H. Hayward ..... Metchosin.
J. W. McGillivray ..... Sumas.
W. Ford ..... Duncans.
Wm. Caswell ..... Saanich.
J. Sluggett ..... South Saanich.
Watson Clarke ..... Victoria.

The Honourable J. H. Turner,
Minister of Agriculture:

DUNCAN, Sept. 4th, 1897.

SIR,—I have the honour to submit the first report of the Dairymen's Association of British Columbia:—

Co-operative Creameries, advantages of.

I have much pleasure in being able to report that the principle of co-operation is gaining ground among the farmers of British Columbia. In the form of Creamery Associations, to which I shall refer later, we have now at least four which are, I think, firmly established and which are doing good work in their separate districts. The advantages which they offer the farmer over the private dairy system are:

1st.—The better quality and greater uniformity of the butter consequent on (*a*) the shortening of the period between milking and churning; (*b*) the use of better and more efficient machinery; (*c*) the use of ice; (*d*) the more accurate and efficient labour:

2nd.—The saving of time and labour both to his household and to himself:

3rd.—The better marketing of the butter.

These three points are fairly well known and acknowledged, but there are others which are not so often brought forward, though affecting the patron of a creamery indirectly, and perhaps, equally important.

Indirect result of Creameries.

In the first place his weekly and monthly statements from the factory placed him in possession of definite information which, in all probability he did not possess before, even approximately. He usually knows how many cows his neighbour has and what are his methods of houseing and feeding them; by looking at the milk sheet at the factory he can compare results.

The creamery is a bond of union in a district when well managed, and the meetings of its patrons should be instructive to all.

The system at once introduces with it more intelligent methods of farming, and improves the herds by degrees through the importation of better stock and the weeding out of the cows that do not pay for their board.

Dairying in British Columbia must be put on a practical business-like footing. Other countries can make money in dairying, selling their products here at prices which our farmers say are too low for them to compete with. Why is this? Is it because the climate of British Columbia is inferior, or her grasses less nutritious than those of California, the North-West Territories or Nova Scotia? Many of our districts are, on the contrary, admirably suited to dairying. I believe our settlers are still thinking of the days when they could not supply the demand for butter at $1 per pound, and they do not really know at what price they can profitably produce butter.

Necessity for good stock.

To begin with, the cows must be good; should be fed for milk with cheap foods; soiling with a succession of green crops (planted with a view to economy in labour) should be practised, and the winter feed of dry hay or hay and roots should be changed to one more succulent and better balanced.

Ensilage.

In favoured parts of the Province corn is grown successfully for ensilage, and in all parts where dairying is carried on clover grows luxuriantly, and will make good ensilage. Clover is greatly to be preferred, as hay to timothy, it forms in fact an almost complete ration in itself.

When the cows are well fed they should be required to come up to a certain standard of production, and with the help of the Babcock tester this is easily determined. If these methods are followed, butter can be made here as cheaply as anywhere.

Creameries in B. C.

Although we have not a co-operative creamery in the sense that a patron is required to take stock in proportion to the cattle which he owns, the Delta Creamery at Ladner's, and the Cowichan Creamery at Duncan's, on Vancouver Island, are co-operative in that they are practically owned and entirely managed by the farmers.

Output of Three Creameries.

Statement received from the Edenbank Creamery, Chilliwhack:—

July 5th to December 31st, 1896:—

Pounds of milk received	439,898
" cream received	34,928
" butter made	26,790

Average nett price per lb. paid to patrons, 19.66 cents.

July 5th 1896, to June 30th 1897:—

Pounds of milk received	895,919
" cream received	51,919
" butter made	50,140

Average price per lb. paid to patrons, 20.62 cents.

Output of butter of the Cowichan Creamery:—

8th June to November 22nd, 1896	23,000 lbs.
22nd November 1896, to November 30th, 1897	42,600 "

The Delta Creamery started midsummer 1894. The output of butter for the 14 months previous to February, 1897, was about 60,000 lbs.

A creamery has been recently started at New Westminster, in connection with the market. No separation of milk is as yet done in the building, and only separated cream is taken from the farmers. I understand that the system appears to work very satisfactorily. A creamery has also been established on Salt Spring Island, and one at Vancouver.

That there is an opening for creameries in several other districts of the Province is evident, more particularly, I might mention, Comox and Saanich on the Island; on the Mainland, Langley (where a strong attempt to start one has already been made), and the Lower Fraser, from Agassiz down, should maintain with ease at least four or five creameries.

There is to my knowledge but one cheese-factory in the Province, viz., the one at Chilliwhack.

Cost of a Creamery.

As I am frequently asked for information regarding the establishment, the cost and the equipment of creameries, and the running expenses of the same, I propose to give a description of the Cowichan creamery, which I am more or less familiar with, and being near at hand, I can the more readily obtain the necessary figures.

The capital was fixed at $3,000; the directors have made this sum suffice; nevertheless, as can be seen from the figures quoted, it was not really enough, and of course allowed nothing for working capital. Ten dollar shares were issued and paid for at the rate of 25% every three months, and were taken up by the farmers in the neighbourhood, with the exception of less than $200. (If the farmers could be got to take, say one share for every cow, it would be practically unnecessary to ever pay interest on the shares, as this would only add to the expenses, and they would get the interest by receiving so much more for their butter-fat.) The site being selected, the building was erected by day labour, and the machinery purchased and placed in position. The cost of this was as follows:—

Site and registration	$ 104.46
Lumber	547.93
Machinery (including some $250 freight)	1,626.53
Labour	663.39
Sundries (hardware, painting inside and out, bricks, lime, tiles, &c.)	334.86
Total cost	$3,277.37

Organizing a Creamery. Before organizing a creamery or cheese factory in any district it is necessary to appoint a provisional committee, or some one person who will ascertain how many cows are within a radius of, say 2 to 2½ hours drive (6 or 8 miles). The next thing to find out is whether the owners thereof will guarantee a sufficiency of milk to enable the creamery to keep the working expenses to a reasonable figure.

Up to 200 lbs. of butter per day the working expenses will be, roughly speaking, about $5. This on 200 lbs. will mean 2½ cents per lb., and on an output of 100 lbs. it will be nearly 5 cents. The hauling is, generally speaking, the principal difficulty, and each district will have to work out this problem for themselves.

Condensed milk. For the year ending 30th June, 1896, $116,586 worth of condensed milk was brought into the Province. Surely there is an opening here for a factory. The development of our mining industry has more than doubled the importation of this article within two years, the amount for 1893-94 being $52,254.

The Eastern condensed milk factories can afford to pay some 10 cents per 100 lbs. of milk more than the creameries or cheese factories situated near them.

I strongly recommend our members to look into this very important question.

From figures which I have carefully examined, I will quote the following as a guide to any one interested in this question :—

100 to 120 lbs. of fresh milk, and 18 lbs. of cane sugar, will be required to produce one case of 48 lbs. of condensed milk.

The cost of cans, labels, labelling, filling and sealing the same, coal, labour, and interest per case, at the rate of production of say 50 cases per day, will amount to about 80 cents per case, so that, exclusive of the milk, we may estimate the cost of producing one case at about $1.60 to $1.70.

The capital required is however, considerably more than for the establishmont of a creamery.

I regret to say that previously this association has not taken the position it should have done. With the increased appropriation your Government has been good enough to make, greater opportunity will be afforded to visit the various districts which may require assistance to establish co-operative principles.

Prosecution. During the present year the association prosecuted successfully, under the Criminal Code, an importer of Californian butter, which was labelled and sold as the product of a British Columbia creamery, and the grocers were cautioned and restrained from selling the said butter.

It had been intended to hold a series of meetings this autumn, with the assistance of Mr. C. Marker, of the Dominion staff, but he was unfortunately detained in the North-West, and the meetings had to be postponed. I have received the assurance of Prof. Robertson, however, that two experts will be sent to the Province this winter, and we hope to do some effective work.

Respectfully submitted,

G. H. Hadwen,

Secretary-Treasurer.

DAIRYMEN'S ASSOCIATION OF BRITISH COLUMBIA.

New Westminster, B. C., January 31st, 1896.

Meeting of the Dairymen's Association called to order at 10 a.m., Mr. Thos. Cunningham, President, in the Chair.

Mayor Shiles—On behalf of the City, I extend to you a welcome to Westminster. We wish, in your deliberations, you may be able to devise some means whereby we may be able to get our butter without importing from the foreign markets. In the year 1894, I think it was 2,000,000 lbs. of butter that was imported into British Columbia. That is something that should not be, because I do not think there is a place better adapted for dairying than British Columbia. But, for some reason or other which I have never been able to understand, we have not been able to supply our local markets. I think this is something that needs great consideration. It is too bad that there is so much money going out of this country annually for butter. We import butter from Australia and from California, and if it can be brought here at a profit why can't the farmers make butter here at a good profit? I am sorry that the citizens of New Westminster take so little interest in this thing. It seems to me we do not realize how much we are interested. For my part, I am a lover of butter, but I want good butter. I think this Association should take some steps to try to make the butter-making of this country a success, and I trust you will be able to do so.

Mr. Cunningham—On behalf of the Dairymen's Association, Mr. Mayor, I heartily reciprocate what you have said. Your remarks are practical and to the point, and I hope you will be able to infuse these sentiments into the people of Westminster, for if there is any place in British Columbia that is dependent upon the development of agriculture it is this city. I would not be unmindful of the fact that New Westminster has been very generous in regard to the provision made for agricultural exhibitions, and in the establishment of a successful market, but I hope the policy which has been made so successful will be continued, and that Westminster will have an agricultural development policy, for upon that depends her future prosperity.

Policy of Portland.

I am constantly reminded of the parallel conditions of Westminster and Portland, Oregon. When I first set foot in Oregon in the year 1859, Portland had a population of about 3,000. Now they have a population equal to the white population of British Columbia, and why is that? Portland had a policy. What was it? Development of the agricultural resources of the country. So it will be with Westminster if she keeps to this point—the development of agriculture and the cultivation of the soil.

Mr. G. H. Hadwen, on behalf of the secretary, read the minutes of the last annual meeting, which were adopted.

Mr. Cunningham then delivered his address:—

President's Address.

As president, he was glad to meet the members at the close of an important year in the history of this industry. The previous year had many discouragements. He feared that they had suffered from one scare unduly, as the feeling now prevailed that tuberculosis did not exist in anything like the degree at first indicated. He hoped that they would at this meeting appoint a committee to investigate this matter fully. He believed that at present the dairy stock all round was in the best of health.

Importation of Dairy Produce.

The statistics recently published by the Department of Agriculture regarding the importation of dairy produce were very startling, as it meant the outgoing of a vast sum of ready money for these articles. Considerably over $1,000,000 was sent out of British Columbia for produce which could easily be raised within this district. He thought the faamers had been untrue to themselves and their land in this matter. What they had to consider was how this industry could be improved and developed.

Want of Dairy Experts.

He urged the need of better cows, and he thought the Province should have two experts to assist the farmers in this matter, and have them test the milk and guide farmers in the selection of cows, and otherwise. This would doubtless lead to the fattening of many cows at present in milk, but the price received for well-fed cows would enable the farmers to get useful milkers.

Silos.

He strongly urged the use of the silo. He had succeeded well with different crops in the silo, and no country was better fitted for the adoption of this method. Ensilage was most valuable for daily feed, as has been amply proved by the experiments of Professor Robertson and others. Great praise was due to the former and to his assistants for the work they have done in the Province, and he hoped this Association would give expression as to their appreciation of this work.

The Association was not in a very good position financially, as they had only a grant of $250 from the Government, and he suggested that a strong representation be made to the Government to obtain a grant at least equal to that received by the Fruit-Growers' Association, viz.: $1,000. He sincerely hoped that they would be successful in this and that the Association would be able to do really good and useful work.

On the motion of the secretary, Mr. Macgowan, the address was referred to a committee consisting of Messrs. A. C. Wells, L. Guichon, and W. H. Lee, for consideration and report.

The financial statement was read by the treasurer, and Messrs. Kipp and Hadwen were appointed to audit the statement and report.

Dairy Marketing, by C. C. Eldridge.

I am pleased to be with you. I am sorry that there are not more here to represent the dairy industry, still I suppose it is a fair representation of the dairy interests of this Province at the present time, but I think if every one of you had the enthusiasm which your president has in this industry, in a few years you will fill this room with members of the Association. I was very much pleased with the papers and discussions which were carried on here yesterday in connection with the Fruit-Growers, and although I do not know very much about fruit-growing, I have learned enough to know it is not only physical energies that are needed but mental—perhaps more mental than physical—and I think that any man with a thoughtful head could interest himself as much in it as he could in Greek and Latin.

With regard to the co-operation that was discussed yesterday, while I am not an advocate of co-operation, still I do not see any other way for British Columbia fruit-growers to get their fruit to market. But I think that when the products become known in the markets, the agents will come on to the ground where the fruit is grown and produced, and purchase it direct from the farmers or from their central point. Take for instance the cheese industry in the Eastern Provinces. I can remember when the only way to get rid of cheese was to consign it to merchants in Liverpool. Now the merchants send their men to Montreal and buy the cheese, which is the proper way.

Mr. Eldridge then read his paper and added the following:—

Skimming Stations.

As some of you are aware, we ourselves have a scheme for a creamery in Vancouver. The scheme is on the Australian plan—that is, shipping the cream to one central point. In Australia they ship the cream as far as 500 miles. In that way the farmer does not have to spend so much money to get started, and the butter is very nice. In Australia, particularly in Victoria, this scheme was started under a bonus of four cents per pound from the Government of what was exported, and it surprised everybody the way it developed. I saw the man who organized the first scheme of that kind, and he said he had 700 farmers bound for cream for five years. In our scheme we do not propose to have anybody bound. My experience in doing business is that you should have a man stand on as good footing as yourself. I propose to say to every man that we will give you so much for your cream for the month, and at any time that is not satisfactory, all he has to do is to quit.

There is another thing I would like to refer to which is of interest to farmers, and that is the dyking of the Fraser River. It is a scheme that the farmers will have to take up themselves, as all business men are so fascinated with the mining that they will pay no attention to it, and it will have to be done through the energy and push of the farmers. We have a right to Provincial aid. We have been building railroads through the mountains more to benefit Eastern Canada than ourselves, until we have farm products to compete with these markets.

B. C.'s Contributions to the Dominion.

Then I think the greatest and most reasonable demand is upon the Dominion Government. British Columbia contributes about $15 per head to the support of the Government through the revenue. We pay that much while the rest of the Dominion only pays about $5. That amounts to about $800,000 a year, and for the time we have been paying it it runs up into millions of dollars. We need not say anything about a moral right for it is a legal right, and I am sure if this was put before them in an energetic manner that they will listen to it and do something towards dyking the Fraser River. The farming depends a great deal upon the dyking of the lands. I was here for three years before I ever went out into the country. After getting tired in the store I began to go out into the country, and I saw some of the most wonderful land I ever saw, and ever since then I have been an enthusiastic advocate of the farming districts of this lower Fraser. The prosperity of Vancouver and Westminster is really at the mercy of the farming lands. At home we used to say if a farmer prospered he would have to sell everything he could, what he couldn't sell to feed to his hogs, and what his hogs wouldn't eat to eat himself. And while farming is a long and laborious job, still there is something fascinating about it.

Proposed bonus to Creameries.

Mr. Hutcherson—With regard to the Government assisting the dairy interests of this Province, it has been reported within the last few days, and it is well known, that there is a bill to come before the House, and that the assistance is in the way of a bonus per pound for the manufacture of butter. I wish to raise my voice against any such bonus. If the dairy interests of this country will not stand on their own feet I say let them go. We wish no bonus from the Government or anybody else for the manufacture of butter, but we do wish assistance from the Government in the way of assisting our farmers. They could do this in one way by reducing the taxation upon creameries and dairy cattle used for creamery purposes. I noticed an item in the financial account of the Delta Creamery Co. I think it was some $7.50 Provincial tax we had to pay. It was a small item to them but it was a large one to us. I think creamery butter-making is going to be a grand success in this country. It will only be a few short years before we will have an over supply of butter in this country. Here is a place where the

Government can step in and give us a Dairy Commissioner to open up new markets for us. I think it would be well for this meeting to pass a strong resolution condemning any bonus on the manufacture of butter. I might say that this matter was discussed this morning in the Guichon Hotel by the Co-operative Association, and I was delegated to come up and bring this matter before this meeting.

Mr. Jaynes, Cowichan—I come from a district which has strongly supported the recommendation that the Government give us a bonus, for this reason—We are somewhat differently placed from what you are here; our farmers are scattered, and are only just starting, and I think it would be an assistance to them if we had some bounty till we could get nicely started, and that is why I supported the resolution. I am sorry that my friend Mr. Hutcherson seems to think that we could get along without it. Probably you could in the Fraser Valley, but I doubt if we could in our district.

Mr. Wells—My views coincide with Mr. Hutcherson's in almost every point. We want to get into our own markets and take care of them. We are being overrun and sending out our good gold for things we ought to purchase here. I think the only thing necessary is for the farmer to be educated into his duty in these matters, and it is almost out of the power of this Convention to do it. We can each one do a little work on our own hook, but to reach the general mass of farmers, who do not even take an agricultural paper, I think there cannot be a better way than for our Government, if the Dominion Government dosn't do it, to send out instructors.

Mr. Higginson—What we want is more cows and more cream, and to do that we must have more land cleared. I would rather support a proposition to clear the land and get the cotton-woods cleared off, get the land dyked, and get more room for raising cows. We cannot raise cows without grass to feed them on.

Fraser River.

Mr. Kipp—I think Mr. Eldridge covered the ground pretty well in his remarks about taking care of the Fraser River. He didn't allude much to the straightening of the channel and deepening it, but no doubt he included it; as for piling up dirt on the banks and not straightening the channel I don't think it will amount to much I think if the Fraser River channel were put through straight, a dyke would not be necessary, at least so large a one. I have been a miner in my day, and I know you can put a great deal more water through a straight sluice than a crooked one, and I think it would work the same way with the river. And I feel, for one, as a Fraser River farmer, that this is the great bugbear on the Fraser River. There are thousands of acres going down to the mouth of the river, and I think the Dominion Government should help us. Never mind about bonuses.

Loans to Farmers in Ireland.

Mr. Lee—I come from a country where the Government advances money to farmers for the purpose of assisting them in draining their land and building their houses. I refer to the Board of Works in Ireland. A man can borrow £100, and at 6½ per cent. per year he can pay principal and interest off in forty years. And if that were done in this country so that the farmers could get enough money to clear a few acres, it would not be a bonus, but it would be a great help to them, and I think if this plan were adopted, that we could have all our land cleared, and that in the very near future.

Mr. Eldridge:—I endorse everything this gentleman has said. I think the scheme that is worked in Ireland is the best that we have, and I think that money laid out in clearing land and improving it is the only help that you can really give a farmer, and it is a thing that ought to be impressed upon the mind of the Provincial Government very forcibly. I know a good many farmers who would be good farmers if they only had a little assistance.

Moved by Mr. Hutcherson, seconded by Mr. Hadwen, and carried, that the Secretary, Mr. Wells, and Mr. Balfour, be a committee to frame a resolution to bring before the Government, condemning any action on their part with regard to the bonusing the manufacture of butter.

Babcock Tester.

Mr. Brown:—With regard to the President's remarks with regard to the Babcock Tester, I would like to say that it is within the reach of everyone. You can get it for $10.00, and there is no reason why every rancher should not have one. I am using one every day, and I think it should be in the hands of every farmer that is handling dairy products to any extent. He can find out from that the value of each cow.

Paper on Cold Storage, by W. H. Lee.

New Westminster.

Thanking you very much for the honour you have conferred on me in asking me to read you a paper on "Cold Storage," especially as regards fruit and vegetables, I must confess at the same time that I accepted your invitation with a certain amount of diffidence.

The system that leaves fruit and other perishable articles in their primitive state with all their special characteristics, is the use of "cold" applied to such an extent that it will not reach actual congelation. Until a few years ago, cold storage was merely the carrying of goods in rooms which were cooled by bodies of ice in upper chambers; the temperature and humidity of such rooms was often very imperfectly controlled, hence decidedly irregular. Mechanical refrigeration has enabled those who have learned their trade to control the temperature and humidity in rooms to a nicety, so that having first ascertained the degree of temperature and percentage of humidity best adapted to the preservation of an article, they can produce and retain those conditions indefinitely.

But be it plainly understood that the cold storage man cannot convert a stale vegetable into a fresh one, or a defective apple into a good one, although many unreflecting people seem to think that he should; he can only supply uniform temperature and humidity. There is no mystery in so-called cold storage. Every fruit-grower in this room knows about what conditions are most favourable to the keeping of his fruit, but he cannot select a day which is just dry enough, and just cold enough, and order such weather to continue so long as suits his pleasure, but he can order the cold storage man to furnish him that kind of weather indefinitely, in lots to suit.

In addition to a fixed temperature, clean, well ventilated, dry rooms, and the exercise of judgment and common sense in handling the goods are universally acknowledged by cold storage men to form the chief attributes to successful cold storage.

After reading his paper Mr. Lee added the following:—I understood my remarks were to be on the effects of cold storage on fruits and vegetables, but cold storage will apply to milk products and butter just the same. In this part of the country it has not been very much used, except just in the form of experiments in the way of keeping fruit, vegetables, etc. We have kept and preserved fish to a considerable extent. We have sent fish 22,000 miles and they have arrived at their destination in a perfect condition. I cannot see why what is done in fish cannot be done in fruit, and in the near future, I think, cold storage will become a valuable addition both to the dairy and fruit-growing industries of this Province. I hope before many years we will see the fruit-growers and the dairymen having cold storages of their own.

Mr. Eldridge:—We have had some experience in keeping butter by cold storage, and it is very satisfactory. You have one of the best cold storage plants in the Province, if not the best, and I think the city could not do better than to arrange with that company in some way, to build a few rooms for the use of the merchants, or the farmers, and commence in a small way to use cold storage for holding vegetables, butter, or anything else that is perishable, and I am sure in a very few years they would be amply repaid. I think the city could not spend her money better than to spend a few thousand dollars in putting in suitable rooms for the caring for of such products.

Cold storage at New Westminster.

Mr. Balfour:—I would like to know what the probable cost would be of storing a good quantity of butter?

Mr. Lee:—Our charge at present in very small quantities is a half cent a pound per month.

Mr. Kipp:—I think Mr. Eldridge has missed his calling. He ought to be a farmer, and I hope to see him up the Fraser Valley. The high water of '94 seemed to take the ambition out of us, but I think it will come back again and Mr. Eldridge is doing much towards that end. We have lots of good men, but they don't seem to manifest the spirit they should. When we lie back and growl instead of cultivating the soil and growing good crops, what do we accomplish?

Mr. Philip:—As one interested a good deal in this Association and as a citizen of Westminister, I must cordially reciprocate the kindly suggestions that have been made by Mr. Eldridge. Last year I put before the Minister of Finance a practical suggestion that appeared over my name in the Columbian the other day, and that was the idea of assisting our farmers with loans. Both Colonel Baker and Mr. Turner expressed a very high idea of the proposal and they were very careful to consider it in respect to the ways and means. I believe that if something of that kind were done to kelp the high land farmers who are face to face with the mighty giants of the forests, a great benefit would be reaped. Putting it briefly, the suggestion was for the Government to advance to the farmers a certain sum up to a certain proportion of the original value of the land, to be expended only for the purposes of clearing and bringing that land under cultivation.

Loans to Farmers.

With regard to dairying, I have taken a deep interest in that and have done something to circulate information about what creameries can do. I was the organizing agent for the largest creamery built in Scotland some 14 years ago.

Certainly there is no more important industry in this Lower Fraser Valley and in this Province. Fruit-growing is an important industry, but with the enormous import of butter at the present time I think you will agree that dairying is exceedingly important, and you cannot do too much to have it put on a proper footing. If this Association is able to educate the public mind to take a deeper interest in this industry it will do a world of good. Not being actually a farmer or a dairyman, not having even a cow, but being deeply interested in dairying must be my excuse for thus fully speaking on this matter.

Meeting adjourned till 4 p.m.

The Association resumed at 4 o'clock, Mr. Cunningham again presiding.

Mr. Cunningham:—The more I see of this duplicate convention of the Fruit-growers and the Dairymen, the more satisfied I am that the two conventions should not be held together. The interest is divided and lost to a great extent.

Work of Associations.

Mr. A. King, Ladner—I quite agree with you that these two conventions should be held separately. I fail to see the connection between fruit-growing and dairying, and I think, although dairying has not been as important a department of the farmer as fruit-growing in the past, that in the future it will be just as important and probably more important. There is nothing that will advance the interests of dairying so much as a good live association. If we simply look at the proportions which dairying has assumed in Ontario and the Eastern Provinces and also in the United States, we ask ourselves what is the reason of this. I contend that the reason of the great advance which dairying has made in these places is through the influence of their Dairymen's Associations. The cheese trade would never have assumed the proportions which it has at the present time, if the farmers had not co-operated. I maintain you will never be able to carry on dairying to any extent without co-operating, and unless farmers meet and discuss the business in general. I think the sooner you realize the importance of a good, live association in this Province, the better it will be for the business.

Paper on "Creameries" was then read by Mr. King.

Condition of Dairying and Establishing of Creameries in British Columbia.

A. A. King, Manager of the Delta Creamery.

All over the agricultural portions of this Province there seems to be a general waking up of the farmers, we might almost call it a revival of dairying, and it appears like a good old fashioned one, too, if one may judge from the degree of earnestness and determination shown by the converts. Let us consider for a short time the cause of this activity and the needs which led up to it.

If we study closely the history of agriculture in this Province in days that are past, we will get a clue as to the conditions existing at the present time.

In the early history of the Province, when mining was the principal occupation, prices of all agricultural produce were enormously high. There was little or no competition, and consequently the farmers could get about what they asked. With very little stirring of the soil, nature gave quick and bounteous returns. It made but little difference in price whether the article was good or bad; hay was hay, oats were oats, and butter was butter, be they good or bad. This condition existed even after the railways connected us with foreign markets. During this time the farmers had ample time to wear out the rut so that it became a pleasure to travel in.

You know that it is harder work unlearning than learning. It is harder work getting out of a rut than falling into one. For years the farmers enjoyed unbounded prosperity; but soon a change became apparent. As the North-West and Manitoba became more thickly settled, as wheat fell in price until there no longer was profit in raising it, the farmers of these Provinces began to go in more for dairying and mixed farming. Creameries and cheese factories were established. With the establishing of these came the question, Where are we to find a market for our surplus produce? It would be of no use to ship to Ontario and the Eastern Provinces because they already have a surplus. So the eyes of the dairyman turned to British Columbia as the Eldorado of big prices and unlimited demand, and consequently here their produce came. A lowering of freight rates on the railway also induced the Ontario dairymen to take advantage of the good demand and prices in British Columbia. Nor were these all. Our neighbours across the line also availed themselves of the opportunity in spite

Shipments of Dairy Produce to B. C.

of duty. And what was the consequence? The consequence was that the dairymen of British Columbia found that their home-made butter had to compete in their own markets with creamery butter of Manitoba, North-West, Ontario, Washington, Oregon and California, and now, since the days of refrigerator store-rooms on steamers, with the best Australian butter.

If we examine the markets we will find that the same is true of nearly all other farm produce. Machinery has taken the place of cattle and horses to a very large extent in mining and lumbering, decreasing very materially the demand for hay and grain, which formerly was such a source of profit.

So you see that the only hope for the farmers of this Province is to get out of the old rut of primeval farming as soon as possible, and meet these on their own ground. The farmers of this Province will have to do more systematic and concentrated farming, which means selling more of the finished article and less of the raw material. As rich as the lands of these valleys are, by continuous cropping and returning nothing to them again, they can be exhausted. You cannot continuously rob even nature's store-house with impunity. Selling the finished article means having more plant food to return to your farms, and thus increase their productiveness. Every ton of hay or grain that is taken to market represents a portion of the farmer's capital going from him. If that hay or grain is fed so as to produce milk, which is sold for city consumption, the capital disposed of is greatly reduced; but if from the milk butter is made, and the bi-products fed to calves and pigs, the loss of capital is reduced to a minimum. This is systematic and concentrated farming.

It is this failure to compete and the awakening to the fact that their present and past modes of farming, in most cases, are ruinous in the extreme which has brought about this move in the right direction. They cannot help but realize that if they would compete with these countries in dairying they must produce larger quantities of a more uniformly good article, which can only be accomplished by the establishing of factories in every agricultural district of this Province.

To impress upon you more forcibly the need of such a course, I would draw your attention to the fact that last year over $400,000 was sent out of this country for butter and cheese alone. *Four hundred thousand dollars* which should have gone to enrich the farmers of this country has gone to increase the prosperity of those of other countries. Now, with such a country as this, possessing in such a large degree superior natural conditions for dairying over any other Province of this broad Dominion, with such cool summers and mild winters, such clear, cool water, such luxuriant pastures, I say that the importation of so much dairy produce is a deplorable mistake. Why not manufacture these at home and thus increase the prosperity of your own country? I am sure that in your efforts you will secure the hearty co-operation of the consumers, for who does not like good fresh butter. I hold that it is a boon that cannot be lightly estimated.

Establishing Creameries.

During the past summer I have received many communications asking for information in regard to dairying, particularly in regard to the establishing of creameries, and before closing I would like to give my opinion on this subject.

The first and most important point in the establishing of either a cheese factory or creamery is to determine how many cows you can rely on for the milk supply. I say "rely on," for that conveys more than the nature of a mere promise from the farmers. Now, if you would be successful, there will have to be something more than a mere promise. It will have to be binding, that the farmer who wishes to patronize the factory will have to pledge himself, under penalty, to supply the milk of the number of cows promised during the milking season. If you can get 250 or 300 cows promised in this way, you will be safe in building and equipping a

factory. I do not mean to insinuate that the farmers regard their word of honour lightly, but I have noticed that seed time and harvest are convenient times to send milk to the factory.

After having secured your cows, the next thing of importance is the location of the factory. There are several important considerations under this head, namely: good drainage, good water supply, central, yet not too far from your shipping point.

Site for Creamery. If possible, secure a position on sloping ground, so you will be sure of good drainage, the importance of which is understood by all. Be sure to secure the coldest and best water in the locality. It must be free from all decaying vegetable or animal matter, and must not contain any offensive taint, because butter, as you all know, is very susceptible to such things. In regard to the other points, those who understand the conditions should determine what is best.

Next erect your building. In this do not be guided by plans such as are often found in machine agents' catalogues, for they are not practical; but secure the advice of some experienced factory man, and get out your plans and specifications according to his advice. Do not crowd your machinery into as small space as possible in order to save expense. You should have it large enough so that you can double your capacity by simply increasing your plant. It is expensive work tearing down and building larger. Secure good ventilation and make your walls tight, so that all odours, steam, etc., may readily escape, and warm and cold air be excluded.

Milk hauling. The next consideration is the milk delivery. Some of the questions arising under this head are: who shall deliver the milk, and of what quality should it be? Under the first I would say that I have noticed that when a company calls for tenders to haul milk, they generally have to pay for it in an expensive manner; but when the people arrange it amongst themselves, they get it done much cheaper, so I would advise paying so much per pound of butter fat delivered. In regard to the next, the milk should be sweet and free from any foreign taints or odours. The determining of what should be received and what neglected should be left entirely with the butter-maker, and he alone. All tainted milk should be returned. First-class butter can only be made from first-class milk. It is well in the rules and regulations that are distributed to the patrons to incorporate the care of milk and cleaning of utensils.

In conclusion, I would like to add that I believe the time is coming when all the butter and cheese will be made according to this method. And then, and not until then, will British Columbia be able to reap the benefit of her own splendid market, and be looked upon by the other Provinces not as a sea of mountains but as an agricultural country of importance.

Discussion. Mr. Eldridge—I might say that the most successful factories in the East had the farmers bound for a certain period. The French people in the Province of Quebec, I think, made the greatest success with co-operative dairying. They had an Act passed and organized just the same as a bank, with President and Directors, and when a man subscribed 20 cows it was just the same as taking 20 shares. They have very poor water there and the French people could not learn how to make good butter, so they have made a great success of it. With the English people it took them quite a while before they would patronize the factory and stay with it. Perhaps Mr. King could tell us whether they are more inclined to patronize the factories there than they used to be.

Mr. King—In a joint stock company the farmers are obliged to supply milk from so many cows. But if a man puts up a building and plant and hasn't the farmers bound, if the price of butter should fall, or something goes wrong, the farmers are apt to drop out of it. In order to make the thing a success the farmers should be obliged to supply the milk of a number of cows for at least one season, and I would make it for three seasons, for at the end of

that time they would see there is money in the creamery business. It may be in this country that you will not be able to bind the farmers, but I know in the East, where they have made a success of the creameries, that the farmers are obliged to send the milk of a certain number of cows for a certain time.

Mr. Jaynes—In what way would you oblige the farmer, or compel him to continue sending this milk?

Mr. King—I would have it in the nature of a pledge, and if he discontinues, he forfeits so much. If you get the rules and regulations of a cheese factory in Ontario you will see that if any farmer discontinues to send the milk, that he is liable to a certain fine, which fine is to be kept out of the milk that he has already sent.

Sunday work.

Mr. Hutcherson—I would like to say a few words in regard to the Delta Creamery. We have found great difficulties. We found no trouble whatever in getting our stock taken and getting the factory into shape for working. There was one question that we struck and I think it was the hardest question that we had to get over, and that was what to do with our milk on Sunday. I would advise anyone starting a creamery to have that question settled the first thing. The cows have to be milked seven days in the week, and the Directors of the Delta Creamery came to the conclusion that they would have to run the creamery seven days in the week, otherwise that milk would be lost. They tried in different ways to get around it, but the conclusion they came to was that the separator had to run on Sunday. There are many objections, of course, to it, and there are many things in favour of it, but I would like to hear an expression from this meeting in regard to it, and would ask the privilege of speaking again later on.

Mr. Wells—I suppose it was only necessary to do the skimming?

Mr. Hutcherson—Yes, that was all.

Mr. King—How do you do in Chilliwhack with your cheese factory, Mr. Wells?

Mr. Wells—With our cheese factory we have never run it on Sunday. We had no difficulty at all. The most of the farmers have an extra can or two, and some of them made butter of the Sunday milk. Of course of late years we have used only our own milk, and we have never run the factory on Sunday. We skim our milk. It is not considered by us as one of the things that is avoidable. Of course we don't make butter, and we do the very least work that we can on the Sabbath day. As far as our business has gone we can get everybody off to church by 10:30. There must be extra work where there are cows. They have to be milked and the milk attended to on Sunday.

Mr. Hutcherson—I brought this question up because there was a round robin signed by the ministers at Ladner's asking the directors of the Delta Creamery to forbid the factory to run on Sunday, and the directors refused to do so.

Sawdust between Walls.

Mr. Hadwen—I would like to ask Mr. King what he would recommend in the way of a building. Would you recommend putting sawdust between the walls?

Mr. King—I do not think it is advisable to go to the trouble of putting sawdust between the walls. I think good tight walls are all that are necessary, but I would impress upon you that you have good ventilation.

I didn't say anything about cold storages in creameries, but that is a very important question. The nicest cold storage room, and the most economical one that I have ever seen, is simply a room done off with a space filled with sawdust, and then a box large enough to contain about half a ton of ice, open at the bottom. Have a pan of gravel sitting underneath to absorb the moisture, and a ventilator in the top of the room to let out the warm air.

Keeping Butter in Unsuitable Places.

There is another subject upon which I would like to speak, and that is with regard to selling butter to grocerymen who have no cold storages. We have had a little trouble in regard to our butter lately. We have sent some butter out of our factory to grocerymen who kept it alongside of a stove for two or three weeks, and we got the blame for turning out bad butter. Where men handle good fresh butter, they should have some place to keep it. It would be well, in the summer, to keep it in cold storage rooms and take it out as they need it, if they haven't any decent place to keep it.

Mr. Hadwen—How much ice do you use?

Mr. King—We used about 15 tons of ice. Of course we would not have used so much if we had a place to store it. We have to buy it at New Westminster, and by the time we get what we buy for a ton down to Ladners there is only about half a ton. We pay $5 a ton, and that is quite an item for the summer.

Mr. Wells—What sized cold storage house would you require for your factory, say where you get milk from 500 cows?

Cold Storage in Factories.

Mr. King—The size of our cold storage is 15 x 18. We could get along with a smaller cold storage room than that. The ice box takes up a considerable amount of room. You want to build it low, so that so as not to have any more air space than possible. The ice box is built in the form of a hopper. I think it is the most economical plan I have seen. Of course you can put up cold storage rooms without any ice at all if you have good cold water, say 49 degrees. You would only need ice then for shipping and cooling down your cream. The way to do when you use water is to have a room and line it with zinc, and have a water tank made of zinc, and have it perforated with little holes. The water will then run down the sides of the walls, where it is caught by a trough. The disadvantage is that where you are keeping butter any length of time it is bad to keep it in a damp room.

The auditors' report on the financial statement was read and on motion adopted.

The following report of the Committee on Resolutions was then read:—

Re Aid to Creameries.

"The annual meeting of the Dairymen's Association of British Columbia, appreciating the necessity of the establishment of creameries in the Province, would respectfully recommend to the Government that, in view of the scarcity of ready money amongst the farmers, a loan for a term of years, to assist in the erection and purchase of machinery for creameries, might be made, to the very great stimulating of the industry, and that, while the system of bonusing will increase the quantity, we consider that the loan system will improve the quality, which is the object to be attained. And we further respectfully urge on the Government the necessity of amending the "Dairy Associations Act, 1895," so as to allow associations incorporated under this Act to buy, raise, feed and cure and dispose of hogs and hog products."

Mr. King—I think that suggestion of loaning money to the farmers organizing creameries is a good one, because times are pretty hard throughout British Columbia at the present time, and it is essential that creameries be organized. The people of the North-West, through their members, have been petitioning the Government at Ottawa to bonus the creameries in that country, and they export butter to British Columbia. I think it is hardly fair to bonus one Province against another, and we should object to it. In Nova Scotia, I believe the Government bonuses creameries. In Prince Edward Island the Government own the cheese factories and operate them.

Mr. Cunningham—I would like to know why British Columbia is not entitled to as much Government consideration as Prince Edward Island.

Mr. King—They don't look upon us as an agricultural province. They have a wrong impression. I always thought British Columbia was a sea of mountains, and I think if some of the members at Ottawa would come out to this Province they would get their eyes opened, and would find the farming sections here superior to any in the East. You have the climate here and soil that are superior to any I have ever seen, and I have been over all the best dairying districts.

Treatment of B. C. by Dom. Gov.

Mr. Cunningham—I have been painfully impressed during the last two years that British Columbia hasn't a fair deal at Ottawa. We have passed through a crisis that has almost overwhelmed the struggling farmers. They have never spent a dollar towards the relief of the sufferers of that flood. Our Provincial Government has done so. We have just heard that they establish and operate creameries in the Maritime Provinces, and don't you think we are entitled to some consideration? Would it not be well to make a demand on the Government for some consideration in the establishment of creameries? I don't think the Provincial Government should do it all. British Columbia isn't a land of gold, as it was supposed at one time to be. The farmers have many difficulties to overcome, and I think it is only reasonable that some assistance should be demanded and conceded to develop this creamery business in British Columbia.

The resolution was then adopted.

The committee to report on the president's address then read the following:—

"With regard to the suggestion of doing away with the veterinary surgeons at present employed by the Government, and the appointment of practical dairy experts to travel around with the Babcock tester for milk, your committee consider that the establishment of creameries will place the Babcock tester within the reach of all, and that, now, as tuberculosis is being better understood, a permanent veterinary staff is unnecessary. We consider the silo system ought to be impressed on the cattle-raiser and farmers generally. When better known it will, here as in other places, become universally used. We join most heartily in expressing our thanks to Professor Robertson and the other gentlemen, whose valuable services are highly appreciated by us. We strongly advocate the establishment of creameries as being the only means of obtaining a uniform and superior quality of butter. We would advocate the advance of $200 by the Government in order to obtain literature for free distribution among dairymen and stock owners."

Mr. Wells—The dairying interest is the very best interest of this Province, if not every Province. We cannot educate the farmers on this line too quickly. Our farmers are away behind. They are satisfied with trying to raise grain and compete with Manitoba, and to my mind it is a hopeless task. We have better grass, better water, better climate, and everything else that is required for making the very best success of dairying. We don't have to go to Japan or San Francisco for a market, but we have one at home, and we ought to teach every farmer that is able to keep a cow, that that is his best interest. If every farmer in British Columbia had the reading of Hoard's Dairyman, I believe it would be a great help to them. To my mind it is ahead of everything printed in the market, or, as far as I know, in the English language, in the dairying interests, and every farmer who is able to grow an acre of grass should have it. It comes once a week, and costs only $1.00 a year.

Dairy Experts wanted.

Mr. Cunningham—That was the thought in my mind when I suggested that the Government give us two dairy experts, one for the Mainland and one for the Island, to instruct us about the importance of dairying as a paying industry. I see the committee have not touched upon that point, but rather discouraged it. There are many worthless cows in British Columbia, and the farmers should be convinced, by actual test, that this is the case.

Babcock Tester, its value.

Mr. Wells—You are quite right with regard to the Babcock tester, but your committee saw a little difficulty in recommending that. Perhaps it is best to send the committee back to remodel their recommendation, but the difficulty was just here:—A man comes around with a Babcock tester, and he will make a test of a number of cows, but one single test is not sufficient. It is not sufficient even to test the cow when you get both the night and morning's milk, although they are different. You have to make more than one test in order to get at the real value of a certain cow. A cow that will give 4 per cent. milk, has been known to test as low as 2 per cent., although 4 per cent. is her average. Now to condemn a 4 per cent. cow because she only gave 2 per cent. milk with the Government test, will be unfair to the man that owns the cow. Every creamery must have a Babcock tester. Creameries, I think, are the order of the day now, and I think the preference would be for the creamery to have the Babcock tester. It is not very difficult for a man to put in a week's milk, and send what is known by milkmen as a composite test, and have his cow thoroughly tested. But you have got to show the farmer, in the first place, the reason of this.

Mr. Hutcherson—I quite agree with Mr. Wells on some matters, but I think the creamery test is not sufficient. He wants his tester right at home, so he can test his cows from day to day. There is now a Babcock tester on the market, and it only costs $6.00. I find our farmers are buying it to test the cows, and to keep a check on the creamery as well. If a man travels through the country to educate the farmers, he might do some good, but I think the farmers should have a Babcock tester right at home.

Meeting then adjourned till 8 o'clock.

When the association resumed at 8 o'clock, the consideration of the report on the president's address was resumed.

Mr. Hutcherson—I would like to ask what work the association has been doing. I see by the treasurer's report that the money has been expended on the secretary's salary and advertisements in the newspapers. If the society isn't doing some work of some kind the sooner it is out of existence the better for all concerned.

Mr. Cunningham—We have not had much money to do anything with so far. The committee now recommend that the sum of $200 be requested from the Government to supplement the $250, in order to circulate free literature among the settlers of British Columbia.

Mr. Wells—I might say I would like to see this association have a little more "go" in it. The members don't seem to take an interest in it, and it seems to me that this dairying interest is the backbone of British Columbia. If we cannot make anything of the Dairy Association, and if there are not sufficient men to carry it on to make it useful, the sooner it is dropped the better, but I would be very sorry to see the institution go down. I know well enough it might be made a very useful institution. Whose fault it is I am not here to say, and what line of policy to go on I am not able to suggest.

Mr. Kipp—One reason why I don't attend these meetings is because I haven't got money enough to pay steamboat fare, so I stay at home. Dairying should be carried on as Mr. Wells says, with a little more vim, but the trouble is, it is money that makes the mare go. Of course the unprecedented flood makes hard times, but our resources are such we can soon recuperate and get over this, although it is a hard pull. It is reasonable and right that the Government of this country ought to assist such institutions as this and the fruit-growing industry. Let them put a little more money in to enable its promoters to carry it on to such a successful issue that it will create a revenue. The most important things are agriculture and horticulture, and they are passing right over these and going to the mines. As a people I think we are wrong that we don't put our wants more on paper in the way of petitions, and we should keep peti-

tioning. For the want of proper petitions our representatives go down there and don't know what to ask for. Let us rise up and go at it with a vim.

Mr. Hutcherson—The last speaker has done a good deal of talking, but he hasn't made any suggestions to help this society out. What we want is some way in which the Dairymen's Association can do some good and earn the money the Government has expended. It seems to be the tendency to go after the Government for everything, but I say to get up and go at it ourselves. We can get the Government to support us when they find we are a benefit to the country, and until this association can see that they are benefiting the country I don't think it is right to ask for an additional grant.

Mr. Kipp—Mr. Hutcherson seems to be complaining of what has become of the moneys that have been appropriated. If they haven't been spent to the best advantage I would like to hear him explain how it could have been done.

Mr. Philip—I think you have an exceedingly useful and practical illustration in the Fruit-Grower's Association. I believe the work to be done in this connection is even greater than the work of the Fruit-Growers Association. You have a wider field to cover, and you need to set to work in somewhat the same way, but with an arm that will stretch a bit further. There are many outlying districts you can interest yourselves in. Some of the smaller districts might be organized to have their cheese factory. But what you need to do first is to educate the people. I myself think that the grant that has been allowed to the Fruit-Growers is an illustration of what you need and might fairly be asked for this, and then you can be aggressive and overcome the great difficulties. I suggest that the grant asked for be $1,000 altogether.

Mr. Hadwen—When both the Fruit-Growers and Dairymen ask the Government for an increased subsidy they will look at the list of members, and when they find the Fruit-Growers Association has only 40 members, they will come to the conclusion that a large part of this $1,000 is spent on those 40 members. In the Dairy Association there are only 12 members, and that seems a ridiculous sum to spend in connection with that number of members. If the farmers don't take enough interest to become members it would seem ridiculous for the Government to grant them more money.

There was one question brought up in connection with the fruit-growers, and that was that the membership fee would be reduced to $1, and I think this membership fee should be reduced to $1 also. I think far more membership tickets would be taken if it were reduced. If the Government are petitioned we might as well add that, and ask to have the Act amended to make the membership fee $1.

With regard to literature, there is a large amount of literature that can be got from the Dairy Commissioner by merely sending him the address of the members. This would be useful. Then there should be more meetings held if possible. I think we have only had one meeting a year until now, and you can't expect to keep an association going with merely a yearly meeting.

Secretary's salary.

Mr. Hutcherson—While Mr. Hadwen was speaking about reducing the entrance fee to this association there was another matter that struck me, and that is the secretary's salary. Of course Mr. Macgowan knows that it is no ill feeling I have towards him. We don't expect Mr. Macgowan to get up and say he wants his salary reduced, but I think he will agree with me that according to the amount of money that is in the treasury and the amount of business in connection with the association, that the secretary's salary is a little heavy in that respect.

Mr. Macgowan—I may say that I would not hold any hard feeling against my friend Mr. Hutcherson, because for one reason there may be another secretary at the election of officers, and actually the work has been light for the money. The literature that Mr. Hadwen men-

tioned has been received in considerable quantities, and it is well announced that this literature can be had by dropping a card to the secretary. There has been a lot sent out, and what actually appears here as work done does not give strictly an idea of the work that has been done. There has been no charge made for postage and stationery in this bill, and this, while small, will amount to something in the end of a year.

The report on the president's address was then adopted.

It was moved by Mr. Earl, seconded by Mr. Kipp:—

Passenger rates on C. P. R. in B. C.

"Whereas there is information before this convention that the rates of fare charged by the Canadian Pacific Railway Company are two cents per mile higher in this Province than in any other portion of the Dominion; and whereas these excessive charges operate to the serious disadvantage of our people; be it therefore, resolved, That this matter be brought to the attention of the Boards of Trade of Victoria, Vancouver and New Westminster, with a view to having these bodies take such action as may be deemed necessary to effect revision of the rates and a reduction of the travelling expenses by rail in this Province to a common level with the other Provinces of the Dominion." Carried.

Election of Officers.

The meeting then proceeded to elect office-bearers, when the following were appointed:—

President—R. Balfour, Langley; Vice-President, J. T. Corfield, Duncan's; Sec.-Treasurer, G. W. Hadwen, Duncan's.

Directors—A. C. Wells, Chilliwhack; H. F. Page, Matsqui; W. P. Jaynes, Duncan's; W. R. Robb, Comox; W. B. Skinner, Delta; D. H. Cogswell, North Saanich; and Thomas Cunningham, Dewdney.

The meeting then adjourned.

Meeting held at the Court-house Chilliwhack.

15th March, 1896.

The President, R. Balfour, of Langley, took the chair, the secretary, and about thirty people being present.

The meeting being called to order by the president, the secretary read the following paper by A. A. King, Manager of the Delta Creamery, on Co-operation and Winter Dairying.

Winter Dairying and Co-operative Creameries.

I have chosen this subject on account of its extreme importance to the farmers of this Province, the need of which is becoming more urgent as the creamery business is advancing so rapidly.

Winter dairying offers special inducements to the farmers of this Province. Let us enumerate some of them. 1st. Better prices, not only for milk but also for calves and pigs. 2nd. A better distribution of labour. 3rd. More manure to return to the soil. 4th. Help can be engaged by the year instead of by the season. 5th. Less food wasted in maintenance.

Delta Creamery payments to patrons.

I would like to emphasize the first because it is the dollars and cents we are all toiling for, and I claim that winter dairying pays twenty-five per cent. better than summer. Let us look at the facts of the case: The Delta Creamery paid 80 cents per hundred for milk testing 3.7 % fat during the summer; during the winter months we paid $1.12\frac{1}{2}$ cents per hundred pounds for the same quality of milk and the skim milk returned. Now does

this mean simply that this is all the farmer made out of his milk? No! Besides this he had all the calves and pigs raised on the skim milk for pocket money, and you all know the difference in the summer and winter prices of these. During the summer the skim milk was only worth to him about a *cent* and *one-half* per gallon; in the winter it was worth *two cents*.

Value of skim milk.

This means that a man supplying 1,000 pounds of milk to the factory in winter realizes about $1.60 for his skim milk per day, while the same amount of skim milk in summer is only worth, for feeding, about $1.20. So you see the skim milk during the winter will go a long distance towards compensating the farmer for his trouble. The question is often asked, will the good winter prices hold out? I think that you will always see a big demand and good prices for local creamery produce in this country. Why? Because the cities are willing to pay a good price for fresh creamery butter which is hard to obtain during this season, owing to the fact that most creameries in Manitoba and the North-West are closed during this season, and Ontario does not produce enough for her own consumption.

Again, it means a better distribution of labour over the entire year. The farmer does not lie idle during the winter season and be rushed with the milking of a lot of cows during the busy seed time and harvest, but is profitably employed during a season when he would otherwise be consuming what he earned during the summer.

Then again it means more steady work for farm hands and, consequently, better satisfaction to the farmer, because a man who understands the business of his employer is more valuable than a green hand, and under the present system of farming the farmer has to dispose of his man during the fall and hire an inexperienced man in the spring.

Again there is the advantage of fertility returning to the soil which, I prophesy, will, in the near future, mean dollars and cents to the farmers of this Province. This system will do away with the old and ruinous system of farming, that is the system of continual cropping and selling the raw material, and returning nothing to the soil to compensate the loss. Now there is no doubt as to the fertility of the British Columbia valleys, but I can point out hundreds of sections just as fertile which have become wildernesses through this ruinous system. The time is at hand when the farmers can no longer afford to burn their manure piles or allow them to float down the stream, for already are the farms beginning to show the result of the continuous cropping which they have received in the past.

Rations for Cows.

I have made reference to food wasted in maintenance. I refer to the unprofitableness of keeping so many cows dry during the winter months. The habit is to milk the cows eight months of the summer and allow them to eat up the profits during four months of winter by boarding them for nothing; for a cow will have to be well fed if you expect her to milk during the coming summer. Some dairymen seem to think that a cow may be kept poor during the winter, and produce the same milk in the spring as if she had been kept in good condition; but this is a fatal mistake. It will take nearly all a poor cow can eat to supply the wants of her own system. It requires two-thirds of a full ration to keep a cow in fair condition—her food of support—before there is any milk. Up to two-thirds all is expenditure and no return. Now the question is, Why not feed the extra one-third to half of your herd and realize a profit than feed the whole herd for nothing, or else sell your hay and grain for about what it cost to place on the market?

In winter dairying the principal points to observe are good, roomy, clean stables, good food and water, good care and good cows.

In closing this part of my paper, I will say that the abundance of food which can be grown here, and the mildness of the climate, makes this Province above all others admirably adapted to winter dairying.

Co-operative Creameries.

Co-operation means unity, and unity means strength and success. Co-operation in creamery business means the joining together of the farmers, a uniting of their energies and capital so as to carry on the creamery business successfully. This is in reality a joint-stock company composed entirely of patrons or intended patrons of the factory. Now, I claim that where a sufficient amount of stock can be raised in this way that it is superior to the ordinary joint-stock companies composed of patrons and non-patrons alike. These factories should be run in the interest of the farmer and for the farmer. The farmers of this Province need, at the present time, all the benefits that may accrue from such a system. But if the majority of the stock is held by the capital of others, it is imperative that we must be governed by them, and it is only just that they should get at least good interest for the money loaned. Where none but patrons are allowed to hold stock, the principle is entirely different; it can then be run entirely in the interest of those patrons, and they of course get all the benefits. The thing is reduced to a simple plan. The plan is this: wherever the farmers possess the desire of establishing a creamery let them call a meeting and appoint four or five men who are active and energetic to perfect the scheme in that particular district. These men should go around and determine how many cows can be relied on for milk supply. Supposing there are 500 cows, then they would say, let five (5) cows represent one share, and if they wished to raise $5,000, each of those shares would be worth $50.00

Supposing the money was not in the district, the directors of the organized company would proceed to borrow at as low a rate as possible, to carry on the work. This debt to be paid off by instalments. A certain fixed amount to be kept off each patron's cheque, according to the number of shares he holds in the company, which, of course, represents the number of cows he possesses, until all is paid. Then after the debt is raised, whatever is over and above expenses, is divided according to the shares held, or better still, after paying a fixed amount for the butter-fat in the milk, to divide the dividends according to shares held. There are these advantages:—Firstly, that those who will receive the most benefits, must pay the most, and secondly, the money all goes back to the farmers. Of course this scheme is only practical where there are a large number of cows, because, according to this plan, the cow pays for the creamery.

After the company is organized and incorporated, and the factory well under way, rules and regulations should be drawn out for the instruction and guidance of the patrons. These rules should emphasize the care of milk and milking utensils, the care of cows (as affecting the milk), the delivery of the milk, and the amount of fine, if the milk of any of the cows is withheld without good reason, &c.

In this short paper my object has been simply to touch on a few important points, and if possible throw out a few suggestions which will be of benefit to the farmers in this new and very important industry.

In the discussion which followed, Mr. A. C. Wells particularly referred to the mistake of keeping the cows poor through the winter, and moved a vote of thanks to Mr. King for his paper, seconded by Mr. F. Richards, of the Pacific Coast Dairyman.

Mr. Richards then followed by a few remarks on dairying. He said that he would recommend the establishment of creameries where 3,000 lbs. of 4 per cent. milk could be secured daily. This, allowing 4 cents a lb. for expenses, butter-making, would cover the wages, oil, fuel, salt, &c.

Mr. McGillivray, of Sumas, read a paper on the care of the dairy herd.

Corn-growing. In the discussion which followed, reference was made to corn-growing, and corn ensilage. Mr. Kipp stated that he had been successful only on sod lands, ploughing in the growth of grass in June, and sowing the corn directly after.

Mr. Wells said that the varieties most successful with him, had been Longfellow, Thoroughbred White Flint, Red Cob, and Mammoth Southern Sweet.

Mr. A. Philips then presented a paper on Agricultural Education, and referred to the effect of allowing pigs to eat fish and skunk cabbage.

The meeting then adjourned till 7 p.m.

The question of Mr. Phillips' paper was taken up when several members gave their experiences.

Fishy Pork. Mr. Wells alluded to the fishy pork which had been sold from Chilliwhack, and laid the blame chiefly on the small traders who dealt with the Indians and others without taking precautions or making inquiries as to where the pigs had been fed. It was the general opinion of the meeting that the taste of salmon would always spoil pork, and even if the pigs had only eaten fish when quite young, the flavour would be retained in the meat.

The Secretary spoke of the unsatisfactory conditions of the Agricultural Societies of this Province and advocated the holding of meetings and discussions.

Moved by G. H. Hadwen, seconded by E. A. Wells, That the Government be petitioned to adopt the recommendations of the committee appointed at New Westminster to consider the assistance to creameries at the earliest opportunity. Carried.

Moved by E. A. Wells that a vote of thanks be tendered to Mr. Richards, of the Pacific Coast Dairyman, for his kind advice at this meeting.

A vote of thanks was also voted to the President and Secretary, and the reporters, and those who had prepared papers.

The meeting then adjourned.

Meeting held at Langley.

17th March, 1896.

The President, R. Balfour, Secretary, and about twelve others present.

The Secretary read Mr. King's paper already presented at Chilliwhack.

Mr. A. Hawkins read a paper on Co-operation. He said that it had been said to him that co-operation among farmers was an impossibility. He hoped, notwithstanding, that the money required for the proposed creamery at Langley would be subscribed locally.

Shallow pans vs. separator. Mr. Richards stated that a farmer who used shallow pan setting could afford to give his skim milk to the creamery, on account of the increased yield of butter he would get.

The Secretary read Mr. McGillivray's paper, and said that he hoped to get some subscriptions from Langley for membership in the Dairymen's Association. After a thorough discussion of the matters presented,—

Mr. A. H. Hawkins moved, Mr. Bain seconding, That a vote of thanks be tendered to the visitors.

The meeting then adjourned.

Annual Meeting of the Dairymen's Association held at Victoria.

City Hall, 28th January, 1897.

Present:—W. H. Ladner, W. P. Jaynes, C. T. Gibbons, J. R. Anderson, Deputy Minister of Agriculture; R. M. Palmer, W. R. Robertson, A. C. Wells, W. Ford, J. Dougan, S. Roper, D. R. Ker, Watson Clarke, J. T. Collins, G. McRea, A. A. King, C. R. King, the Secretary, and several others.

The President not being present, Mr. W. H. Ladner was elected chairman, and then called the meeting to order.

The Secretary reported that during the past year only eight members were enrolled, although general interest was manifested by the farmers throughout the Province in the work of the Society, and much good has been accomplished by it. The membership fee of $2 was held by some to be responsible for the limited enrolment, and this being made the subject of one of the first discussions of the morning session, it was decided to receive members hereafter at one-half this amount—$1 being the fee now agreed upon, subject to the necessary amendment being secured in the Act, to which it is promised there will be no objection.

Mr. Ladner spoke strongly on the subject of the Government grant, pointing out that while the fruit-growers received $1,000 per annum from the public funds, the dairymen are allowed a grant of but $250. And even this it was officially intimated would be withdrawn unless greater interest were manifested in the Association. It was true that the membership of the Dairymen's Association was smaller than it should be, but with the reduced admission fee this fault would quickly be corrected: and it was a self-evident fact that the dairymen, in establishing creameries and similar industries throughout the Province, the success of which had already been proven, were doing as much or more than the fruit-growers towards increasing British Columbia's practical prosperity.

The minutes of the last annual meeting and those of the Chilliwhack meetings were then read, and on motion, adopted.

The Secretary reported that he had endeavoured to get the subscription fee reduced from $2 to $1; it was at the present time still fixed at the higher figure by Act of Parliament.

Moved by A. C. Wells, seconded by J. R. Anderson, that the Provincial Government be petitioned to lower the subscription to the Dairymen's Association to $1, and that the Secretary be empowered to receive $1 on account in the meantime for the coming year.

Messrs. Ladner, Wells, Palmer, Watson Clarke, D. R. Ker and several others spoke on the desirability of a larger appropriation for the respective claims of the Dairymen and the Fruit-Growers.

The following letter was read from the Minister of Agriculture, it being explained by Mr. C. R. King that the Commissioners had decided to hold no sittings in this Province or Manitoba, and the communication being accordingly tabled for consideration that afternoon:—

Ottawa, November 24th, 1896.

Letter from Minister of Agriculture.

My Dear Sir,—I desire to direct the attention of your association to the invitation that has been sent out on behalf of the Government to all who are interested in the revision of the tariff. It is the desire of the Government to afford every facility to those engaged in all industries to lay their views upon this question before the committee charged with the investigation. As the Minister of Agriculture, I am especially anxious that those engaged in the business of farming should discuss what changes in our customs duties can be made in their interest and put their views before the committee. I would suggest therefore that your association, representing a branch of this industry, should discuss the question and either forward resolu-

tions adopted at your meeting or name a committee to meet the committee of the Government. In the latter case, on information from you, I shall be happy to arrange an early opportunity for your committee to meet the committee of the Government at some central point in your Province.

I am, etc.,

(Signed) Sidney Fisher,
Minister of Agriculture.

A letter was read from Mr. Flett, Deputy Minister of Finance, *re* the probable discontinuing of the appropriations to the Dairymen's Association unless the farmers promised better support in the future.

Afternoon Session.

Secretary's salary.

The Secretary-Treasurer then presented his accounts, and stated that although the late Secretary-Treasurer had drawn a salary of $20 per month he could find nothing on the minutes in reference to the salary of the secretary, and he therefore left it to the meeting to act in the matter.

Moved by A. C. Wells, seconded by J. R. Anderson, that a salary of $100 and expenses be voted to the secretary-treasurer for the past year. Carried.

Moved by W. P. Jaynes, seconded by A. C. Wells, that Mr. C. R. King be appointed auditor.

Election of officers.

The following officers were then elected: Mr. W. H. Ladner, of Ladner's, President; Mr. W. P. Jaynes, Duncan, Vice-President; Mr. G. H. Hadwen (re-elected), Secretary-Treasurer. These have associated with them on the directorate, Messrs. J. T. Collins, of Salt Spring Island; W. R. Robb, Comox; H. F. Page, Matsqui; R. Balfour, Langley; Thomas Kidd, Lulu Island; A. C. Wells, Chilliwhack; Thomas Robertson, Ladner's; W. H. Hayward, Metchosin; J. W. McGillivray, Sumas; W. Ford, Duncan; J. Bond, Vancouver; William Caswell, Saanich; J. Sluggett, South Saanich, and Watson Clarke, Victoria.

The following paper was then read by Mr. J. R. Anderson, Deputy Minister of Agriculture, upon the subject of winter feeding and winter dairying generally:—

Winter Dairying.

In effect Mr. Anderson pointed out that the sooner dairymen discover, the better it will be for them, that the profitableness of the dairy business is to quite an extent dependent upon producing dairy products at the season of the year when they bring the best prices, the men making the most marked success as dairymen in all parts of the world being careful to have a large proportion of their cows in full milk flow during the latter fall and winter months. Thus instead of forcing the creameries to close for the want of milk during several months of the year, a very little provision in the way of winter feed makes a vast difference to the income of those who look to dairying for a livelihood. Another argument in favour of winter dairying is that the care and milking of a herd of cows in full milk occurs at a time of the year when the farm hands and horses can best be spared.

The subject of cattle feeding and handling stock is a large one, and only general principles can be advanced—no hard and fast rules for feeding are known. It is nevertheless true, that the man who exercises the largest amount of good judgment, based upon all that the most advanced science can teach him, and who tries to put into practice the knowledge thus acquired, will be on the much surer road to success than one who works blindly. There may be no

"best" breed, no "best" ration, and no "best" way of handling dairy stock, yet there are many bad sides to all these questions and the man who learns to avoid the bad is well on the road towards the best.

Rations for dairy cows must vary with the animals fed, the stage of lactation, the system of farming followed, and many other conditions. It therefore seems futile to speak of feeding standards and of fixed rations, the subject has been threshed out by professional and practical men in all dairying countries, notably Germany, and whilst the conclusion arrived at is that cows require a certain quantity of food to supply a certain amount of protein fat and carbo-hydrates per day, firstly to replace the daily wear and tear, in other words, to keep the animal alive in a healthy condition; and secondly, for the purpose of forming milk. Experience has taught the lesson that common sense must after all, be consulted in feeding, as no two animals are constituted exactly alike.

The body is constantly undergoing waste, the substance wears out, breaks down, is taken up by the blood, and removed by the excretory organs. The matter thus removed must be constantly renewed, or the animal will grow thin and ultimately die. To supply material for repairing this waste is the first use the cow makes of the food, in other words, the greater portion is used for the production of heat and energy, and is, as far as the farmer is concerned, a dead loss, as he gets absolutely no return for it. To secure profit in feeding this proportion should be as small as possible, and there are two ways in which we may diminish the proportion which the food of support bears to the amount supplied. To secure profitable feeding both these plans must be used. The first is by reducing the food of support, and this may be done by protecting the cow from cold.

When labour of any kind is performed by the cow, food must be burned in the system to develop the required energy. Excitement of any kind involves an expenditure of energy, and must come from food. It is evident, therefore, that in order to reduce the amount of food for this purpose, cows which are fed for the production of milk should not be required to make any exertion not absolutely necessary. Not only physical energy, but also digestion is obtained from food, and we can therefore reduce this amount of food of support by providing food easily digested. This alone explains the necessity of providing cows with ensilage at the time of year when there is no green feed. If the food given to the cow is dry and hard to digest, she cannot be expected to derive the same benefit from it as if it were green food and easy of digestion. If a cow is kept in terror or excitement there will be an extra amount of food used in the development of energy, which otherwise might go for the production of milk. In order, then, to reduce to the lowest point the amount of food used as food of support we should observe the following rules:—

1. The cow must be protected from the cold.
2. She must not be called on to make any unnecessary physical exertion.
3. She must be kept in a placid temper, free from annoyance, excitement or alarm.
4. The food she receives must be easy of digestion.

By these means the amount of food used as food of support will be decreased, and the proportion which it bears to the total amount of food supplied will be decreased.

The second method of decreasing the proportion which the food of support bears to the total amount of food supplied, is by increasing the amount of food supplied. It is evident that every increase in the total amount of food supplied, causes a decrease in the proportion which the food of support bears to the whole. The total amount of food which can be supplied to an animal is limited by that animal's power to eat and digest it. If the food is coarse and bulky, requiring a large quantity of food to contain a small amount of nutriment, or if it is distasteful, the animal cannot take a sufficient quantity to accomplish the best results. The cow must have

an abundant supply of food for the maintenance of animal heat and supply of energy; and to obtain this wholly from coarse food, such as straw or poor hay, would require the consumption of too large a bulk of food. The cow can manufacture milk only out of the food given to her. No care in feeding, or perfection in pedigree, will enable her to put into the pail material which she does not find in the food.

To feed profitably, it is necessary that the feeder should get the largest possible return from a given amount of food. Silage must ultimately take, and is now taking, a permanent and very important place in the returns of dairy cows. Dairymen generally, do not sufficiently appreciate the great need and value of green, juicy food, as one component of the daily rations of the dairy cow. In our own case, we lay by vegetables, fruits and preserves for winter use, not simply to please the palate, nor because they are highly nutritious, but because they contain principles which are of the utmost importance in the influence which they exert over the process of nutrition and assimilation. Now, our domestic animals, like ourselves, not only relish, but greatly need something of this nature, roots and silage, as part of a winter ration, and the great problem is how this can be most cheaply provided, and the question becomes of imperative and paramount importance to the dairy farmer, who is keeping his cows for the purpose of consuming the largest possible amount of food, and converting it into the richest milk at the lowest cost. It is one thing to carry an animal through the winter on a simple maintenance, but it is a very different thing to crowd into the cow all that she can possibly eat and convert into milk.

It is irrational, said Mr. Anderson in conclusion, to suppose that a cow fed only to the limit of support, can supply milk, hence it follows that one cow properly fed will give more milk than two improperly fed cows. It is well to lay to heart the saying *Ex nihilo nihil fit*—Nothing can come of nothing. There is one other subject in connection with winter feeding, and that is the necessity of an ample supply of good water. Milk is largely composed of water (I do not mean as it is supplied to town customers), and it is a matter of paramount importance that cows should at all times have access to water, and of equal importance that the water should be absolutely pure and free from taint. The whole matter is summed up in bulletin 33 of the Wisconsin Experiment Station as follows:—

"Keep only good cows that respond to feeding.

"Feed liberally, but not to waste.

"Select such feed stuffs as will supply a fair quantity of protein.

"Raise and feed more oats and clover; use bran, shorts and oil meal whenever needed, and when obtainable at a reasonable price."

Mr. C. R. King warmly complimented the deputy minister upon the excellence of his paper, and observed that the choice was simply between cold storage and winter dairying. British Columbia was most favorably situated in regard to its adaptibility for winter dairying, climatic and other natural conditions being especially advantageous. In this Province the winter production of butter should be equal to that of the summer, better profits being thereby obtained. He urged increased attention to care and feeding, pointing out particularly that the cold rains of British Columbia are as dangerous to stock as the frosts of the Eastern provinces, while there is little nutriment to be had from winter grasses, no matter how green. Mr. King had also practical observations to make as to the feeding of ensilage, grains and concentrated foods, differing materially from the natural coarse foods of the cow, and the dangers incidental to unintelligent feeding. He favoured the thorough mixing of concentrated foods with some bulky material, such as chopped straw.

Mr. A. C. Wells also thanked Mr. Anderson for his hints contained in his valuable paper, and remarked that if any Province was in a position to advance, and advance rapidly, in the

matter of winter dairying, it was British Columbia. Several good moves had already been made in this direction—all the creameries were running this winter, and the butter output would, in consequence, be very creditable to the Province. He had a word to say, too, with regard to the superior advantages possessed by British Columbia in the matter of ventilating in the winter months, the health of the cow being more easily preserved here than in the Eastern Provinces, and closed with a word of suggestion as to mixed winter foods.

In this latter connection Mr. R. M. Palmer mentioned the use that may be made of oat dust, a short but interesting debate arising out of his expression of opinion.

Mixed Farming, by Mr. Watson Clarke.

"In preparing this paper on 'Mixed Farming' I have been as brief as possible," explained Mr. Clarke in his introductory remarks, "and I have left the subject as open to argument as possible, for it is one that embraces a very great deal. It is, in fact, inclusive of all systems of farming, such as the breeding and rearing of stock of all kinds, the growing of cereals and green crops, and the general cultivation of all classes of land. Mixed farming may be termed to a farmer as not carrying his eggs all in one basket, or having more strings to his bow than one. For when he has all kinds of cattle, grain and produce, he ought surely to have something which will command a ready market; and therefore he has a better chance than one who goes in for but one kind of produce. I believe, however, that on every farm, large or small, every farmer should have one or more specialties, and on large farms have as many specialties as possible. It is my belief that a man ought to stick to his specialties and not turn first to one thing and then to another just because some one article happens to make a little better price for the time being. It nearly always happens that if any article makes a good price one year, before three years are over the same article is over-produced, and, of course there is no demand for it. Stick to your specialties, and depend upon it your turn will come; take wheat at present as an example.

On a large farm we expect to find all kinds of stock, horses, cows, sheep, and pigs. We will take the horse first, as on every farm he is indispensable. I think that on a large farm it is the duty of every farmer to breed and rear all his own horses, taking care always to keep the very best of his mares for himself for breeding purposes, and not to dispose of them because they happen to make a little more money than the worse animals, as the best come from the best, or like produces like. I need not make any remarks as to the feeding of horses, as almost everyone who possesses one has his own way, and, as a general rule, will look well to its feed and comfort. Only, as to the younger animals, I would say that they require more attention than is given them, especially in the winter season, for if they are given plenty in summer and then are starved in winter it is like putting money into the pocket at one time and throwing it away at another—it will leave you no better in the end.

In touching on the cattle, we will take the milch cows first, and I must say that the class of cattle we have on Vancouver Island is not at all creditable, and I think it is the duty of every one concerned to try by all means to improve. We cannot blame either the land or the climate, for I have yet to see the country or the climate that can beat ours, where good care and judgment are used—in fact, I am surprised to see the cattle as good as they are, considering the treatment they receive. It is my idea that the first thing we should do would be to get some good male animals and try to get our cattle improved in that way. If I might suggest any of the breeds, I would recommend the Shorthorn or the Holstein—something that would raise a more general purpose animal—one that, should she fail in the dairy, could easily be disposed of to the butcher, and I wish to say that the dairying part of the business is only

one part of the profit which ought to be made from the cattle. Supposing you have a farm on which you keep twenty milch cows (milk selling dairies excepted), I would expect to see say twelve to fifteen calves reared every year, and easily raised without purchasing very much food for them.

Feeding Calves.

I should recommend that the calves have new or whole milk for at least three weeks; the next week half new and half skimmed milk, and then they ought to be strong and healthy and able to get along with skimmed milk alone. Or, if you want to make them extra good, it is as well to make a little gruel of linseed or oat meal, to be mixed amongst the milk when hot, to warm the milk, as it is then not as liable to produce colic or scour when fed. Such feed should not be dispensed with until the calf is from six to eight months old at least. They ought then to be well cared for till they reach the age of twenty-four or thirty months, at which time they will produce a calf and go into the dairy. And now comes the time that a farmer makes something from his stock, for say that only ten of the lot come all right into the dairy, he will have a like number of his older stock to sell out, and ought to make a good price to the milk-selling dairies or to the butcher.

In my opinion, choosing a proper dairy cow is as easy as anything there is to do on a farm. The first thing to do is to examine the udder, and if it is a proper shape and size, and the teats are in a right position, you may be sure that you will not be wrong in buying her. Some one will ask what is a proper shaped udder. See how they are pictured in the agricultural papers; you will see a large front bag extending well behind, with teats set on square, not pointing forward,but hanging straight down or even a little inclined backwards. Of course, you have the animal to look at; she may be large or small, rough or a beauty, but if her udder is not deformed her dairy or milking qualities are sure to be good.

Sheep.

On mixed farms, we expect to find a flock of sheep too, and if they be of the right kind there is nothing on the farm that will pay the same profit for the amount of labour and the feed they consume. I have heard it remarked that this island is not adapted for sheep, but I wish to contradict that flatly, as the climate is good, the land sound and dry, excepting a few swamps and low places (and they might be easily drained), and from the flocks I have examined I have found the sheep to grow to a great size, with a good quality of mutton and wool. There is plenty of mountain or upland on which the sheep can graze cheaply most of the year. The spring commences early, and the sheep can be kept outside most of the winter. All the land at the foot of the mountains is good for wintering the sheep, and also for fattening them and their lambs. There is nothing that feeds on the land that leaves as much or as good manure as the sheep.

Where sheep are kept, I think the fat lamb comes in first of any crop and always commands a ready market because the butcher finds that lambs taken direct from their dams and slaughtered are a much better quality than those that have left their mothers a week or more, or say, the imported ones. I am pleased to say the Vancouver Island Flockmasters' Association are taking up the matter of sheep-breeding, and we must commend them for the labour, energy and spirit they display in buying up the best rams they can obtain and doing all they can to improve the quality of their flocks. It is a step in the right direction, and I am sure that in a few years they will be rewarded for their labour and outlay. I am sure we all wish them every success. The wild animals and too many dogs are the great drawbacks for sheep-breeders.

Swine.

I must not forget that most important animal, the pig, because if you do not keep swine on the farm a great deal of feed, which can be given to nothing else, otherwise would be lost, and in these times we cannot afford

to throw anything away. The pig is best adapted for the smaller farms and milk-selling dairies, where you have not sufficient milk and feed for calves regularly. I consider the pig a market at home for everything which cannot be sold elsewhere. I say keep him well and he will bring his recommendations with him.

Cultivation. In regard to the cultivation of the land, I will not take up much of your time on the growth of wheat and oats, as I think the best methods of growing them are very well known. One thing I must say in regard to them and all other crops—plough deep, plough well and sow as early as possible. It is a well-known fact that in dry climates it is best to cultivate deep and roll down hard. As to the growth of barley, seeing there is so little grown on the Island, it is and should be considered, one of the best paying cereals on account of the large quantity required for malting, its quick growth and heavy yield. I am somewhat surprised that we do not have any malt kilns, as I am sure the amount of malt used in Victoria alone ought to keep one going and be a paying concern. It seems to me to be a case of no barley, no malt kilns—no malt kilns, no barley. It is not because the barley grown here is not good, as I have seen samples grown at Saanich really first-class for malting purposes. Barley on the lighter lands is, too, a really good change of crop for the land, instead of growing oats year in and year out as I have often seen done.

Malt.

Seeding grass. Seeding down land for hay or pasture is one of the most difficult parts of work on the farm, mostly on account of the very dry time we have in the months of July, August, September, and sometimes even in October. The young plants cannot stand the very great change that takes place in being sheltered by a heavy crop, which when cut, lays the plants open to a scorching sun. It is one of the big items of expense on a farm, and when we have to sow for two or three years before we get a catch, it throws your rotation all out of order. It is a subject that requires great study. I always find it a good rule to follow nature as closely as possible, and I would like to ask has anyone tried to sow grass seed as soon as the grain is taken off, because all the seeds that ripen and drop before the first rains come up and go on well.

For my part, I recommend that the land that is to be seeded down ought to be after a green crop, so that when you have worked and cleaned the land well and killed all the wild grasses, the seeds sown have the best chance and the land is not as likely to dry out as when only ploughed out of stubble. Sow plenty of seeds and be sure they are good. While I am on this subject, I wish to ask this question: Is timothy alone the best to sow? I say no; not on a mixed farm where you keep all kinds of stock. Timothy grows but one crop per year and is nothing for your cattle in the spring or fall. I recommend those who keep stock to try a mixture of Italian rye grass, red clover orchard grass, and sow this along with a little timothy, so that you will have early grass for your sheep and lambs, and after you have taken off your crop of hay have a good bite for your milch cows or any other stock. To those who go in for selling hay, why grow timothy, of course.

Now I come to what I consider one of the most important subjects of mixed farming—the growing of root crops. Potatoes are always a staple crop, and when too cheap and plentiful for the market are first-class for fattening cattle or producing milk, or for the making of first-class bacon. Till last year, potatoes have been free from all pests, but last year I was sorry to see the amount of damage done by a little black beetle, or fly, almost like the little black turnip fly, which eats all the leaves. Then the tops went down and died, and I give them more credit for spoiling our crop than the dry weather. Turnips cannot be recommended on account of the destruction caused by the green fly or aphis, and I am sorry to say that useful vegetable, the cabbage, had the same enemy, but I trust they will leave us soon and for

ever. The roots I recommend are the carrot and the mangold, as they are heavy croppers, and as yet free from all pests. On every farm there ought to be a large quantity of roots grown. They are the most useful kind of feed grown for winter and spring. Where a flock of sheep are kept nothing equals them, and I must tell you that if you have any land that wants manuring why, put on your sheep, feed them roots, and you will soon see the result. What have you better than a few carrots for your milking stock or your horses? But where you will find roots the most useful is amongst your young stock and dry cattle. You can feed them roots and straw and bring your cattle through winter in good shape, and you will also make a large amount of good manure to improve your farm.

Marketing Produce.

The most disheartening part of farming comes after you have worked, I may say, almost night and day to get your cattle into shape for the market, your grain and produce ready for the consumers. How many here have been disappointed after working hard a whole year to make something nice and good, and, when taken to city or market, to be told by the middle-men and the store-keeper, "There is no demand for it; it is worth nothing; but out of pity's sake, and as you are a friend, I will give you so much for it." At the same time, he is expecting to clear more for selling it once than you get for growing, preparing, carrying, and also selling it once.

Market Hall in Victoria.

The remedy for this complaint is for the farmers to combine, and I am sure if they will look round they will see they have it in their power to do so. Look at the fine Market Hall, which at the present time is a white elephant to our city authorities, its income barely paying for one man to attend to it. I am sure the city would be only too glad to rent it at a nominal rent. Now, if the farmers would combine and rent this place they would have every opportunity of placing everything they grow direct before the consumers, and on this point we might be able to turn to a profit what has hitherto been a loss. I think you will all agree with me that the small losses of one thing or another which under present conditions cannot be helped, could by having a market of your own be turned into a very nice profit—I mean all kinds of small articles which will not pay to take to town separately, which could be easily sent in under combination rules, for you can all see that if one waggon could collect and take articles, say from ten different places instead of hitching up ten teams, there must be a considerable saving. Our friends the fruit-growers did try to make a start of something of the kind, and I was sorry to see they did not go on with it; at any rate I consider it is a subject we might all take into consideration and discuss, and if it is considered worth while, why, let us combine at once.

Before I finish I may perhaps be allowed to make a few general remarks, and a suggestion upon which I think you will all agree with me. A question crops up. How are farmers to get the really good bred male animals of which I have spoken before? We all know that it will take more money than the ordinary farmer has to spare. Look at the enormous cost of carriage alone. Now in looking over what the Dominion Parliament are doing away back east, to help the Eastern farmers—that is, subsidizing fast steamers for exporting their goods, providing cold storage and even starting them stores in England for the sale of their goods, I should think it would be as little as they could do to help us to get in first class male animals, and I am sure that a few thousand dollars expended on them, and in placing them in different parts of the Province, so that all the farmers might have the use of them, would be money very well expended. I think it would be a more profitable and sensible plan than spending so much money on one or two experimental farms, as then everyone would have a chance of improving his stock. I am sure there are plenty of farmers who would undertake to keep a stud horse or a bull, and allow everyone the use of them for a very nominal charge.

I am sure, also, that everyone can plainly see that farmers, like the rest of people, will have to combine and stand shoulder to shoulder and work in harmony, instead of being broken up into all kinds of factions, and I would advise you all to weigh this matter over, and if you think I am right, why commence at once. I must ask a little forbearance from you all, as I don't think farmers are expected to be first-class writers, and if I have not made the address as it ought to be, you must excuse me. I have refrained from using figures, as I think any ordinary man can make a farm pay largely on paper. For myself, I am content to make a small profit from the land itself.

The Institute System, by Premier Turner.

Hon. J. H. Turner, Premier and Minister of Agriculture, having entered during the reading of Mr. Clarke's eminently practical paper, he was on its conclusion invited to address the meeting and at once complied, although he was still suffering from an attack of the grippe, and his remarks were therefore somewhat brief. He expressed pleasure at having been in time to hear a portion, at least, of the paper on mixed farming. Then turning to the matter of the Government grants to the dairymen and fruit-growers, he explained that the latter were considerably older and more numerous than the dairymen—the members of their association at all events—and the Government had therefore felt justified in extending aid to the first in the field, and thus making what was in reality a very important test. Its success would, he thought, be admitted, for the fruit industry had undoubtedly developed amazingly, thanks in great measure, no doubt, to the energy and ability of the inspector. In the case of the relative assistance to the two associations, the Government would naturally have to be guided largely by the interest evinced by the people of the Province.

Government work in Ontario.

While on this subject of societies for the promotion of special branches of industry, he thought it would be well for British Columbians to give a little consideration to a plan that was proving a great success in Ontario—the formation of Farmers' Institutes, the intention of which was to take in hand the various interests now dealt with by separate societies, but being very closely akin in their aims and character. For example, the Fruit-Growers' Association, the Dairymen's Society, the Horse Breeders' Association, &c., had all interests in common, and it was matter for consideration, whether it would not be advisable for British Columbia to follow the example set by Ontario. The practice there appeared to be that a small members' fee was charged, the municipality making a grant equal to it in the aggregate, and the Government contributing a like amount. The Government also provided lectures on the subjects of horticulture and agriculture, and by this means much valuable information was diffused, and at a comparatively small and divided cost. He thought the system might be adopted here with advantage, and work effectively; at all events the matter was worthy of consideration. If the dairymen saw fit to give it consideration before closing their annual session, he hoped that they would favour him with the opinion resulting. As to the grant, the Government would be pleased to consider any request they might have to make in this connection; they would be disposed, too, to deal liberally, for the revenue was increasing, and the Province showed undeniable signs of improving times.

Agricultural Societies in B. C.

Brief reference was made to the Kootenay country and Victoria's interests therein, the Premier remarking that he had no doubt improved communication would shortly be had with this important section, and promising legislation at an early date, having for its object the development not only of the mining industry, but of the agricultural and all other important

industries. In closing, he expressed the hope that some effort would be put forth shortly in the direction of closer union by the larger agricultural societies of the Province. If, for example, Victoria and New Westminster would combine and not split the Government grant, taking the exhibition year about, better and more satisfactory results would unquestionably be obtained.

Hon. Mr. Turner's remarks were productive of several other short addresses. Mr. Ladner holding the small shows to be very necessary, as many could not afford to attend the larger exhibitions; Mr. Wells referring to the difficulty of combining the large shows, and working harmoniously; Mr. Anderson and Mr. Hadwen arguing in behalf of combining the smaller shows where the size of the district made this practicable, at the same time increasing the prize-lists; and Mr. Watson Clarke lamenting the disposition on the part of the promoters of the large exhibition, to make horse-racing and other similar attractions more conspicuous than the displays of products that were the real exhibition, if its proper character were maintained.

The Education of the Cow, by Mr. A. A. King.

"The Education of the Cow" was the title which Mr. A. A. King gave to his address, in prefacing his paper on "Some Needs in Dairying."

We often hear from patrons of the creamery, said he, that there is no profit in dairying—that it costs too much to produce a hundred of milk or a pound of butter, or butter fat. Others again are satisfied because they are making money out of their herd. When we hear the different stories told by these people, patrons of the same creamery, enjoying the same advantages, the one becoming bankrupt and the other rich, we naturally want to find out the reasons thereof. And on investigation, we find one man well versed in his business and the other ignorant, opposed to new methods and theories, "unwilling to change to suit his old cow." We find one herd of selected cows, with a pedigree based on their milk and butter production; we find the other herd made up of cows that have never been tested in any way, but simply kept because they happen to be cows or heifer calves. This brings me to the first great need in the dairy line in this Province, and that is the practical application of the Babcock tester to the dairy herd.

The market prices are beyond our control, but we have control of the cost of production, and to this alone do we look for our profits. The herd, then, becomes the foundation of the whole dairy business. Much, of course, depends on how we feed and care for our cows; but no amount of feed and care will ever make a cow whose capacity is only 120 pounds of butter a year, a profitable cow. Every dairyman should establish a standard of his own, which is adapted to his particular conditions, and every cow that does not come up to that standard should be sacrificed.

Standard for Cows.

In calculating your standard of profitableness, you should take into consideration the cost of feed, labour and interest on the investment in the cow. Let us calculate a standard for an example. We will suppose that it costs $40 to feed a cow for a year, $10 for labour, and $2.50 to pay interest. We now have about $52 charged up against the cow. Now what have we to put on the other side of the account? It is plain to be seen that the 120-pound cow is not in the race, as her butter would have to sell for 40 cents to make a profit.

We will allow $10 for skim milk and $5 for manure, which will leave $37 to be paid for by the butter. Supposing that we made as much butter in the winter as summer, and getting

on an average from the creamery 21 cents per pound, we would have to make about 176 pounds in order to come out square. So you see that there is no profit in a 175-pound cow, neither is there very much profit in a 200-pound cow.

Now why do we keep such cows as these? We would not keep a servant long who would only do enough to pay for his board, and why should we keep a cow? The reason is that we do not know, and do not take pains to find out, which cows are profitable and which are not. I believe that three-quarters of the cows kept in this Province are actually running their owners into debt. There is no excuse for this in these days of the Babcock testers—in these days when science has made it possible for the dairyman to have complete control of his business. No other business man would neglect the opportunity of avoiding loss and securing a profit, especially when it can be secured as easily as this.

In the estimate that we have made we find that it requires 176 pounds with the skim milk and manure to pay for feed, labour and interest; this being the case, we must weed out all cows that only make that or under, if we wish to make a success of our business.

Individual and Composite Tests.

Perhaps the surest way of finding out the value of the individual cows in your herd, is to keep an accurate account of the weight of each cow's milk during the milking season, and also to take a test of an average sample of this milk about once a month in winter and twice a month during the summer season. This method is called the composite test. The first step in the composite test of cows is an accurate account of every day's milk of each cow. This can be very simply accomplished by providing each milker with a spring scale and tally board, so that when he finishes milking a cow he has simply to hang the pail on the spring balance and mark the weight under that particular cow's name on the tally board. The next step is the taking of the sample. To do this, get your tinsmith to make you a little cup one inch in diameter and about two inches deep. This will hold about one ounce, and is sufficient; pour the milk from one pail to another once or twice, and then take the little ounce cup full and put it in the jar marked with that cow's name, shake gently to mix the milk, and place jar back in its proper place. To preserve the samples sweet for any length of time, put in the jar about as much bichromate of potash as you could hold on a ten cent piece. This will also prevent the cream from becoming hard or adhering to the sides of the jar. When you desire to test, at the end of a week, or two weeks, place the jar in a pail of warm water to soften the cream, then shake with a rotary motion until the cream is thoroughly mixed with the rest of the milk; take out your sample and test it.

A simpler form is, instead of continuing the test throughout the entire season, test an average sample of one week's milk every two months throughout the milking season. This is not so accurate as the first, but will enable you to get at an approximate value of your cow.

We have now tested the cow, and have found out the amount of butter fat and milk given during the season. Next we must find out how much butter this represents. The simplest way to do this is to add on one-tenth to every per cent. of butter fat. For example, our cow gave an average test of 4.3 per cent. of butter fat; by adding on one-tenth of every per cent. we get 4.7 pounds of butter to every 100 pounds of milk, and by multiplying the number of 100 pounds of milk given by the cow during the season by 4.7 we get the amount of butter which we could make from that cow with proper care, and with the number of pounds of butter you get the profit that the cow is making for you, or if she be kept at a loss, the amount of that loss.

I hear some one of my farmer friends saying that that is all right in theory, but not practical, but I tell my friend that it is just as good in practice as in theory, and it is the only practical method of determining the value of the individual cows in your herd. Of course, it

means some very careful work on your part, but "nothing good is lightly won" in this world, and in this case you will have the satisfaction of knowing that, by a little patient effort, you have established a herd that is every day putting dollars into your pocket, no matter whether the sun shines or not.

But, returning to our subject, supposing our cow gives on an average one pound of butter per day for 300 days; that cow's milk would be worth $61, and would give you a clear profit of $24. But don't be contented with this—aim higher—put your standard at 400 pounds per year. What one dairyman has done another can do, and perhaps a little better. Let us try to excel in whatever line we are working.

The meeting adjourned until 7 p.m., when the discussion on Mr. King's paper was resumed.

Increasing per cent. of Butter fat.

Mr. King referred to the question of feeding with a view to increasing the percentage of butter fat in the milk, saying that although this had never been proved possible, yet he thought that the question should not be considered as definitely decided. He urged the necessity of being absolutely clean in milking and in caring for the milk.

Oleomargarine.

A discussion took place on the question of whether any margarine was at present being imported into British Columbia. Moved by R. M. Palmer, seconded by Watson Clarke, that the president and secretary be empowered to obtain samples of butter suspected and have them analysed.

Mr. J. T. Collins, of the Salt Spring Island Creamery, read a paper on dairying, and touched on much the same subjects as Mr. King, and the discussion was continued.

Tariff.

The tariff question was then introduced, and after the expression of several members as to the necessity of a high tariff, the following were appointed to draft a resolution to be forwarded to the Dominion Government, viz.: Messrs. C. R. King, A. C. Wells and G. H. Hadwen.

Evening Session, January 30th.

Messrs. C. R. King and J. T. Collins presented their report as auditors, which, on motion, was adopted as read. Moved by C. R. King, seconded by A. C. Wells, that the B. C. Government be petitioned to print 1000 copies of the report of the Proceedings of the British Columbia Dairymens' Association.

The committee appointed to draft a reply to the Minister of Agriculture read a letter urging the Dominion Government, in view of the increasing and important dairy industry of this country, not to lower the tariff on dairy products.

The letter, on motion, was adopted as read.

Votes of Thanks.

Votes of thanks were then voted to the Mayor and Council for the use of the City Hall; to the Canadian Pacific Navigation Company for the rates quoted to members attending the Convention; to Mr. J. R. Anderson, and the President, W. H. Ladner.

The meeting then adjourned.

Winter Dairying, by H. F. Page, Matsqui.

Dairying at the present time is more a live question than ever it has been in the history of the Province, and, I venture to say, offers better inducements than any other branch of farming, while some who lately have gone into dairying have not met with the success they anticipated, are giving up in disgust. While I will not venture to cover the grounds of failure in these cases, I will say that every man is not a dairyman, and is not qualified to meet with the same degree of success as his neighbour may, no matter what the conditions.

I believe that winter dairying warrants more consideration than it has received heretofore, and that it offers better inducements than the practice generally in vogue now in British Columbia. No part of Canada can grow more succulent feeds, suitable for profitable feeding of dairy cows. These feeds can be fed as a soiling crop, or converted into ensilage or cured, as the case may be. We have a mild climate, which does not require such expensive buildings to keep the cows *comfortable*, which is one of the environments essential to success in dairying. I think the word comfort deserves much more consideration than it generally receives. Unless cows are comfortable in every sense of the word, they will not do their best, no difference what breed they may be, nor the feed they consume.

Cows coming in fresh the last of August get the benefit of the aftermath, and escape the hot dog-days, and if put in the barn at nights during the cold rains and fed some succulent food, of which corn is no doubt the best where it can be grown successfully, although second crops of clover or oats and peas, sown late for this purpose do very well—cows so attended and fed should go into winter quarters giving a full flow of milk, while cows calving in April and May would be about dry, and would be dead heads for five or six months.

Feeding ensilage.

Where ensilage has been prepared, cows should receive from 40 to 60 pounds per day, this with 15 pounds of early cut *clover* hay, and 6 to 8 pounds of ground grain should keep a cow up to full flow of milk. This should be fed in two feeds, and cows not disturbed more than is necessary, very little exercise being required by cows giving a good flow of milk where the surroundings guarantee comfort, such as warm stables, plenty of *light* and *pure air*. I have always found that cows calving in the fall, and well fed and kept during the winter, will increase their flow of milk with the fresh grasses of the spring, in many cases equal to the cows lately calved.

Quoting from John Gould, the well known writer on dairy subjects, he states that his herd of cows which had calved in the autumn of 1895, were the best milking herd up to July 10th last year, at the creamery where he delivered his milk. A writer in the Country Gentleman also states that his 10 best cows, calving in April, gave 43,082 pounds of milk during the year, while 10 cows calving in the fall gave 50,478 pounds for the same period.

Further, cows calving during the fall allow the milking to be done when there is not the rush of work. Allowing more time to attend to cows and calves, and the calves when weaned, go to grass and get a good growth before going into winter quarters. The work of the farm is thus more evenly distributed and help can be continously kept, which generally is more satisfactory. Probably the greatest benefit is the increased price of product, which in the writer's case is 50 per cent. more now than it was in July last, also the product is much more easily handled during the cool winter months, whether it be milk, cream, or butter.

Agricultural Papers.

In conclusion, I would say, study your business by reading one or more of the best papers bearing on the subject; consider the means used by those who have been successful, and adopt them so far as practical for you to do so. I will again say, that comfort, with regularity of attention is essential to success in dairying, be it summer or winter.

Winter Feeding, by Guy McL. Richards.

Winter feeding is a subject that should interest all dairymen, for upon it depends your success in winter dairying, and as I consider winter to be the most profitable season of the year for dairying, not only because our dairy products command the best price, but because we must, to make it profitable, properly feed and care for our cows at the season when they most demand it; this subject should have the careful consideration of all. In selecting our feed for winter use, we should do so with the view of supporting the cow's body, supplying it with the necessary energy and warmth which is required to enable her to fully perform the functions of milk production, at the same time not allowing an over accumulation of flesh. It is a well known fact that a cow with a disposition to turn her food into flesh is not as a rule a profitable milk producer, it therefore becomes necessary for the feeder to have a general knowledge of the chemical constituents of food, and the proper proportions in which these foods should be fed with a view to producing the most milk, and at the same time supporting the body and keeping it in a healthy working condition.

Balanced Ration.

We have in feeding what is called a "balanced ration," that is, a ration chemically balanced to support the body and also produce the best milking results. The American feeding standard for a thousand-pound dairy cow is 24.5 pounds of organic matter (dry matter) daily, containing 2.2 pounds of digestible protein, 12.16 pounds carbonydrates, and .7 pounds of fat, this giving us a nutritive ratio of 1 to 6.9, *i. e.*, one pound of nitrogenous matter to 6.9 pounds of carbonacious material.

It has been discovered that the above ration is required for the average dairy cow, but this is not a cast-iron rule that can be set down and followed without variation, for all cows are not evenly constituted, some requiring more of the carbo-hydrates, which are the body supports and form the heat producers, while others require an increased amount of protein (nitrogenous) which is a blood and tissue former, hence contributes to the formation of milk. It therefore becomes necessary for the dairyman to study the individual characteristics and needs of his cows, and should he find that some are producing large quantities of milk, but at the same time losing flesh, becoming thin and weak, he should in this case feed an increased amount of carbo-hydrates, without decreasing the amount of protein. Again, on the other hand, if he finds cows decreasing in milk supply and increasing in flesh, he should lessen the carbo-hydrates and increase the protein. Thus it will be seen that a dairyman, in order to be successful, should not only be a student of feeds and feeding stuffs, but he must also be a close observer and watch the individual characteristics of each animal.

Large feed for one Cow.

Another important point in feeding is the animal's power of assimilation and the amount of food she can daily consume at a profit, and right here let me say that a cow is nothing more nor less than a machine for converting food into milk, the more food you can get her to consume to an advantage the more profitable she will be; for instance, the great Holstein cow, Rosa Bonheur, 11,227, owned by the Michigan Agricultural Experiment Station, during an experimental test consumed daily, and profitably too, 114 pounds of silage, 12 pounds of corn meal, 9 pounds of oat meal, 3 pounds of bran, 9 pounds of oil meal, and 27 pounds of roots. Thus it will be seen that she had great powers of digestion and assimilation, for weighing 1,750 pounds, she consumed daily over 30 pounds of organic matter (dry matter) to each 1,000 pounds live weight. Another thing that made possible this large daily consumption of food was the quantities of succulent food consumed, which is not only more digestible in itself, but aids greatly to the digestibility of the more concentrated foods fed with it. I doubt very much if this cow could have held out during the experiment had dry hay been used in the place of the silage and roots. Succulent foods, such as silage

Succulent foods.

and roots, are very necessary for successful winter dairying, for during that season there is no material green feed, and cows kept in confinement must have something to keep their systems in tone, and nothing to my knowledge can compare with the above named foods.

Kindness to Animals.

In conclusion let me say, supply yourselves with a table of the chemical analyses of feeds. These tables are found in most of our agricultural bulletins on the subject of feeding, and have also been printed in all daily papers. Study these tables and use them as a guide in formulating your ration. Provide your cows with good warm winter quarters; warm stabling is indispensable for successful winter dairying; keep your cows clean and comfortable; don't be afraid of using the brush and comb, you will be well paid for these little extra attentions, both in the saving of food and the increased flow of milk. Treat your cows as you would like to be treated were you in their place. Use the milk stool to sit on, not to abuse the cow with, should she happen to brush her tail across your face, or in some other way ruffle your temper. Remember when you abuse your cows they will always pay you back with a decreased flow of milk or a lower per cent. of butter fat. Kind treatment and palatable food pleases the cow and appeals to her sympathy, which she will abundantly demonstrate in her actions towards her keeper and an increased productiveness.

———o———

INDEX.

L.

M.

N.

O.

P.

R.

S.

VICTORIA, B. C.:
Printed by RICHARD WOLFENDEN, Printer to the Queen's Most Excellent Majesty.
1897.