

plient, while the owners and the exporters held their butter too long for higher prices, although knowing that butter does not improve by keeping. He thought that refrigerator cars should be run every two weeks to Montreal in order to get the butter into cold storage buildings as early as possible.

On the second day Prof. Shutt took for his subject, "Chemical Advice in Dairying Practice" In his address he showed the close relationship between chemistry and agriculture, and how useful the former was in explaining the more intricate problems in agriculture.

"The Value of Education to the Dairymen" was touched on by Mr. John S. Pearce, London. If buttermakers are to keep up to the times, they must study. A course at the dairy school was strongly advised.

On being once more called on, Mr. John Gould spoke on silos and ensilage, giving his own experience and much advice as to the construction of a silo.

"Good Roads," as a means of lessening the cost of hauling milk to creameries and cheese factories, was the subject of Mr. A. Pattullo's address. The improvement of country roads would mean an annual saving of half a million dollars to dairymen.

Prof. Dean, in speaking on "Fat in Milk," said that fat could not be fed into milk. The quality of the milk depended on the cow herself. Feeding slop did not increase the quantity of milk. The separator method extracted more cream from the milk than other methods.

Prof. Robertson addressed the meeting on "The Creamery Outlook of Canada." Creamery butter was the only kind that could compete in the British markets with foreign and colonial butter. Dairying offers the best chance to a man of getting good returns for his skill. The co-operative method is the best way of manufacturing butter, being the most economical, and giving a better product that will sell for the highest price. He gave some advice as to feeding and the care of dairy cows, and some hints as to the best method of handling the cream.

Prof. Shutt followed with a talk on improved methods of farming, after which Mr. John Gould discussed the management of the dairy, pointing out that, after all, the man was the most important factor in the dairy, the cow coming next.

Mr. J. W. Wheaton, secretary of the Western Ontario Dairymen's Association, took for his subject "Bacteriology in Relation to Milk." He showed that there were two kinds of bacteria present in milk. Of these, one kind could be destroyed by heating up to 130° or 140°, while the others could not be killed unless a temperature of 230° to 260° were obtained. As these germs flourished in milk, he showed the necessity of absolute cleanliness both in the stable and in everything connected with milking and the dairy utensils. Pure air tended to destroy the injurious bacteria, while the more desirable forms that ripened the milk were fostered in it. Pasteurizing milk could be done in the creamery, but not in the cheese factory. Separating cream immediately after milking would ensure purer cream and butter. He thought the study of bacteria so important that a specialist should be appointed for that purpose.

Prof. Robertson, in speaking on marketing butter, referred to the difficulties in shipping to the old country, and favored giving a bonus to factories for building cold storage buildings. He would hold summer creamery

butter in cold storage, and ship it to Great Britain in the winter.

A resolution was then moved by Mr. J. H. Croil, Aultsville, and carried, that "The Dominion and Provincial Parliaments be asked to extend such financial aid as may be necessary to place weekly shipments of fresh-made Canadian creamery butter on the English market until such time as its quality be established."

Prof. Robertson, being again called upon, spoke on "The Proper Method of Feeding a Cow."

The following are the officers for the current year: President, D. Derbyshire, Brockville; first vice-president, Wm. Halliday, Chesley; second vice-president, J. Miller, Spencerville; directors, J. H. Croil, Aultsville; A. Campbell, Ormond; Charles Johnson, Athens; John Sprague, Ameliasburg; A. A. Wright, Renfrew; A. A. Allan, Toronto; John S. Pearce, London; W. G. Walton, Hamilton; John Hannah, Seaford; A. Wenger, Aytun; W. Snider, St. Jacobs; James Carmichael, Arva; John Seinkam, Wellesley; secretary and instructor, Mark Sprague, Ameliasburg.

Western Ontario Dairymen's Association.

January is the month for the dairymen of Ontario to sit in session. The hall was opened by the eastern men, then came the creamery meeting, and last of all the western men had their turn. These had selected Stratford for their place of meeting, and January 15th and the two following days as the dates. With the exception of the opening session, the meetings were very well attended. The chair was occupied by Mr. Andrew Pattullo, Woodstock, president of the association. In the course of his able annual address, he referred to the work of the association during the year past, and thought that much of the prosperity of the dairy industry was due to their efforts. There had been a steady growth of the cheesemaking industry in western Canada, and the growth of the dairy was further evidenced in the progress of winter butter-making in connection with cheese. It was possible that the expansion of dairying might cause a fall in prices. All efforts should, therefore, be directed to raising the quality and improving the position we now hold in the markets of the world. Cheesemakers should be paid a good salary. Oftentimes, the cheapest cheesemakers were the dearest in the end. The association might do a useful thing if it could bring about an arrangement by which all the factories would establish a fair and liberal rate for the manufacture of cheese according to the volume of the output in each, then advertise the price to be paid for making, and select the maker in every case purely on merit, and without any reference to the price which he is willing to take in competition with others. Mr. Pattullo strongly urged that attention be paid to the improvement of the home market. As regards branding cheese, he felt that the advantages of branding our cheese indelibly on the bandage, that is, the name of the district of the factory and the date of manufacture, would far exceed any possibility of disadvantage that can be suggested. Such a system would promote confidence in the producer and prevent deception, either on the part of the middlemen or of the makers of cheese.

The report of the secretary-treasurer, Mr. J. W. Wheaton, showed that the work of the association was progressing favorably. Ad-

resses had been given at twenty special dairy and annual meetings, as also at other meetings. Circulars, asking questions on some of the more important phases of the factory system, had been sent out to factories. To these 136 replies had been received, being about three-eighths of the total number of factories. There was an average of 72.7 patrons and 466.2 cows for each factory. This would make a total of 23,627 patrons, supplying the milk of 151,555 cows to cheese factories in western Canada. The largest amount of money received by any patron from a cheese factory in 1893 was \$65, and the lowest \$9.96. If 151,555 was taken as being the number of cows, the estimated amount of money paid to the cheese factory patrons in the territory looked after by this association would be \$3,917,696. The cost of manufacture, including drawing, varies from 1½ to 2½ cents per pound, making an average of 2 cents. The highest test of butter fat for June, 1894, was 4.9 per cent., the lowest 1.8, and the average test of the fats 3.4 per cent. The prices obtained for butter at the creameries last winter varied from 23½ to 24 cents per pound. The cost of manufacture varies from 3½ to 4 cents per pound. There is an increase in the number of factories making butter. As far as can be estimated, there are thirteen cheese factories in western Ontario making butter.

The inspector's and the directors' reports were then submitted, and Mr. J. S. Pearce, London, delivered a short address on "Dairy Goods at our Exhibitions," making several suggestions for increasing the exhibits and extending the interest in them. He was followed by Mr. D. Derbyshire, who paid the president a high compliment on his address. He would not have cheese made in early winter or spring. In winter, fancy butter should be made, and fancy cheese between May and October. We furnish one-half the cheese imported into the mother country, and could easily increase the trade to 75 per cent.

Mr. John Gould, of Ohio, gave a capital address on "Some of the Principles of Dairying," in which he counselled dairymen to learn thoroughly the A B C of the business.

Mr. C. H. Everett, president of the Wisconsin Dairymen's Association, followed him, and spoke of the high reputation Canada had for cheese.

Hon. Thos. Ballantyne gave a sketch of the progress of dairying during the past twenty-eight years. He advised breeding special purpose cows. Nothing was as profitable as dairying to-day.

Mr. F. C. Chapais, assistant dairy commissioner for Quebec, spoke briefly of the progress of dairying in that province.

Prof. Robertson devoted his address to dairying in general. He was of the opinion that the most valuable equipment of a dairyman was a clear head and a good mind. Speaking of the cheese industry, he said that we exported \$16,500,000 as the product of the dairy last year. Of this, \$15,500,000 was in cheese, and a little over \$1,000,000 in butter.

The hall, at the second day's session, was crowded. Prof. Fletcher, Ottawa, spoke on "Injurious Insects." First treating of the hornfly, he said that it had reduced the dairy output from one-quarter to one-half last year. Speaking of lice, these worried cattle and affected the production of milk. The remedy for the hornfly was two parts of coal oil to one part of soap suds or sour milk reduced by ten times the quantity of cold water and applied by a force pump, a sponge, or a swab. It

was a cheap and effective remedy, and would clean the cattle of lice as well. It had also another advantage, as it reduced the warble attacks on cattle. It prevented the eggs of the warble fly from being laid, and also suffocated the insect inside. The attacks of the pea bug were next touched upon. By holding over for two years one had an effective remedy for the pea bug. Place the peas in tight paper or cotton bags, and the insects would come out during the first year and die of starvation, because they did not feed on the dry seed. Another insect, hatched from an egg on the green pods, was proving very injurious. The eggs were laid immediately after the seed pods were formed, and the small caterpillar ate its way into the pods. When full grown, it fell to the ground, where it lay during the winter. The remedy which obviously suggested itself was to grow the peas as far as possible on the second year from where they were grown the first year.

The clover seed midge and insects in fruit-also came in for mention. Spraying was the only sure remedy for these latter.

Mr. C. H. Everett discussed the "Breeding, Feeding, and Care of Swine." His remarks were much in a line with the experience of the best swine breeders, but his advice to look for breadth in preference to length would not be at all suitable for Canadian hog-raisers who have the English market in view.

Mr. John Gould's discourse on "The all the year-round Care of Cows" contained much solid good sense and practical advice. The dairymen who gave all the year round care to his cows got the best results. He advocated saving the best young heifers, using vigorous sires, and keeping cattle in clean, dry, and pure stables.

Prof. Dean then spoke on "Some Experiments in Cheesemaking" that had been conducted by the Ontario Agricultural Experiment Station. The conclusions drawn were that an increased percentage of fat in the milk gives an increased yield of cheese, though not in the same proportion. That a pound of butter fat in milk averaging 3.37 per cent. of fat will make more cheese than a pound of fat in milk averaging 3.94 per cent. of fat is shown by the results of the experiments at the dairy of the Ontario Agricultural College, and all the other Canadian experiments quoted point in the same direction. There is little difference in the per cent. of fat lost in whey, whether the milk is rich or poor in fat, what difference there is being in favor of the whey from the poor milk. Adding on 2 per cent. to the fat readings, and dividing the proceeds among the patrons according to this basis, appears to be more nearly correct for normal milk than paying by weight of milk, or paying according to the percentage of fat alone, though this number is tentative or suggestive rather than conclusive.

Prof. Robertson disagreed with Prof. Dean as to the correctness of these results, and a letter was read from Prof. Van Slyke, of Geneva, N.Y., who also was opposed to Prof. Dean's conclusions. Hon. Thos. Ballantyne also asserted that rich milk made better cheese than poor milk.

In answer to Prof. Robertson and the letter of Prof. Van Slyke, Prof. Dean said that the only point in which they differed was the relative excellency of the cheese made from the rich and that made from the poor milk.

Mr. A. W. Campbell, St. Thomas, spoke of his experience in road building, and showed how good roads should be built.

Prof. Robertson closed the evening's pro-