

## The Cheese and Butter Association of Western Ontario

The program for the 32nd annual convention of the above association has reached us. This annual gathering of Western Dairymen will take place in the Grand Opera House at Guelph, Ont., on January 17th, 18th and 19th next. A splendid array of talent has been secured, and dairymen who can avail themselves of the privileges of this convention will be well repaid in the fund of practical and up-to-date information they will receive on all branches of dairying. Among the prominent speakers who are to address the convention are the Hon. Sydney Fisher; Hon. John Dryden; Hon. Thos. Ballantyne; A. F. MacLaren, M.P.; A. Pattullo, M.P.P.; Prof. Robertson; Prof. Jordon, Director New York Agricultural Experimental Station; Prof. Beardshear, President Ohio State College of Agriculture; Prof. McKay, Iowa State Dairy Instructor; Dr. Saunders; Dr. Mills; Prof. Dean; Prof. Shutt; Dr. Connell; C. C. James, Deputy Minister of Agriculture; A. W. Campbell, Provincial Road Instructor; F. C. Harrison, and D. Derbyshire, President Eastern Butter and Cheese Association. Arrangements have been made for a return trip for single fare to Guelph. Delegates must secure standard certificates from the ticket agent from whom a first-class single ticket to Guelph is purchased.

Though we have as yet received no programme of the annual convention of the Eastern Cheese and Butter Association, we understand that the annual gathering of Eastern Dairymen will be held at Kingston, Ont., on January 10th, 11th and 12th next.

## Influence of Feed on Quantity and Quality of Milk

Paper read by Prof. C. F. Curtiss, Iowa Experiment Station, before the Ontario Experimental Union, 1898

At the outset it may be stated that it is universally conceded that feed exercises a marked influence in determining the quantity of milk yield from dairy cows; so much so that the yield of a dairy herd is in many cases directly proportional to the nutritive value of the ration given. The dairy functions of the cow are never developed to their maximum capacity except by liberal and intelligent feeding. To be sure, it requires something more than liberal feeding to make a good dairy cow in all cases, but of one thing the dairyman may rest assured, viz., that no really good dairy cow was ever produced without it. The good dairy cow does not come by chance or accident. She grows, but not spontaneously; she begins milking at about two years of age, and, when surrounded by favorable conditions, continues to develop and grow in milk-producing capacity until the age of seven. It then takes seven years of constant, careful work after birth to make a dairy cow what she ought to be, and many of our best cows represent at least a hundred years of intelligent selection and breeding before birth. During all this time feed exercises a dominant influence in the development of dairy function and increasing milk-giving capacity. The quantity of milk, then, is directly dependent upon two principal factors—feed and hereditary training or force. Feed is simply the raw material from which the cow, as a delicate organization or machine, makes the first product of the dairy; milk and other things being equal, the results are always in favor of the cow capable of utilizing the largest amount of this raw material. The importance, then, of liberal feeding and the cow having large digestive capacity is readily apparent.

The second phase of the question under consideration relates to whether or not the cow is able to furnish a uniform product under all conditions independent of the kind of raw material or feed used. For several centuries this question was answered negatively by almost universal consent. It was considered settled. But the invention of Dr. Babcock giving to the dairy world a simple and accurate means

of measuring the fat content of milk, shed new light on this problem, and we have another illustration of the saying, that great questions are never settled until they are settled right. The reading of the Babcock test did not reveal the variation in quality of milk due to feed that had been supposed to exist, and a great many careful and practical investigators have been studying this subject during recent years. The authorities are not yet agreed on the influence of feed in this respect. The investigations that have been conducted in the United States have generally indicated that feed has comparatively little influence in determining the quality of milk, while many practical dairymen yet believe the opposite. Some of the British authorities hold very positive views on this subject. I quote the following sentence from a writer in a recent number of a British agricultural journal, relating to the work of an American experiment station: "It is impossible to too strongly denounce the false teaching of those ignorant American would-be scientists and their fellow-followers in this kingdom."

The false teaching referred to was the conclusion reached at one of our stations to the effect that feed exercised no perceptible influence in modifying the composition of milk. The writer then proceeded to quote from the report of that station, and from the report of an experiment by Mr. J. Speir, of England, in parallel columns. The sentences quoted are as follows:

"So far, however, no method of feeding has yet been devised that so far improves the quality of milk as to produce more butter at one time than at another."—American Experiment Report.

"On pasture, 100 pounds of milk produced 3.77 pounds of butter; on decorticated cotton-cake feeding, 100 pounds of milk produced 5.26 pounds of butter."—English Report.

A superficial glance at these statements indicates a marked discrepancy in the two investigations under consideration, and, if the latter were accepted as conclusive, the American investigators alluded to, and a number of others as well, would unquestionably have to plead guilty to ignorance. Mr. Speir's report was published in the Journal of the Royal Agricultural Society in 1896. The experiment covered a vast amount of research, carefully and conscientiously reported by Mr. Speir, but there were a number of factors entering into the experiment tending to modify the results in such a way as to make them not directly comparable. The experiment started out with only four cows, and all of them were changed between the grass and the cotton-seed feeding periods, so that these periods were really nine months apart, and conducted with different sets of cows. When the variation due to these influences is accounted for, the contrast in the result is much less striking than the above comparison indicates. There was, however, a less marked variation in the composition of the milk, that was attributed to the influence of feed. Mr. Speir summarized the results in the following words, "There are at least two foods, viz., young fresh grass and grains that have the power of lowering the percentage of fat in milk, and two others, viz., vetches and decorticated cotton-seed cake, that have a tendency to increase it."

These findings harmonize with the conclusions of England's most eminent investigators, Lawes and Gilbert, who report from their Rothamsted experiments, in the Journal of the Royal Agricultural Society, 1895, that, "The yield of milk was in much greater degree increased by grazing than by any other change in the food, and that roots came next in order. Also that grazing considerably reduced the percentage composition of the milk, though owing to the greatly increased quantity yielded, the amount of constituents removed in the milk whilst grazing may nevertheless be greater per head than under any other conditions."

The experience and observation of practical dairymen are quite generally in accord with the foregoing results, though on careful analysis the distinctions not infrequently partially or completely vanish. In the Iowa Experiment Station herd in 1897, the record of seventeen cows was taken, extending over a period of eight months, from Feb-