

sampling three days a month will not give practically as good a comparison of the cows as weighing every day, and the reply was that it would give practically as accurate results. There is this one point, however, which the editors of "The Farmer's Advocate" would impress: The man who weighs only three days a month will not have as good a guide for his daily feeding operations, nor will he have that constant stimulus before his herdsman and milkers that is essential to maximum results. For these reasons, it pays handsomely to weigh every milking, though weighing three days a month is far better than not weighing at all.

#### THE MEN WHO ARE TESTING SEND THE MOST MILK TO THE FACTORIES.

W. H. McNish, of Lyn, Ont., was the third speaker. He emphasized the need for more enthusiasm in dairy work. We do not make half the progress we might. We should get our families interested in this testing work. He had noticed, in his district, that the men who are testing their cows are the ones who have sent the most milk to the cheese factories and have the best herds to-day. No man can successfully maintain a high-class herd without milk records. There is money in testing—money for the individual, and money for the nation. There are also commercial possibilities, even for men with grade herds. The progeny of high-class tested cows will sell at a premium. He told of one heifer from a cross-bred cow which he sold for four times what his neighbors were getting for similar heifers, just on the strength of her dam's milk record.

#### THE SANITARY HANDLING OF MILK AND MILK PRODUCTS.

From an address by Prof. H. H. Dean before the Ontario Winter Fair, December, 1907.

Someone has said, "Every good farmer has two farms, the real and the ideal. The ideal is always a little better than the real, because when the real catches up with the past ideal, there is created a new and better ideal. As soon as a man has attained in reality the best ideal he can create, he comes to a standstill, and when a man gets to that point he begins to go backward. Keep pushing up your ideals, and strive for them." Too many dairymen have reached their ideal, hence make no improvement; in fact, the tendency is backward. To produce a higher ideal in the minds of producers and consumers of dairy products, is the object of this address.

Ideals are produced chiefly in two ways: first, by stimulating the person to improve through precept and example, or, in other words, by means of education; and, secondly, by means of force, or what is commonly known as "the law," which compels a better ideal, though this is often more apparent than real. Ideals obtained by means of education are possibly more valuable than those attained by means of force, but the latter is a method that makes better time, and is the only effective way of changing the real into the ideal in some cases. We may safely say that the "Please-be-clean" campaign has been largely a failure, and it would seem as if something sterner is necessary in order to obtain ideal or clean milk or cream for use in the home and for use in the cheese factory and creamery.

The Commissioners of the District of Columbia, U. S. A., have recommended that there be recognized by law three grades of milk for sale, namely, Certified, Inspected, and Pasteurized. It is quite probable that the United States Congress will pass a federal law in the near future, requiring all milk sold for direct consumption to be graded into these three classes. According to the ruling of this commission, "Certified Milk" is milk produced at dairies which are inspected regularly; have the products frequently analyzed; cows free from tuberculosis and all other communicable diseases; cows fed on clean food, and kept in clean stables, properly ventilated; persons handling the milk must exercise scrupulous cleanliness, and be free from infectious germs; milk must be drawn from the cow in a cleanly manner, be immediately strained, cooled, and placed in sterilized bottles, and be kept at a temperature not exceeding 50 degrees F. until delivered to the customer. The water used throughout the farm and dairy must be chemically and bacteriologically pure. The milk must not be more than 12 hours old when delivered, and should not contain over 10,000 bacteria per cubic centimeter.

"Inspected Milk" is a slightly lower grade than "Certified Milk," the chief difference being in the number of bacteria per c. c. of milk which is allowed. In this class, 100,000 bacteria per c. c. is the maximum.

The third class, known as, "Pasteurized Milk," is from dairies not able to comply with the requirements in the other two classes.

#### HOW TO ATTAIN THE IDEAL.

1. At present, it seems to be no person's business in particular to see that the people of Canada are furnished with pure milk. At the risk of

being called visionary, we beg leave to suggest that Parliament appoint a Milk Commission, somewhat similar to the Railway Commission, whose duty it shall be to see that people and factories are furnished with clean, wholesome milk. The Commission should be composed of men of wide experience in producing and handling milk, and, above all, they need to be men with backbone and good sense. This Commission should be the fountain-head of the milk trade in Canada. It is a question more important than railways or anything else, as the very life and health of the people of Canada depend upon a pure milk supply. About the first thing which man requires when he comes into this world is milk; he uses it largely in some form all the way through life; and about all he needs in the way of food just before he passes out of the world is milk, chiefly cow's milk. The cow may be considered as the "foster-mother of the human race." What should we do without her?

2. A corps of instructors and inspectors to carry out the will of the Commission would be needed in every Province. These inspectors should be properly paid. The U. S. Commission recommend a salary of \$1,600 to \$2,000, and travelling expenses, which is none too much for the right kind of man, with the necessary technical knowledge and skill.

3. A central milk laboratory, for chemical and bacteriological analyses is necessary, and also branch laboratories for similar work in every dairy district. Standards for chemical and bacteriological tests should be set for the guidance of laboratory workers. Experiments in conjunction with the dairy departments of the various agricultural colleges and experiment stations should be made. A German professor recommends compelling German railways to provide refrigerator cars, attached to express trains, for transporting milk. The freezing of milk, and transporting it in a frozen condition is also recommended. Is this practicable? It can be demonstrated only by experiment.



Calves at Pasture.

4. In the distribution of milk and cream in towns and cities, the use of a paper bottle would undoubtedly lessen expense for bottles, labor for washing, and lessen the danger from contagious disease, as they are used but once. Quart bottles may be purchased at one-half cent each, and should prove a great help in the milk and cream business. Glass bottles, cans, dippers, etc., ought to be sterilized daily.

5. All our exhibitions, including the Winter Fair, should give prizes for best milk and cream, best stables, and most cleanly-kept cows. Every important fair in Canada ought to have a model stable in actual use on the grounds, in order to give practical demonstrations in the sanitary handling of cows and milk. Milk and cream contests have been tried, and proven to be helpful in improving the quality of the milk and cream delivered to American cities. Prizes for dairy farms kept in a sanitary way would also be helpful.

6. Literature should be freely distributed, showing the importance of a pure water supply on the farm, need of healthy cows, and clean, light, well-ventilated stables; need of care in milking, straining, and cooling milk to 60 degrees F. for the factory, and 50 degrees for city trade. Having done all this, then those who will not improve should be firmly dealt with, and be compelled to produce clean dairy products or go out of the business.

7. The Second International Pure-milk Congress, which met at Brussels in September, 1907, recommended universal pasteurization of milk as the best immediate means of improving the milk supply for home use. There is little doubt that this system is one of the very best for improving the ordinary milk and cream sold for household use. It is a question which every buyer of milk needs to consider carefully. Every

town and city should consider whether or not the milk sold should be pasteurized. Where private means are not forthcoming, the municipality should furnish the necessary pasteurizing plant. Pure milk is just as important as or more important than pure water.

If it is not practicable that all cows shall be free from tuberculosis, as shown by the tuberculin test, consumers of milk have a right to protection from possible tubercular contamination, by the State requiring all milk, other than that from tubercular-free cows, to be pasteurized. Further, a man who has healthy stock has a right to require that the State shall protect him from possible contamination from neighbors' unhealthy stock, by the consuming of infected dairy by-products from creameries and cheeseries. This can be done by requiring that those by-products shall be pasteurized at the factory. Prof. Van Behring has discovered a lymph which he calls Bovavaccine, that is said to make animals immune from tuberculosis.

8. Wherever practicable, proper contract should be made between the milk producer and the purchaser or consumer.

We have omitted saying anything about the importance of sanitary ice-cream, butter, cheese, etc. The same principles should apply and should be followed in these as in the case of milk. If we can secure sanitary milk, all else will follow. The greatest problem is the milk problem.

In the report of the Registrar-General for the Province of Ontario, 1904 (latest available), we are given, on page 9, the number of deaths in the Province, at various ages, for the years 1897 to 1904. The yearly average deaths for all ages, for the eight years, is 28,688. Of this number, 6,228, or over 21 per cent., died under one year. From one to four years of age, the total average deaths were 1,937. In 1904, the total deaths for the Province, of all ages, was 31,290, of which 6,902, or over 22 per cent., died under the age of one year. Of these 6,902 deaths under one year, 192 deaths were from communicable diseases, and 852 were from diseases of the digestive system, which means, in most cases, deaths caused by impure milk.

In cities, out of a total death rate, of all ages, in 1904, of 8,742, 2,268, or over 25 per cent., died under one year, and, of these, 364 were from diseases of the digestive tract.

These figures are sufficient to show the very large death rate in this Province among children under one year, and especially in cities, where over one-quarter of the deaths are among helpless infants.

The Deputy Registrar-General and Sec. of the Provincial Board of Health, Dr. C. A. Hodgetts, in a recent communication, says: "A large amount of work must be done by this Board, as also by all interested in securing a pure-milk supply, before very material advantages will accrue to the infantile population of our cities and towns, in the way of providing for them pure, fresh milk. Our Governments are making strenuous efforts to induce immigration to this country, but are they doing as much as they might to save the native-born population, who are much more valuable? We hear of earnest appeals for aid in establishing and maintaining consumptive hospitals, but would it not be wiser and cheaper to prevent the spread of tuberculosis by giving careful heed to the milk and meat supply of our people? In this case, it is doubly true that "an ounce of prevention is worth a pound of cure."

#### EFFECT OF TREATING MILK WITH CARBON-DIOXIDE GAS UNDER PRESSURE.

Bulletin 292, from the New York Experiment Station, Geneva, treats of the above topic in a very interesting manner. The bulletin is nicely illustrated, showing styles of bottles used for holding carbonated milk, apparatus for carbonating milk, method of drawing carbonated milk, etc.

The authors say: "Milk, carbonated under a pressure of 70 pounds comes from the bottle as a foamy mass, more or less like kumiss two to three days old. It has a slightly acid, pleasant flavor, and tastes more salty than ordinary milk. In the case of carbonated pasteurized milk there is a slightly cooked flavor. All who have had occasion to test the quality of carbonated milk as a beverage agree in regarding it as a pleasant