

DR. FAGAN'S REPORT ON MILK INDUSTRY

Synopsis of Results Investigation of Eastern Methods and Experiments.

Dr. C. J. Fagan, secretary of the provincial board of health, was sent east last summer by the Hon. Dr. Young to study the methods in vogue in connection with the business of milk supply to the public. He has now made his report, embodying the results of his researches and observations on the methods used in the great eastern centres, both of Canada and the United States. This report, which consists of over 150 typewritten pages, is too long for reproduction here, but it contains a great deal of valuable information, and shows how closely the question of milk supply and the proper care of the cows and dairy are bound up with the public health. The conclusions given represent the last word of medical science on the subject, which should be generally understood if adequate regulations are to be enforced.

Taking some of the points made by Dr. Fagan it appears that the problem to be solved is that of reducing contamination of milk from outside sources to the least possible factor. The average composition of cow's milk is as follows:

Water	87.00 per cent.
Sugar	4.95 per cent.
Protein matter	4.00 per cent.
Mineral matter	0.75 per cent.

Total 100.00 per cent.

Milk, being an animal secretion, is easily affected by the health of the cow, and also by extraneous influences. Exposed to the air it readily absorbs all odors of objects near it.

Bacteria Do It

The whole trouble with milk is caused by bacteria, which appear to be always present in greater or less proportion. Some of these, however, are not noxious, while others are dangerous. Warmth is one of the greatest elements of growth, and within limits the warmer the temperature the faster the bacteria multiply. An instance is given of an experiment in which two equal samples of milk were subjected to temperatures differing by 18 degrees. In fifteen hours there was a difference of 75,000,000 bacteria. At 50 deg. F. most bacteria are quite inactive, but even freezing the milk does not kill them. Apparently they just take it easy waiting for better times.

Extreme heat, however, is fatal to the stoutest bacteria. At 125 deg. many die, and at 150 all die. In some cases, a species which requires still greater heat. It should be remarked, however, that while many bacteria are not generally dangerous, yet excessive numbers of any kind renders the milk unfit for infants, and a large proportion of summer complaints of infants have been directly traced to bacteria-laden milk.

Legal Standards.

Several cities have tried to introduce legal standards. The first attempt was made in New York in 1900. It was there made illegal to sell milk with more than a million bacteria to the cubic centimetre (a measure of volume). But it was found almost impossible to enforce it on account of the complexity of the matter. The subsequent difficulty in fixing the responsibility. In Boston, however, a standard of half a million bacteria has been made and is being enforced. In New York, the standard is 100,000 and many authorities believe that none should be sold containing more than 100,000 bacteria to the cubic centimetre. It is pointed out that these standards only apply to the general trade. For hospitals and infants, a much lower standard of bacteria can be tolerated.

It is stated that for practical purposes it may be assumed that deterioration in milk is solely due to the entrance of bacteria from outside, hence the necessity for care and absolute cleanliness in handling. The only method of preserving milk absolutely from decomposition is by killing the bacteria with heat or sterilizing, but this makes the milk less digestible. Pasteurization consists of subjecting the milk to a temperature of 150 deg. for twenty minutes and then cooling it rapidly. This kills most of the bacteria, including all the harmful ones, and does not hurt the milk. Such milk, however, will only keep for a limited time. Preservation of milk by chemicals is universally condemned and should be prohibited by law everywhere.

Causes of Contamination.

Starting out with the proposition that many bacteria poison milk or may produce specific diseases in human beings, the following causes of bacterial contamination are set out:

- (a) Cows which are badly ventilated and not kept scrupulously clean.
- (b) Impure water. This has been known to communicate typhoid fever through the milk. It is not so common for washing in the dairy and rinsing the vessels.
- (c) The cow must be kept clean. This is one of the most frequent causes of contamination.
- (d) The milk must be both clean and well as apart from tuberculosis, the disease-spreading bacteria are more likely to be found in the milk than the cow. "Wet milk" is styled a common, but dirty and dangerous habit.
- (e) The milk vessels must be kept scrupulously clean.
- (f) The air is a frequent source of contamination. Generally there are fewer bacteria out of doors, but they are usually numerous in stables, especially if hay is stored there. Hay appears to be crowded with bacteria while the presence of many dusty cows is bad.
- (g) Milk houses are a source of contamination. If kept for any purpose save storing milk, and if not kept clean, well ventilated and free from flies.

It is also pointed out that the consumer must be just as careful as the dairymen if he wishes to drink pure milk.

By way of showing that milk can be kept pure, Dr. Fagan describes tests made in eastern laboratories some of which showed milk to contain only 2,000 bacteria to the cubic centimetre, or almost pure, other samples went 21,000,000.

As to the regulation of the milk industry, the doctor is of the opinion that primarily this lies with the Dominion government, but dealing with the necessary steps.

As to producers and dealers he re-

commends a conversation with Dr. Woodward of Washington, D.C., who repeated a proposition made by a prominent milk dealer. He thought that they should have to show testimonials of competency before being allowed to engage in the business, as ignorance causes most of the trouble. Ice cream and butter makers and other manufacturers of food products should be regulated. So also the transportation agents, especially as to sealed cans, the storage of milk in a cool place, etc. Files especially in households, should be guarded against.

Diseases Communicable

The principal diseases spread by milk are: Typhoid fever, scarlet fever, diphtheria, cholera, diarrhoea, anthrax and tuberculosis. Contamination by attendants being possible, no infectious persons should be allowed round a dairy.

The question of tuberculosis passing from cattle to human beings was discussed at the International Tuberculosis convention at Washington, D.C., at which Dr. Fagan was present. It was there proved, and the convention adopted a resolution to the effect that the disease could be so transmitted. It may thus be considered a settled question.

This disease appears to be very prevalent in cattle everywhere, especially in dairy cows, but it can always be detected by the tuberculin test. It seems that many owners of herds object to the test, from the mistaken idea that it is injurious. As now administered it does not affect a healthy animal in the least, and only temporarily affects an infected beast. The report goes on to show that a tuberculous cow does not really pay to keep, and that the worse she gets, the greater the loss to her owner. Consequently as the cow is bound to get steadily worse, the owner of the cow would really be better off if the animal were destroyed, quite apart from the protection to the public it would appear, however, that the dairy man does not see it that way. Also one infected animal will spread the disease among the herd.

Dr. Fagan is convinced that most of the most painful results are on account of ignorance, and suggests a course of popular lectures and a model dairy run by the government. For the dairymen auditors, a sentence by the magistrate is advised.

Hints to Dairymen.

The report contains 21 suggestions recommended by the Bureau of Public Health at Washington, and Dr. Fagan suggests that they be printed and sent to every dairymen in the province. The suggestions follow:

1. Have the herd examined frequently by a skilled veterinarian. Promptly remove any animal suspected of being in bad health. Never add an animal to the herd until certain it is free from disease, especially tuberculosis.
2. Never allow a cow to be milked by hand driving, abuse, loud talking or unnecessary disturbance; do not unduly expose her to cold or storm.
3. Clean the entire body of the cow daily. Hair in the region of the udder and surrounding parts with a clean, damp cloth before milking.
4. Do not allow any strong flavored food, such as garlic, cabbage or turnips to be eaten except immediately after milking.
5. Radical changes in feed should be made gradually.
6. Have fresh, pure water in abundance, easy of access, and not too cold.
7. Dairy cattle should be kept in a stable, preferably without cellar or storage loft. Stable should be light (four square feet of glass per cow) and well ventilated with fresh air to each animal. It should have air inlets and outlets, so arranged as to draw fresh air from outside into the stable and remove the stale air.
8. The floor, walls and ceilings of the stables should be tight, wall and ceiling should be kept dry and whitewashed twice a year. There should be as few dust-catching ledges and projections as possible.
9. Allow no dusty or dirty litter or strong smelling material in the stable. Store manure under cover at least 40 feet from the stable in a dark place, and plaster daily in gutter and on floor.
10. Cans should not remain in the stable, being left lying about. Remove milk of each cow at once from the stable to a clean room; strain immediately through a clean cloth or coarse cotton; cool to 50 deg. W. as soon as strained; store at 50 deg. F. or lower. All milk houses should be limited time.
11. Milk utensils should be of metal with all joints smoothly soldered, or when possible should be made of stamped metal. Never allow utensils to become rusty or rough inside. Use milk utensils for nothing but handling milk.
12. To clean dairy utensils use pure water only. First rinse the utensils in warm water; then wash inside and out in hot water in which a cleansing material has been dissolved; rinse again; sterilize by boiling water or steam; then keep in pure air.
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14. If any part of the milk is bloody, stringy, or unnatural in appearance, reject it by accident dirt gets into the pail, the whole mess should be rejected.
15. Weigh and record the milk given by each cow.
16. Never mix warm milk with that which has been cooled, and do not allow milk to freeze.
17. Feed no dry, dusty food just previous to milking.
18. Persons suffering from any disease, or who have been exposed to a contagious disease, must remain away from the milk.
19. It is needless to say that the shorter the time between the production of the milk and its delivery, and the better the quality of the milk.
20. The report winds up by saying that drastic regulations in advance of public opinion would probably be of little value, and suggests that the points of view of all parties be taken before government action is decided upon.

Fire in Brantford

Brantford, Ont. Jan. 14.—Fire this morning badly damaged the machinery and destroyed stock of the Campbell Paper Box Company. The loss and insurance are not known.

COMMITTEE PREPARES FOR COMING MEETING

Meets Friday in Two Sessions and at Luncheon Hears Richardson

Mayor Nicholson, of Ladysmith, who is also the president of the Board of Trade there, has been chosen as the board's representative at the Island Development conference and luncheon on Friday next, while Mr. W. R. Armstrong will represent North Saanich. Mr. L. E. Solly, the E. & N. land grant concession and Mr. S. Barpole, the E. & N. and C.P.R. railway systems. As the great majority of the delegates to this important function will be in town on Thursday, it is suggested that Mr. W. J. Sutton, M.B. F.R.G.S., the able and popular geologist of the Wellington Coal Company should be invited to deliver a seasonable address at the Board of Trade rooms upon Thursday evening, the 21st instant.

Mr. Sutton is at the present time in town and would, no doubt, at once comply with the request, as in all probability he possesses sufficient knowledge of this island and of its manifold resources. The luncheon tickets, \$1.00 each, are now in the hands of the members of the reception committee, from whom, or from the secretary of the Board of Trade, they can be readily obtained.

The programme for this first meeting of delegates with the view of organizing a Vancouver Island Development Association, is as follows:

10:30 a.m.—Luncheon at the Empress Hotel. Address by Mr. Richardson.

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\$36,977, while purchases from outside sources of butter, eggs, etc., for crates, amounted to \$13,447.02. Freight and cartage cost \$1,676.06, leaving a gross gain on the year's operations of \$3,855.45, and after expenses of management were paid a net gain of \$1,876.76. On Dec. 31 there was stock on hand valued at \$1,893.00, and supplementary statements showed the amount of insurance returnable to growers in December was \$1,848.50, and after other charges a net profit and assets realized the net surplus was \$303.30.

Election of Officers.

The election of officers resulted as follows: President, Thomas Brydon; first vice-president, L. W. Toms, Gordon Head; second vice-president, F. Sumers, Gordon Head; manager, James Drummond, Board of directors, George Watson, Gordon Head; W. E. Scott, Salt Spring Island; George Sawyer, Keatings; Mr. Weismuller, Duncan; W. H. Hayward, Duncan; F. N. Borden, Cedar Hill; R. Puckle, Keatings; Mr. J. H. Macdonald, Cedar Hill; Mr. Erving, Sidney; Capt. Elliston, Cedar Hill.

Following the election of officers discussion took place on topics of interest to the growers. It was decided to increase the capital to \$10,000, and an anxious effort was made to see what they could do by strenuous exertion in the meantime in the matter of securing further contributions. For surely if the members of the association had confidence in its management they would respond to the appeal for monetary assistance. (Hear, hear.) During his term of office the association's officers had had for the past year a time of financial stringency and if they had had so much as a single bad debt it would have been a serious blow to them. (Hear, hear.) Cash was not actually necessary at the moment, as notes of hand payable to the association would have been sufficient to cover all necessary purposes. (Hear, hear.)

Capital Increase

Capt. Elliston urged that the sum of \$1500 did not provide sufficient capital and suggested an adjournment for a month which would enable them to see what they could do by strenuous exertion in the meantime in the matter of securing further contributions. For surely if the members of the association had confidence in its management they would respond to the appeal for monetary assistance. (Hear, hear.) During his term of office the association's officers had had for the past year a time of financial stringency and if they had had so much as a single bad debt it would have been a serious blow to them. (Hear, hear.) Cash was not actually necessary at the moment, as notes of hand payable to the association would have been sufficient to cover all necessary purposes. (Hear, hear.)

Mr. Brydon remarked that promises to pay nothing when the fruit was being marketed would meet their requirements. (Hear, hear.) They should also bear in mind that giving this financial aid they were helping not some other organization—but themselves. (Applause.)

Mr. Featherston of Cedar Hill, stated that he was prepared to take 100 shares of 50 each. (Applause.)

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Great Sale

These are astounding bargains in silk voile, eolienne, and silk crepe; individual creations—no two alike—except in the tremendous price reductions and the beauty of the materials used in their construction.

Silk Voile Skirts Very Much Underpriced

SUPERIOR SILK VOILE SKIRTS, the majority built on silk foundation, together with several silk crepe, eolienne, and silk skirts, very tastefully trimmed with tucks and bands of silk, no two alike, regular prices from \$10 to \$25. Special Sale Price.....\$5.00

SEVEN EXTRA SPECIAL VOILE UNDERSKIRTS. Sale Price.....\$7.50

Beautiful Belts

In fancy colored braids and all the latest leathers, Regular price 50c

SALE 25¢ PRICE

The Ladies' Store

Angus Campbell & Co. 1010 Gov't St.

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Meat

Poultry

Seafood

Alcohol

Tobacco

Drugs

Chemicals

Minerals

Metals

Textiles

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Wood

Stone

Brick

Tile

Paint

Oil

Gas

Electricity

Water



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CONSERVATIVES READY FOR THE CONVENTION

Delegates From the Local Party Are Nominated