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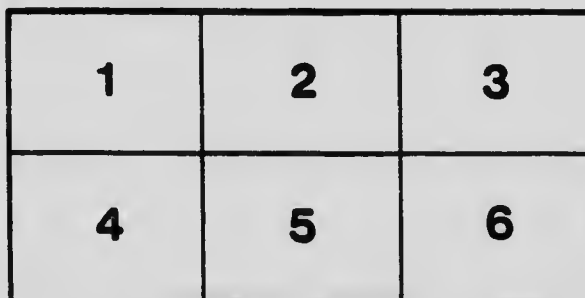
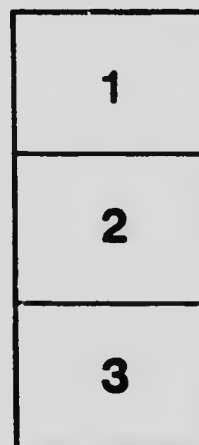
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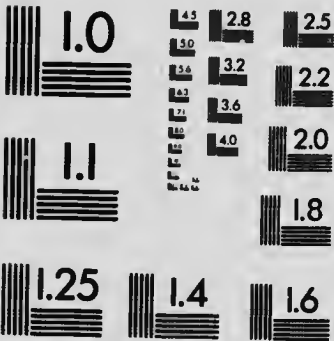
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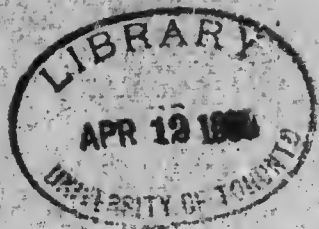


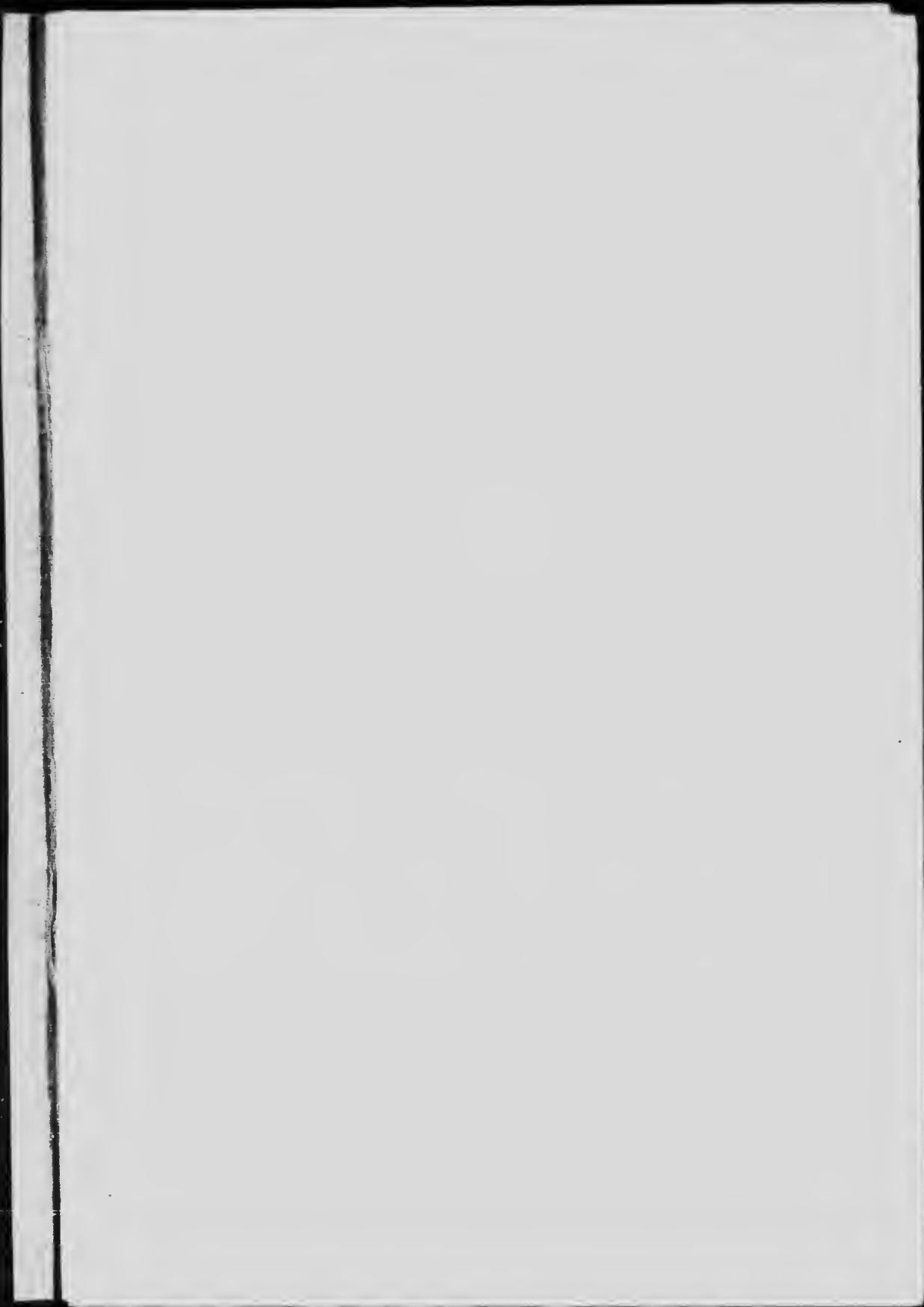
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REPORT OF CANADIAN
MEDICAL ASSOCIATION
MILK COMMISSION, 1910





Canadian Medical Association Milk Commission

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REPORT OF CANADIAN
MEDICAL ASSOCIATION
MILK COMMISSION, 1910



PRESENTED AT THE FORTY-THIRD ANNUAL
MEETING OF THE ASSOCIATION, HELD IN
TORONTO, JUNE FIRST, SECOND, THIRD,
FOURTH, NINETEEN HUNDRED AND TEN

Minute from Executive Council, Ottawa, June 10, 1908.

Resolved: That a Milk Commission be appointed by this Association whose duty it will be to act when possible in conjunction with the various health departments of the Dominion in inquiring into the condition of the milk supply, and in endeavoring to secure such legislation as will warrant them in taking steps which will secure a pure milk supply; "that this Commission as now constituted have power to add to its numbers."—Carried.

Report of the Canadian Medical Association Milk Commission

To the President and Executive of the Canadian Medical Association.

Sirs:—

We have the honor to present to you the Report of the Canadian Medical Association Milk Commission, appointed by you at the Forty-first Meeting of the Association held at Ottawa, in June, 1908. You will recall that at that meeting the subject of "The National Importance of Pure Milk" was taken up and freely discussed by the joint sections on Public Health and Laboratory workers and it was on recommendation of these sections, to the Executive, that the Commission was appointed. Your Commission has held some thirty meetings, all of which have been well attended, and a marked interest manifested by the various members. As there were enough members in Toronto to constitute a quorum, we have been able to hold regular meetings, notice of which has been sent to the various members throughout the Dominion, and all members have been sent a synopsis of the proceedings accompanied by a request for comments and also for suggestions.

The following Committees have been appointed:

FIRST.—A Committee to prepare rules and regulations governing the production and delivery of milk. This Committee secured literature from all the cities in the United States where efforts were being made to improve the milk supply, and where city ordinances were in force. From this accumulation of literature, rules and regulations have been compiled.

Legislation Asked for

SECOND.—A Committee on Local Legislation to take up the matter of Milk Legislation with the Local Legislature. This Committee conferred with Mr. W. K. McNaught, M.P.P., on

different occasions, when he was preparing his address on "Milk" for the Ontario Government, and went carefully over the different phases of the milk problem from the standpoint of both producer and consumer. Mr. McNaught expressed himself as being thoroughly in accord with the work done by the Commission. On November 18th, 1908, our Commission waited on and interviewed the Hon. Mr. Hanna, Provincial Secretary for the Province of Ontario, relative to the securing the laboratories of the Provincial Board of Health, for the use of the Commission in the analysis and bacteriological examination of samples of milk. Mr. McNaught was present and introduced the delegation. Mr. Hanna graciously acceded to the request, and promised the use of the laboratories for the purposes above indicated, adding that he did not know of any better use that the laboratories could be put to.

THIRD.—The Committee on Federal Legislation. Representatives of this Committee had a conference with Prof. McGill, of the Inland Revenue Department, Chief Analyst for the Dominion, in respect to the definition of Certified Milk and Pasteurized Milk, to be incorporated in the Food Adulteration Act. Again on July 12th, a second deputation of the Commission went to Ottawa, and through the kindness of Prof. McGill, secured an interview with Mr. Gerald, Deputy Minister of Inland Revenue. The deputation was most cordially received by the Deputy Minister and Prof. McGill, who promised hearty co-operation, and assured us that the Governor-in-Council would include Certified and Pasteurized Milk among their list of articles in the Public Proclamation of food standards. The Deputy Minister asked that our Commission forward to the Department its definition of Pasteurized Milk and Certified Milk, and if they met with the approval of Prof. McGill, would no doubt, be accepted by the Governor-in-Council.

The following definitions were promptly forwarded:

1. Certified Milk is milk examined and guaranteed by any local Board of Health, or incorporated society, or Association of legally qualified medical practitioners. First: To be taken from cows semi-annually subjected to the Tuberculin Test, and found without re-action, all doubtful or suspicious cases to be excluded from the herd.

2. To contain not more than 10,000 bacteria per c.c. in the summer time, and 5,000 in winter, on delivery to the consumer.

3. To be free from pus, blood, disease-producing germs, preservatives or other foreign matter, and not to have been heated in any way or frozen.

4. It shall contain at least 12 per cent. of total solids of which from $3\frac{1}{2}$ to $4\frac{1}{2}$ must be butter fat.

5. It must be cooled to a temperature of 45 degrees F. within one-half hour after milking, and shall be kept at a temperature not higher than 45 degrees F. until delivered to the consumer.

PASTEURIZED MILK is milk which has been subjected, in a closed vessel, to a temperature of 150 degrees F. for twenty minutes or 140 to 145 degrees F. for thirty minutes, and immediately thereafter refrigerated to at least 45 degrees F. and kept to that temperature until delivered to the consumer.

In May, on invitation of Mr. J. Ross Robertson, a deputation of the Commission accompanied him as his guest to New York City to inquire into the advantages and disadvantages of Pasteurization, and assist him in the choice of a pasteurizing plant for the Children's Hospital, Toronto. We spent two strenuous days in interviewing the leading experts on the milk problem in that city, among which were:

Dr. Thomas L. Darlington, Commissioner of Health, New York.

Dr. Alfred Hess, Research Laboratory of the Board of Health of New York City.

Dr. Chas. E. North, Consulting Sanitary Expert.

The Nathen Strauss Laboratories.

The Walker Gordon Laboratories.

Mr. Wilbur Phillips, Chairman, New York Municipal Commission and Combined Charities.

The Children's Hospital, New York City.

The work being done by Dr. Darlington and his staff is an education of itself well worth a visit to New York City, to anyone interested in this all important, life saving problem. Dr. Darlington informed us that when they first began their inspection, it was not unusual for them to lose a meal, as the conditions found in many cases were too awful to describe;

hundreds of cattle were ordered to be destroyed, their City Health ordinances require that all milk delivered in New York City must be kept at a temperature of not more than 50 degrees F. They experience great difficulty in inducing the railways to put on refrigerating cars. They got over this difficulty, however, by their staff examining a large shipment of milk. Finding that the temperature was between 60 and 70, they dumped 28,000 quarts of this milk into the Hudson in one morning. The indignation of the producers was so aroused that they immediately demanded compensation from the railways. All sorts of tactics have been resorted to in order to detect uncleanly methods. On one occasion, when visiting a dairy farm, suspicion was aroused as regards the conditions of the milk utensils. They were assured, however, that they had all been carefully washed and would again be washed and sterilized before being used again. While Dr. Darlington was talking to the Dairyman, one of his men sprinkled a few grains of carmine in the bottom of some of the milk cans; the consequence was that the following day they had a large shipment into the City of beautiful pink milk. The Dairyman demanded to know what right they had to tamper with their milk cans, Dr. Darlington's reply was:—"What right have you to violate our milk ordinances?"

Replying to a query regarding Municipal Pasteurization, he said:—"I am afraid to undertake it in a City the size of New York, on account of the abuse it has been subjected to, but," said he, "we send out army of nurses to the homes of the poor to teach them how to pasteurize the milk in their own homes."

Dr. Chas. E. North, after a very interesting and instructive interview, informed us that he procured certified milk, and pasteurized it in his own home before using. Of special interest was our visit to the Strauss Laboratory pasteurizing plant and milk depots. No milk is accepted for pasteurization that falls below the standard set for certified milk in New York City. Over four million glasses were sold to the poor in the parks at one cent a glass. In this noble charity, Mr. Strauss, we were informed, expended over \$100,000 last year.

On June 7th, our Commission was represented by the Chairman at the Third Annual Meeting of the American Association of Medical Milk Commissions held at Atlantic City. At that meeting there were reports presented from twenty-seven Milk Commissions, and eighteen papers and addresses on the various phases of the milk problem, and its relation to Public Health were

read and delivered. The papers and addresses were all of a very profitable character, prepared and presented by such men as:—

DRS. HENRY L. COIT, ROWLAND, GODFREY, FREEMAN, of New York City.

DR. E. C. SCHROEDER, Supt. Experimental Station, Bureau of Animal Industry, Dept. of Agriculture, Washington, D.C.

DR. W. KERR, Asst. Surgeon General, United States Public Health and Marine Hosp. Service, Washington, D.C.

DR. W. H. PARK, Director of the Research Laboratory of the N.Y. Dept. of Health, New York City.

DR. THOMAS L. DARLINGTON, Commissioner of Health, New York City.

PROF. RAYMOND A. PEARSON, State Commissioner of Agriculture, Albany, N.Y.

PROF. H. W. CONN, Wesleyan University.

DR. W. A. EVANS, Commissioner of Health of Chicago, and others.

We have communicated with all the Local Boards of Health throughout the Dominion in cities of 10,000, or more, as to what they have done to improve the milk supply in their respective jurisdiction, in a general way, also what they are doing and what they propose doing in the future. Replies were received in most cases, accompanied in many cases with literature. These are being carefully tabulated, so that we may have a summary of all the work done.

By-laws in Various Cities

By-laws to license and regulate milk vendors in the following Cities:—

HALIFAX.—No regulations so far.

FREDERICTON.—No regulations so far.

CHARLOTTETOWN.—An inspector is appointed; inspection of milk as delivered; license fee of \$15 a year; penalties, \$30 or 30 days jail.

ST. JOHN, N.B.—Inspection of herds; inspection of premises; inspector appointed; inspection of milk as delivered; vendor shall notify of any disease in family or herd; penalties \$40 and

license cancelled. Shall deliver statement of name and address, source or sources of milk supply, number of cows in his possession, quantity of milk disposed of, situation of dairies. Shall not offer skimmed milk unless asked for, and labelled with letters of not less than 2 inches long. Shall furnish certificate from Veterinary Surgeon that cows are free from disease, at least once a year.

QUEBEC.—Has about the same regulations as St. John; but the license fee is only \$1 per annum; and there is a standard for fat of 3 per cent., 12 per cent. total solids and sp. gr. of 1029 to 1033 at 60° F. Compulsory tuberculin test. Penalties are \$20.

MONTREAL.—Same as Quebec, but no specification for the sale of skimmed milk nor tuberculin test.

HULL.—Same as above, but the standard for butter-fat is 3.25 and penalties from \$1 to \$50.

OTTAWA.—Same as Quebec, but 3.5 butter-fat.

KINGSTON.—3 per cent. butter-fat and 12 total solids; penalty, \$1 to \$50, otherwise the same as Ottawa.

TORONTO.—3 per cent. butter-fat and 12 per cent. total solids; inspector appointed and inspection of milk as delivered.

BRANTFORD.—3.5 butter-fat and 12 total solids, and same as Toronto.

HAMILTON.—No standards, but has an inspector appointed for herds, premises, and milk as delivered, and a license fee of \$1 per annum.

WINNIPEG.—By-laws are in the hands of the printer.

CALGARY.—3 per cent. butter-fat and same as Hamilton.

VANCOUVER.—Same as St. John, N.B., 3 per cent. butter-fat and a license fee of \$5 per annum and penalties from \$1 to \$100.

REGINA.—Has about the same regulations as St. John; the license fee is \$5 per annum; and there is a standard of 3.5 per cent. for butter-fat and 12 per cent. total solids. Penalties are \$10 a day for each day after having been notified by the Health Officer.

Objects of Milk Campaign

As the aim and objects of the Milk Campaign now engaging the attention of all civilized nations is to save human life and diminish human suffering, our Commission has endeavored to ascertain the extent to which life is in danger by market milk along the following lines:

FIRST.—The relation of milk to infant mortality.

SECOND.—The role played by milk in the spreading of communicable diseases.

THIRD.—Milk as a cause of tuberculosis.

FOURTH.—Pasteurization, its effects on milk and the bacteria in milk.

FIFTH.—What is being accomplished by Milk Commissions to remove the aforesaid dangers.

Dangers to Human Life

Attention was first drawn to the dangers to human life, lurking in milk, in an attempt to ascertain the cause for the appalling tide of infant mortality, when it was found that 90 per cent. were from the ranks of hand fed children. It was also observed that there was an abrupt upward curve in the midsummer months and an equally sharp drop in the fall. The marked increase in the months of July, August and September was found to be largely due to diarrhoeal diseases, there being very little fluctuation in the non-diarrhoeal cases; of the 1943 fatal cases collected by Dr. Emmett Holt, of New York, only 3 per cent. were exclusively breast fed. Prof. von Behring says that in Germany, of every 1,000 born alive, 237 succumb during the first year of life, and only 510 out of the 1,000 ever attain manhood, and not more than a third of those reaching maturity are found to be fit for military service. These sad facts, says Prof. Behring, are attributable in a large measure to the effects of infection derived in infancy from contaminated milk. In Leipzig, of every 1,000 children born in the month of August, 571 died, and of these 430 were from diarrhoea. In Berlin, Germany, the infant mortality among hand fed children during the hot summer months is from twenty-one to twenty-five times greater than among those fed from the breast. In Australia, the authorities are gravely concerned about the awful infant mortality. Dr. Turner points out that in Brisbane during the summer months more than half of the bottle fed babies died. Musket of Sidney made the statement that at least 50 per cent. of the children who have died in the last ten years in New Zealand and Australia might have been saved. Dr. Newsholme of Brighton (Medical Officer of Health), in an article recently published in the *Lancet*, said: Breast fed children contribute but one tenth of the diarrhoeal infant mortality. Dr. McLeary, Medical Officer of Health for Hampstead, says that infant mortality, broadly speaking,

is a mortality of hand fed infants. In Germany, 41.37 per cent. of the entire mortality of the year occurred in the months of July and August. On the other hand, in Prague, Austria, where nearly every woman nurses her own babe, the hot summer months do not show any appreciable increase in the infant mortality. It is quite obvious therefore that gastro-intestinal disease is but another term for milk poisoning. While the marked similarity of these reports from the various European nations and the United States is very convincing, yet much more convincing are the recorded results where market milk has been substituted by certified and pasteurized milk, resulting in a reduction in infant mortality of nearly 50 per cent.

As regards the role played by milk in the spreading of communicable diseases, over 500 epidemics have been collected by the Department at Washington, traced directly to milk.

Milk as a Cause of Tuberculosis

The great significance of the second interim report of the British Royal Commission on human and animal tuberculosis cannot be over estimated. Their conclusion was to the effect that a large proportion of tuberculosis contracted by food is due to the bacilli of bovine source, and that a very considerable amount of disease and loss of life, especially among children, must be attributed to cows' milk containing tubercle bacilli.

Dr. McCaw, Senior Physician to the Belfast Hospital for Sick Children, after twenty years careful study of tuberculosis of children in connection with the seven leading hospitals for Sick Children in England, Ireland and Scotland, reported that 25.5 per cent. of all the children treated in these hospitals were suffering from some form of tuberculosis. This certainly demonstrated beyond questioning the presence of tuberculosis in children to an alarming extent and at a period when milk constituted the principal article of diet.

Until recent years it has been thought that tuberculosis was contracted by inhalation, but it is now known that in the vast majority of cases the germs are taken into the stomach with either food or drink, and pass into the bowels where they either set up local disturbance or penetrating the mucous membrane are conveyed into the main lymph stream (the thoracic duct) through which they are conveyed to the blood stream, and thence to the right side of the heart, thence to the lung where they are filtered out by the wonderful net-work of vessels in that organ. Here they may lie latent until the vitality

of the parts is lowered by some inflammation, when they gain the ascendancy over the resisting forces of nature and the host becomes the victim of tuberculosis.

The question is often asked, "Does the milk of a tuberculous cow, whose udder is not affected, contain tubercle bacilli?" The consensus of opinion is that it may do so, but this is not by any means the only source of contamination of milk by tubercle bacilli. It has been demonstrated that a cow suffering from an attack of tuberculosis, so as not to give any physical signs of disease, may be excreting from the bowels 37,800,000 tubercle bacilli per day. The slightest particle of this excretion on the udder of a healthy cow may gain access to the milk, and in this way contaminate the entire milk supply of the herd. Then there is always the danger of contamination from those handling the milk.

Preponderance of Germs in Gravity Cream

Our Commission would like to draw special attention to the preponderance of all pathogenic germs in gravity cream, it having been demonstrated by Hess and Freeman, of New York, especially, that from 75 to 90 per cent. of all pathogenic germs found in milk are above the cream line. In a bottle of milk well within the standard for certified milk after standing for twelve hours at room temperature, the upper two ounces of cream were found to contain 115,000 bacteria per c.c., while the milk in the same bottle only contains 6,000. Schroeder, of Washington, has frequently found tubercle bacilli in butter, and after 90 to 160 days they were found to be but slightly, if at all, reduced in virulence, and the animals fed on this butter or into which it was injected readily contracted the disease.

"It is obvious therefore that measure for measure we have in butter a greater danger of tuberculous infection than we have in milk. In fact," says Schroeder, "it is difficult to imagine a better environment for the conservation of the life and virulence of tubercle bacilli, not actively associated with tuberculous lesions, than butter affords."

In conclusion, Dr. Schroeder says: "Until we are certain that the milk delivered to us is obtained from healthy cows in every way protected from exposure to tuberculosis, we should not use it until it has been pasteurized, and all cream that is not above suspicion should be pasteurized before it is used in the

preparation of butter. The average market milk, unpasteurized, is to-day the most important cause tolerated by civilization for unnecessary disease, suffering and death."

This is indisputable evidence of the manifold danger to human life in milk. In view of the fact that notwithstanding the efforts put forth by the various Milk Commissions of New York City for from ten to fifteen years, less than one per cent. of the milk consumed in that city last year came up to the standard of certified milk, and having carefully reviewed the investigations made and the conclusions arrived at by the highest authorities and the most ardent and careful workers in the campaign for milk that can be accepted as a safe food for human use, we strongly advise, in the interests of public health, that all milk not answering the standard set for certified milk be pasteurized, and that the milk before being accepted as fit for pasteurization, must at least be macroscopically clean and kept at the lowest possible temperature, also that the shortest possible time elapse from the taking of the milk from the cow until it is pasteurized, and that immediately after pasteurization, the milk be lowered to a temperature of forty degrees, and maintained at that until used, all pasteurization to be under control of Health Departments.

Classification

While in some of the larger cities in the United States they have found it necessary to have several grades of milk (for instance in Washington, D.C., the classification is: First—Certified Milk; Second—Inspected Milk; and Third—Pasteurized Milk) yet your Commission recognize the fact that there is only one kind of unadulterated milk that can be accepted as absolutely safe for human use, that is, certified milk, and therefore advise the following classification as probably suitable for all parts of the Dominion and one that will secure an entire milk supply for all municipalities, that is at least clean and free from disease-producing germs:

First, Certified Milk; and Second, Inspected, Pasteurized Milk.

CERTIFIED MILK

This milk must come up to the following standard and be obtained by observance of the following rules:

Milk Standards

- I. The herd milk shall contain 12-13 per cent. of total solids, of which $3\frac{1}{2}$ - $4\frac{1}{2}$ shall be butter-fat.
- II. It shall contain no coloring matter, preservatives or other foreign substances.
- III. It shall be free from blood, pus or disease-producing organisms.
- IV. It shall be free from all disagreeable odors and tastes.
- V. It shall not have been heated in any way, nor frozen.
- VI. It shall be derived only from cows which have been tuberculin tested by the veterinarian of the Commission before entering the herd, and have been found healthy, and which shall have been so tested every six months thereafter.
- VII. It shall have been cooled to 45 degrees F. within one-half hour after milking, and shall be kept at not higher than 45 degrees F. until delivered.
- VIII. It shall not be more than 24 hours old when delivered to the consumer.
- IX. It shall not contain during the months of June, July, August and September more than 10,000 bacteria per cubic centimeter, as shown by a 48-hour culture on standard nutrient agar medium at 37 degrees C., nor in the remaining months of the year more than 5,000 bacteria per cubic centimeter as demonstrated by the same tests.
- X. The veterinary inspector and the physician of the Commission shall each month inspect the herd, the health of the employees, and the hygienic conditions of the dairy generally.
- XI. All bearers of a physician's prescription for certified milk shall be deemed preferred customers.

In order that this standard may be obtained the Commission makes the following recommendations:

I.—THE BARNYARD.

The barnyard should be free from manure and well drained, so that it may be free from stagnant water. The manure which collects each day should not be piled near the barn, but should be taken several hundred feet away. Observance of these rules frees the barnyard of objectionable smells and diminishes the number of flies. These flies are an element of danger, for they

are fond of filth and milk, and are liable to get into the milk after having soiled their bodies and legs in recently-visited filth, thus carrying it into the milk.

II.—THE STABLES.

The stables should be well ventilated, lighted and drained, and should have tight ceilings to prevent the sifting of dust from above, and tight floors, preferably of cement. They should be whitewashed inside at least twice a year, unless the walls are painted or of smooth cement finish, which can be washed down frequently, and the air should always be fresh and free from bad odors. There should be an adequate water supply, and necessary wash-basins, soap and towels. The manure should be removed from the stalls twice daily, except when the cows are in the fields the entire time, between morning and evening milkings. The manure gutter must be kept in a sanitary condition, and all sweeping and cleaning should be finished at least one hour before milking, so that at the milking time the air may be free from dust

III.—WATER SUPPLY

The whole premises used for dairy purposes, as well as the barn, should have an abundant and easily accessible water supply, absolutely free from any danger of pollution with animal matter.

IV.—THE COWS.

The cows should be examined by a skilled veterinarian at least once a month. Any animal suspected of being in bad health must be promptly removed from the herd and her milk rejected. Never add an animal to the herd until it has been tested with tuberculin, and it is certain that it is free from disease. All cows shall be tuberculin tested every six months at least. Do not allow the cows to be excited by hard driving, abuse, loud talking or any unnecessary disturbance. Do not allow any strongly-flavored food, which will affect the flavor of the milk, to be eaten by the cows. Groom the entire body of the cow daily. Before each milking wash the udder and inside of the thighs with water and dry carefully with a clean towel. If the hair in the region of the udder is long it should be clipped. Cows must not be allowed to lie down after being cleaned for milking until the milking is finished. A chain or rope stretched under the neck will prevent this.

All milk from cows 21 days before and seven days after calving should be rejected.

V.—THE MILKERS.

The milker should be personally clean. He should neither have, nor should he come in contact with contagious disease while employed in milking or handling milk. In case of any illness in the person or family of any employee in the dairy such employee must absent himself from the dairy until the Commission's physician certifies that it is safe for him to return.

Before milking the hands should be thoroughly washed in hot water with soap and nail-brush, and well dried with a clean towel. On no account should the hands be wet with milk or other fluid during milking.

The milking should be done regularly at the same hour morning and evening, and in a quiet, thorough manner. Light colored washable outer garments should be worn during milking. They should be clean and dry, and when not in use should be hung in a clean place protected from dust.

Milking stools must be kept sterile. Iron stools painted white are recommended.

VI.—HELPERS OTHER THAN MILKERS.

All persons engaged in the dairy should be reliable and intelligent. Children under twelve years should not be allowed in the stable during the milking, since in their ignorance they may do harm, and from their liability to contagious diseases they are more apt than older persons to transmit these diseases through the milk.

VII.—SMALL ANIMALS.

Cats and dogs must be excluded from the stables.

VIII.—THE MILK.

The first few streams from each teat should be discarded in order to free the milk ducts from milk that has remained in them for some time, and in which bacteria are sure to have multiplied greatly. If in any milking a part of the milk is bloody and stringy or unnatural in appearance, the whole quantity of the milk yielded by that animal should be rejected. If any accident occurs by which the milk in the pail becomes dirty do not try

to remove the dirt by straining, but reject all the milk and cleanse and sterilize the pail.

The milk pails should have an opening not exceeding eight inches in diameter.

Remove the milk of each cow from the stable to the dairy immediately after it is obtained and strain it through a sterilized strainer.

The rapid cooling of milk is of great importance. The milk should be cooled to 45 degrees F. within one-half hour after milking. Aeration of pure milk beyond that of milking is unnecessary.

All dairy utensils, including bottles, must be thoroughly cleansed and sterilized. This can be done by first thoroughly rinsing in warm water, then washing with a brush and soda or other alkaline cleansing material and hot water, and thoroughly rinsing. After the cleansing they should be sterilized with flowing stream for one hour, or with steam under one atmosphere of pressure for fifteen minutes, and afterwards be kept inverted in a place free from dust.

IX.—THE DAIRY.

The dairy shall be a building separated from the house and the stable. The rooms in which clothing, utensils and bottles are cleansed and sterilized should be separate from the milk-cooling and bottling room.

Only those engaged in cooling and bottling of milk shall be allowed in the cooling and bottling room.

Bottles after filling must be closed with sterilized discs and capped so as to keep all dirt and dust from the inner surface of the neck and mouth of the bottles and stored in a separate refrigerator.

X.—EXAMINATION OF MILK AND DAIRY INSPECTION.

In order that the dealers and the Commission may be kept informed of the character of the milk, specimens taken at random from the day's supply will be taken once a month or oftener, and subjected to examination by the experts of the Commission. The Commission will make inspection of certified farms at frequent intervals and reserve the right to change its standards in any reasonable manner upon due notice being given to the producers.

XI.—PHYSICIAN'S PRESCRIPTION.

If milk be required by a physician the holder of physician's order shall in all cases be a preferred customer.

The Commission is ready to certify to the milk of any producer who fulfils the foregoing standard to their satisfaction.

A Milk Commission, should be actuated only by a desire to obtain for the children and patients under the care of its members a milk supply beyond suspicion. The motives of the Commission are disinterested, and its members forbid to themselves any pecuniary reward.

Inspected Pasteurized Milk

RULES GOVERNING THE PRODUCTION OF MILK FOR PASTEURIZATION

The following regulations ask for nothing more than the cleanliness required in the preparation of any other article of diet placed on our tables.

BARNYARD

1. Manure should not be allowed to accumulate in the barnyard in the summer time, and should never be allowed to come in contact with the stable or milkhouse. It gives rise to bad odors and encourages flies.
2. The barnyard should be well drained.

STABLES

1. Cows should be housed in well-lighted and well-ventilated stables in order to keep them in good health.
2. There should be at least 500 cu. ft. of air space for each cow.
3. No other animals but cattle should be kept in a cow stable. It should not be used for storage of any kind because of the danger of accumulating dust.
4. The stable floor should be made tight and preferably of some non-absorbent material with a proper slope for drainage.
5. If the space above the stable is used for the storage of hay, etc., the ceiling should be made dust-proof. Cobwebs should not be allowed to collect.
6. Stables should be whitewashed with lime every six months.
7. There should be an efficient manure gutter which should be cleaned morning and evening.

Cows

1. Sick cows should be removed from the herd and their milk should not be used.

2. Cows should be kept clean. The udder and teats should be washed and well dried just before milking. The clipping of the long hairs around the udder and tail will materially help.

3. Cows must be treated kindly and spoken to gently.

4. The bedding should be clean.

MILKING AND MILKERS

1. The milkers should be healthy and should wear a clean linen or cotton duster and cap while milking.

2. They should wash their hands thoroughly with soap and water and dry them on clean towels before milking.

3. The hands and teats must be kept dry during the entire process of milking.

UTENSILS

1. The pails into which the milk is drawn should have an opening not exceeding five inches in diameter on one side of the top. This prevents the entrance of a good deal of dust.

2. The milk pail when full should be immediately removed to the milk house, and the milk strained through gauze that has been sterilized by boiling at least 5 minutes. The milk should then be immediately cooled to a temperature of 50° F. and kept at that temperature, or lower, until delivered to the pasteurizing plant.

The more rapidly milk is cooled, the safer it is and the longer it will keep, because cold checks germ growth. It should be delivered to the pasteurizing plant within eighteen hours after being drawn.

3. Ice should be kept for cooling.

4. All water used must be pure. It must be easily accessible and abundant.

MILK HOUSE

1. A milk house should be provided separate from the stable and dwelling house, and used for storing the milk only. It should be kept absolutely clean.

2. Farms which furnish "inspected milk" must always be open to inspection by the Commission.

3. The Commission also reserves the right to make a bacteriological and chemical examination of the milk as they deem fit, both before and after pasteurization.

4. Milk must comply in all points with the requirements of the Pure Food Law of the Adulteration Act of the Dominion of Canada.

If the above rules and regulations are fulfilled, the milk when delivered to the pasteurizing plant should not exceed 100,000 bacteria per c.c. between May 1st and September 30th, and should not exceed 60,000 per c.c. from October 1st to April 30th.

While milk thus produced is clean, yet it is not bacteriologically clean but this can be accomplished by pasteurization or heating.

This insures an absolutely safe milk at little or no increase of cost.

Pasteurization or Heating of Milk

Why does your Commission recommend the pasteurization or heating of milk? We recommend it for the following reasons: First, there is only one class of unheated milk that we can recommend as a safe food for infants and children and that is "Certified Milk"; you may have an absolutely clean milk as regards barnyard contamination but that does not mean that it is bacteriologically clean unless it has been surrounded by all the safeguards laid down for the production of certified milk.

Secondly—Because in the City of New York, last year, certified milk constituted less than one per cent. of the entire consumption of milk in that city and only one-tenth of one per cent. of the entire consumption of milk in the United States, or in other words for every hundred children suffering or dying from impure milk in New York City only one is being saved by certified milk. What about the ninety and nine who are still unprotected?

In the City of Toronto, of a daily consumption of 95,000 quarts, 470 quarts are certified, about one-half of one per cent.

Can we afford to leave the ninety-nine and one-half per cent. of our entire supply to continue its deadly effects?

When we add to the dangers already referred to through diarrhoeal diseases and tuberculosis, the fact that from ten to twenty-five per cent. of all epidemics of typhoid fever, scarlet fever and diphtheria are traceable to milk, we feel that we would be defeating the very object of our existence.

Thirdly—Because pasteurizing or heating the milk to a temperature of 140 degrees and maintaining it at that for 30

minutes, destroys all disease producing germs and about 99 per cent. of all the germs in the milk and does not interfere with the nutritive value or digestibility of the milk or the formation of the cream line.

Fourthly—Because we have yet to hear the first logical argument against it.

The attitude of your Commission towards the heating of milk is fittingly set forth by Dr. Rowland Godfrey Freeman, professor of diseases of children, Bellevue Hospital Medical School and President of the American Association of Medical Milk Commissions, in his contribution to a symposium on infant feeding at a stated meeting held on October 20th, 1909, of the Medical Society of New York.

Pasteurization of Milk—Dr. Rowland G. Freeman said:—
“All are agreed that what is wanted is a safe, raw milk, and hence the only question for discussion is whether we can obtain a safe raw milk for feeding infants or not, and if not, whether milk is injured by heating, and to what extent, and by what temperature. It is possible to obtain a much safer raw milk to-day than it was five or ten years ago in New York City. Tuberculosis is one of the lesser dangers in milk under present dairy conditions. The diseases concerning which we have most tangible and uncontrovertible proof were typhoid fever, diphtheria, scarlet fever, and epidemic sore throat.

Our sanitary dairies do almost all that is possible to protect from these diseases, but epidemics still occur from the sale of certified milk. I believe,” said Dr. Freeman, “that at the present time there is no absolute safety in raw milk.”

The opinion has become current that heated milk produces poorly nourished children, and that it produces rickets and scurvy and that heating destroys the life of the milk, and produces chemical changes in it which renders it less nourishing. These opinions do not prevail abroad. European physicians have used it for years without having made similar observations. Although children fed on heated milk had developed scurvy, the milk was not at fault. Out of 356 cases of scurvy studied by the American Pediatric Society in 1897, 60 per cent. were fed on proprietary foods, 19 per cent. on sterilized cow's milk, and 10 per cent. on condensed milk, 3½ per cent. on breast milk and only 4½ per cent. on pasteurized milk.

These figures indicate very little responsibility on the part of pasteurized milk, for scurvy. Scurvy developed to a great

extent when extreme dilutions were being fed. Comby of Paris, in a very large experience, has seen only five cases of scurvy in babies fed on pasteurized milk and with these the milk was over diluted. The assumed relationship between the heating of milk and scurvy is unfounded.

The ordinary commercial pasteurization of milk is to be condemned. The only safety for the consumer is to get his milk clean and sweet, and then render it safe by the smallest amount of heat compatible with safety. A temperature of 140 F. continued for thirty minutes would kill all bacteria that were known and feared in milk. This changes neither the taste nor, as far as we know, the chemical composition nor the ferments of the milk. Such pasteurization should be still used by every physician who is conscientious in his endeavors to secure the safety of the infants he is feeding."

The following resolution was passed by the National Association for the Study and Prevention of Tuberculosis, Washington, D.C., May 2nd, 1910.

1. Resolved, That the production and handling of milk, under such satisfactory, sanitary conditions as to insure its complete reliability (that is the production of what is known as certified milk) at the present time, unfortunately increases the cost to such an extent as to make the use of such milk for general consumption impracticable.

2. Resolved, that the efficient pasteurization of the general milk supply (excepting certified milk) when supplementing dairy inspection and applied to milk from inspected dairies, and done under official supervision, is desirable for the destruction of the ordinary micro-organisms of fermentations and putrefaction and as an additional protection against infection by typhoid fever, scarlet fever, diphtheria, tuberculosis, and possibly some other specific infectious diseases.

3. Resolved, that commercial pasteurization as a method for the preservation of old or dirty milk, should not be permitted.

Dr. Thomas L. Stedman, editor of *The Medical Record*, in a recent editorial in that Journal says: "The best that can be hoped for the City of New York and all other large cities for some time to come is that the milk be macroscopically clean and therefore only safe after pasteurization."

At a recent meeting of the section on Public Health of the Academy of Medicine of New York, after carefully discussing the various phases of the milk supply for that city, they were

unanimous in their opinion that all milk coming into the city which was not officially certified should be pasteurized.

At a meeting of the Medical Association of the greater City of New York in April, 1907, a symposium on milk occupied the entire evening. The conclusion arrived at was that while there should be no relaxation on the part of the Milk Commissioners and the various health departments in their efforts to secure a pure milk supply, yet securing of this will necessarily mean time, and that our only safeguard for the present lies in proper and efficient pasteurization of all milk not officially certified.

Dr. M. J. Roseneau of the Hygienic Laboratory of the Public Health and Marine Hospital Service of Washington, says: "After carefully considering the advantages and disadvantages of pasteurization of milk, the advantages so far outweigh the disadvantages that I unhesitatingly recommend compulsory pasteurization of all milk not officially certified."

The last recommendation of the Medical Milk Commission for Washington was that all milk supplied to the city not officially certified be pasteurized.

At the International Pure Milk Congress held at Brussels in September, 1907, the use of uncertified raw milk for infant feeding was officially deprecated and pasteurization advocated.

At a meeting of the Academy of Medicine in Toronto a strong resolution which was passed the previous week in the section on Public Health was unanimously adopted, as follows: "In the opinion of this section, in view of the fact that only a fraction of the entire milk supply comes up to the standard of certified milk, we advise that all milk not officially certified be pasteurized, all pasteurization to be under the direct supervision of the Health Department, the labels on the bottles to contain the date and method of pasteurization.

"After the pasteurization, the milk is to be immediately refrigerated to a temperature of not more than 45, and kept at that temperature until delivered.

"Pasteurization and refrigeration to be supplemented by rigid and conscientious inspection of the sources of supply."

Careful inspection of the source of supply, heating to a temperature of 140 F., holding at that for thirty minutes, immediate refrigeration to from 40 to 45 degrees Fahrenheit and keeping at that until delivered to the consumer, are, in our opinion, the essentials for efficient pasteurization.

Alleged Objections to Pasteurization : First, that it will encourage continued careless habits on the part of the producer. This will be overcome by inspection and the demand for a low bacterial count previous to pasteurization.

Second, that pasteurized milk as a continued food tends to produce rickets and scurvy. This applies only to sterilized milk, as a temperature of 140 does not affect the nutritive properties of the milk.

Third, that it is a cooked milk. This is not the case, as neither the chemical nor physical properties of milk are materially altered by official pasteurization.

Many of the leading experts on the milk problem and in bacteriology in the United States have informed us that they pasteurize all the milk in their own homes before feeding it to their children.

Professor Gordon Bell, of Winnipeg, and Professor John Amyot, of Toronto, two of the leading bacteriologists in the Dominion, and two of the ablest experts on milk, have not permitted any unheated milk to be fed to their children for years.

Dr. Henwood, Professor of Hygiene in the University of London, England, explains the objections to pasteurization as follows:—The objections raised are not to pasteurization but rather to the faulty methods, as (1) improper pasteurization, (2) pasteurization of improperly procured milk, and (3) improper care of pasteurized milk.

We all agree that certified milk is the ideal, but it would require a faith that would remove Mt. McKinley and plant it down on Well's Hill as a scenic attraction for Toronto to enable us to believe that for years to come the entire milk supply of any large city can be raised to that standard.

Notwithstanding the indisputable evidence in our possession in favor of safeguarding human life by the heating of milk, one of the most difficult problems we have to handle is the educating of the public and the profession at this point, but this is not to be wondered at when we recall the fact that it has taken over fifty years to educate the profession in anti-septic surgery, and there are some delinquents yet.

How can we Secure Clean Milk Without Increasing Cost of Production

Your Commission has fully realized that the commercial aspect of the milk problem is of such magnitude as to demand serious consideration. In the Province of Ontario alone, accord-

ing to the report of the Ontario Government Milk Commission, the entire dairy products are worth \$45,000,000 annually, while the estimated annual value of dairy products of the United States exceeds \$500,000,000.

In our efforts, therefore, to secure clean milk, we have had due regard for the vested rights of those engaged in its production.

We hear much about profitable and unprofitable dairying. The consumer objects to paying any more for his milk and the producer objects to having any extra cost put on the production. How can this be overcome? Mr. Thompson has a good dairy herd that yields him an excellent profit. Mr. Jones, his neighbor, has an equally good looking herd and in every respect as well cared for, but his can barely make ends meet, and their less fortunate friend, Simpson, is losing money on his herd, and the explanation of it all is the lack of business principles. Enquiry reveals the fact that Mr. Thompson knows exactly what every cow eats every day and what it costs, he also knows exactly how much milk each cow gives every day, and the amount of butter-fat it contains. The other two keep no record.

A large proportion of the dairy cattle in every state in the Union not only yield no profit, but are kept at an actual loss, and this is undoubtedly true of every province in the Dominion.

The most profitable dairy cows in Illinois give a net profit of \$57.22, and the poorest were kept at an actual loss of \$17.83 (Illinois State Bulletin.)

The above facts, says the Bulletin, show clearly that the average production of Illinois dairy cow can be doubled, and the profit increased fourfold, and your Commission is convinced that the same may be accomplished in Canada if every milk producer in the Dominion were to adopt careful business principles, keeping an accurate daily record of the amount of milk and butter-fat, and also the cost of the food consumed by each individual cow in his herd, and when he discovered that a cow is not giving a good return, remove her from the herd and replace her by one of a greater productive capacity.

It is quite apparent that the assistance which our Commission, with its various branches distributed all over the Dominion, will be able to render the producers in the selection, care and feeding of their herds will compensate them fourfold for the slightly increased expenditure necessary to insure the production of a clean milk, and to this end we are incorporating in this report

the following information from the General Manager of the Walker Gordon Laboratory Company:

Description of Dairy Cattle

Dairy Cattle, the name given to the neat cattle raised for their milk, rather than for their flesh, the latter being called beef cattle. Man has, by careful attention, prolonged the natural period of milk-flow and increased the quantity much beyond the needs of the calf. This is drawn from the cow by the milking process familiar to most people; and the value of the cattle depends upon the quantity and richness of the milk produced, more than upon any other feature. Naturally, however, the more robust breeds, and those that can do well on comparatively coarse food, are most useful in certain sections of country subject to extremes of temperature and producing inferior fodder-grass.

Though dairy cattle are bred almost all over the civilized world, the stock of the best breeds comes from the British Isles, Holland and Switzerland, the two last named countries being justly famous for their rich milk and fine cheese.

In America, almost all breeds of cattle are represented, and experiments have been made and statistics gathered under the supervision of government as to the breeds that thrive best in the various agricultural districts. According to the reports of the United States Department of Agriculture these are the Brown Swiss, which, as its name signifies, is of Swiss origin; the Dutch Belted, and Holsteins, two breeds from Holland; and the Ayrshire, Devon, Guernsey, Jersey, and various breeds of Durham from Great Britain.

Dairy cattle are usually somewhat less heavy than beef cattle; and, except in rare cases, are extremely gentle. They should be well cared for, and kept in as cleanly a manner as possible, as such care is fully repaid by both the amount and condition of the milk produced.

The **Brown Swiss** is a breed of medium size, fleshy, well-proportioned, with a straight, broad back, heavy legs and neck, and a somewhat coarse appearance. Despite this, however, these cattle are rather small-boned, have fine silky coats, and rich elastic skin. The color is brown, shading into a soft mouse color, or dun, on the body, with head, neck and legs very dark, often almost black. The nose, tongue, hoofs and switch are quite black. There is a light-colored stripe around lips and nostrils, a tuft of light hair between the horns, and a similarly

colored stripe along the tail. The eyes are full, gentle, very bright, and usually black. The small horns are white, tipped with black, and curve forward and inward. The ears are good-sized, and round, and lined with light-colored silky hair. The udder is large, and quite white. The average weight is from 1,200 to 1,400 pounds, the bulls sometimes attaining greater size and weight. Both bulls and cows are hardy and active, and, owing to their origin, thrive well in mountainous regions. The bulls are just as docile as the cows, and even in big herds are easily managed.

The **Dutch Belted** are gentle, vigorous cattle, with rather longer legs and less bulky bodies than other breeds, and are easily known by the broad belt of white encircling the body, between hips and shoulder blades, forming a marked contrast to the jet-black, glossy coat of the remainder of the body. No white should appear on the black portions, and on the white belt there should be no black spot.

The second Dutch breed, the **Holstein-Friesian**, is characterized by great size, and by the black-and-white coat. The ground-color is usually jet-black, of a silken texture, with marks of pure white upon it. These do not merge gradually into the black, but are clearly outlined patches. The horns are small, usually white, tipped with white. The tail is tipped with a white brush. Though the largest and heaviest of dairy cattle, the Holsteins are not so easily satisfied with coarse food, nor so hardy as many other breeds; and they are large feeders.

The **British breeds** are varied. The **Ayrshire** is the breed best suited to rugged uplands, pastures, and inclement weather. These cattle, generally under the average in weight, are short-legged, small-boned, and alert. The horns are gracefully curved, generally upward; the eyes are unusually bright. The color is red and white in spots; the red sometimes varying to a rich brown. The coat is always glossy; and the intelligence, economy, and large yield of milk make this a favorite breed.

The **Devon**, considered the most beautiful of dairy breeds, is a red-coated, smooth-skinned animal, active, hardy, symmetrical, and intelligent. Though the typical red may vary in tone, being sometimes dark, no markings of white or black appear, save one patch of white on and in front of the udder.

The females have beautiful, creamy, black-tipped pointed horns, curving upwards. The males have shorter, thicker, and less graceful horns.

Guernseys, as their names signifies, originated in the island of Guernsey in the English Channel. They are yellowish in color, often with patches of white on the body and legs. The ground color is deepened almost to brown in many cases. The horns are small, fine, and graceful, often yellowish from the base. This breed secretes a large amount of yellow coloring matter, noticeable in the animals themselves, and very prominent in the golden color of the butter made from their milk. Guernseys are nervous, and yet with care may be kept quite gentle.

The **Jersey**, from the same group of Islands as the former breed, are smaller than any other breed of cattle. In color these animals are rather variable, ranging through shades of brown to black, yellow, tan or cream, either solid color, or broken, patches often being white. The horns are small and crumpled, the eyes soft and gentle. Jerseys are much less fleshy than most other breeds and are sharper in outline. They are light, quick, and rather graceful in motion; and are second only to Guernseys in the richness and color of their milk. There is an unmistakable though indefinable air of breeding about a Jersey that invariably shows.

The **Durham** cattle are of various breeds. They are all short-horned or quite hornless; are red in color, sometimes marked with white; have heavy bodies, and short, broad heads. They are usually classed as beef cattle; but are so capable of giving good milk in large quantities that they are often bred for dairy purposes. They are exceedingly docile, even the great bulls, which attain a weight of 2,500 to 3,000 pounds, being thoroughly domesticated.

Most Profitable Breeds

The best and most profitable breed of dairy cattle has as yet never been agreed upon. Each of about half of a dozen different breeds has strong claims to highest merits and each has its enthusiastic advocates. The latter are often influenced by conditions which have no economic importance. Different breeds differ markedly in certain characteristics such as size, color, and disposition, as well as quantity and quality of milk. As a general rule, when a large amount of milk is given, it is low in fat-content or "richness."

There is a wide variation in the milk production of different cows of any breed. Yields of milk amounting to 10,000 pounds (two and one-seventh pounds to one quart) in one year are not

rare. They are exceeded even by some Jerseys and Guernseys whose milk is always of high quality. Records of over 20,000 pounds are credited to Holsteins, whose milk tests considerably lower in fat. The great majority of dairy cows throughout the country are "grades," that is, their blood represents different breeds, and in no definite proportions. As producers of milk, individual grade cows can be selected that will equal thoroughbred animals, but the latter are more satisfactory for breeding purposes. Farrington reports a high grade Shorthorn cow in Wisconsin that gave in one year 11,131.7 pounds of milk containing 584 pounds of butter. The total feed consumed in the year cost \$39.60. The total value of her butter and skimmed milk was \$131.83. The cost of feed consumed for every pound of butter produced was only 6.7 cents. Too often the value of the annual product of a cow is very low,—even less than \$25.00. It is a fact that on account of lack of business methods many such cows are kept at an actual loss to their owners.

Dairymen are divided upon the question as to the merits of the "single-purpose" and "dual-purpose" animals. The latter include those that can be profitably disposed of for beef when their period of usefulness in the dairy is ended. Advocates of the former think that this advantage is purchased at a high cost and that the single-purpose cows are enough more profitable while in the dairy herd to permit of their final disposition at a low figure.

The selection of cows for a dairy herd, regardless of the breed chosen should be based upon individual merit. Small and unprofitable producers as well as unhealthy cows and those of weak constitutions should be avoided, and when they are found in the herd, advantage should be taken of the first opportunity to displace them. It is well said "the bull is half of the herd." When calves are to be raised, as is the rule in most dairies, the influence of the bull upon the development of the herd is readily seen. If possible a bull of proved excellence should be used. It is always well to give special attention to the breeding of the bull, and attach considerable importance to the performances of his dam and grand-dams. The quantity of milk given by each cow, and its fat test, should be recorded at least one day every two weeks for the purpose of showing which animals of the herd are profitable and which are not. The time for breeding cows depends upon the requirements of the milk. Formerly it was the general practice in dairies not supplying

milk for retail sale to have cows calve in the spring, and be "dry" throughout the winter. At the present time, however, a large number of dairies are operated most profitably during the winter for the purpose of supplying milk for butter and cheese making as well as for consumption in towns and cities.

Better Methods of Feeding

Feeding with the best results is a subject which requires much study and experience. Especially is this the case where winter dairying is practised. In the first place feed should be wholesome and palatable. Then care should be taken to have the nitrogenous and non-nitrogenous components properly proportioned. Just what feeds will be used depends largely upon local conditions, cost, availability, etc. Practical rations as fed in different parts of the country and reported by Woll are as follows:

New York, 20 pounds of hay, 2 pounds wheat bran, 2 pounds cotton-seed meal, 2 pounds hominy meal.

Vermont, 30 pounds corn silage, 10 pounds hay, 4.2 pounds corn meal, 4.2 pounds wheat bran, 8 pounds linseed meal. Wisconsin, 26 pounds corn silage, 10 pounds clover hay, 5 pounds oil meal. Most coarse fodders are low in nitrogenous component or protein; of these, the leguminous plants contain the highest percentages of protein. The concentrated feeding stuffs commonly used and containing the most protein, are cotton-seed meal, linseed meal, gluten meal, dried brewer's grains, wheat middlings and wheat bran.

Changes in methods of feeding which are especially marked at the present time include the growing use of ensilage and the increasing practice of "soiling" or cutting green feeds of different kinds and bringing these to the animals instead of allowing them to graze.

Work Being Done by Milk Commissioners in the Dominion

The very valuable work done by the Ontario Government Milk Commission is too well known to require more than a passing comment and we advise all members of our Association to secure a copy of their very comprehensive report which may be had on application to the Department of Agriculture. The work done by this Commission must be most valuable from an educative standpoint in helping to arouse interest throughout the province, in addition to securing better legislation.

We have eight Medical Milk Commissions in the Dominion and others in course of organization. We regret that the reports from the various branch Commissions were not received in time for incorporation in this report.

The work done in Toronto may be briefly summarized as follows: The amount of certified milk consumed in the City is 470 quarts per day and this is looked after by the Commission of the Academy of Medicine.

Your Commission waited on the Mayor and the Board of Control in October, 1908, and presented the following requisition to which they promised to give their serious consideration:—

Toronto, October 20th, 1908.

“ TO THE LOCAL BOARD OF HEALTH OF THE CITY OF TORONTO:

In view of the fact that contaminated milk is responsible for a large portion of our infant mortality, especially in the summer months, and also a not infrequent source of outbreaks of typhoid fever and other infectious diseases, the most common source of tuberculosis in early childhood, the undersigned members of the Milk Commission appointed by the Canadian Medical Association, have been endeavoring to arrive at a conclusion as to the best means of securing milk free from pathogenic germs and a safe food for infants and children.

“ Having carefully reviewed the investigations made and the conclusions arrived at by the most ardent and careful workers in the campaign for milk that can be accepted as a safe food for young children, we strongly advise, in the interests of the public health, that all milk not answering to the standard set by the Health Department for certified milk be pasteurized, and that the milk before being accepted as fit for pasteurization must be macroscopically clean and kept at the lowest possible temperature; also that the shortest possible time elapse from the taking of the milk from the cows until it is pasteurized, and that, immediately after pasteurization, the milk be lowered to a temperature of 40 degrees and maintained at that until used—all pasteurization and certification to be under control of the Health Department.

“ We would also recommend that as soon as practicable, the sources of the entire milk supply of the City of Toronto be placed under the rigid inspection of the Health Department, and that supervision also be made of the transportation of the milk from the farmers to the city.

"We also advise that milk depots be established at which the poor sick children of the city may receive modified, certified or pasteurized milk.

"We would also advise the distribution among all the milk producers and dealers of a circular of instruction such as are contained in the circulars recommended to be distributed by the Provincial Board of Health."

Commission Assumes Responsibility

We waited for some action to be taken, but in vain, and at the last meeting of the Association in Winnipeg we obtained authority from the executive to endorse any company that complied with our requirements for inspected pasteurized milk.

We have now in Toronto three firms that have their sources of supply regularly inspected, and refuse to accept milk from any producer who will not comply with requirements in the cleaning up of their herds and stables. These firms have three and four sets of milk cans for all their producers, all of which are sterilized at the pasteurizing plant before being returned to the producer, and have assured us that as soon as they can secure satisfactory seals all the cans will be sealed before being returned to the producer and then sealed by him when filled with milk. The time elapsing from the time the milk is taken from the cow till it enters the pasteurizer is under fifteen hours. This milk is heated to a temperature of 140° F. and held at that temperature for thirty minutes and immediately refrigerated to from 40° to 45°, and kept at that till delivered. These three firms are supplying to our citizens 36,484 quarts of officially pasteurized milk and 4,956 quarts of pasteurized cream daily, or more than one-third of the entire milk supply of the city. In addition they supply pasteurized butter.

In October, 1909, a pasteurizing plant was installed in the Children's Hospital, the donation of Mr. J. Ross Robertson. Number of gallons of milk pasteurized per day—50 gallons.

In addition to the children in the hospital, sick children from the Evangelia Settlement, and also from the Infants' Home, are getting this pasteurized milk.

The average bacterial count of the milk supplied to the hospital for the past week, before pasteurization, was 11,400 per e.c., while the count for the past six days, after pasteurization, was 36, 64, 18, 8, 50 and 64 respectively. After the first of June, 1910, the contract that Mr. Robertson has made for a

certified milk not exceeding more than 1,000 per e.e., in winter, and 2,000 per e.e. in summer, when delivered to the pasteurizer, will come into effect. This will be a most valuable object lesson to all hospitals and the citizens of Toronto.

It is, therefore, quite apparent that before midsummer we can hope to have at least one half of the milk consumed in Toronto clean and a safe food for human use. We have reached the point where the demand will positively produce the supply as the firms now supplying this could double their output. These pasteurizing plants during the summer months will be under the regular supervision of members of our Commission and bacteriological examinations made at least twice a week. This has been invited by these firms who have expressed themselves as being desirous of co-operating with us to attain the highest standard for an inspected pasteurized milk. By our bacteriological examination we will stimulate a spirit of contest, a low count before pasteurization being as important as a guide to your Commission as regards the method of production as the count after is for its freeness from disease producing germs.

It must not be forgotten, however, that the care of the milk after it is delivered at the homes is equally as important. It should be immediately placed in a refrigerator at a temperature not higher than fifty degrees, Fah. If there is no refrigerator, place the vessel containing the milk in a pail of cold water, which should frequently be renewed, and kept in the coolest part of the house. It should be kept in tightly closed vessels, so as to prevent the possibility of contamination with dust or unpleasant odors, but more especially is the common house-fly to be dreaded. The danger from this latter source can not be too much emphasized,—as one minute it may be in contact with excretion from a typhoid or a tuberculous patient, from which it might carry thousands of bacteria on its feet, and the next moment in an open vessel containing the milk supply for the home.

In view of the facts here presented, is it too much to hope that our federal, local and municipal legislatures will realize that human life is at least worthy of as much consideration as is farm stock and agriculture?

All of which is respectfully submitted.

CHARLES J. HASTINGS,
Chairman.

Constitution and By-Laws of the Canadian Medical Association Milk Commission

ARTICLE I.

Name—The name of this organization shall be the Canadian Medical Association Milk Commission.

ARTICLE II.

Purpose—The purpose of this Commission shall be to act as far as possible in conjunction with the various Boards of Health in inquiring into the milk supply of the various cities and towns throughout the Dominion and through the formation of local sub-committees to endeavor to secure such federal and local legislation as would warrant them or each municipality in establishing a system of rigid inspection, and the adoption and enforcement of such rules and regulations as may be found necessary.

ARTICLE III.

Membership—All members must be members of the Canadian Medical Association.

ARTICLE IV.

Additions to the membership of the Commission may be made by a two-thirds vote of the members present at any regular meeting.

ARTICLE V.

Local Sub-Commissions may be arranged for by the Commission under the authority of the C.M.A., whose Chairmen shall be ex-officio members of the Executive.

ARTICLE VI.

Sessions and Meetings—The Commission shall hold an annual session at the same time as the meeting of the Canadian Medical Association and in the same place.

Meetings shall be held monthly at the call of the Chairman.

ARTICLE VII.

Officers—The officers of the Commission shall be a Chairman, a Secretary and Treasurer.

The Chairman shall be appointed by the Canadian Medical Association with power to appoint a temporary substitute in the event of absence. The Secretary and Treasurer shall be

elected for a term of one year at the Annual Meeting of the Commission, and serve until their successors are elected.

ARTICLE VIII.

Executive Committee—The Executive Committee shall consist of the Officers and two members of the Commission, together with the Chairman of Local or Sub-districts Commissions.

ARTICLE IX.

Amendments to the Constitution and By-laws may be made by a two-thirds vote of the members present at any session, provided that one month's notice of such amendment has been given before the meeting.

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