DEPARTMENT OF AGRICULTURE

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(Revised)

TUBERCULOSIS IN CATTLE

BY

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FARMERS' BULLETIN.

TUBERCULOSIS.

In issuing this bulletin on a subject affecting very intimately not only the extensive and rapidly growing cattle industries of Canada, but also having a close and direct bearing on the health and lives of the people, an effort is being made to convey to every one interested, more especially the farmers, dairymen and stock-raisers, in a condensed form and in non-technical language, a simple statement of facts as to the nature, causes, symptoms and prevention of this disease.

In the preparation of the bulletin free use has been made of the publications and reports of the best authorities up to date, especially those of Prof. Ed. Nocard, of Alford Veterinary College, France, Chief Consulting Veterinarian in France; Prof. Bang, of Denmark, who was specially employed by the Danish Government to investigate this disease; the report of the Royal Commission appointed by the British Government; the reports of the Bureau of Animal Industries at Washington, U.S.A.; Prof. Theobold Smith, Harvard University; Profs. Law and V. A. Moore, Cornell University; the late Prof. Walley, Edinburgh Veterinary College, &c., as well as of the extensive experience of the veterinary staff of the department.

The statements contained herein are accepted generally by scientific men as facts, and our farmers may accept them as such, care having been taken to avoid making statements on debatable points. The Minister trusts that interested parties will carefully read the bulletin, preserve it for future reference, and apply the suggestions contained therein to their own individual cases.

Full directions for applying the tuberculin test are given, by following which any intelligent person accustomed to handle cattle may diagnose obscure or latent cases, which seldom present symptoms recognizable by mere clinical examination.

Accuracy in conducting the test being all-important, any owner desiring to have his cattle tested by a Government Inspector may have it done free of cost by making application to the Department of Agriculture at Ottawa by a letter addressed to the Deputy Minister of Agriculture. This does not apply, however, to the testing of cattle for exportation to the United States.

In the event of an Inspector discovering the disease in one or more of the herd, it will be his duty to at once remove them out of the byre to an isolated place, in which they must remain quarantined until otherwise disposed of. The premises must also be disinfected to the satisfaction of the Inspector.

INDEMNITY.

As no provision has so far been made by Parliament for the payment of indemnity for animals slaughtered on account of this disease, under ordinary circumstances no indemnity will be paid by the Minister of Agriculture.

OBLIGATIONS OF OWNERS OF DISEASED CATTLE.

The following extract from the Animal Contagious Diseases Act will explain to owners of diseased cattle their responsibility under this Act:—

Notice of disease to be given to the Minister of Agriculture by breeders or dealers.

3. Every cattle or farm stock owner, and every breeder of or dealer in cattle or other animals, and every one bringing foreign animals into Canada, shall, on perceiving the appearance of infectious or contagious disease among the cattle or other animals owned by him or under his special care, give immediate notice to the Minister of Agriculture, at Ottawa, of the facts discovered by him as aforesaid.

Penalty for neglect.

Or fraudulent concealment of disease.

4. Every owner of such diseased cattle or other animals who neglects to comply with the provisions of the next preceding section shall forfeit his claim to compensation for any cattle or other animals slaughtered in accordance with the provisions of this Act; and no such compensation shall be granted him; and every person who maliciously or fraudulently conceals the existence of infectious or contagious disease among cattle or other animals, shall incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 4.

Penalty for keeping diseased animals in places not inclosed.

5. Every person who turns out, keeps or grazes any animal knowing such animal to be infected with or labouring under any infectious or contagious disease, or to have been exposed to infection or contagion in or upon any forest, wood, moor, beach, marsh, common, waste land, open field, roadside, or other undivided or unenclosed land, shall, for every such offence, incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 5.

Penalty for bringing such animals to market, &c.

6. Every person who brings or attempts to bring into any market, fair or other place, any animal known by him to be infected with or labouring under any infectious or contagious disease, shall, for every such offence, incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 6.

Penalty for selling or putting off such animals, &c.

7. Every person who sells or disposes of, or puts off, or offers or exposes for sale, or attempts to dispose of or put off any animal known by him to be infected with or labouring under any infectious or contagious disease, or the meat, skin, hide, horns, hoofs or other parts of an animal known by him to be infected with or labouring under any infectious or contagious disease at the time of its death, whether such person is the owner of such animal, or of such meat, skin, hide, horns, hoofs or other parts of such an animal, or not, shall, for every such offence, incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 7.

For throwing carcass into rivers, &c.

8. Every person who throws or places, or causes or suffers to be thrown or placed, into or in any river, stream, canal, navigable or other water, or into or in the sea, within ten miles of the shore, the carcass of an animal which had died of disease, or which has been slaughtered as diseased or suspected of disease, shall, for every such offence, incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 8.

For digging up any such carcass when buried.

9. Every person who, without lawful authority or excuse, digs up or causes or allows to be dug up the buried carcass of an animal which has died or is suspected of having died from infectious or contagious disease, or which has been slaughtered as diseased or as suspected of disease, shall, for every such offence, incur a penalty not exceeding one hundred dollars. 48-49 V., c. 70, s. 9.

Such animals if offered for sale to be seized and reported to the mayor, &c.

10. If any animal infected with or labouring under any infectious or contagious disease, is sold, disposed of, or put off, or is exposed or offered for sale in any place whatsoever, or is brought or attempted to be brought for the purpose of being exposed or offered for sale in any market, fair or other open or public place where other animals are commonly exposed for

sale, any clerk or inspector, or other officer of such fair or market, or any constable or policeman, or any other person authorized by the mayor or reeve, or by any justice of the peace having jurisdiction in the place, or any person authorized or appointed by the Governor in Council, may seize the same, and report the seizure to the mayor or reeve, or to any justice of the peace having jurisdiction in the place ; and such mayor, reeve or justice, or person authorized or appointed by the Governor in Council, may cause the same, together with any pens, hurdles, troughs, litter, hay, straw, or other articles which he judges likely to have been infected thereby, to be forthwith destroyed, or otherwise disposed of, in such manner as he deems proper, or as is directed, as provided by this Act. 48-49 V., c. 70, s. 10.

Who may cause them with things supposed infectious to be destroyed.

TUBERCULOSIS.

This disease claims for its victims nearly, perhaps we might say, all the domestic animals, and few of the wild animals subjected to domestication resist the contagion, as is well known to keepers of menageries. Rats, mice, and other vermin which inhabit houses and outbuildings not only contract the disease but are active agents in spreading it.

Some species are more susceptible than others and contract it readily by eating food containing the germ of the disease, or inhaling the dried germs given off from the lungs and throat and animals affected in these organs.

The most susceptible of the domestic animals are cattle, swine, chickens, goats and rabbits. These contract it readily in the natural way, but it can be produced in sheep, dogs, cats and horses by inoculation with tuberculous material.

Tuberculosis in the lower animals is the analogue of consumption in the human family. It is due to a similar germ (Bacillus Tuberculosis Bovis), but it is, however, more virulent than the human bacillus.

It is communicable from other animals to man, and from man to the lower animals, by natural infection and by inoculation.

TUBERCLE.

The germs (bacilli), which are living organisms of minute microscopic size, when they reach and become located in a tissue, produce local irritation and the formation of small reddened areas infiltrated with fluid and cells. These are the tubercles. As they become a little older they enlarge, and their colour is grayish or yellow from changes that take place within causing the death of the central tissues. Their appearance and consistence in this way resemble that of cheese.

These nodules may vary in size from a pin head to a cocoanut, often they are of stony hardness from the presence of lime salts. The tubercules may be confined to one organ or tissue of the body, such as the lymphatic gland, for example, of the mesentery or thorax, or the throat, or udder, or ovaries, &c., or they may be generalized throughout the body, the germs travelling in the blood circulation. In this way the abdominal organs (liver, spleen, kidneys, &c.,) may all be involved as well as those of the thorax, lungs, pleura, heart, lymph glands, &c. Often the pleura and peritoneum are covered with grape-like excrescences whose appearances are characteristic of this disease. Whenever tubercles are lodged for any length of time, much destruction occurs in the affected tissue.

THE TUBERCLE BACILLUS.

Is described as a rod-shaped organism with rounded ends and a slight curve, requiring complex laboratory methods of cultivation and staining, to prepare it for microsceptic study.

It is a parasitic organism, which is only found in the bodies and excretions of animals affected by this disease. It thrives badly in the sunlight, which is said to kill it in from a few minutes to several hours. This fact should be remembered in dealing with it with a view to preventing it.

The invasion of the animal's body by the entrance into it of living bacilli is effected either through the digestive organs, (ingestion) or by the respiratory organs (inhalation), by transmission to the sexual organs when the testicle in invaded, and by inoculation, or by a cut or abraded surface.

Without the entrance of the living bacillus into the body, tuberculosis cannot affect it. It is the seed from which it grows and it is essential to the development of the disease as oats, peas, or potatoes are to reproduce the plants.

WHAT RENDERS CATTLE SUSCEPTIBLE TO THIS DISEASE ?

Impaired health from whatever cause it arises renders cattle susceptible to tuberculosis. Heredity has been proved not to be an active cause of its propagation. It is well established by the experiments of Prof. Bang and others that calves may be bred from tuberculous mothers, and if removed before the cow licks them, or they have sucked their mother's milk, are placed in absolutely healthy surroundings and fed on milk from healthy cows, they can be reared and remain so far as any inherited disease is concerned perfectly free.

In-and-inbreeding by producing animals with reduced vitality, over-milking, under-feeding, want of sunlight and pure air, insufficient exercise, breeding too young, are all what may be termed predisposing causes to tuberculosis, and should be avoided.

One breed of cattle is just as liable to contract this disease as another when subjected to the predisposing and exciting causes. Dairy cattle are most subject to it because they are most exposed, they are more congregated ; more closely and continuously housed, their vitality more drained by heavy milking and they are kept longer than the beef breeds. Their calves are more liable to milk infection, as they are fed on mixed milk, whereas the beef breeds usually suckle their calves. The majority of beef cattle are killed off at three or four years old, hence they are exposed to the contagion for a shorter term of life which is spent more in the open air and in sunlight.

HOW THE DISEASE IS USUALLY INTRODUCED INTO A HERD AND HOW IT EXTENDS IN IT.

A tuberculous bull is probably the most active agent in spreading this disease, both by cohabitation and sexual connection.

Farmers cannot be overcautious in buying a bull or in having cows served by one till he has been subjected to the tuberculin test and found free from the disease.

Nothing should induce a breeder to allow contact with his healthy cattle by a bull till he has every assurance that he is free from Tuberculosis.

Tuberculous animals of any kind should be prevented from coming in contact with the cattle.

TUBERCULOUS ATTENDANTS.

Tuberculous attendants; men or women suffering from pulmonary consumption should on no account be allowed to feed, milk, or have anything to do with cattle or pigs.

The intercommunicability of the disease from animals to man, and from man to animals is an established fact no longer open to discussion.

The bacilli from the throats and lungs of diseased people or animals, being coughed up adhere to and dry on the woodwork, walls, floors and feed boxes in buildings, cattle trucks or stock yards, and the dust being moved about by air currents, or, mixing with the food in the hay rack or feed-trough, find access to the stomach and intestines, thence through the blood or lymph channels to the abdominal glands and other organs.

DANGER FROM MILK.

The virulence of milk from tuberculous cattle especially when the udder is diseased has been cleraly demonstrated. Milk is dangerous even when the udder is not specially diseased. It will communicate the disease even when diluted by mixing with large quantities of other milk in the creamery or cheese factory; whey is equally dangerous.

The germs remain active in the skim-milk and whey, and may produce the disease in calves fed on it. Milk obtained from creameries in districts where tuberculosis prevails should be raised in temperature for 10 minutes to 160° before being given to calves, otherwise living bacilli may be taken into the stomach, and entering the lymph channels produce the disease. As a precautionary measure, milk from tuberculous cows should not be received at creameries or cheese factories. All skim milk and whey should be heated to 160° for ten minutes before being given out to farmers from the factories for feeding calves or swine. Unless this is done creameries and cheese factories may become distributing agents of this disease to healthy herds. Milk from tuberculous cows is a frequent source of communicating the disease from cattle to people, especially children and old feeble persons; meat from diseased cattle is also dangerous, although it may be sterilized by heat.

HOW TO PREVENT ITS INTRODUCTION TO A HERD.

See that your animals to begin with are free from the disease.

Never bring any animal into the byre till you have ascertained beyond a doubt that it is healthy.

Keep your own bull. Your neighbour may be obliging, but if careless about the health of his stock, you may suffer irreparable injury by accepting even the free use of his bull should the animal happen to be tuberculous.

Conversely, if you have a bull, be exceedingly careful to see that no tuberculous cows are brought to him for service.

Never allow a consumptive person to have anything to do with your cattle, make no mistake about this.

Your byres must be well lighted, almost as light as outdoors; disease germs are killed by sunlight.

Pure air and plenty of it is essential to health. This can only be provided by sufficient space. Let your cow stable be roomy.

Drainage is essential to purity of the air. Without proper and efficient drainage the air must become contaminated by emanations from the droppings and urine of the cattle as well as by the decomposing vegetable matters with which they are mixed.

Drain your buildings, and do it thoroughly.

The ventilation is all-important. By properly arranged ventilators the impure air is removed and replaced by pure, the oxygen of the air is constantly being consumed in the process of breathing, and unless it is replaced it becomes unfit to sustain animal life. The constant change of the air in buildings inhabited by animals is absolutely necessary to preserve health.

During summer weather most buildings are sufficiently ventilated by the doors and windows being left open; it is during the winter when cattle are housed that they suffer from imperfect ventilation.

Proper ventilation provides for the admission of the pure and the escape of the foul air. As a rule farmer's architects do not make sufficient provision for either.

The air may be admitted by openings near the floor and by windows hinged at the bottom and dropping inward.

The ventilators or air shafts are usually too small. Most buildings require shafts three feet square placed about twenty feet apart, in the middle aisle of the byre. The shafts should be divided inside into two by a partition extending from

the top to within three feet of the ceiling; the opening being controlled by trap doors opened or closed by cords running through pulleys.

CATTLE STANDING HEAD TO HEAD OBJECTIONABLE.

The common plan of arranging the byre, so as to save labour in feeding, by having an alleyway with the heads of the cattle opposite each other is objectionable from a health standpoint, as it exposes animals opposite tuberculous cattle much more to the contagion than when they are placed with their heads to the wall. They may be easier fed the former way, but they are easier cleaned the latter, and it has a decided sanitary advantage should contagious disease exist.

Running water in troughs placed in front of the cattle is objectionable if tuberculosis is present, as by this means the germs may be carried in front of the whole herd.

SYMPTOMS AND DIAGNOSIS OF TUBERCULOSIS.

In the majority of cases the symptoms are obscure, and till the discovery by Prof. Koch of the reaction produced by the injection of tuberculin (being a most reliable test for discovering this disease in obscure cases unrecognizable by symptoms) the majority of cases could not be detected even by experts.

When affecting the lungs, throat and respiratory organs generally, it is accompanied by a frequent cough but no fever. There is disturbance of respiration; the breathing is quickened by slight exertion or excitement; the cough is produced by changes of temperature. The expert can detect dull spots surrounded by areas of increased resonance on examination of the lungs by the usual methods.

Usually the superficial glands, in the throat, between the jaws, under the ear, or the udder, may be hard and swollen. The animals may continue for months or even years to maintain fair condition. They are sometimes fat while the lungs may be found studded by large tubercular masses.

When the disease is abdominal and the glands and organs in the belly are chiefly affected, the symptoms of defective nutrition are early apparent ; emaciation, lessened secretion of milk, indigestion, breathlessness, and general failure more or less rapid. Many cases cannot be detected by symptoms, but can be almost to a certainty (in 98 per cent at least) by the Tuberculin Test.

THE TUBERCULIN TEST.

Until the discovery by Professor Koch, in his experiments to discover a cure for consumption in human beings, that the injection of tuberculin invariably caused a rise in temperature when the person or animal was tuberculous; while it produced no effect whatever when free from it, the detection of the disease in early stages or when slightly affected was considered impossible in most cases. This test is most delicate and reliable (about 98 per cent), where it is properly applied.

Tuberculin is a soluble product of cultures of tubercle bacilli, of which a glycerine extract is made which is sterilized by heat and filtered through porcelain, so that it contains no living germs, and therefore cannot produce tuberculosis in animals injected with it. It has therefore, no effect on healthy animals, in some cases the disease is aggravated by it when it exists, but, it cannot be produced by it.* The lymph must not be exposed to sunlight. It must not be frozen; must be kept well corked to exclude air.

Tuberculin injection has no bad effects on the secretion of milk.—The consensus of opinion of those most experienced is that it does not lessen the secretion of milk in dairy cattle, consequently they may be tested even when in full milk without disturbing its secretion.

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*NOTE.—It would be as reasonable to expect barley to grow from whiskey placed in the ground, as tubercle from injecting tuberculin into an animal body.

Dose—The dose varies with the size and age. As issued by this department it is ready for use, with doses marked on the bottle, viz.: 20 drops for calves, 40 for small or medium sized animals, 60, larger, and 80 drops for very large ones.

When second tests are considered necessary at least thirty days should elapse and the doses be slightly increased.

PREPARATIONS FOR THE TEST.

It being decided to test a herd, the following suggestions should be considered. If the weather is extremely hot, or very cold wait till it moderates. If the animal is suffering from any inflammatory disease when the temperature is over 102° from any cause, a cow being bulling—a bull being sexually excited, scarcity of water, impure air, irritation from flies, pregnancy in advanced stages, are all unfavourable for reliable testing.

Instruments necessary.—The following instruments are required. One or more Fahrenheit (clinical) thermometers, a hypodermic syringe with three strong hypodermic needles and a fine trocar and canula, a fine brad-awl, and a pair of clippers or curved scissors, and several glass droppers.

The Thermometers in use for this purpose cost about $1, are self-registering, and can be bought at any drug store.

Syringes.—Metallic syringes, strong and easily taken apart to be cleaned and disinfected, costing $3, can also be obtained at drug stores, or instrument makers.

The Scissors and Brad-awl are easily and cheaply procured at any hardware store.

Charts for recording tests which should be numbered, and the name or number of the animal, the colour and markings, sex, age, breed, hours at which the temperatures were taken before and after injection, and a column for the decision should be arranged.

Disinfectants.—Professional men generally prefer a solution of corrosive sublimate, 1 part to 1,000 of water, but equal results will be obtained by using a 5 per cent solution of carbolic acid or creolin, and they have the advantage of being less poisonous. Such a solution is required to wash the hands and instruments in, and when used to disinfect the skin it has the advantage of being anesthetic locally.

The Cattle should be Stabled.—If the cattle are at pasture, they should be stabled, tied up in their accustomed stalls, numbered at they stand, handled quietly, by those accustomed to feed and milk them.

They should be allowed to remain undisturbed for some hours, being careful not to disturb the temperature by large draughts of cold water or overabundant feeding.

Taking the Temperature Before Injection.—Two men to whom the cattle are accustomed should assist the person taking the temperature. One takes the nostril with finger and thumb with one hand, and the horn with the other. The second stands at the hip to prevent her from moving from side to side. The thermometer with the mercury forced down by a few sudden jerks, as if shaking ink off a pen, till it marks below 100°, is inserted into the rectum, where it should remain for three minutes. Enter the temperature in a book or chart at 5 p.m., and 8 p.m.

The hands and thermometer should be dipped in the disinfectant solution before inserting it into another animal. When there is a large number to be tested three thermometers may be in use simultaneously, so as to save time.

The best place to inject the test is in the loose skin on the side of the chest above and behind the elbow. The hair should be closely clipped off in a circle about three inches in diameter, and the skin well washed with a 5 per cent solution of carbolic acid.

Injecting the Test.—The dose of diluted tuberculin is now taken into the syringe, all air being forced out. The operator, if he is a fairly tall man, and the animal not very large, should stand on the opposite side, and reaching across the shoulder, he takes up the disinfected loose skin with the fingers, and if the needle is strong and sharp

enough, he penetrates it and pushes the needle its full length into the loose cellular tissue beneath the skin ; if not he should with the brad-awl pierce the skin and insert the needle into the puncture, then slowly inject the fluid withdrawing the needle gradually. The advantage of this position is that the animal when pricked with the needle, cringes from it, and needles are often broken, whereas in this position it cringes towards instead of from the operator.

The Best Time to Inject the Test.—The injection may be commenced after finishing taking the normal temperatures, say, nine o'clock in the evening.,

Temperatures after Injection.—Commence to take the temperatures at 6 o'clock next morning, take them every three hours till it falls to normal again. If tubercle is present there will be a rise of temperature, which attains its highest point usually about mid-day, sometimes later and generally it falls gradually till in about twenty-four hours from the hour of injection it is normal again.

The rise in temperature is no indication of the extent of the disease. Often the reaction is a high temperature, and post mortem examination shows but slight affection.

A rise in temperature of two or more degrees will indicate tuberculosis. In tuberculous herds, one and a half degree would indicate the disease also ; but that temperature in a single animal in a herd would indicate suspicion only, and suggest retesting after thirty days.

SAMPLE OF CHART.

CHART NO.....

Tuberculin Test at.....of Cattle owned by Mr. .....

No.	Age—Years.	Sex.	Breed	Colour.	Date 189					Date.....						Normal.	Reaction.
					TEMPERATURE.												
					BEFORE INJECTION.					AFTER INJECTION.							
								5 P.M.	8 P.M.	6 A.M.	9 A.M.	12 A.M.	3 P.M.	6 P.M.	9 P.M.	MAXIMUM.	
*1	5	Cow..	Ayreshire.	Red and white	....	....	...	101⅔	101⅔	101⅔	101¼	100	100½	102	102	102	102
†2	8	"	Shorthorn.	Roan.	...	..	...	101⅜	101⅔	102⅜	106	107	106⅔	105½	104⅔	101⅜	107

Decision—*Healthy. †Tuberculous.

OFTEN NO REACTION IN ADVANCED CASES.

It is usually found that in animals in advanced stages of the disease, owing to there being a superabundance of tuberculin in the system already, there is little or no reaction.

Fortunately in such cases the symptoms are so apparent, such as coughing, wasting, enlarged glands, etc., that the owner has little difficulty in recognizing the disease.

HOW TO DEAL WITH A DISEASED HERD.

When tuberculosis is discovered in a herd immediately remove the diseased ones from the healthy to another isolated stable, or a part of the byre may be partitioned off by close boards as far as possible from the rest of the herd.

In the case of low-priced cattle the owner will best serve his own interests by slaughtering them at once.

When they are specially valuable and in calf, the experiments of Prof. Bang and others show that the calf may be saved by removing it as soon as born, and before the cow has licked it, or it has been suckled by its diseased mother, and by placing it in an uninfected building, and feeding it on milk from tested cows, it will in all probability grow up free from tuberculosis.

The herd should be tested every six months, and those which react likewise removed till all trace of it disappears.

DISINFECTION OF PREMISES.

Most careful and complete disinfection of infected buildings and yards in which diseased cattle have been kept should be employed to rid them of disease germs.

In doing this before sweeping sprinkle the floors and walls well with water to prevent dust rising, remove drinking troughs, feed boxes and stall divisions. The floors must be specially scrubbed, the walls, ceilings and partitions should be carefully washed, and all freely sprayed with a disinfectant solution such as carbolic acid, one pint of crude acid to four gallons of water, or better still, lime wash. It may be applied by a whitewash brush or a spraying pump, care being taken to see that every corner, crack and joint is thoroughly penetrated by it.

The cleansing and disinfection should extend to drinking troughs and fences of the barn-yard to make disinfection complete.

DISPOSAL OF TUBERCULOUS CARCASSES.

All animals slaughtered should be buried or burned. It is allowed in densely populated European centres by Government regulation that when the disease is limited and local the flesh may be sold for food, all others are confiscated and destroyed.

In Canada no provision is made in the Animal Contagious Diseases Act for such disposal, on the contrary it is strictly forbidden under section 7, 48-49 V., c. 70, which is as follows :

Penalty for selling or putting off such animals, &c.

7. Every person who sells or disposes of, or puts off, or offers or exposes for sale, or attempts to dispose of or put off any animal known by him to be infected with or labouring under any infectious or contagious disease, or the meat, skin, hide, horns, hoofs or other parts of an animal known by him to be infected with or labouring under any infectious or contagious disease at the time of its death, whether such person is the owner of such animal, or of such meat, skin, hide, horns, hoofs or other parts of such an animal, or not, shall for every such offence, incur a penalty not exceeding two hundred dollars. 48-49 V., c. 70, s. 7.

Every stock owner should have his stock tested, and voluntarily eradicate the disease from it, because diseased animals are a constant source of danger to the balance of the herd. It is unlawful to sell animals or their products known to be suffering from a contagious disease as tuberculosis is well known to be. Buyers of breeding stock should not purchase from a herd suspected of disease.

Tuberculous cattle cannot be exported. They are a menace to your neighbour's cattle which may be infected by them, milk and other products of the dairy is dangerous to your own family as well as others using it when drawn from tuberculous cows. Once your herd and premises are free from the infection they can be kept so by following the suggestions above made. It is a duty you owe to yourself, your clients and country.

By co-operation of the breeders it is quite within the possibilities that this disease can in a few years be eradicated from Canadian herds. If the nature and manner of introduction and extension of tuberculosis is once thoroughly known, and preventive measures are enforced in both the human family and lower animals, this fell destroyer of human beings and the lower animals will disappear from the Dominion.

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