Original Articles.

PREVALENCE OF BOVINE TUBERCULOSIS.¹

BY DR. AUSTIN PETERS, BOSTON.

TUBERCULOSIS has been known for all time, and among all civilized people and in all habitable climates. Among cattle-keeping people it is known among their bovines; and while it continues to exist among the human race, it will prevail among their cattle, its prevalence among the latter depending upon how they are kept, where they are kept, what they are kept for, and upon the susceptibility of certain breeds or the constitutions of certain individuals.

Among the human family, as well as among the ox tribe, has Pharaoh's dream been constantly repeated, from the days of Joseph to the present day. The seven well-favored, fat-fleshed kine have been devoured over and over again by the seven ill-favored and lean-fleshed kine, which I have not the least doubt were suffering with tuberculosis. It is not even necessary to have the seven ill-favored and lean-fleshed kine to devour the seven healthy ones; for if a single tuberculous cow be placed in a dark, badly-ventilated stable with the seven well-favored ones, kept under unhealthy surroundings and forced to an enormous yield of milk, this single ill-favored and lean-fleshed individual will in time succeed in devouring the seven well-favored ones. Notwithstanding the fact that the milk from this herd yields the greatly-to-be-desired 13 per cent. of total solids, yet will there be "death in the pot," or rather in the milk-can — "consumption at eight cents a quart," or cholera infantum at the same price, or perhaps a pleasing mixture of the two commodities combined.

Admitting that tuberculosis is due to a specific germ, the bacillus of tuberculosis, and that it can be communicated from one animal to another of the same or a different species, by means of the expectorations after they become dry, or by the consumption of the flesh, milk, or dairy products of tuberculous cattle, yet in order to appreciate the danger to human beings from the use of the dairy products of tuberculous cows, it is important to have some idea of its prevalence.

It is an impossibility to get any statistics to show the extent to which this malady exists among our bovine population, but I think I can show that it is of sufficient frequency to be of very great importance from a sanitary and economic standpoint.

Fleming, in his "Manual of Veterinary Sanitary Science and Police," in speaking of the geographical distribution of this disease among animals, says: "Tubercular phthisis, or tuberculosis, probably prevails among domesticated animals over the entire globe, though its frequency will depend upon various external influences, as well as the constitutional tendencies of different species and breeds. In some countries it is enzootic and very destructive. Such is the case in densely populated districts and in unhealthy climates, or in regions where animals are improperly fed and housed. In Mexico, for instance, it is very common, and causes much loss; about 34 per cent. of the animals slaughtered for food being found affected. In Europe, particularly in the cow-sheds of the large towns and cities, it is extensively prevalent; and in this country (meaning England) it has long been recog-

nized as a common disorder among animals, but more especially as affecting the bovine species."

Walley's "Four Bovine Scourges" considers contagious pleuro-pneumonia, rinderpest, foot and mouth disease and tuberculosis as the four great cattle plagues of the world.

In this country rinderpest is unknown; foot and mouth disease does not exist at present; contagious pleuro-pneumonia has been stamped out in every locality in the United States where it has ever existed. So that to-day we can safely say that the only one of the four great bovine scourges staring us in the face and challenging us to combat, if we are not afraid to grapple with it, is tuberculosis.

During the past four or five years many of the States, particularly in the East, have been aroused to take steps to eradicate tuberculosis from among their neat stock, chiefly by having the work attended to by cattle commissions; and while numbers of cattle are examined, yet, as a rule, the work has not been done in a way to give any idea of what relation the number of diseased cattle bears to the number of healthy ones, or what the ratio of herds where the malady exists, is to the herds where the creatures are all healthy.

During the winter of 1892 and 1893 the New York State Board of Health, having been empowered to regulate the matter of bovine tuberculosis in that State, undertook a farm-to-farm inspection of the cattle in two dairy districts, with a view of ascertaining about the percentage of tuberculous cows in a certain region. In lower Westchester County approximately 10,000 head were examined, and in the neighborhood of 80 were destroyed as tuberculous, or .8 per cent. In Orange County, in the neighborhood of Monroe, about 10,000 head of cattle were examined and 35 were killed as tuberculous, or .35 per cent.

In testing herds with tuberculin, I have found that by means of the old-fashioned physical examination about one case out of three present could be picked out; that is, after diagnosing the cases present in a herd by means of a physical examination, and then testing it with tuberculin, three animals will react to every one found by means of an ordinary diagnosis. Taking this for granted, it is safe to say that among the herds of the farmers in a district like Orange County, which somewhat resembles Worcester County, about one per cent. of the cows are tuberculous, these herds being made up largely of hardy grades of the Ayrshire, Holstein and Short-horn families. In Westchester County, nearer New York City, where more cattle of the Channel Island breeds are found, and the system of dairy farming more nearly resembles the milkmen's management on the outskirts of our large towns and cities in Eastern Massachusetts, it is safe to say that between two and three per cent. of the cows are tuberculous, allowing that only one case can be detected by means of a physical examination to three that will show a well-marked reaction to tuberculin. These figures compare quite evenly with the abattoir statistics of many of the cities of France, Germany, Belgium and Holland.

In Eastern Massachusetts we have no exact figures to give us statistics; but it seems to me that bovine tuberculosis must be much more frequent here than even in Westchester County, N. Y., or else I have been unfortunate enough to be called, during the past winter, to see so many herds where tuberculosis exists, as to prejudice me into this belief. Since December

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1st, last, I have had occasion to examine about 500 head of cattle in Eastern Massachusetts, of which 75 have been tuberculous; but then, of course, I am very likely to be called to examine creatures where the presence of tuberculosis is known or suspected.

As to the prevalence of tuberculosis among cattle of various ages and sexes, abattoir statistics show it to be very rare in calves killed for veal. It is seldom seen in steers and oxen killed for beef; in fact, it is almost unknown among our Western beeves. It is seen chiefly in cows when slaughtered for food, and is met most frequently among dairy cows from the outskirts of large cities and towns. Here it is found more among the older cows, the lesion being much more readily found in cows over six years old than among those younger. That is, overcrowding in unsanitary stables and the depleting influences of lactation are the two great predisposing causes. Among certain fancy herds of pure-breeds of different breeds tuberculosis exists to an alarming extent; but this is because some of our breeders have nurtured this malady as carefully for years as though they were trying to breed tubercle bacilli instead of cattle.

In Massachusetts our system for dealing with bovine tuberculosis is faulty: in the first place this is a commission-ridden State; everything is managed by commissions of three or more men. It is a well-known fact that an army of three generals would meet with defeat; a ship with three captains would meet with disaster; a railroad with three superintendents would go into bankruptcy; and yet that which would bring defeat in war, disaster in commerce, and bankruptcy in business is expected to work successfully in the affairs of an over-taxed people. These are the views of Seth Low, President of Columbia College, and Gamaliel Bradford. The only possible excuse for such a system is that it furnishes salaries for a lot of played-out politicians and impecunious lawyers, instead of placing the management of affairs in the hands of single, responsible heads, directly accountable to the appointing power.

Another criticism of the present state of affairs is the system of town and city cattle inspectors. One city or town may appoint a competent veterinarian to such a position (these instances are rare); a few more cities or towns may appoint an incompetent veterinarian, who is but a very slight improvement over any other ignoramus; but in most instances the appointees are men of no special qualifications for the positions they hold; their examinations of herds are farces, and the certificates they write are not worth the paper they are written on.

I am in favor of having a State veterinarian who shall be responsible either to the State Board of Health or to the State Board of Agriculture, depending upon whether this subject is considered most important from a public health or an agricultural point of view; then divide the State into districts, say ten or a dozen in number, and appoint the best veterinarian in that district (that is, the best cattle practitioner, as the best horseman is not always the best cowman) district veterinary inspector to act under directions from the State veterinarian. Furthermore, owners of animals suffering from contagious diseases should be reimbursed. The co-operation of farmers in eradicating bovine tuberculosis will never be secured until this is done. There should be also an arrangement for utilizing the meat of slightly diseased cattle for food,

and the proceeds of these sales should be used for helping to pay the expenses of this work. It is an outrage to destroy a man's property without paying for it, and absurd to say that tuberculous cattle are not property.

The relation that the use of milk from consumptive cows bears to the malady in mankind will never be known until thorough steps are taken to prevent its use. If all the tuberculous cattle in the State were killed to-morrow, and infected stables burned, there would be a fresh supply in a few years from the contamination of consumptive persons, unless boards of health and physicians are ready to look upon it as an infectious disease, call it thus in annual reports and vital statistics, and take steps for preventing its spread from person to person and from mankind to cow. If we start a crusade against the poor cow, without taking any other precautions to guard against it, we shall be simply continuing to prevent a waste at the spigot while there is a big leak at the bung.

Sterilizing food is a safeguard to the public health; on the other hand, there is the economic standpoint of great importance to the farmer of protecting healthy from diseased cows.

I suppose that what I have said will lead to the old time hue-and-cry that "the horse-doctors want a pull at the public crib, but they shan't have it" so long as there are any fossilized politicians, unsuccessful lawyers, or even decayed labor-leaders to be provided for; but let me remind you that a capable veterinarian can make more in private practice than the salaries usually paid by the State amounts to, and as I generally give my text at the end of my sermons instead of the beginning, I will simply suggest to you, "To render unto Cæsar the things that are Cæsar's, and unto God the things that are God's."

DIAGNOSIS AND PREVENTION OF BOVINE TUBERCULOSIS.¹

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It is essential in discussing the diagnosis of tuberculosis, to bear in mind that the veterinary surgeon may be called upon to say whether an animal is affected or not, under two very different circumstances. He may, in one instance, be expected to make a differential diagnosis in a case where the animal is noticed to be ill, and regarding which his advice is desired by the owner; or in another animal, as a veterinary inspector, he is expected to recognize the disease, when to the ordinary observer and owner the animal has the general appearance of health. It certainly must be very apparent, that if there exists any uncertainty in the first of these conditions, by a physical examination, how much greater must that difficulty be in the second. In order to illustrate this difference, one ought to bear in mind the lesions found at the autopsy of animals that have died from tuberculosis, or have been killed because hopelessly afflicted with it, in the first instance; and those lesions of tuberculosis which are found in animals killed for food, and supposed to be healthy at the time of slaughter, in the second.

The lesions of this malady have a very different distribution when we take account, not merely of the animals about which veterinary advice is sought, but

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