CONGRESS AT CARDIFF.

CONFERENCE OF VETERINARY INSPECTORS.

ADDRESS

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IT can scarcely fail to be gratifying to us all to be called on to take part in acquiring and disseminating knowledge destined to improve conditions of human life. Pursuit of the original objects of our special branch of medicine always affords opportunities for preserving the health of the lower animals, thereby conserving the national wealth; but, sharing the best instincts of the human family, our loftiest aspirations lead us to regard the part we may be privileged to play in the conservation of human health as a duty of the highest order. Though not laying claim to special knowledge of morbid processes in man, as members of the community we may express a common interest and desire to join in the attempt to solve one of the most important and complex problems of our civilisation.

The set subject arranged by the Council of the Institute for discussion in this section is "Meat and Milk in Relation to Animal Tuberculosis." To those whose work entails the constant consideration of these matters it might appear that the subject has been laboured *ad nauseum*, but finality has not been arrived at. Many points concerning the relations of meat and milk to animal tuberculosis have, we believe, been definitely settled. The ground is clearer for action to-day than before, but times change and we must change with them. It has been truly said that the belief of one age may be the heresy of the next. A careful study of the views expressed by those whose position entitled their opinion to our respect will indicate that our subject is no exception. I take it, too, that one of the principal objects of this and similar gatherings is the education of public opinion, a task demanding the greatest delicacy and force, and beyond everything guidance by true principles and scientific accuracy. To effect our purpose it is essential that in our deliberations we realise the necessity for statements of fact, well conceived deliberate deductions, and practical

suggestions. The dissemination of crude, immature opinions, so many of which are doomed to explosion as based on worthless theories, is specially obstructive to the application of expert knowledge. The scares arising out of misrepresentation, exaggeration and dogmatism have, I venture to say, had a most deterrent effect on the crusade against tuberculosis in men and animals. The reason of the British Public must be appealed to, for John Bull looks for some solid basis for action before he embarks on a serious enterprise. When an idealist says he cannot admit the question of cost in making propositions, which threaten extraction of millions from the Englishman's purse, for purposes whose value is not well understood, he is not likely to induce the holder to relax his purse-strings and provide the essentials. This matter cannot be considered apart from cost.

I think facts prove that this stolid prudence is not always wrong. In relation to the matter about to be discussed, if action had been taken on the lines laid down by the most clamant enthusiasts of the past twenty years, we should at the present moment have neither home-grown meat for the English market, nor dairy-herds to render matter for our deliberations at this Conference. It will not be difficult to show that by exercise of the knowledge acceptable to common sense, public opinion focussed on Parliament has led to the adoption of measures, incomplete and insufficient as we now regard them, which have where adopted effected material improvements and paved the way for the application of others whose beneficial effect will, we hope, be still more marked.

Though the converse had been strongly suspected for many centuries, it is scarcely fifty years since Villimin demonstrated the transmissibility of tuberculosis of man to animals and communicated the disease so induced to other animals. The discovery of the tubercle bacillus by Koch, just a quarter of a century later, had a marked effect in establishing and generalising the view that tuberculous animals were a source of danger to man, an impression which spread so rapidly that consumption was often looked on as a disease of cattle transmitted to man by eating flesh or drinking milk. For some time the attention given to the matter by the public was mainly centred on the danger associated with the flesh. The confiscation and destruction of every animal which gave any sign of tuberculosis even the smallest speck of tubercle, was demanded. On this point scientific knowledge and common sense have prevailed, and at present it is generally held that in only a small proportion of cases is the flesh of tuberculous animals dangerous to the health of man.

Our experience of meat inspection will, I think, allow of the conclusion that where this is carried out uniformly and systematically by officers

having an intimate knowledge of animal diseases and pathological processes, and actuated by sound common sense, the public is amply safeguarded against the risk of contracting tuberculosis from consumption of home killed animal flesh, and the trader has little to complain of from unjustifiable seizure. It must, however, be insisted on that such highly important and responsible duties as the inspection of meat should be exercised only by those who possess the requisite knowledge. The special education of the veterinary surgeon in the laws affecting the health of the domesticated animals, in anatomical, physiological, and morbid states of their tissues, and pathological processes affecting them, bring within his view the consideration of the conditions under which tubercle bacilli may contaminate flesh used as food of man. In this consideration he will be guided by realisation of the fact that before flesh may be regarded as infective it must be infected. No greater obstacle to the removal of the danger has arisen than the irrational cry for the destruction of the whole carcase of every animal that has reacted to tuberculin, or which shows a single tuberculous lesion.

With the knowledge gained as to methods of inspection and the amount of animal flesh condemned as unfit for human consumption by public authorities sufficiently enlightened to adopt the measures at their disposal, it is nothing short of a national disgrace that a large proportion of animal flesh offered for sale is not subjected to inspection, and that there is in the greater part of the kingdom no check on the traffic in diseased meat and cattle. On behalf of the unprotected portion of the community we make the demand for general and uniform inspection.

On the score of the protection of human health, as well as of home interests, we must insist on the production of some evidence of freedom from tubercle bacilli in imported meat. There is the demand for inspection of the viscera of our home killed cattle, and without it the best, indeed, the only reliable evidence of generalised tuberculosis may be wanting. If this is necessary in the case of our home bred cattle, surely we should have similar evidence concerning animals whose carcasses are imported by us, and a reliable certificate of freedom from evidence of tuberculosis should accompany carcasses so imported.

In Glasgow the seizures of meat on account of tuberculosis are represented as among home fed cows 50 per cent., imported cows 1·23 per cent. It is scarcely conceivable on any information we possess as to the relative prevalence of tuberculosis in any other country than Great Britain, that these figures represent the true state of affairs. In New Zealand, for instance, where tuberculosis is regarded as comparatively

uncommon, examination at the abattoirs has shown that out of 45,742 cows examined, 4,718, or more than 10 per cent., were tuberculous.

For convenience of meat inspection the public abattoir is superior and desirable, but the dislocation of the meat trade and cost to the ratepayer may not be kept out of consideration. From a veterinary point of view, it is sufficient to insist that every carcase and its viscera should be efficiently examined before being offered for sale. In country districts there are very real obstacles to the establishment of public abattoirs; and, if the general and uniform inspection of meat is not attempted until it is possible to do so in every case in public abattoirs, we fear a large supply of tuberculous flesh will continue to be dished up for many years to come.

In England and Wales in 1898, with a population of 31,397,078, there were registered 60,139 deaths from tuberculosis of all forms at all ages, or 1 to every 521 of population. Of these, 7,063 were of infants under one year of age, the almost exclusively milk-drinking period. Of this number 3,265, or 46·22 per cent., came under the head of *Tubes mesenterica*, including *tuberculous peritonitis*, that form of the disease attributed to ingestion of tubercle bacilli. These figures naturally indicated that the food of infants rendered them specially liable to the disease, and when statistics relating to the incidence of tuberculosis were examined, it appeared that a material diminution had taken place at all ages, except that of milk drinking. The inference very seriously incriminated cow's milk, which from change of parental habits had come more into use as an article of children's diet than formerly.

The Returns for 1906 show the deaths of infants under one year of age from all forms of tuberculosis to have been 4,601, a diminution of 34·8 per cent.; those from *Tubes mesenterica* and *tuberculous peritonitis* 1,914, a diminution of 40·9 per cent. This change has been effected in eight years. The same returns show that whereas in 1881 of the total deaths of the population 2·5 were attributable to tuberculosis, in 1894 the proportion had fallen to 1·7. In his reply to the deputation on legislation and the milk supply, the President of the Local Government Board, referring to my remarks that tuberculosis in infants was diminishing, said: "I am glad to say it is. It is diminishing in this country generally, proportionately more rapidly than in any other country in the world." These figures and statements are adduced to indicate an improvement of remarkable character, not as an apology for future inaction, but to incite enquiry and as a call for uniformity in the adoption of measures which have effected this beneficent result.

The report of the Medical Officer of Health for Liverpool for 1905

gives, *inter alia*, the following instructive figures, which may be taken as typical of improvement accruing to the action of other sanitary authorities who have taken the matter seriously and acted vigorously. For the period 1866 to 1875 the annual average death rate per 100,000 of population at all ages for all forms of tuberculosis was 430·8; for the year 1905 the figures had fallen to 225·4, or a diminution of 47·3. The average annual death rate per 100,000 of population below five years from *Tuberculosis mesenterica*, *hydrocephalus* and *scrofula* for the period 1866 to 1875 was 637·1, and for the year 1905, 307·6, a diminution of 52 per cent. The most remarkable relative diminution in deaths at the milk-drinking age is that shown for the ten years prior to 1906, being nearly twice as great as the average diminution at all ages of the whole population, and the figures for 1906 indicate that this progress is being maintained.

In his report for 1907 the Medical Officer of Health for Birmingham remarks that possibly the cause of this large incidence of tuberculosis of the intestines in young children is the milk supply, and states that no less than 85 per cent. of the deaths from tuberculosis of the intestines were of children under five years old. There is a table showing that in 1902, 56 infants under one year old died of tuberculosis of the intestines, and in 1906, 30, a diminution of 46·4 per cent. In 1902 the number from one to five years old is 25, and in 1906, 22.

It is not possible to state what proportion of the deaths at the earlier or later dates may have had their origin in cows' milk or animal flesh, nor to form a very reliable opinion as to how far the favourable change is dependent on improvements in the milk supplied. We may, however, refer to what has been effected with milk. A table prepared by Prof. Sheridan Delépine, and published in the *Medical Chronicle*, in March, 1908, gives results of his highly valuable work in connection with the milk supply of Manchester. Samples of milk such as would have been supplied to the consumer in town were taken at railway stations and other places away from the farm. As a result of inoculation of guinea pigs it is shown that in 1898 17·2 per cent. of the samples yielded effective tubercle bacilli; in 1906 6·6 per cent.. As bearing on other infective properties we find that while in 1898 following 64·5 per cent. of inoculations no lesions were attributable to the milk, in 1906 the proportion rose to 84·7 per cent. Other figures speak equally forcibly of the higher degree of purity and innocuousness of milk on sale in Manchester in 1906 as compared with 1898. Of samples of milk taken the following contained tubercle bacilli: In Liverpool—town milk, 1896-1905, 2 per cent.; 1905, 4 per cent.; country milk, 1896-1905, 9 per cent.; 1905, 3·5 per cent.; mixed dairy milk.

Birmingham—town milk, 1907, .0 per cent.; samples taken from 81 suspected cows, 6.4 per cent.; mixed country milk, 1907, 13.3 per cent. Sheffield—1902, 17.8 per cent.; 1906, 9.5 per cent.

Whatever may be the connection between the diminution of tubercle bacilli in cows' milk and the decrease of tuberculosis of children of the milk-drinking age, it is safe to assume that the effect is largely due to the action of those authorities who, with other hygienic improvements, have included the veterinary inspection of cows, dairies, etc., and the removal of animals undoubtedly dangerous as discharging tubercle bacilli which gain access to the milk. This by no means closes the book, but I venture to think that indefinite as may be our knowledge of the proportional value of the several hygienic measures adopted, the veterinary inspectors may claim a not inconsiderable share in the provision of the more favourable conditions now obtaining, and as one deeply indebted to them and to medical officers of health for most valuable information always most generously given, I beg leave to take this opportunity to express my sense of obligation, and my admiration for the zeal and enthusiasm, and generally the consideration displayed in the discharge of duties not at all times easy or agreeable.

These few points in the cursory review of the situation as to meat and milk in their relation to animal tuberculosis indicate progress in the right direction. The whole community rightly claim the same degree of protection as that afforded to those sections numerically and intellectually strong enough to take advantage of the levers of civilisation for their social welfare. Had the powers exercised by our enlightened corporations affected similarly the whole community, the present conditions would have been much more favourable.

I do not suggest that the general adoption of such measures as are rendered available by the Dairies, Cowsheds and Milkshops Order or the special powers granted by Parliament to some large corporations are likely to accomplish within a measurable period the eradication of bovine tuberculosis from our herds. Experience tells us that something has been done towards safeguarding a portion of the community. To my mind it has proved that such veterinary inspection as has already been exercised is valuable. Results of examinations by experts of samples of milk by microscopic and inoculation tests prove, that, if the veterinary inspector be possessed of the necessary legal powers, he is capable, with some degree of certainty, of detecting and removing the offending cow from a herd, and thereby the danger for the milk. While it would be dangerous to over-estimate the power of the inspector in this direction, I am bound to say

cases which have come under my own notice in which the origin of tubercle bacilli in samples of mixed milk has been traced by the examination of cows on several different farms have impressed me very deeply as to the value of his services. I am in possession of a letter from a medical officer of health who has given particular attention to the milk question for many years, and who is quoted as a high authority, which says: "The veterinary examination detects the disease earlier than the biological one, and every cow ought to be examined once in three months."

I am in full agreement with those whose ideal is the eradication of tuberculosis from cattle, as this would be the real safeguard of the public and to the true interest of the stockowner, and I realise that it is the duty of the veterinary surgeon to associate himself with all rational attempts to effect this. Doubtless the conference will be provided with opportunities of expressing their views on this aspect of the question, for its accomplishment would be the solution of the difficulty. It is a problem of such magnitude that we should not be justified in relaxing any efforts already found successful in diminishing the number of samples of tubercle from milk, in hope of early extirpation of the source. All of us are well aware that by aid of tuberculin, isolation, and the exercise of intelligent interest, patience, skill, and money, an individual herd may be purified and kept free. This is quite within the sphere of practical politics for individuals, and is in practice, and it is our duty to encourage, as far as possible, the voluntary effort, and to consider when time is ripe the recommending of its adoption by legislation. The recent report of the medical officer of health of a large corporation demands the universal and compulsory stamping out of tuberculosis by slaughter, "sterilisation and destruction of all animals which react to tuberculin," and estimates that "the disease in animals may be thus eliminated in a single year." It is, I am sure, unnecessary for me to comment on such quixotic ideas to this Conference, or for us to formally dissociate ourselves from them.

There are many reasons for thinking the process of eradication of tuberculosis of cattle must be gradual, though there is no question that legislation will provide measures directed to assuring a pure milk supply to the people. We have the word of the President of the Local Government Board for this, and I have no doubt this Government Department will control such measures. The suppression of tuberculosis in cattle will naturally come within the sphere of the Board of Agriculture, though I do not share the views of those who appear to think that an attempt will be made to stamp out tuberculosis by the means successful with pleuro-pneumonia. We need only ask ourselves what would be the

effect of slaughtering all animals affected with tuberculosis and those in contact with them. The sudden withdrawal of all reacting cows from supplying milk must mean the ruin of the dairy industry and the withdrawal of that nutritious diet which is most required to improve the physical element of the nation. I see no means of bringing tuberculosis within the sphere of action of the Board of Agriculture unless it is scheduled as a contagious animal disease, and I do not see why it should be beyond the wit of man to devise measures short of those referred to, which would remove at least the dangerous animals, for cows which are dangerous to man are often dangerous to their fellows, and the protection of the agricultural interest calls for the intervention of the Department of Agriculture.

It cannot be said that our knowledge concerning the relation of meat and milk to animal tuberculosis is complete. One Departmental Committee and two Royal Commissions have considered and reported on the subject in the past 20 years, and an immense amount of valuable information has been supplied. The interim report of that now sitting gives evidence of such masterly work, and the promise of more, that I am fain to think no Government Department is likely to take action on lines divergent from its findings, or to attempt to elaborate a scheme for the stamping out of tuberculosis, *par coup*, until its deliberations are complete and its final report issued. In the meantime, following the direction of the last paragraph of the interim report, which indicates "the necessity of measures more stringent than those at present enforced being taken to prevent the sale or consumption of tuberculous milk," I am inclined to think Mr. Burns will not fail to include all practicable means to effect a pure milk supply. It was my privilege to address the President on the matter of inspection, to indicate the apparent results of that already arrived at, and to receive the assurance that "in a subject like this he could not ignore the veterinary surgeon, that in any scheme he might bring forward he will not have a disproportionate place. If he should enter more largely into the scheme of inspection and supervision than he now does, and looks after other people, he may rely upon it that the Board of Agriculture and the Local Government Board are determined to look after him." To a conference of veterinary inspectors I may be permitted to add that the expressions of confidence in them were general and flattering, and I take it as evidence of work well and effectively done. It is evident that their work is not yet completed, and your presence bears witness to your interest in the matter and the determination to render yourselves competent to perform the duties which must devolve

on you. The equipment necessary to performance of veterinary inspection is of no mean order, and I am sure you all realise that the importance of the object in view demands the best you have within you.

My experience with tuberculosis in the lower animals has been somewhat long and intimate, and I cannot call to mind any individual who has expressed himself forcibly regarding it who has not had occasion to change his views. The experimenters and writers on the subject are so numerous, that even reports of scientists and experts often embarrass and hamper rather than clear the way. Deductions for one animal from experiments on another of different species do not always afford reliable basis for action. Common sense and the results of ordinary observation cannot always be carelessly brushed aside for new theories or statements which are incompatible with them.

In a report of experiments recently issued by Schroeder and Cotton it is stated that butter made from milk soiled by fæces of 40 per cent. of all cows that reacted to tuberculin, though they still retained the appearance of health, induced fatal tuberculosis in guinea pigs; that tubercle bacilli can be found more frequently in butter than in milk; and that butter injected into fifty guinea pigs caused forty-four of them to die of generalised tuberculosis, and some of these samples of the butter were nine days old. The report of another series of experiments by one of the same observers indicates the almost constant existence of effective tubercle bacilli in the fæces of cows which had reacted to tuberculin but remained apparently healthy. In view of these findings, the large proportion of our cows known to react to tuberculosis, and the alleged insanitary conditions connected with the milking process, it is most remarkable that our country milks, subjected to no kind of inspection, should even be so free from tubercle bacilli, as is shown by results of examination and tests already referred to. In fact, if the public were influenced to believe that what is fatal to guinea-pigs on inoculation is fatal to man on ingestion they would realise no means of escape from death except by disuse of all dairy products. As veterinary inspectors you can only be satisfied when the milk supplied under your control is proved free from the dangerous element. We must take advantage of all circumstances for discovering and applying the best means by which this can be assured, temporarily and permanently.

The eradication of tuberculosis must be our ultimate goal, the removal of the bacillus-distributing animal our watchword and means of suppression. Conditions favourable to the general health of the cow are usually, if not necessarily, unfavourable to the contagion. Sunlight, ventilation,

drainage, air space, sound food, pure water, cleanliness of the cow and her surroundings, and scrupulous care of milk are all favourable to the accomplishment of our task, but the crux of the matter is contagion, and we cannot hope to deal with tuberculosis effectually, except as with other contagious diseases, by removing it. This we must preach from the house top. We must try to convince the stockowner that tuberculosis is as much a scourge of the bovine as of the human species and that it is a source of serious loss to him, which can be largely averted by his voluntary action. We all know the difficulty of this task, as we realise the value of his co-operation, but we are not alone in this difficulty. Few things have been harder than to convince the public of the danger to his fellows of a human subject affected with phthisis, a fact which is too little realised or acted on at the present moment. I think it may safely be assumed that the legislature will soon help to secure the stockowner's conviction, and I trust his co-operation will be enlisted by just, if not generous, enactments that will call for notification and slaughter of animals with open tuberculosis, frequent inspection, withdrawal from the milk supply of cows affected with udder disease, slaughter of those found to be tuberculous, disinfection, improved housing, milking, and dairying, and that all will be directed to the ultimate elimination of tuberculosis from our herds.

The veterinary inspector cannot fail to have a share in this work, I believe the enthusiasm shown by those who have already been engaged in such work with such good results will infuse those who follow. The object is certainly worthy of all effort, and I trust the veterinary surgeon may rise to the occasion and show himself capable and fit for administrative as well as executive duties in connection with the suppression of animal disease, and the danger arising therefrom. In this direction, his success of action means not only prevention of the access of disease germs to man, but the provision of an increased supply of pure milk, which is one of the desiderata of the nation, whose position depends on the physical condition of her population, for which there is no better foundation in the shape of food, than a supply of pure milk. If the money spent in gin and beer were used in the purchase of pure milk, and the energy and parental care, now in abeyance to alcohol and thriftlessness, devoted to the health of rising generations, I venture to think we should hear less about physical deterioration, parsimony in nutrition, etc., for not a little of the blame attributed to the cow and the cowshed is rightly attributable to improvidence and neglect of the home and tuberculously disposed children. Indeed, it sometimes occurs to one that the trend of modern investigation

is to confine the attention too exclusively to the consideration of the seed, disregarding the soil on which it may be sown. The suppression of the tuberculosis of the human subject derived from the lower animals must finally be accomplished by education of the public in the general laws of hygiene, in aiding which such meetings as those arranged by The Royal Sanitary Institute and other such associations play no unimportant part.

In relation to tuberculosis we may learn from the Interim Report of the Royal Commission that in the production of the disease experimentally the determining factor is the dose in relation to the susceptibility of the animal. Whether the latter is inherited or acquired, or both, is perhaps not yet known. That a degree of insusceptibility to tuberculosis of cattle may be acquired by inoculation with tubercle bacilli of the human type would appear proved by several series of experiments. A method has already been adopted in practice, and from an official communication just received from Massachusetts, I am informed that the results seem very encouraging. Should we become possessed of the power to immunise our stock, the problem of eradicating its tuberculosis would be robbed of its greatest difficulties.

Another series of experiments, which may possibly have a bearing on the subject, was carried out at the Harpur-Adams Agricultural School, and it shows decisively that, at any rate in Shropshire, cows can be kept out of doors all the winter without interference with health, cost, milk or flesh production.

I cannot more appropriately terminate my remarks than by quoting from the speech of the President of the Local Government in reply to the Deputation to which I have had occasion to refer, and which cannot fail to call forth admiration:—"In forty years, in my judgment, better housing, more and better milk, less of other potent liquids, and general social advance, will practically abolish tuberculosis in all its forms in men and cattle. If you will help to contribute towards that result, ten, twenty, or forty years hence you will have builded better than you know by meeting here to-day."