

1891.
NEW ZEALAND.

EXTRACT FROM THE GENERAL REPORT OF THE
JOINT COMMITTEE ON LIVE-STOCK AND RABBITS,
1890,

TOGETHER WITH MINUTES OF EVIDENCE AND APPENDIX RELATIVE TO DISEASE
AMONGST STOCK.

Evidence ordered to be printed, Session I, 1891.

ORDER OF REFERENCE.

Extract from the Journals of the House of Representatives, Wednesday, the 28th January, 1891.

Ordered, "That the evidence taken before the Joint Live-stock and Rabbits Committee of last session, and laid upon the table of this House, in so far as it refers to disease amongst stock, be printed."—(Mr. DUTHIE.)

EXTRACTS FROM GENERAL REPORT OF THE JOINT COMMITTEE ON LIVE-STOCK AND RABBITS.
(*Vide I.—11, 1890.*)

Sheep.

Your Committee has had under its notice various matters connected with the Live-stock Department, and is much gratified to learn from the reports of Inspectors that on the 30th June last clean certificates were held by all owners of sheep in the colony. The three districts, Tophouse, Kaikoura, and Miranda, which last year were still infected with scab, have, after a very careful inspection, been declared free from this disease, whilst no fresh outbreak has occurred in any other district.

Your Committee considers that there is now good reason for believing New Zealand to be absolutely free from scab; but two years must elapse before it can be deemed to be clean within the meaning of the regulations in force throughout the Australasian Colonies for the prevention of diseases in stock.

Lung-worm and other diseases in sheep being on the increase, your Committee considers it very desirable that Professor Thomas should be requested to complete the investigations commenced by him a few years ago, and also suggests that Mr. J. F. McClean, M.R.C.V.S., should be employed in the same direction.

Cattle.

With regard to cattle, the attention of your Committee has been drawn to the prevalence in New Zealand, to a considerable extent, of the disease known as tuberculosis, and to a less extent of cancer. It is very desirable that the probable danger to human beings arising from these causes should be brought prominently before the public, and very stringent measures taken to prevent the possibility of meat or milk of diseased animals being used for food in any way. The Cattle Bill referred to above is intended to provide the necessary authority for inspection of cattle, and the destruction of such as are diseased; but until the establishment of public slaughter-yards, under proper control, there must always be considerable risk of diseased meat finding its way into the markets.

The very able report of the Departmental Committee appointed in 1888 to inquire into the nature and extent of pleuro-pneumonia and tuberculosis in the United Kingdom contains much useful information, and your Committee considers that the Government have acted wisely in causing that portion of the report referring to tuberculosis to be reprinted in the colony for distribution by the Live-stock Department, but does not think it has been sufficiently circulated.

When it is generally understood that tuberculosis in animals is virtually the same disease as that known as consumption in man, that it is communicable to human beings by the use of either meat or milk of diseased animals, and that calculations based upon the statistics of the Registrars of various countries go to prove consumption to be "the cause of from ten to fourteen per cent. of all deaths among human beings," the serious importance of checking its spread in every possible way cannot but be recognized.

Believing, then, that nothing but a generally-diffused knowledge of the evils here referred to, and their causes, will ever effectually lead to their prevention and cure, your Committee recommends that full information regarding tuberculosis and cancer in stock be circulated by the Government as widely as possible.

11th September, 1890.

1—I. 1.

MINUTES OF EVIDENCE.

WEDNESDAY, 13TH AUGUST, 1890. (Hon. G. R. JOHNSON, Chairman.)

Rev. H. VON STAVEREN examined.

1. *Hon. the Chairman.*] This Committee is desirous of getting information from you regarding the prevalence of disease amongst cattle sent to the slaughter-yards, and being sold for human food? I am informed that you have exceptional opportunities of obtaining information. The Committee will be glad to receive any evidence you can give on the subject?—My experience has been, since I have been in the colony, that disease in cattle is not so prevalent here as at Home. Of outside disease there is very little indeed. By "outside disease" I mean disease that is discernible to the naked eye: such for instance as outside cancer; that is not prevalent in this colony. But inside diseases are very prevalent—indeed much more in sheep and cattle on one coast than the other. On the west coast of this Island—I mean sheep and cattle coming from Wanganui and the surrounding districts—diseases are more prevalent, such diseases as pleurisy and tuberculosis, than on the East Coast. Cancers are very prevalent in sheep, especially in the livers. Last Thursday was the first time it happened that I had seen anything like cancer on the back of a sheep. When I first saw the sheep I did not notice it for the moment, but a young fellow called my attention to it. I then saw that there was a fearful cancer, caused by the shears, which had cut into the skin; the wound, apparently, had festered, and cancer set in there. That is how cancer often occurs. In cows, when they are horned by the oxen, cancer sets in in the jaws. I should imagine that there would be fully 7 per cent. of the slaughtered sheep and cattle sold here to the public for consumption more or less diseased. Of course in one year disease is not so prevalent as in another. The worst diseases that rage here are tuberculosis and consumption.

2. If I understand you rightly, this is chiefly discovered after death of the animals?—Yes. I could not tell you anything about it before then. Sometimes you might see from symptoms that disease was present. Sometimes you will see very good-looking meat in the butcher's shop, but it is diseased. You may select a particular rib of beef or a leg of mutton because it looks better than another, but it may be diseased. As a rule, in examining the carcase I never allow anything to pass me. I go thoroughly inside and examine the lungs, liver, heart, and kidneys. I had, not long ago, examined the carcase of a bullock which had a heart you could not tell from your hat.

3. *Mr. Lance.*] What is that?—You could not tell it was a heart.

4. *Hon. Mr. Pharazyn.*] Do you mean as to colour?—No; as to shape.

5. *Hon. Mr. Walker.*] What was that?—It was so from disease—it was a diseased heart.

5A. Disease of the heart would not necessarily affect the rest of the flesh of a beast, would it?—Most decidedly it would. A disease of that nature always affects the flesh.

6. *Hon. the Chairman.*] Can you suggest to the Committee any means to check the sale of diseased meat?—There is certainly a way out of the difficulty: that is to have public abattoirs, and inspectors of slaughter-houses. That is the only way that I can see. Very often you can see as you pass diseased meat hanging up.

7. In the shops in town?—Yes, in all the shops in town. I can see it when others do not know anything about it. You say you would like that fine rib of beef, or that nice leg of mutton, yet the carcase from which it was cut is thoroughly diseased and the meat unfit for human food.

8. Is there at present any inspection of slaughter-yards?—Not here. There is not.

9. *Hon. Mr. Pharazyn.*] Would not the inspection of diseased animals in the way you state require a person of considerable experience, like yourself?—Yes, most decidedly.

10. Would there not be a difficulty in obtaining the services of such persons?—Yes, a great difficulty, even in regard to experience. But there would be a greater difficulty in respect to what always happens, the case of bribery. I have known, even among ourselves, that people have been corrupted by bribery, and would allow diseases that were not very bad to pass. You know what the "almighty dollar" will do.

11. Especially when the remuneration is cut down to the utmost point?—Especially where under a couple of hundred pounds a man cannot live. Even if you got the House to vote the salary, you would not get good men for a few pounds. But there is still another difficulty. Public abattoirs and inspection might be established in the large towns, such as Wellington, Auckland, Christchurch, and Dunedin; but in Napier, Wanganui, New Plymouth, Nelson, and all the smaller towns, it would be impossible to pay men, who would, of course, want the same pay and privileges as in the large towns.

12. Then, practically, your proposal would merely profit the large towns, and leave the smaller towns to take their own course?—My proposal would not do so; it is for you to say how the difficulty should be met.

13. Practically that would be the outcome of it?—Yes.

14. *Hon. Mr. Peter.*] Do you travel from place to place, or do you confine yourself to Wellington?—I confine myself to Wellington.

15. *Hon. Mr. Pharazyn.*] Does it not take up a great deal of your time performing this duty?—Certainly it does; three times a week I go out there, and I am out there three hours: that is, in winter. In summer I am there every morning, except Saturday and Sunday.

16. Do you get any special salary for this work, or is it a labour of love?—It is not a labour of love; I get well paid for it. My community pay me well for it.

17. Is it a part of your ordinary duty?—Not a part of my ordinary duty. There are gentlemen in London who get £300 a-year for this work alone; but they are not ministers.

18. *Mr. Kerr.*] You said "outside" diseases are not prevalent?—By that I meant diseases that are discernible by the naked eye very easily.

19. How many head of cattle have you seen with cancer?—That is more than I could tell you. I saw a very bad one about a fortnight ago; I would not like to be near such a case again, the flavour of it remained in my nostrils for several days.

20. Was that an "inside" cancer?—An inside cancer.

21. Do you mean to say that is very prevalent?—No, I mean to say that tuberculosis and consumption are very prevalent, but cancer is not. I do not think there is more than a fourth per cent. of cattle suffering from that disease at present.

22. What would you say is the percentage of tuberculosis and consumption: 7 per cent.?—Yes.

23. *Mr. Buchanan.*] You have mentioned, I think, that, so far as living cattle are concerned, you do not see much sign of disease?—No; they are abundantly healthy in appearance.

24. Would it not strike you that is a proof of the disease not affecting the health of the animal itself very much?—With that I cannot agree: that could never be; the disease must affect the health; it may not affect the appearance of the animal for the time being, but it must affect it ultimately.

25. Would you not think that a bad case of disease would, within twenty-four or forty-eight hours, affect appearance?—No; certainly not. We know well that there are plenty of human beings who suffer from disease and yet look very well. There are very few human beings who have perfectly healthy kidneys; there are a good many who have heart disease, and yet they look very well; there is plenty of people who have diseased livers and look healthy enough, and you would say you could take a lease of their lives, but that is only for the present.

26. Do you not realise the enormous difference there is between heart disease, which means structural change which does not prevent the usual functions being performed, and other diseases; whereas a serious disease of the kidneys, for instance, must affect the daily health?—Yes; and so with cattle; serious consumption will cause that beast to fall off. A sheep suffering from consumption is not fat; another may be very fat when killed. But it must affect them in the course of three or four years—it might be four years, that is to say, before the sheep would die. But they are killed within two or three years.

27. In a sheep, you say, the disease would take three or four years to show itself: would it not show itself directly?—No; it is only in the last stages that the appearance is very much affected, either in man or beast.

28. You have mentioned tuberculosis, consumption, and pleurisy. Now, between tuberculosis and consumption, how would you define the difference?—According to the appearance of the tissues; the colour and the tissues are gone. The appearance of the tissues are, in lung diseases, very different from what they are in other diseases. I could show it to you, it is impossible to define it; it is very easily discernible. If I thought I was to be so closely examined upon this subject I would have prepared myself.

29. I wish to free your mind from the notion that I am pursuing anything in the nature of a cross-examination of your evidence. I only want to get before the Committee what you have in your mind on the subject: take tuberculosis, what are the usual appearances which you call tuberculosis, say, as to the outward appearances first?—While cattle are healthy in appearance I should not like to say; but the inward appearances are plain and obvious. Sometimes these appearances are manifested through the whole frame of the animal, even from the throat downwards. They are seen; you can see them even in the blood.

30. Have you dissected the throat and lungs yourself?—The men do; I stand there and see it done.

31. How does tuberculosis show itself?—I do not understand exactly how it shows itself.

32. *Hon. Mr. Pharazyn.*] Is it in the colour, in alteration of structure, and so on?—You know that in tuberculosis there are small pimples.

33. *Mr. Buchanan.*] What is the appearance inside the pimples when cut open?—Very red.

34. Hard or soft?—Hard. They often present themselves with consumption: sometimes you see a swelling and mucous, but in consumption the tissues of the lungs are destroyed.

35. As to pleurisy, what are the appearances there?—Very often the lungs become like leather; sometimes it becomes green; sometimes of the colour of the white of an egg, attached to the ribs; there are many differences of appearance.

36. What would be the proportion of pleurisy as compared with other diseases?—There is more pleurisy than anything else. I should say there is quite 4 per cent. of pleurisy in sheep.

37. In cattle?—In cattle it is not so great. There is another thing I want to call your attention to—namely, that there is not so much disease in horned cattle as in sheep. The disease in sheep is far greater than in horned cattle.

38. What is the percentage of disease in horned cattle?—The disease would not be 4 per cent. in horned cattle; I have been giving the general average on sheep and cattle.

39. What would you estimate the pleurisy cases at?—Not more than 1 per cent. There are many diseases arising from bruises, which I do not consider. I notice principally diseases of the lungs, liver, and kidneys.

40. Do the above percentages include all cases, even where there may be only little disease?—Yes, they include all cases; where there may be only a little disease we are not permitted to partake of the meat as food.

41. *Hon. Mr. Pharazyn.*] In fact, any departure from normal health is a state of disease?—Yes.

42. *Mr. Buchanan.*] We know that in numerous cases, after inflammation has subsided and the animal has recovered altogether, there sometimes remain adhesion of lungs and membranes, but the

disease has gone; I have known, for instance, of cattle being slaughtered years after, showing the old adhesions, although all traces of disease had gone; the adhesions being simply the effects of the previous disease. Would your percentage cover such cases as that?—No.

43. *Mr. Kerr.*] If there were disease would the lung be attached to the ribs?—It depends upon how it is attached; if it is attached and the tissues are gone, disease is still there; long after disease has gone, traces of it will be found in the liver. I have only noticed disease where the tissues are effected.

44. What is the percentage of sheep suffering from disease such as you have described?—It would be more than 4 per cent., it would be fully 7 per cent.

45. *Mr. Buchanan.*] In what forms?—The same forms as are seen in cattle—exactly the same forms: tuberculosis, pleurisy, consumption; in fact, all the diseases that cattle are liable to, with exactly the same symptoms.

46. In that 7 per cent., what would be your estimate of the number suffering from tuberculosis and consumption?—Taken together, there would not be more than 3 per cent.

47. The balance would be cases of pleurisy?—Pleurisy and cancer.

48. Now, as to inspection, are you aware that some of the meat-supply for large towns is killed at long distances from town—up as far as Hawera, in the case of Wellington?—Yes, that is the worst part of it, and shows why these suggestions of mine cannot, I am afraid, be carried into effect.

49. You have no suggestion to offer to the Committee which would enable inspection to be carried out?—The only effective suggestion I could make would be that you should make it prohibitive to slaughter cattle except in public abattoirs. Diseased cattle would then be destroyed—that is, consumed by fire. I have seen cattle slaughtered that were not fit to be used for human food; it was thrown into a destructor, and in less than a quarter of an hour the whole beast was consumed.

50. *Mr. Buchanan.*] Have you any information to give the Committee relative to milk-supply?—No, I have no information as regards that. I take care to get my milk from a clean dairy, that is all I know.

51. You have no information on that subject?—None whatever.

52. *Mr. Duncan.*] You say that disease in sheep and cattle is more prevalent on the West Coast than on the East Coast. Can you give us the percentage of difference?—No; but I can tell you there is a good deal of difference. Cattle from Masterton are far more healthy than they are about Palmerston. Why it is so I cannot tell, but I know that is the fact.

53. *Hon. Mr. Pharazyn.*] The reason is, I suppose, that it is more dry on the East Coast?—I have no doubt that is the reason. I have been in one place where there were fifty-three sheep killed, and they had only sixteen healthy out of the fifty-three.

54. *Mr. Buchanan.*] That means far more than 30 per cent.?—Yes.

55. Does the evidence you have given to the Committee apply to both sheep and cattle?—Yes, on the West Coast it does; there they are not near so healthy.

G. A. MARCHANT, Esq., M.H.R., examined.

(Evidence not taken down.)

TUESDAY, 22ND JULY, 1890.

JOHN F. McCLEAN, Government Veterinary Surgeon, and Sub-Inspector of Sheep and Cattle, examined.

Witness: I have had experience in tuberculosis, and so far as I have seen it is fairly prevalent in New Zealand. I should say from 4 to 7 per cent. of all the beasts slaughtered in the Wellington slaughterhouses have suffered more or less from this disease, and the proportion is probably larger amongst the dairy cattle around Wellington. The cows likely to be soonest affected were often the best milkers, because the process of long continued milk-secretion has an exhausting effect. In this case there was an analogy between the condition of the animal and that of a man, who by some exhausting occupation fell into, or was predisposed to fall into, a decline. There is a bacillus, and the disease is supposed to be produced by the entry of the bacillus into the system. In the case of a cow that is a good milker, the system is weakened by the strain of milk-giving, and the condition thus produced favours the development of the bacilli in the system. I know of no direct experiments in the transmission of the disease from cows to men; but I have experimented in transmitting, by means of inoculation and otherwise, the disease from cows to rabbits and guinea-pigs, and birds; and tuberculosis has always been produced in such cases. I know, however, that it has been proposed in England to test this matter with condemned criminals who are awaiting execution.

Hon. the Chairman: Yes. In fact an experiment of this kind was made in Melbourne in 1885, in the case of a man who was suffering from gangrene. The man strenuously objected to amputation, and death was therefore absolutely certain to ensue. This being so, an experiment was made in his case by means of inoculation. The experiment was made a week or ten days before the man's death, and it was effective to some extent in showing that the disease was transmissible to the human body.

Witness: The disease may be transmitted by means of pus, sputum, or any tissues containing the bacilli, and it is not advisable to run any risks. In fact, every precaution should be exercised wherever the disease is known or suspected to exist. I am of opinion that tuberculosis, or rather the condition predisposing to tuberculosis, is hereditary. It happens in this way: When a cow in a tubercular condition gives birth to a calf she bequeaths a weakened condition of all the tissues generally to the calf—a condition commonly called scrofulous. Being in that condition, the calf

is not able to resist the inroads of bacilli that are supposed to be always in the air: in such cases the germs may enter the system during either ingestion or inspiration, and are there developed. A cow before calving is sometimes strong and healthy, but after calving poor and weakly; and in the latter state the microbe produces its effects with much greater rapidity. It is certainly unwise to eat the meat of animals that have been affected with tuberculosis unless it has been thoroughly cooked, which is rarely the case. It is difficult to detect the disease in the earlier stages of its development in animals, but in later stages its detection is comparatively easy. The symptoms are to be looked for in connection with the lungs, intestines, glands, or serous-mucous membranes. Sometimes the animal has a dry cough, or a discharge of mucus at the nose or mouth. An instance of its intestinal manifestation is seen in the condition of what is commonly called an "unthrifty" calf—a calf that is always sneezing. The most prevalent symptoms are those which accompany the condition which laymen speak of as a "wasting away." The disease, if present in the lungs, may be detected also by auscultating and percussing the chest; but that is generally a difficult matter, and a great many cases altogether escape detection by ordinary laymen. I look upon the disease as being really a serious thing for the colony; for the importation of fresh blood is small, and, unless the disease is efficiently dealt with, its spread is sure to tell in time on the cattle of the whole colony. I do not think that in-breeding would help much in propagating the disease—that is, in causing its spread amongst the progeny, provided the parent animals were thoroughly healthy. It is, however, highly desirable that all bulls that are tainted, or suspected of being tainted, should be kept from cows—that they should be prevented from becoming sires. I have examined the Bill before the Committee, and I think it supplies sufficient means for dealing with diseased cattle. Cancer and tuberculosis are not the same thing. Tuberculosis largely affects the lungs, but it is not identical with pleuro-pneumonia—the two things are entirely different.

56. *By Mr. Dodson.*] It is difficult to detect the first symptoms of tuberculosis, and in cases where it is suspected; but where there are no distinct manifestations it is well to inquire into the past history of the animal—its near relations and its own antecedent conditions. Yet the matter is not so very difficult for those who are closely connected with the herd.

57. *By Mr. Kerr.*] I know how cattle look when they are partly starved, and the state into which calves get when they receive too much hot milk. I know what is meant by "asthmatical," when applied to cattle; but tuberculosis is entirely different from the two first-mentioned conditions. A change of diet will often do away with diarrhoea. It is quite possible to tell the difference between the livers of such animals and those of animals suffering from tuberculosis.

58. *Mr. Kerr.*] Well, I can say that in all my fifty years' experience I have not seen ten cases of the disease you speak of. Are you quite sure that from 4 to 7 per cent. of the cattle killed for the Wellington market suffer from tuberculosis?—Quite sure.

Mr. Kerr: I do not think there is 1 per cent. in New Zealand, let alone Wellington.

59. *By Hon. Captain Morris.*] I think it would be dangerous for children to drink milk taken from infected cows, more especially if the children were in a weak state of health from any cause. In experimenting with rabbits and guinea-pigs, I have given them milk from infected cows, and inoculated them, and in all cases the rabbits died within three months from acute tuberculosis. I do not think that dairies are inspected by the Stock Department. Corporations have the power, but I do not think they exercise it.

60. *By Mr. J. McKenzie.*] I have been three years in New Zealand, and have had experience in the Old Country and in Australia; I have seen pleuro-pneumonia there. The percentage mentioned by me has not come actually under my personal observation, but I came to that conclusion by examining the records of examinations made as to the state of various slaughter-yards, and the results obtained from analyses of lungs and entrails there, and by comparing those results with my own personal knowledge. One can detect the presence of the disease more quickly by means of examination after killing an animal than by means of observations made while the animal is alive. Still, if a herd of cattle is well looked after by an intelligent man, such a man may detect the presence of the disease even more quickly than even a professional man who is unacquainted with the history of the herd. It is sometimes the case that cattle suffering from tuberculosis put on fat during the earlier stages of the disease. This is explained by the fact that, in certain conditions, tuberculosis would cause an extra secretion of the gastric juice. This, however, does not go on for long, and the affected animal soon begins to fall away. Some men cannot differentiate tuberculosis from pleuro-pneumonia, and inoculation with the matter of the former in mistake for the virus of pleuro-pneumonia would doubtless in many instances cause tuberculosis.

61. *By Mr. Lawry.*] Cattle seen at Wellington are usually not so far advanced in the disease as to make the disease easy of detection during their lifetime. The disease can sometimes be suspected by the aspect of the eye, and conformation generally. Experienced butchers sometimes pick out an apparently healthy beast, and are able to say from observation that it is affected with the disease. It is difficult to deal with such cattle; but the new Bill gives power to compel their destruction, and that will go a certain length in checking the spread of the disease.

Hon. the Chairman: In fact, in this connection, the object of the Act is to diminish the disease by prohibiting people from dealing in beasts that are affected, and by compelling the destruction and burial of such animals.

The Hon. the Minister of Lands, who had to leave in order to keep an appointment, said: The Bill before the Committee had arisen from cases that had been matters of public scandal—cases at Invercargill slaughter-yards, and in connection with Wellington dairies. At present there was no power of dealing with cattle affected in the way mentioned, and the present Bill provided machinery for dealing with specific cases. As to the rate of 2d., it was thought fair enough to put that on, inasmuch as the sheepowners paid at present £16,000 a year towards the maintenance of the Stock Department; and as cattleowners were as much interested in keeping down the rabbits as other stockowners, the proposed tax was thought to be a fair one. As a matter of detail, however, it

would not matter if people with only ten or twenty head were exempted from the operation of the provision in question. Section 8 of the Bill was to put a stop to that kind of cattle-stealing which consisted in drovers picking up and taking away all beasts as they passed across hundreds, &c. The quintessence of the Bill, however, lay in clauses 9, 10, and 11, which were intended to prevent the sale of cancerous meat; to put a stop to the sale of milk from cows suffering with tuberculosis; and to insure the destruction and burial of such animals. In preparing the Bill the Australian Acts had been carefully considered, and, after comparing these with the colony's particular requirements, they had laid down in the Bill the lines which were deemed to be the best to go upon.

Witness pointed out that in the proposed Act there was no definition of cancer, and said he believed that cattle in nine cases out of ten in which they were regarded as being cancerous were not truly affected with cancer. There were also other diseases which were included under this head, where it would be unwise to eat the flesh of such animals.

62. *Hon. the Chairman.*] Could you suggest a definition then?—I would like to think the matter over.

It was agreed that the witness should do so.

Mr. Pasley wished to add that, in his opinion, the provision in clause 8 of the Bill was as necessary in the case of cattle as it was in that of sheep.

Mr. R. C. PASLEY, Inspector of Sheep, examined.

Witness: I have seen the Cattle Bill which has just been introduced. At present there are no means of dealing effectively and conveniently with cancerous cattle without specially removing the cattle. It is therefore necessary to give power to the Inspectors to deal with individual instances of disease without having to proclaim the whole district as being infected?—Yes; I have observed that the Bill contains a provision for taxing cattle at the rate of 2d. per head, which has not been recommended by the conference of inspectors.

The Hon. the Minister of Lands explained that the Bill had not originated entirely with the inspectors. A good deal recommended by them had been worked into it; but it also contained provisions not embraced by their recommendations.

Witness: I was chairman of the first meeting of inspectors about two years ago, and that meeting had discussed and recommended some of the provisions in the Bill. Tuberculosis does not prevail to any great extent in the colony, but it is necessary to provide means for dealing with it. I cannot say, of my own experience, that it is increasing, but I have heard of its doing so in other parts of the colony. I cannot say how many cases there may be in my own district, Hawke's Bay. I have not had personally any experience with tuberculosis, and I go chiefly by what I have heard.

63. *By Mr Kerr.*] I do not think I ever saw a case of the disease in the Wairau, or the Wairau District.

Witness: Preventive measures are certainly advisable. As to compensating the owners of animals destroyed, we considered that question, and we thought that compensation should be granted in such cases to the extent of the full value. The meeting of inspectors in 1888 passed a resolution to that effect. Sale of and traffic in tuberculous cattle should, I think, be prohibited in whatever stage it is possible to detect the disease in the cattle.

64. *By Mr. Lance.*] Tuberculous animals are exposed for sale sometimes, and I think there should be some means for putting a stop to such sales at once.

65. *By Hon. Mr. Miller.*] Yes, I consider the disease contagious; at any rate, its presence in an animal must affect the meat of that animal. I also think that healthy cattle—that is, cattle free from the disease—are liable to be infected by diseased cattle.

66. *By Hon. Mr. Walker.*] I also think that there is most decidedly danger in using the milk that is drawn from animals affected by the disease.

67. *By Mr. Kerr.*] I cannot say this from my own knowledge, but it is perfectly well known that the disease does affect the milk of cows that have it. I have seen a cow with cancer, and the milk of such a cow is, in my opinion, dangerous to children. I do not know whether a cow affected by cancer will give it to other cattle; and I have seen cancerous cattle in the same yard with other cattle that were free from cancer.

68. *By Mr. Lawry.*] I never saw tuberculosis in Australia, and only knew of it there from hearsay. It is not so prevalent here as in Australia. I am perfectly satisfied that it is infectious, and also hereditary—transmissible by parent to offspring. There is more cancer in cows than in bullocks. I have not noticed it as a result of bad branding, or as marks made upon the rumps of cows when they were being stunted. I have read the Cattle Bill, and I do not see that a settler need have any difficulty in complying with clause 6. The same thing is now done by every owner of sheep; and I apprehend that the settler will have to give only his own registered brand, and not all the brands and ear-marks which may be on stock which he may have bought from various persons. I cannot say that I know of any means whereby we can detect internal cancer in cows.

69. *By the Chairman.*] I have not had much personal experience in connection with these diseases. I have examined the Bill, and I think it is desirable that steps should be taken to treat the diseases as suggested. At present the inspectors do not possess the necessary power, and I think the Bill would meet the case and give the inspectors the power required. The proposed tax of 2d. would, I suppose, go into the same fund as the sheep rates—the fund out of which are defrayed the expenses of the Stock Act. There was no reason why cattle owners should be exempt any more than sheepowners, for they too were gainers by rabbit destruction and other work carried on under the Sheep Department.

APPENDIX.

CIRCULAR ADDRESSED TO CATTLE-OWNERS THROUGHOUT THE COLONY.

SIR,—

Stock Inspector's Office, April, 1889.

Tuberculosis having been found to exist among New Zealand cattle, I would respectfully draw your attention to the facts that definite danger arises from the presence of tuberculous cattle in a herd; that a tendency to disease is certainly bequeathed in many cases by affected parents (whether male or female) to their progeny—that possibly the very germs of disease may be so transmitted; and that the disease may spread by way of contagion when infected animals are penned with healthy ones.

With a view to lessening the evil, I would recommend the destruction of all wasters, as there is certain loss in keeping such cattle. Animals with chronic coughs should be looked upon with suspicion, and cattle of doubtful health should never be used for breeding purposes. I would further recommend that the offspring of those known to be tuberculous should be either spayed or castrated.

As tuberculosis is rare in young dairy-cows, and as it becomes increasingly prevalent with advancing age, I would suggest that dairy-farmers weed out their herds from time to time so as to limit the age of the cows from which milk is obtained.

With regard to the general management of cattle, it may be noted that the prevalence of tuberculosis among mankind in any district is more beneficially affected by drying of the subsoil than by any other cause; and with cattle also it is found that tuberculosis is specially prevalent among those kept on low damp pastures.

I might here refer to the necessity of supplying cattle with extra food and shelter during winter in poor or exposed districts; but these and other precautions will readily suggest themselves. There is no doubt that all depressing and debilitating causes are as effective in favouring tuberculosis among cattle as among men, and in cases of threatened disease the removal of such causes will have like beneficial results.

The attached report of the Departmental Committee appointed to inquire into this subject in Great Britain contains much useful information.

To

I have, &c.,

Inspector in Charge.

REPORT OF THE DEPARTMENTAL COMMITTEE APPOINTED TO INQUIRE INTO TUBERCULOSIS IN THE UNITED KINGDOM, 1888.

Nature of the Disease.

1. This disease, technically known by the term "tuberculosis," or "tubercle," is so called because it produces in the tissues of most warm-blooded animals small inflammatory lumps or knots, the Latin word for which, as originally applied by Celsus, was "tuberculum."

2. The disease is known in the United Kingdom by different names, according to the parts of the body it may happen to attack, or according to the kind of lesions it produces, or, finally, according to its general effect on the body. Thus, it is commonly called phthisis or consumption, pining, and wasting (the animal being called a "waster"), scrofula, strumous disease, cheesy inflammation of the lungs, caseous pneumonia, caseous broncho-pneumonia, tubercular pleurisy, the grapes, the grape disease (German *perlsucht*), consumption of the bowels, tabes mesenterica, tubercular meningitis.

3. For many years most of these conditions were supposed to be different diseases; we now know for certain that they are all forms of one and the same process, and caused by a microbe—*i.e.*, a parasite misco-organism, which, growing in the tissues, gives rise to the tubercles, and which, by reason of its being thrown off from the diseased animal in quantity, renders the malady a contagious one.

Tuberculosis, therefore, exists only in those localities where the microbe happens to be endemic—that is, however, in all European countries—and can only occur in an animal by reason of the microbe being introduced into its system. The microbe, or bacillus, thus forms the poison or virus of the disease.

4. The great discovery that the tubercles or foci of the disease contained a virus or poison capable of producing the malady when inoculated into the lower animals was first made by Klencke in 1843, but first described at length and placed on an undeniably firm basis by Villemin in 1865. The nature of the poison itself remained unknown till it was discovered by Koch, in 1881, to be a rod-shaped microbe.

5. He found that this rod-shaped microbe was of a length about equal to or less than the diameter of a red-blooded corpuscle. When magnified very highly and stained with certain dyes it presents a dotted appearance, showing that the protoplasm forming its body is interrupted. This condition of the protoplasm is supposed further to indicate its reproduction by spores or seeds, such seeds or spores of microbes having, it is well known, greater vitality than the adult rod.

6. This greater vitality of the spore, and the viability of the rods, are, of course, points of the utmost importance, since, if the mucus, or saliva, or expectoration of an animal or human being suffering from tuberculosis be dropped upon the ground, flooring, or furniture of a room or shed, it is obvious that such secretions are, in proportion to the effect which exposure at the temperature of the air and drying may have in destroying the organisms and their spores, a source of

danger to other animals or human beings who may accidentally take up the poison. From this it follows that the temperature of the air and drying for a very long period determine the survival or death of the infective microbes. These points, therefore, require careful consideration and examination.

7. The temperature which is most favourable to the growth of the microbe is that of the ordinary heat of the body of a warm-blooded animal—namely, from 37° to 38° C = from about 98.9° to 100.5° Fahr.; but if the temperature falls to about 82° Fahr. such growth ceases. Though, however, cold prevents its development, it does not kill it, whereas if it be kept at a temperature of about 107.5° Fahr. for several weeks the organism gradually becomes exhausted and dies.

8. It is obvious from these facts that, if bacilli or their spores be scattered on the ground or elsewhere at the ordinary temperature of the outer air in our climate, they will not grow, although they may fall upon a suitable soil. On the other hand they will not be killed, and, moreover, the temperature of some dairy-sheds in the summer may approach the point at which the development of the organisms outside the body would be possible. It is only, therefore, under these latter circumstances to be feared that in this country these tubercle microbes will grow and develop outside the body.

9. The other condition, drying, is, in the case of most microbes, a very important one, since few resist dessiccation. Numerous experiments, however, have been made upon expectoration containing the bacilli. Such expectoration has been dried during very considerable periods—namely, several months—and has also been successively dried and moistened for similar periods, and yet the bacilli have not been killed, and when inoculated into animals they have actively produced the disease.

10. It is abundantly evident, therefore, that the infectious discharges of a tubercular animal remain actively virulent in this climate for a long time after they have been cast from the body, and that stalls and sheds may thus become a source of danger unless thoroughly cleansed.

11. The bacillus, under ordinary circumstances, of course flourishes upon the living tissues of the animal it attacks, but its discoverer, Koch, showed that it could be cultivated artificially upon various purified, *i.e.*, sterilised, animal fluids, such as the serum of blood, &c.

12. The tubercle bacillus does not attack all domesticated animals equally. Arranging them in order of respective liability to the disease, they are as follow: Man, milch cows, fowls, rodents, pigs, goats, sheep, horses, carnivora, *i.e.*, dogs, cats, &c. (very rarely).

13. From this it appears that the organism grows most readily in those animals which are omnivorous or herbivorous.

14. In all cases the female sex suffers more than the male; and in certain forms of the malady, as is common to all microbe diseases, young animals are more sensitive and more easily attacked than adults.

15. Further, certain unhealthy conditions cause a predisposition to contract the disease and receive the poison. Such are—(1.) Starvation. (2.) Deficiency of oxygen by bad ventilation. (3.) Exhausting secretions, *e.g.*, prolonged lactation. (4.) Possibly hereditary (*vide infra*, modes of transmission of the virus, Art. 29). (5.) Certain foods (asserted, but very doubtful).

16. (1.) Of these, starvation is very important, since it causes degeneration of the tissues, and diminishes thereby their resistance to the growth of the parasitic microbes.

17. (2.) The deficiency of oxygen by want of ventilation has been for very many years recognised to be a fertile source of predisposition to tubercular infection, and to be very favourable to the transmission of the virus from one individual to another. This is so notorious that reference need only be made to the instances recorded in works on hygiene to substantiate the statement.

18. (3.) Exhausting production of milk can be easily understood to effect—as seen in the gradual emaciation, &c., of milch cows by the constant loss of the fat, albumen, and salts contained in the milk—just those degenerative changes which reduce the vital resistance of the animal. It is consequently very probable that the special proclivity of milch cows to contract the disease is, to a considerable extent, due to this factor as well as to that expressed in Art. 17.

19. (4.) The well-known influence of heredity in perpetuating tuberculosis among stock is attributed by some to the transmission from parent to offspring not of the actual virus, but of a condition of tissue which is peculiarly favourable to the development of that organism. This view is naturally but a hypothetical one. Still, as it is held by many authorities, it is here stated. See also Arts. 28, 29, 30, 31, 32, and 33.

20. (5.) Some foods, *i.e.*, grains, &c., have been imagined to favour the occurrence of tuberculosis, but this is extremely problematical.

Modes in which the Virus or Microbe enters the Body.

21. The *bacillus tuberculosis* has been proved to enter the body, and to kill the animal by causing the growth of tubercles, in the following ways: (1.) Inhalation into the air-passages and lungs. (2.) Swallowing into the alimentary or digestive system. (3.) Direct introduction into the subcutaneous or submucous tissue by means of a scratch, or cut, or sore in the skin or mucous membrane.

It is also supposed to be directly transmitted by (4) Heredity.

22. (1.) *Inhalation*.—Owing to the fact that the signs of disease are most commonly found in the lungs, inhalation would appear to be the commonest way in which the disease is contracted. This has been tested by comparative experiments, in which animals inhaled tubercular secretions so minutely divided as to admit of the bacilli being distributed in a current of air, thus closely imitating that distribution of the virus which occurs when a tuberculous animal coughs, &c. The results of these experiments have been almost invariably positive, the animals breathing such infected air rapidly succumbing to the disease.

23. Cohabitation, therefore, of the diseased and healthy animals is a fertile source of spread of the malady.

24. (2.) *Swallowing*.—Numerous experiments have similarly been performed upon the possibility of the tubercular virus entering the body through the alimentary canal. In these experiments, tubercular secretions, *i.e.*, mucus, saliva, milk, &c., portions of tubercles from diseased tissues and cultures of the bacilli, have been swallowed by various animals (calves, pigs, sheep, rodents, fowls, &c.), with the effect that the disease has fatally followed the ingestion of such infective material.

25. It is obvious, therefore, that the digestive fluids do not necessarily exert an injurious influence upon the poisonous bacilli.

26. (3.) *Direct introduction into the tissues beneath the skin or beneath the mucous membranes*.—If tubercular material, that is to say, secretions from a tubercular animal, or portions of tubercles, be introduced into the loose tissues beneath the skin or mucous membranes, the bacilli cause a local inflammatory swelling (*i.e.*, a tubercle) at the seat of infective inoculation, and then grow along the lymphatic vessels, causing similar inflammation of these latter, and, finally, reach the nearest glands. These also become diseased, and from them the microbes pass through the large lymphatic vessels, which subsequently discharge into the veins, so that the virus is distributed throughout the body, and the disease, at first local, becomes general, affecting most of the organs (but especially the lungs, see Parts 37 and 42).

27. Undoubted instances have been laid before us of such inoculation occurring, and others are on record in which the human being has become affected with the disease by the microbe entering the system through a scratch or sore on the hands which have been brought in contact with tubercular sores or secretions.

28. Similarly, cases probably falling within this category have been recorded, and one or two stated in the evidence, in which a bull has given the disease to cows, and the converse has also occurred, namely, that a bull has contracted the disease from cows.

In the former of these instances, of course, the virus may have been contained in the secretions, and it may have thus reached the ovary, and so affected the system generally.

29. (4.) *Heredity*.—While it is undeniable that the disease runs through certain families or strains, there is considerable doubt as to whether this is simply because the tissues of one particular breed or race are especially favourably disposed to nourish the tubercle bacillus, or whether the bacillus is actually contained in the ovum or spermatozoon, and so becomes a constituent part of the embryo and foetus, and develops within the uterus. The former view has already been referred to.

30. In favour of the latter, it may be said that Baumgarten has actually, in the rabbit, observed the bacillus within the ovum, and, further, that the bacilli have, by different observers, frequently been seen mingled with active spermatozoa.

31. Finally, in one striking case found by Professor Johné, of Dresden, an unborn calf of seven months' intra-uterine growth was discovered to present numerous tubercles in its lungs, showing that if the ovum had not been inoculated it had received the virus through the placenta, which amounts practically to the same thing. Similar intra-uterine infection has been shown to be more than probable in the human being.

32. Against this view of the infection of the ovum and embryo it has been suggested that the disease-producing influence of the bacillus would prevent the ovum from arriving at maturity.

33. Whichever view be accepted, the solution of the practical problem, as far as it is connected with this part of the subject, is easy, as all breeders have discovered the infinite risk of breeding from tubercular stock (see also Arts. 78–80).

34. It has also been stated that in-and-in breeding will of itself give rise to the disease. This is, of course, erroneous, but no doubt such breeding in one line predisposes to general infection if the virus is at any time introduced into the herd.

Mode of Attack and Distribution of the Disease within the Body.

35. The disease, as already referred to, may attack the body of an animal in two different ways.

36. It may, for instance, be introduced into the blood, and be distributed generally over the body, spreading so rapidly as to make its entry difficult of discovery, and to gain for it under this condition the name of acute or general or miliary tuberculosis.

37. On the other hand, it may, as already stated, affect for a considerable time only the point of entry and the neighbouring lymphatic glands, becoming consequently distributed over the body from these latter. This is called in the first instance local tuberculosis.

38. Local tuberculosis is also occasionally seen to follow the circumstances which usually produce general tuberculosis: thus in cattle the malady shows itself locally under the form known as grapes, where the pleura is alone attacked, this condition differing markedly from the form in which the alveoli of the lung itself are crammed with the tubercles and the other organs also affected.

39. Local tuberculosis is more common in man than in the lower animals. In him it frequently attacks one point, whatever be the mode of its original introduction into the body. In cattle this is very exceptional.

40. The distribution of the disease in the body is difficult to connect with any special mode of introduction of the virus, save, perhaps, inhalation.

41. Undoubtedly, in cattle, the lungs and pleurae and the serous membranes generally are the favourite seats of the malady; any and each of the other organs being occasionally affected. In pigs it commonly attacks the glands in the neck; in rodents, the spleen, the liver, the lungs, and the bones; in fowls, the nose, mouth, and spleen; in horses, the glands; and in man the glands, the lungs, the joints, and the nervous system.

42. Possibly this predilection for the lungs, spleen, joints, &c., is dependent upon the rate of the circulation in those parts, the tubercle bacillus certainly appearing to grow best where the circulation is least vigorous.

43. The distribution of the disease and the bacilli in the body closely affects the question of the use of tubercular meat as food.

44. It appears that the marrow of the bones is affected at an early period, and that the bacilli may be present therein in considerable quantity before they discover themselves by changes obvious to the eye.

45. Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.

46. Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals.

47. The tubercles or inflammatory patches produced by the bacilli in their growth in the tissues differ rather according to their seat, and the acuteness of the disease.

48. If the malady is very acute and generalised in its course, the organs will be found riddled with small greyish knots, varying in size from one twenty-fifth of an inch (dust shot) upwards.

49. If the disease is more chronic, these small tubercles coalesce, the centres of the conjoint patches thus formed become degenerated into cheesy masses, while the outer border becomes hard, tough, and fibroid. This rough fibrous tissue of the tubercular nodule is well seen in the grapelike nodules of the pleural tubercles in cattle. Finally, the cheesy matter may become stony-hard from the deposit of lime salts within it. This occurs when, owing to the death of the bacilli, &c., the disease ceases to spread at that point, and the tubercle shrivels into a calcified mass surrounded by a sheath of dense fibrous tissue. Such remains of tubercles are, on *post-mortem* examination, not infrequently found coupled with more recent lesions in animals previously supposed to be healthy.

50. The secretions from the organs thus diseased contain the tubercle bacilli, and are consequently infective in proportion to the activity of the malady. Such secretions are the mucus from the air, alimentary and genito-urinary passages, the saliva, milk, urine, &c.

51. Of these, it is obvious that the fact of milk being infected is of primary importance to the health both of animals and of men, since milk has been proved both to contain the bacilli and to infect the lower animals, *e.g.*, calves, pigs, &c., while, unfortunately, it is becoming abundantly clear that by the same method of transmission of the virus, the disease is communicated to the human being.

52. The general symptoms produced by tuberculosis are, when the disease is general, fairly easy of recognition, early malaise commencing, and emaciation preceding the occurrence of the other prominent systems, such as a dry cough, &c.

53. When, however, the affection commences locally and remains for weeks, or it may be months, very slowly growing, and so producing the hard fibroid nodules before referred to, no symptoms may be manifest to a casual observer at all—in fact, the animal may be considered to be in a singularly fine condition.

54. Ultimately, however, in all cases, if the malady has the opportunity of developing further (*i.e.*, where the animal has not been killed in a well-nourished condition at the commencement of the disease), the emaciation becomes very marked; the milk, previously abundant though poor in quality, becomes still poorer, and also diminished in quantity. The weakness increasing with the wasting, there is distress on exertion, the cough and laboured breathing indicating the degree in which the lungs are affected, and physical examination of the chest—*i.e.*, by percussion and auscultation—revealing their solidification and the pleuritic adhesions.

55. The disease in the lower animals always terminates fatally.

Frequency of Proportionate Occurrence among Animals and Men.

56. Now that the unity of the various processes which the tubercular bacillus sets up is known, it should be clearly understood that it has been calculated from the statistics of the registrars of various countries that to this poison alone are due from 10 to 14 per cent. of all deaths among human beings.

57. In certain instances even this number seems to have been exceeded, as in Paisley, where it is 17·5 per cent.

58. Its proportionate occurrence among animals has not been so clearly made out.

59. It appears to be certain that it is more prevalent in some parts of the country than in others, notably so in Ireland, and especially in Dublin, while it is much more common among milking cows than other kinds of stock. In Dublin the percentage of animals discovered to be affected with the disease in the course of application of the recent Slaughter Act was 4·9 per cent. In some exceptional cases the percentage is still higher, in others lower. In Germany the proportion of tubercular disease among cattle slaughtered appears to vary from 1·5 per cent. to 20 per cent. according to the district.

60. On analysis it will be found that, as an almost invariable rule, the low percentages given are those for herds fed in the open air most of the year, the high death-rates being among dairy cattle cohabiting in sheds.

61. The relative frequency with which the disease appears among fowls seems to be not generally known, except to veterinary surgeons of large cities. Both from direct experiment and from clinical observation it is now proved, not only that the fowl contracts the disease from man by reason of its swallowing the expectorated bacilli, but also that it thereby forms a vehicle for the further transmission of the disease to man and the lower animals.

62. The widespread injury and loss it thus inflicts calls for legislative interference, which we will now proceed to consider.

63. Before doing so we must direct attention to the fact that in the view of several authorities this disease is believed to be on the increase.

64. It is doubtful whether this is really so, for the reasons that (1) the apparent increase may be due to better recognition, and consequently more frequent notification, of the disease; (2) that, general hygiene being improved, and this improvement having already greatly diminished the tubercular death-rate in places where the malady was very prevalent, it is probable that the increasing attention given to hygienic requirements will still further reduce its virulence.

Remedial Measures.

65. The two points to be borne in mind in considering remedial measures are: (1.) That the disease can be transmitted to man from the lower animals, and from man to the lower animals, by one or other of the methods which we have already discussed, and especially by the ingestion of tubercular-diseased meat or milk. (2.) That it spreads from animal to animal.

66. The first of these, being in part dealt with under the Public Health Act, is usually considered apart from the measures taken to prevent disease in cattle; but, though this procedure is perfectly possible with most other diseases of the lower animals, it cannot be applied to tuberculosis, for not only is the disease communicated from animals to man, but also from man to animals.

Legislation, therefore, directed to the protection of cattle from tuberculosis should at the same time include such measures as will also prevent its communication to man.

67. In the first place, the question of curative treatment may be dismissed in a few words, since no cure or antidote is known for this disease, except in those cases (almost entirely confined to the human being) where it is only locally manifested, and in which consequently its foci can be excised and removed by surgical treatment.

68. This being so, it is evident that legislation must follow the two lines of—A. Prevention. B. Extirpation.

A.—Preventive Measures.

69. These should include provision for: (1.) Improved hygiene of cattle-sheds, &c. (especially in the direction of providing proper ventilation, pure water-supply, and adequate disinfection of stalls, &c., wherein tubercular animals have been kept). This has been partly met in the Dairy and Milk Shops Order, but its administration by the local health authorities is at present imperfect, and we would suggest that it should be much more stringently enforced, and that veterinary inspectors should be given more extended powers of entry into all places where animals are kept.

70. Improvement in the hygienic surroundings of animals should include isolation of all suspected cases (see also par. 17), precautions against the flesh or milk of diseased animals being given as food to others, *e.g.*, to pigs, fowls, &c., and care that fodder, litter, and water should not be taken from one animal or stall and given to another.

71. Our attention has been drawn to the frequency with which animals obviously diseased, sometimes even in the last stage of the malady, are sold in open market.

Although in England and Ireland, under the provisions of the Nuisances Removal Act as embodied in the public Act, 1885, the medical officer of health or inspector of nuisances may seize such animals, yet such seizure is rarely performed.

72. We find the veterinary inspector has no power to prevent such sales, or to seize the beasts for slaughter, since tuberculosis is not included in the Contagious Diseases (Animals) Act of 1878.

73. We further find that there is actually a regular trade in such stock infected with tuberculosis, and that they go by the name of “wasters” and “mincers,” being frequently slaughtered in the neighbourhood of the larger towns, to which such portions of the meat as are likely to escape the observation of the inspector of nuisances are sent for the purpose of sale among the poorer inhabitants, and especially for the making of sausages.

74. We are therefore very strongly of opinion that power should be given to the veterinary inspector to seize all such animals in fairs, markets, or in transit.

75. Notwithstanding the uniform prevalence of the disease in Europe and elsewhere, there seems to be no reason to apprehend that, with our present regulations for the slaughter of animals at the port of debarkation, and for quarantine of those imported for breeding, there is any special danger of increasing the infection in England by introduction from abroad. The danger, however, exists in regard to the stock brought from countries which are exempt from slaughter on landing, and subjected to the ordinary veterinary inspection during the present period of detention of twelve hours.

76. It is therefore evident that the present rules for the prevention of the introduction of disease into the United Kingdom from abroad are incomplete. A further difficulty arises owing to the failure of many veterinary surgeons to detect the disease in its early stages.

77. It is certain that hitherto, in those cases so frequently referred to, where the disease is stated to have been found to be exceedingly marked on *post-mortem* examination, although presenting no obvious symptoms during life, no proper veterinary examination was made.

78. As, however, it is impossible to suppose that extensive pleural or pulmonary disease would not be revealed by a careful physical examination of the chest by percussion, auscultation, &c., the statements to the contrary made on this point would not outweigh any legislative proposals, although such proposals would be partly dependent upon such proper and adequate physical examination.

79. Since all authorities are agreed that the disease is very marked by heredity, we think it highly desirable that breeders should, in their own as well as in the public interest, discontinue breeding from tuberculous stock.

B.—Extirpation.

80. In order to insure the gradual extirpation of tuberculosis we are of opinion that it should be included in the Contagious Diseases (Animals) Acts, for the purposes of certain sections of those Acts, so as to provide—(a) For the slaughter of diseased animals when found diseased on the owner's premises; (b) for the payment of compensation for the slaughter of such animals; (c) for the seizure and slaughter of diseased animals exposed in fairs, markets, &c., and during transit; (d) for the seizure and slaughter of diseased foreign animals at the place of landing in this country.

81. Notification of this disease should not be compulsory, because it may exist without developing any sufficient outward evidence to enable the owner to detect it, and its growth is so slow that non-notification of its existence, even in a large number of cases, would do little to nullify the stamping-out effect of the Act of 1878.

82. The powers and responsibilities of inspectors in ordering the slaughter of diseased animals should be the same for tuberculosis as for pleuro-pneumonia, according to section 51 (5) of the Act of 1878.*

83. An additional argument in favour of the slaughter of diseased animals is to be found in the fact that frequently tuberculosis and pleuro-pneumonia actually occur together, or are mistaken one for the other, so that in either case slaughter would be highly desirable.

84. Further, tubercle, though hereditary, is nevertheless much less contagious than the other diseases included under the Act of 1878, and it is clear, therefore, that the immediate slaughter of diseased animals would go far to stamp it out, though doubtless, owing to heredity, this stamping-out process would be gradual in its effect.

85. The annual reduction of the disease would probably be very considerable, and, even should it not be so, that would not constitute any reason against the adoption of the proposed regulations, since, however small the effect produced, the result to the nation must necessarily be gain.

Payment of Compensation for Loss of the Animal.

86. (3.) As in the other diseases scheduled in the Act of 1878, so in this, the owner should be compensated for the slaughter of a tuberculous animal at the rate of three-fourths of its value before it was slaughtered, and the valuer should shape his estimate according to its worth to the owner, i.e., as a milk-producer, or for any other special purpose.

87. If the animal should be one of great value, as in the case of pedigree stock, its worth might be determined by arbitration, and the three-fourths value paid in compensation under the provision before referred to.

Conclusion.

In terminating our inquiry, we desire to state that the great number and importance of the facts which were brought before us compelled us to extend the taking of evidence beyond the limits which we had originally contemplated, and to delay the presentation of our report to your Lordship. We recognise that the two subjects referred to us, pleuro-pneumonia and tuberculosis, are of the highest interest and importance, not only to the stockowners of the United Kingdom, but also to the public at large.

We believe that, if our recommendations be firmly carried out, pleuro-pneumonia may, within a moderate period, be exterminated in this country; and, although we cannot dare to indulge in such sanguine expectations with regard to tuberculosis, we still venture to hope that much may be done to reduce its extent, and to minimise a disease so dangerous alike to animals and to mankind.

SUPPLEMENTARY REPORT ON TUBERCULOSIS BY PROFESSOR HORSLEY.

The foregoing report on tuberculosis, which I have signed, is entirely in accordance with my views on the subject so far as it goes; but there are two points upon which I consider further legislation to be absolutely necessary. These are—

1. *Breeding.*—Tuberculosis is notorious, even among the laity, as a disease which is transmitted from parent to offspring. This is a fact with which cattle-breeders are specially familiar, and which finds strong expression in the evidence attached to this report. Further, this generally-received truth has been completely confirmed by the results of scientific investigation, as is also duly set forth in the report. Considering, therefore, the extreme importance of this point, I think that the act of wittingly breeding from animals so infected should be made an indictable offence. The only objection that can be raised to such legislation, which if effected would prevent the dissemination of the disease among cattle in this country, is that, owing to the present state of want of knowledge among cattle-owners and even veterinary surgeons of the early symptoms, and physical signs on examination, of this disease, prosecutions would occasionally occur in cases in which no fault could properly be attributed to the owner, and that, therefore, such prosecutions would be needlessly vexatious.

Considering, however, the extreme rarity with which such cases would occur, and that, as in the matter of non-notification, each case would be tried before district magistrates on its own merits, this objection is deprived of the force it might have possessed.

Notification of the Existence of the Disease.

2. This point requires no explanation, since it is clear, that, unless the veterinary inspectors or authorities receive information of occurrence of diseases, it is impossible to insure the thorough carrying-out of the provisions of the Contagious Diseases (Animals) Act.

* Section 51 (5) of Contagious Diseases (Animals) Act, 1878: "A certificate of a veterinary inspector to the effect that an animal is or was affected with a disease specified in the certificate shall, for the purposes of this Act, be conclusive evidence in all Courts of justice of the matter certified."

That deliberate non-notification should be punished cannot be doubted by any one. Objection, however, to legislation in this direction has been put forward on the same grounds as those upon which the prevention of breeding from diseased animals was contested. As, however, I consider that these objections have been already shown to have no weight, I recommend that both the forbiddal of breeding from diseased animals, and the notification of the disease, should be included in any legislation for tuberculosis.

REPORT by MR. J. F. McCLEAN *re* LUNGWORM at TUPURUPURU.

SIR,—

Stock Inspector's Office, Wellington, September 8th, 1890.

As instructed by you, I visited Mr. W. C. Buchanan's property, "Tupurupuru," on Monday, the 1st inst., and remained there and in the immediate neighbourhood for several days, examining the affected stock and country. I have the honour to report as follows:—

I found "lungworm" very prevalent among the hoggets at "Tupurupuru" where, judging by the appearance of the flocks, the losses from this cause must have been very serious. But until pastoralists acquaint themselves with what we know of the life-history of the "lungworm," and recognise that where this pest has once gained a footing on a run, or part of a run, it will increase its ravages year by year (according to the locality of the place and the suitability of the seasons), I can expect little benefit to accrue from any recommendations I may make.

As this can only be a condensed report, I would like to point out the lines sheepowners should take to keep this pest within bounds.

There is no doubt that where lungworm is prevalent the best remedy of all is to plough up and crop the infected area for one or two seasons; but, of course, this plan is inapplicable on the No. 3 sheep run. The substitution of cattle for sheep for a season will also go a very long way towards cleaning a country, as the lungworm of sheep does not affect cattle, and *vice versa*. Then again there is the Australian method of shutting up the infected area for some months, and then firing the growth that has taken place.

Where owners cannot or will not adopt any of the above methods, it only remains for them to take all care that their lambs are in good condition before and at the time of weaning, and thus render their systems less liable to fall an easy prey to the disease. This, I need hardly say, can only be attained by good feed and pure water in liberal quantity, and general good management.

In the country I have been examining during my visit to Tupurupuru, I cannot too strongly recommend the allowance of a free supply of salt, from the middle of summer right through the autumn.

For this purpose I would prefer to use inferior common salt, commonly known as "Liverpool salt," placed in troughs about the paddocks. Rock salt, though infinitely better than no salt at all, is too liable to injure the teeth of lambs and thus render them unfit for turnips later on in the season. Another advantage Liverpool salt possesses is that any other medicament may be incorporated with it, and for this purpose I know of nought better than the following mixture: Liverpool salt, 100 parts; chlorate of potash, 10 parts; sulphate of iron, 5 parts. Lambs provided with this mixture will readily lick it, and as near as possible render themselves worm-proof.

I am often asked if drenching lambs is any good, and am forced to reply in the negative; for I am of opinion that, unless in the hands of a competent and careful man, much unnecessary pain and serious damage is too often inflicted on an animal mostly in a delicate state of health, by the injudicious mixing and administration of the various drugs used.

If an owner is of opinion that he ought to drench his lambs, let it be done two or three times, early in the year, and advisedly with turpentine and milk thoroughly incorporated. It is worse than useless to wait till such time as the hoggets are coughing. The object of drenching should be to cause the expulsion of the worm before it has gained an entry into the lungs or blood stream. The lambs should be carefully handled, the mouth gently opened by an assistant, and the medicine slowly allowed to fall into the mouth, in order that the animal may have time to swallow it, and not, as one too often sees, the mouth roughly torn open, while another man as roughly squirts the medicine out of a syringe, the bulk of it not entering the gullet as intended but passing direct into the larynx and setting up a violent fit of coughing, and in the end causing severe bronchial disturbance.

If owners will attend to these few particulars, I think we may confidently expect to see our losses from lungworm reduced to a minimum.

The Hon. the Minister of Lands.

I have, &c.,

JOHN F. McCLEAN, M.R.C.V.S.

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