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Gt. Brit. Departmental
Committee Appointed to Inquire
into Pleuro-pneumonia and
tuberculosis in the United
Kingdom
Report ...

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REPORT
OF THE
DEPARTMENTAL COMMITTEE
APPOINTED TO INQUIRE INTO
PLEURO-PNEUMONIA AND TUBERCULOSIS
IN THE
UNITED KINGDOM.

PART I.—REPORT.

Presented to both Houses of Parliament by Command of Her Majesty.
1888.

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1888.

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APPOINTMENT OF COMMITTEE.

Departmental Committee to inquire into and report upon the nature and extent of pleuro-pneumonia in the United Kingdom, and the effects of inoculation and other preventive measures on that disease; also, to inquire into the nature and extent of tuberculosis in the United Kingdom, and the means to be adopted to arrest its progress:

Jacob Wilson, Esq.

Sir G. Macpherson Grant, Bart.

J. Bowen Jones, Esq.

P. Stirling, Esq.

Victor Horsley, Esq., F.R.C.S.

Professor Brown, C.B.

J. Naper, Esq.

Richard Dawson, Esq., is appointed to act as secretary to the Committee.

Approved.

(Signed) CRANBROOK.

April 16, 1888.

Lord Cloncurry is nominated in the place of J. Naper, Esq., who is unable to attend.

Approved.

(Signed) CRANBROOK.

April 19, 1888.

REPORT.

TO THE LORD PRESIDENT OF THE COUNCIL.

MY LORD,

1. Your Lordship having been pleased by your letter of instruction, dated 16th April 1888, to appoint a Departmental Committee to inquire into, and to report upon, the nature and extent of pleuro-pneumonia in the United Kingdom, and the effects of inoculation and other preventive measures in that disease; and also to inquire into the nature and extent of tuberculosis in the United Kingdom, and the means to be adopted to arrest its progress,—

2. We have now the honour to report that immediately upon receiving your Lordship's commands we proceeded to the duties thus imposed upon us.

3. We met for the first time on the 17th of April, and thereupon commenced taking evidence, and continued our meetings from time to time up to the 4th of June. During that interval we sat for 17 days and examined 44 witnesses, as hereafter described.

4. TOTAL NUMBER OF WITNESSES, 44.

ENGLAND (13).

Mr. J. Dunne - - -	Chief Constable - - -	Cumberland and Westmoreland
Mr. C. Stephenson, F.R.C.V.S. -	Veterinary Surgeon - - -	Northumberland.
Mr. A. Dean - - -	Farmer - - -	Lincolnshire.
Mr. J. Williams Bell - - -	Farmer - - -	Dorsetshire.
Mr. R. Bruce - - -	Farmer and Stock Dealer - - -	Yorkshire.
Mr. Woodroof, M.R.C.V.S. -	Vet. Surgeon - - -	London.
Mr. Alexander - - -	Cowkeeper - - -	London.
Mr. W. Stratton - - -	Tenant Farmer - - -	Wilts.
Mr. Low - - -	Justice of the Peace - - -	Kent.
Mr. Latter - - -	Clerk, Divisional Committee, L.A. -	Bromley, Kent.
Mr. Tisdall - - -	Dairyman - - -	Kensington.
Mr. A. Lingard - - -	M.R.C.S., D.P.H., Camb. - - -	London.
Mr. Allender - - -	Managing Director, Aylesbury Dairy Co. -	Horsham, Sussex.

SCOTLAND (16).

Mr. Spreull, F.R.C.V.S. - - -	Veterinary Inspector for Borough -	Dundee.
Mr. Cunningham, M.R.C.V.S. -	Veterinary Surgeon - - -	Edinburgh.
Mr. Rutherford, F.R.C.V.S. -	Veterinary Surgeon - - -	Edinburgh.
Mr. W. Cairns - - -	Dairyman - - -	Edinburgh.
Mr. Swan - - -	Live Stock Salesman - - -	Edinburgh.
Mr. Stenhouse, junr. - - -	Farmer - - -	Midlothian.
Mr. Biggar - - -	Farmer - - -	Dalbeattie.
Mr. T. Elliot - - -	Farmer - - -	Galashiels.
Mr. A. Mitchell - - -	President, Shorthorn Society - - -	Alloa.
Mr. Duthie - - -	Farmer - - -	Perthshire.
Prof. McFadyean, M.B., B.Sc., and C.M. -	Royal Veterinary College - - -	Edinburgh.
Mr. Speir - - -	Farmer - - -	Lanarkshire.
Mr. Drummond Forbes - - -	Landowner - - -	Perthshire.
Mr. Peel Ritchie, M.D. - - -	President, College of Surgeons - - -	Edinburgh.
Mr. Littlejohn, M.D. - - -	Medical Officer of Health - - -	Edinburgh.
Prof. McCall, F.R.C.V.S. - - -	Principal, Vet. College - - -	Glasgow.

IRELAND (6).

Sir Charles Cameron, M.D.	-	Medical Officer of Health	-	Dublin.
Mr. Gavin Low	-	Cattle Salesman	-	Dublin.
Mr. Chambers, M.R.C.V.S.	-	Veterinary Inspector	-	Drogheda.
Mr. Hedley, F.R.C.V.S.	-	Travelling Vet. Inspector, Irish P.C.	-	Dublin.
Prof. Carroll	-	Principal, Glasnevin Model Farm	-	Dublin.
Mr. Lawler, M.R.C.V.S.	-	Vet. Inspector, South Dublin Union	-	Dublin.

COLONIAL (6):

Hon. P. Vanderbyl	-	Stockowner, Member Leg. Council	-	Cape Colony.
Hon. W. McCulloch	-	Stockowner, Member Leg. Council	-	Victoria.
Mr. G. Watt	-	Stockowner	-	New South Wales.
Hon. W. J. Winter	-	Stockowner, Member Leg. Council	-	Victoria.
Mr. Fitzwilliam Wentworth	-	Stockowner	-	New South Wales.
Mr. Mitchell Innes	-	Stockowner	-	Natal.

OFFICIAL (2).

Mr. Cope, M.R.C.V.S.	-	Chief Inspector, Agricultural Department, Privy Council.	-	London.
Prof. Duguid, F.R.C.V.S.	-	Assistant Inspector, Agricultural Department, Privy Council.	-	London.

FOREIGN (1).

M. Lameris	-	Government Veterinary Surgeon	-	The Hague, Holland.
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I.

PLEURO-PNEUMONIA.

History.

5. The general history of pleuro-pneumonia points to its introduction into the United Kingdom about the year 1840, but, unfortunately, no accurate account of the earlier outbreaks can be discovered, as the official records only go back to 1869. From this return it appears that since 1869, 74,552 animals have been returned as attacked, 59,599 killed as diseased, 7,480 have died, and 7,470 recovered. Since the passing of the Contagious Diseases (Animals) Act of 1878, which required that all cattle attacked by pleuro-pneumonia should be slaughtered, no returns have been made of animals that recovered. It appears that outbreaks of disease have constantly occurred in England, Scotland and Ireland for nearly 50 years, but have been of more frequent occurrence and more virulent in type amongst the cowsheds of large centres of population, such as London, Edinburgh, and Dublin, than elsewhere. This is mainly attributable to the greater susceptibility of cows giving milk, and to the insanitary condition of the sheds in which they are kept.

6. The Highland and Agricultural Society of Scotland have recently instituted an inquiry into pleuro-pneumonia, and have taken evidence on that subject from several eminent and representative men in Scotland. We have had the privilege of receiving an epitome of the evidence thus taken, and have had an opportunity of re-examining some of the witnesses who gave evidence on that occasion.

7. Valuable as this evidence undoubtedly is, it is to be regretted that it was not published *in extenso* instead of in its epitomised form, inasmuch as some of the most important witnesses declared to us that, as at present published, it did not express the views which they desired to convey in their examination. We may state that, in addition to the evidence already referred to, we obtained much valuable documentary information, some of which will be found in the Appendix.

Appendix,
Cope.

Q. 7276.

Q. 3905.

Documen-
tary evi-
dence.

Q. 868.

8. Previously to 1885 pleuro-pneumonia had been steadily decreasing, but in that year and in 1886 and 1887 a considerable increase has taken place. The disease has been particularly prevalent in some parts of Scotland during this period, where the number of outbreaks increased from 55 in 1884, with 321 cattle attacked, to 324 in 1887 with 1,380 attacked, whilst up to June 1888 there have been 123 outbreaks and 493 cattle attacked.

9. The statistics for England for the same period, show in 1884, 257 outbreaks with 775 attacked, in 1887, 293 outbreaks and 1,047 attacked, whilst up to June 1888 there have been 113 outbreaks with 452 animals attacked.

10. The statistics for Ireland show that in 1884 there were 460 outbreaks with 1,194 animals attacked, in 1887, 240 outbreaks with 819 animals attacked, whilst up to June 1888 there have been 115 outbreaks with 395 animals attacked.

11. The following table shows the progress of pleuro-pneumonia in the United Kingdom during the past 10 years:—

GREAT BRITAIN.

Years.	Number of Outbreaks.	Cattle.			
		Attacked.	Slaughtered.	Died.	Recovered.
1878	1,721	4,593	4,488	114	
1879	1,549	4,414	4,296	119	
1880	1,052	2,765	2,681	88	
1881	729	1,875	1,797	78	
1882	494	1,200	1,161	39	
1883	349	931	897	35	
1884	312	1,096	1,074	20	
1885	404	1,511	1,469	42	
1886	553	2,471	2,409	63	
1887	618	2,437	2,384	52	

IRELAND.

1878	1,365	2,755	2,612	143	
1879	946	2,031	1,945	86	
1880	759	1,541	1,500	41	
1881	703	1,860	1,821	37	1
1882	534	1,355	1,328	28	
1883	488	1,291	1,264	25	2
1884	460	1,194	1,183	11	
1885	389	1,246	1,229	17	
1886	343	1,050	1,041	9	
1887	240	819	805	14	

12. The spreading of disease indicated by these figures can be clearly traced to the movement of infected cattle through fairs, markets, and auction marts, more especially in Scotland, and their unguarded and reckless admission into the cowsheds of towns. It has been shown that in the year 1887 89 per cent. of the fresh outbreaks have occurred on premises to which newly-purchased cattle had been introduced within the previous three or four months. That these newly-purchased cattle were infected and were the cause of the outbreaks is established by the fact that in most cases they were the first to become affected.

13. In the map attached to the Annual Report of the Agricultural Department for the year 1887, and annexed hereto, it will be observed that the outbreaks of pleuro-pneumonia were in the main confined to three districts in England; first, the metropolitan district, comprising the Metropolis itself, Essex, Kent, Middlesex, and Surrey; second, the north-western district, comprising the West Riding of Yorkshire, Lancashire, and Cumberland; third, the eastern, comprising Norfolk alone. In this last case it is interesting to notice that the counties immediately surrounding Norfolk appear to have been entirely free from disease, a singular condition, which will be considered hereafter when dealing with Ireland.

14. In Scotland, the same chart shows that the disease is practically limited to the central counties of Lanark, Edinburgh, Fife, Forfar, Perth, Dumbarton, and Inverness,

Agricultural
Report 1887,
page 13.
Q. 5731.
Q. 5681.

Distribution
of disease in
the United
Kingdom.

in which was comprised practically all the disease that existed during the past year in Scotland.

15. The deduction from the study of this very instructive map, is that pleuro-pneumonia is particularly prevalent in districts subject to two special conditions: first, in those districts in which town dairies are numerous, such as the metropolitan district in England and the Edinburgh district in Scotland; and second, in those districts which largely receive Irish cattle, such as the north-western district of England (Westmoreland excepted), which receives Irish cattle at the many ports on the coasts, and in Norfolk, which, in spite of its geographical position, is a large importer of Irish stock, chiefly coming through Liverpool, from Dublin, Dundalk, and Dundrum, and, therefore, specially exposed to pleuro-pneumonia.

16. In Scotland the same principle will be found to hold good. The evidence which has been laid before us by the Scotch witnesses is almost unanimously in favour of the opinion that a large per-centage of outbreaks were traceable to importations of diseased cattle from Ireland, through Glasgow and other ports. The number of outbreaks in Lanarkshire in 1887, viz., 73, the largest number for any single county in Great Britain, goes far to support this theory. The conditions, too, under which these animals are dealt with after arriving in Scotland, appears to be a fruitful source of spreading the disease. Cattle are moved through surrounding districts, exposed in open fairs and markets, and so not only form centres of disease themselves, but are the means of causing animals, which enter the fairs and auction marts healthy, to take away the seeds of disease with them.

17. It is true that attempts are made to diminish the risk of having diseased animals moved about the country, by requiring the production of certificates of health, and proof of their having come from healthy districts. We are, however, satisfied that the protection afforded by these certificates is in many cases wholly illusory, and that too often, in the words of several witnesses, they are "not worth the paper they are written on." In many instances this may arise from natural or accidental causes, but we regret to have to state that certificates are constantly tampered with wilfully by dishonest dealers.

18. The disregard, in many cases, of the restrictions upon the movement of cattle in Scotland, it is fair to say, does in some measure diminish the force of the accusations against Ireland which were made by every Scotch witness, and we cannot but believe that in some cases, when Irish cattle have been centres of disease, they may have contracted it originally from Scotch beasts with which they were brought in contact. Still, while this must be admitted, we are compelled to say that the evidence brought before us points to the conclusion, that the outbreaks of pleuro-pneumonia in England and Scotland are in a considerable measure traceable to the prevalence of that disease in Ireland. We desire therefore to lay before your Lordship the facts respecting the condition of pleuro-pneumonia in the latter country.

19. Ireland for many years has never been free from pleuro-pneumonia, but it is a very remarkable circumstance that, although the disease has been prevalent in that country for so long a period, it has been of late years almost entirely confined to Dublin, and to those districts of the eastern counties into which the cows from the dairy yards of Dublin are introduced. The importance of this fact in tracing the origin and importation of pleuro-pneumonia from Ireland to Great Britain will be immediately seen when we consider that the movement of stock in Ireland is almost invariably from the west to the east, and that the dairy yards and large grazing farms of Dublin and adjoining counties derive their supply of cows and stores from the southern and western parts of Ireland, and practically send back to these districts no stock at all. It is true that young calves are occasionally sent from the Dublin dairy yards to the western counties of Ireland, but they are very few in number, and are sent out at such an early age that the risk of spreading the disease is minimised, although one or two outbreaks are said to have found their origin from that cause. In this connection, it is worthy of note that whilst a large number of Irish cattle are received at Bristol, the district surrounding that port has been for several years entirely free from the disease, a fact which we may attribute to the cattle coming to Bristol being mostly exported from Cork and Waterford, which are outside the zone of pleuro-pneumonia in Ireland, whilst a very large proportion of the cattle coming to the north-western district of England and the Scotch ports, are exported from Dublin, Dundalk, and Drogheda, which are within or adjacent to the comparatively limited area which is infected. It is not to be supposed that all the diseased animals which come into Great Britain have been inhabitants of this infected area in Ireland for any considerable period; and it is also just to point out that many

animals, which afterwards spread the disease in Great Britain, come from absolutely healthy farms in Ireland. There is, therefore, no doubt in our minds but that they contract the disease whilst passing through the infected ports and from contact with diseased animals on board the steamers.

20. Many of the Scotch witnesses have complained of the laxity and carelessness of the inspection of cattle at the ports of embarkation in Ireland. It is quite certain that, not unfrequently, diseased animals do pass the portal inspectors, but we are not disposed to attribute this entirely to incapacity or neglect. From the nature of the case, the number of animals awaiting embarkation in a confined space is so large, and the time at the disposal of the inspectors so short, that it is impossible to expect the detection of all cases of disease, especially of pleuro-pneumonia, which is in its early stages so difficult of diagnosis. We find, however, that animals which have been in the same herd or cargo with animals stopped as diseased have been permitted by the inspectors to leave the ports, presumably through ignorance on their part of the extent of the powers vested in them. We therefore recommend increased vigilance and the detention of cattle in contact with the diseased animals at the ports of embarkation.

Inspection at
Irish ports.

Q. 4131,
6238.

Q. 8375-7,
8406-11.

Q. 8399-
8400.

Q. 8491.

21. It is therefore plain to us that, if our efforts to stamp out the disease in the United Kingdom are to be successful, it is absolutely necessary to attack it at the fountain head, and, whilst crushing every new outbreak in the United Kingdom, to devote our strongest energies to exterminate the disease in Ireland.

Q. 1413-16.
Q. 2071-72,
8391-2.

22. Having thus briefly laid before your Lordship a history of pleuro-pneumonia, so far as it has been brought before us, and of the extent to which it at present prevails in the United Kingdom, it now becomes our duty to describe the symptoms and nature of the disease, and also refer to the forms of treatment suggested by the witnesses whom we have examined.

Nature and Treatment.

23. Pleuro-pneumonia is a specific contagious disease affecting the lungs of cattle. It is characterised by the following symptoms as given in the Handbook of Contagious Diseases (Animals) Act and Order of Council for 1887. "The internal temperature is always increased, even in the earliest stages of the disease; it may reach 104° or 105° Fahrenheit. A short, dry, husky cough, which continues throughout and is easily excited by moving the animal, is one of the earliest symptoms. The breathing is increased in frequency and altered in character, is often accompanied with a grunt, and becomes painful as the disease advances. A dull sound is emitted on percussing the side of the chest over the diseased lung. Firm pressure applied to this part will cause the animal to shrink. The appetite is generally diminished, but rarely lost except in the advanced stages of the disease. In milch cows the secretion of milk is always lessened but not completely stopped."

Symptoms.

24. The post-mortem appearances of the lungs of an animal affected with pleuro-pneumonia which has died or been slaughtered are of so marked and distinctive a character that they ought never to be mistaken for other affections of the lung. The one special and peculiar feature is that when a cut is made through the diseased portion of the lung white bands are to be seen crossing and intersecting the darker structure, and presenting an appearance which is most aptly termed "marbling," and it may be accepted as a fact that no case of pleuro-pneumonia ever existed in which this characteristic feature was absent.

Post-mortem
appearance
of pleuro-
pneumonia.

25. There may or may not be pleurisy also present. Pleurisy is indicated by the presence of exudation on the outside of the lung or on the wall of the chest. This lesion is usually confined to that portion of the pleura which covers the diseased part of the lung, and is frequently very limited in its area. In aggravated cases, where there is extensive disease of the pleura, there is also effusion of fluid into the cavity of the chest.

Pleurisy.

26. Amongst the witnesses examined with reference to pleuro-pneumonia, there was a remarkable agreement upon the following points:—

Evidence.
Q. 6776-7,
4956, 5667,
7196, 7775.
Q. 5404, 8981.
Q. 4077-9,
4207, 4327,
7484, 4206,
4399, 7482,
4653, 4957-8,
5488, 5671-2,
6509.

(a.) That pleuro-pneumonia is an imported disease, and not indigenous to this country.

(b.) That it is an incurable disease, and therefore requires that the treatment should be of a preventive and not of a curative nature.

(c.) That disease is communicable by contact between living animals, and through the medium of the respiratory organs only.*

* A few of the witnesses expressed their belief that the disease might be conveyed by the infection of byres or sheds, but we could not obtain any actual facts to support this belief.

- Incubation.** 27. Another point which was prominently brought before us by various witnesses was the lengthened period during which pleuro-pneumonia exists in the animal in a latent form. As regards the length of this period of incubation, very conflicting evidence was given. Several witnesses contended that the disease developed itself within three months, whilst others maintained that it might remain dormant for a much longer time, some even stating that they had known cases of the development of the disease after no less a period than 15 months. The evidence tends to show that the period of 56 days, referred to in section 20 of the Contagious Diseases (Animals) Act, 1878, is quite untrustworthy and insufficient as a period of safety from infection. It is obvious that the peculiarity of the disease, viz., the uncertainty as regards the period of incubation, must add largely to the difficulties of detecting it in its early stages. It is, indeed, only by the use of the thermometer that this can, in some degree, be effected, though it should be remembered that the increase of temperature points to abnormal conditions, and should make the animal an object of suspicion, but does not necessarily indicate the specific nature of the disease.
- Q. 4103,
4428-34,
7099, 2656,
4655-60,
5712, 5816.
Q. 5240A,
6528, 8619.
Q. 5915,
6514.
Q. 5914,
6515-18.
- Difficulty of detection.** 28. It is plain that the difficulty of detecting pleuro-pneumonia during this very lengthened period of incubation adds enormously to the probabilities of the spreading of the disease, and the difficulty of bringing it within efficient control. We regret to have to add, that it has been made abundantly clear to us that, in many cases, this difficulty and danger have been increased by the great carelessness on the part of some stockowners and dairymen to report promptly the appearance of disease on their premises, whilst it is a matter of not at all unfrequent occurrence to find deliberate concealment of an outbreak, even where the symptoms are manifest and beyond doubt, and instances were brought to our notice where animals, manifestly suffering from disease, were exposed for sale in public markets.
- Q. 4643,
5310, 5317,
5341, 5740.
- Slaughter-houses.** 29. We cannot but regard the existence of private slaughter-houses as a very serious evil. When placed in crowded centres of population their insanitary effects cannot fail to be injurious; and they are, moreover, powerful aids to the concealment of all forms of diseases of animals. The witnesses we examined on this point were unanimously in favour of the erection of public abattoirs, such as are possessed by a very few of our principal cities, though they are to be found in almost all towns of any importance on the continent. We would therefore recommend that public abattoirs should be erected and maintained under the supervision and inspection of the Local Authority.
- Q. 7726-8,
8345.
Q. 7791-2.
- Town dairies.** 30. We have already pointed out that cowsheds are frequent centres of infection. This undoubtedly arises from the highly insanitary condition of, we regret to say, a large proportion of the dairies and cowsheds in many of our large towns.
- Q. 7030-2,
7637.
Q. 7849-50.
Q. 7642,
7929.
31. Apart from the injurious effects to the health of the surrounding population, a subject which is outside our inquiry, we would desire to point out, both on grounds of humanity and as tending to the extermination of disease amongst cattle, the necessity of a more stringent and systematic inspection of town dairies and cowsheds.
- Q. 8171,
8692-8.
32. We may here observe that there is a marked difference in the management of the dairy herds of Dublin as compared with those of London and Edinburgh. In the case of the latter the cows once admitted rarely, if ever, leave the sheds until they are sent fat to the butcher for slaughter, which generally occurs at the end of 12 or 15 months. In Dublin, on the other hand, the animals are kept for a much longer period, and are generally only confined to the sheds during the winter months, being sent to open fields, some at a considerable distance from the city, in the summer. Inasmuch as the Dublin cowsheds are now admittedly constant centres of disease, it is clear that this practice largely increases the difficulty of successfully dealing with pleuro-pneumonia in the Dublin districts. Moreover, it inflicts great injury and injustice upon the owners of healthy cattle in the grazing districts near Dublin, by the frequent introduction of diseased cows from the Dublin dairy yards into those districts, which would otherwise have been free from disease.
- Q. 7783,
7900, 8840.
33. In connection with this subject, by the kindness of the Aylesbury Dairy Company, we had an opportunity of inspecting their farm near Horsham, and cannot help expressing our admiration of the excellent arrangements for the comfort and health of the animals in the recently erected cowsheds, and the stringent regulations there in force to prevent any possible infection of disease from other sources.
- Suggested remedies.** 34. The three chief methods of dealing with pleuro-pneumonia which have been prominently brought before us in the course of our inquiry are all of a preventive and not of a curative nature. They are: (1) Isolation; (2) Inoculation; (3) Slaughter.

(1.) *Isolation.*

35. Isolation and disinfection have undoubtedly considerable sanitary value. They tend to limit the progress of the disease, and in some measure to palliate its results, but no evidence has been brought before us to show that they can be thereby regarded as a sufficient remedy for the evils which we have to confront. Those who have laid the greatest stress upon their efficacy, have only done so with the proviso that they should be employed in connection with some other more rigorous treatment, such as inoculation or slaughter. We find, however, that slaughter of all diseased animals, combined with isolation of those in contact, has hitherto failed to eradicate the disease.

Q. 7350,
7353.
9046-54.

(2.) *Inoculation.*

36. A large portion of our inquiry has been devoted to a searching examination of inoculation, as we feel that the appointment of the Committee was chiefly due to the representations of those who believed they had found in inoculation an alternative to the policy of stamping out by slaughter, as hitherto adopted.

37. There was a general agreement amongst all the witnesses we examined, both scientific and practical, as to the method of performing the operation. The fluid taken from the lung of the freshly-killed animal is conveyed into the system of the animal operated upon by a seton or incision at the end of the tail; but we find a considerable difference of opinion amongst those witnesses as to the ease or difficulty of performing the operation. Most of the English and Scotch witnesses alleged that the operation was one of considerable delicacy, and requiring the presence of a skilled operator, whilst, on the other hand, we found that in the colonies and in the London dairies it is constantly performed by the stockowners or their *employés*, without the intervention of any professional assistance. The per-centage of deaths that, directly or indirectly, resulted from the operation is not considerable, the general opinion being that it would never exceed 4 per cent. In many instances, however, the animal lost the whole or part of the tail from inflammation consequent upon the operation. The advocates of inoculation, however, do not regard these drawbacks as outweighing its advantages.

Nature of
operation.

Q. 4439.

Q. 4089.

38. The practice of inoculation, as a means of prevention, has never been generally adopted in this country, whilst it has been extensively carried out in the Australian and African Colonies for at least a quarter of a century. This fact is probably due to the exceptional circumstances attending the ownership of stock in the colonies. The large extent of the runs, the great size of the herds, the absence of power of isolation, and the want of strict inspection and control, the constant liability of cattle to disease owing to the practice of driving large mobs of fat stock (in almost all of which pleuro-pneumonia exists) from inland districts to the markets of Melbourne, Sydney, &c., compelled the stockowners to practise inoculation, as the only means at their disposal to limit and modify, if they could not entirely destroy, the disease.

Inoculation
in Colonies.

Q. 6705.

Q. 5451-55.

39. In this country inoculation is at the present time principally carried out in the dairies and cowsheds of the Metropolis, Edinburgh, and Glasgow, and in the counties of Lanark, Perth, and Fife. Throughout the country districts of England it has hitherto found little favour.

40. On a careful examination of the evidence given by the advocates of inoculation in this country, both lay and professional, we cannot fail to be struck by certain prominent features which diminish considerably the value of that evidence.

Doubtful
results of
inoculation.

(1st.) We find a general ignorance as to the previous history of the animals operated upon, a point which is of great importance, in view of the long period during which the disease may lie dormant, and the possibility that the animal inoculated might be already diseased, although apparently healthy. From the evidence laid before us it also appears, that cattle have been known to contract the disease after apparently successful inoculation.

Q. 6640.

Q. 5887-8,
5921,6563-5.

(2nd.) In the dairies of London and Edinburgh, where inoculation is largely practised, the life of the animal is in general so short that it affords us no reliable knowledge as to the immunity from disease conferred by inoculation, and in cases where the animal is released from confinement, we have very vague information as to its subsequent career.

Q. 7245,
7284,
9065-73.

(3rd.) But the point which above all others militates against our obtaining an accurate idea of the exact prophylactic value of inoculation, is the fact that it is not generally practised in this country, except in cases where an outbreak of pleuro-pneumonia has actually occurred. The mode of treatment adopted under such

Q. 5828-30,
6640.

circumstances is as follows:—The animals which are diseased, or suspected of being diseased, are slaughtered, whilst the rest of the herd are subjected to inoculation.

41. It is therefore impossible to determine what effect, if any, inoculation has had in suppressing such an outbreak in this country, inasmuch as, in a large majority of cases, we cannot be certain that after the slaughter had been carried out any diseased animals were left on the premises which would be likely to continue the disease. It might therefore be open to assumption that, even if inoculation had not been practised, the spreading of the disease would have been equally checked by the slaughter of the diseased or suspected animals.

42. On the other hand, the advocates of inoculation not unfairly point out that, in cases where inoculation may be said to have failed, such a result might have been attributable to the inefficient manner in which the operation was performed. This is a further illustration of the uncertainty and doubt which we have found throughout the whole of the evidence regarding the practice of inoculation.

Value of
inoculation.

Q. 6624-27

Q. 7074.

43. While we cannot deny that inoculation, in itself, is valuable, as a palliative and preventive method of treatment, it is clear to our minds that its employment in this country is impracticable, as with the present knowledge on this subject at the command of veterinary science, and under the recognised position of agriculture, it is impossible to employ this method under the only conditions that might render its operation successful. These conditions include :

- (a.) Performance of the operation by competent men, specially appointed for the purpose in all parts of the United Kingdom ;
- (b.) Its employment universally and compulsorily upon all cattle above three months old.

Q. 8930.

Therefore, even if accompanied by other measures, it cannot be depended on as an efficient means of exterminating pleuro-pneumonia.

Result in
Colonies.

Q. 5465-67.

44. Throughout our Australian, New Zealand, and South African Colonies inoculation has been practised on an extensive scale for a long period, but neither universally nor compulsorily, and has been proved incapable of extirpating pleuro-pneumonia. Most of the colonial witnesses, whom we examined at great length, were of opinion that, without inoculation, the disease would have spread more widely and more rapidly than it did, whilst some considered that it arrested the disease in their herds. It is plain that some importance is attached to inoculation in the colonies, from the fact that in many cases inoculated cattle command a higher price than those on which the operation had not been performed.

Q. 6724-8,
6771-5.

45. From the evidence of the colonial witnesses, however, it is quite certain that their advocacy and practice of inoculation is based upon, and limited to, the special circumstances of their respective countries, to which we have above referred ; for it will be seen, on a perusal of the evidence, that they universally admitted that, were the conditions of stock-owning in the colonies similar to those which prevail in England, with its small herds, greater power of detection and isolation, they would unhesitatingly adopt compulsory slaughter as the surest and most economical means of exterminating the disease.

America.

Q. 4741-6.

46. It must be taken into account that in America the feeling against inoculation is so pronounced, that any animals, bearing the trace of the operation, are only admitted into the country under a quarantine which is practically prohibitive.

The Nether-
lands.

47. Further evidence of the inadequacy of inoculation, as hitherto practised, to eradicate pleuro-pneumonia is furnished by the history of the disease in the Netherlands. In that country pleuro-pneumonia has been known to exist since 1833 (it was, indeed, from thence that the disease was first brought to the United Kingdom in 1840), and from that period until 1885 it prevailed to an enormous extent, and the injury it inflicted will be readily understood, when we remember that Holland possesses a larger head of stock per acre than any other country in the world. In the Report of the Agricultural Department of the Privy Council for 1885 will be found an interesting account of the progress and treatment of the disease in the Netherlands.

48. We have, with your Lordship's approval, and the sanction of Her Majesty's Treasury, summoned before us M. Lameris, one of the Government veterinary surgeons, residing at the Hague. In view of the fact that Holland is the only country in the world from which, after having obtained a good foothold, pleuro-pneumonia has been eradicated, the evidence of this gentleman possesses considerable interest and importance.

49. From the evidence of M. Lameris it appeared that for many years inoculation was practised by owners of cattle, and so impressed were they by the benefits which

appeared to result from that operation, that they petitioned the Government to make the inoculation of cattle in Holland universal and compulsory. The Ministers, however, declined to accede to this request, not only on the ground of expense, but because of the difficulties attendant on the carrying out of such a law, and of obtaining sufficient inoculating material.

50. In 1871 an order was issued for the compulsory slaughter of all actually diseased animals, compensation being paid out of the Royal funds. After three years, compulsory inoculation of suspected cattle was also employed, though not universally. These combined methods of treatment, however, although reducing the disease, failed to eradicate it, and therefore the system of stamping out was adopted, and since 1885 the Netherlands have been practically free from pleuro-pneumonia.

Q. 6660-62.
Q. 7114.

51. M. Lameris was very decided in his opinion that compulsory inoculation could not have cleared his country of disease; that stamping out was the safest and most certain way of attaining this result, and proved, in the long run, to be the cheapest.

Q. 7126-7127.

52. In considering the efficacy of inoculation as applied to this country, a distinction may fairly be drawn between ordinary farm stock, which is kept in the open air under natural conditions, and is constantly being moved about the country; and the cows which are kept in town dairies and cowsheds, which for the most part never leave these buildings except for slaughter. As applied to the former class of animals we are decidedly of opinion that inoculation, even if practicable, would be a method of treatment at once expensive, uncertain, and even possibly dangerous. With regard to cows in town dairies and cowsheds, we understand that the circumstances are somewhat exceptional. In the first place, animals are subject to closer control, with better opportunities of inspection, whilst dairymen complain, and not without some cause, of a certain disturbance to their trade by the compulsory slaughter of their entire stock. These exceptional circumstances may possibly be held to justify an exceptional treatment, which we will more fully indicate when dealing with the recommendations we shall have to offer.

Exceptional case of town dairies.
Q. 5845-57.

Q. 4016.

(3.) *Slaughter.*

53. The evidence before us abundantly proves that, where properly and thoroughly carried out, slaughter has always been successful in completely eradicating pleuro-pneumonia. In cases where the result has been less satisfactory, it is undoubtedly traceable to various neutralising influences. Prominent amongst these are to be noticed the unwillingness on the part of Local Authorities to incur large expenses with the unpopularity of heavy rates, and a consequent laxity in carrying out the slaughter of diseased herds. To this feeling, too, in many districts may be attributed the advocacy of inoculation as opposed to compulsory slaughter. In proof of this, we will call attention to the remarkable admissions made by several witnesses from the districts where inoculation is popular, that if the compensation for slaughter were payable from the Imperial exchequer instead of the local rates, they would advocate slaughter in preference to inoculation. In such districts, therefore, the controversy as between inoculation and slaughter resolves itself merely into a question of finance.

Q. 6543.

Expense.
Q. 8461, 8973.

Q. 6338-9, 6369-70.
Q. 9161-2.

54. Another cause which militates against the success of slaughter we have already alluded to, viz., accidental or wilful neglect on the part of stockowners to report disease. As an illustration of this latter point we would instance the case of Lanarkshire. In that county the slaughter of diseased and suspected cattle has been carried out at a large expenditure of money. It is, however, unfortunately the fact, that Lanarkshire is still largely infected with disease, and this we attribute to the distribution of infected animals, through the fairs and markets of the county, and to the existence of unreported centres of disease. The conclusion which we draw from this is, that whilst rigorous slaughter is a necessary part of any system of stamping out, it is still to be regarded only as a part, and must be accompanied by a very strict supervision of fairs and markets, and the general movement of cattle throughout the country, and also by a more vigorous enforcement of the penalties for concealment of disease.

Concealment of disease.
Q. 4094-5, 4643, 6856, 6960, 7016, 8873.

55. We regret to say that the system of inspection adopted by Local Authorities is, in very many cases, highly unsatisfactory. Many of the veterinary surgeons, employed as inspectors, are young men, of small experience, and, consequently, in some degree, irresponsible. It is desirable that Local Authorities should select men of higher professional qualifications, at a scale of remuneration which may induce them to sacrifice, if necessary, a portion of their private practice. Such officials should be responsible for the condition of their district, and for its proper supervision by their

Veterinary inspectors.
Q. 6476-78, 5679, 8455, 8884-89.
Q. 5902, 5946-9.
Q. 6503-4, 8707.

subordinate inspectors, if any. From an adoption of this system we believe that much advantage would ensue.

Reports.
Q. 6493-5.
Q. 6535,
8147.

56. We regret to have found great want of knowledge on the part of inspectors of Local Authorities, in reference to the diseases of live stock, in this and other countries, which are annually reported on in the Veterinary Reports of the Agricultural Department. We consider that all the Reports relating to this subject should be distributed, as they are issued, to Local Authorities, for their own information and that of their inspectors. We also think that it would be advisable that the Consular Reports, referring to outbreaks of cattle disease in foreign countries, should be published as they are received, and issued in a similar manner.

"Contact."
Q. 6510,
7500, 3720,
4219.

Q. 4219,
3720, 6510-
12, 6603-7.

Q. 4039.

57. The third of the antagonistic influences to which we allude is the inability or disinclination of the Local Authorities to define the meaning of the term "contact." It must be admitted that there are considerable difficulties in the way of determining with accuracy this expression. We have found conflicting evidence as to the distance to which the disease might be carried from one animal to another; some witnesses put 1,000 yards as a safe distance, whilst others believe that a small space, such as the breadth of a road or a thick hedge, would be sufficient protection. These opinions, of course, only refer to animals living in the open air, where the general conditions are natural and healthy, and the poisonous breath is largely diluted. In covered buildings, where thorough ventilation is seldom found, the poisonous exhalations dwell in a more concentrated form, and are more readily conveyed from one animal to another. The uncertainty as to the definition of contact has produced great want of uniformity of action, by enabling Local Authorities to interpret it with greater or less laxity according to their own feelings or prejudices. It must also be remembered that it was not until the issue of the recent Order of Council, dated March 10, 1888, that the slaughter of animals in contact was made compulsory, instead of being left, as hitherto, to the discretion of Local Authorities. It is not therefore surprising that amongst conflicting interests, financial or otherwise, and under the influence of preconceived opinions, there should have been total absence of uniformity of action, and in many districts a lack of vigorous treatment.

Q. 4622,
5202, 5177,
6189, 6530-
33.

Compulsory
slaughter
order.

58. The compulsory slaughter clauses of the Order of Council of March 1888 are as follows:—

Slaughter of Cattle exposed to infection of Pleuro-Pneumonia.

"1.—(1.) A local authority shall cause all cattle being or having been in the same field, shed, or other place, or in the same herd, or otherwise in contact, with cattle affected with pleuro-pneumonia to be slaughtered within ten days after the fact of their having been so in contact has been ascertained or within such further period as the Privy Council may in any case direct.

"(2.) A local authority shall cause all cattle which have been certified by an inspector of the Privy Council to have been in any way exposed to the infection of pleuro-pneumonia to be slaughtered within such period as the Privy Council may direct.

"(3.) All cattle by this article required to be slaughtered shall be kept in a shed or other place approved by the Privy Council, and shall not be moved therefrom except for slaughter as herein-after provided."

In order to meet the difficulty of more correctly defining the term "contact," we are of opinion that Article 1 of the Slaughter Order, 1888, should be amended by the addition, after the words "pleuro-pneumonia," of the words "or being or having been otherwise exposed to the infection thereof."

Slaughter in
Dublin.

Q. 8566-70.

Q. 4108,
4112,
7087-9.

59. In the case of Dublin, to which we desire especially to refer, nearly 1,500 animals have recently been slaughtered under this order. A post-mortem examination of their carcasses was made under the supervision of Mr. Hedley, the travelling inspector under the Irish Privy Council, and it is important to notice that in many animals, which presented no obvious external appearance of disease, there were found extensive indications of pleuro-pneumonia. This instance is so remarkable that we desire to give it in detail. The entire number of animals slaughtered was 1,486, of which 956 were found upon a post-mortem examination to be healthy, and 530 diseased; of these 530, 174 were found to show symptoms of recent disease, whilst no less than 356 are described as "old cases." We may explain that "old cases" are those in which the animals after having been attacked by pleuro-pneumonia have apparently recovered, although a cyst had been formed in the lung. When it is remembered that each of these "old cases" may be capable, in certain circumstances, and for an uncertain

time, of propagating the disease, the great value of the recent slaughter order, under which these animals were destroyed, at once becomes apparent. But, as we cannot believe that all the diseased cows in the Dublin district have been included in the above number of 530, we make a special recommendation herein-after with reference to this district.

60. In view of these facts, we have no hesitation in expressing our approval of the policy now being carried out by the English and Irish Privy Councils, and we are convinced that, although from the peculiar and insidious nature of the disease, the result may not be immediate, still we cannot hope for the extermination of pleuro-pneumonia in this country except by a vigorous persistence in this policy.

Compensation.

61. The scale of compensation at present given, and the manner in which it is assessed, seems to us to give general satisfaction. Some exceptions to this, however, must be made. The owners of valuable herds of pedigree stock, whilst they are disposed to acquiesce in the present maximum limit of 40% laid down by the Act, complain that in many cases valuers have not given them any increased value above that of ordinary farm stock for pedigree animals slaughtered.

62. The chief complaints, however, have come to us from the dairies of London and Edinburgh, the dairymen having protested against a valuation which only takes into account the market value to the butcher of the animal slaughtered, whilst its actual market value, as a milch cow, is left out of consideration; and also on the ground that no allowance whatever is made to them for the pecuniary injury they sustain to their business, nor for the loss from the breaking of contracts for supply of milk. We are not able to agree with the demand for compensation for disturbance of trade, for this must be regarded as forming a portion of the risk which a dairyman has to face on entering his business; and we believe that it can be to a considerable extent minimised, by bringing milk from country districts by rail, as is done to a considerable extent in England already, where it has been found practically feasible, owing to the improved scientific methods of refrigeration and the increased facilities of transport. While, however, we cannot admit the justice of a claim for loss of trade, we fully recognise the hardship which dairymen now suffer from having their stock valued for purposes of compensation at their value to the butcher, which in the case of dairy stock is low, whilst they have had to pay for them on the basis of their dairy value. We believe, therefore, that in the interests of justice, and to avoid friction in the administration of the order, Local Authorities, or whatever body is entrusted with the administration of the law, should instruct their valuers to award compensation for the animals slaughtered on the basis of their value for dairy purposes.

63. A large majority of the witnesses have taken exception to the sources from which the compensation fund has been derived. Their contention was that, inasmuch as the eradication of pleuro-pneumonia from the country is of national importance, and as the Local Authorities are compelled to act under the directions of the central authority in London or Dublin, the money necessary to carry out these orders should be derived from the Imperial exchequer, as in the case of the cattle plague, instead of being thrown, as at present, upon the local rates.

64. This, in our opinion, is a question which must depend upon the nature of the authority to whom, from time to time, the administration of the Act may be entrusted. It is obvious that if it should be deemed desirable to transfer to any large extent the powers now exercised by the Local Authorities to a central board, it would be impossible to impose upon the ratepayers of any special district the whole of the expense of carrying out the instructions of the central authority. We may observe that during two of the outbreaks of cattle plague, when the whole power of dealing with it was vested in the Privy Council, the expenses consequent upon their administration were defrayed out of the Imperial exchequer.

Administration.

65. We have, therefore, now to consider in whose hands the administration of the Contagious Diseases (Animals) Acts, as applied to pleuro-pneumonia, can be most satisfactorily entrusted.

66. In Great Britain at present, whilst the Animals Orders emanate from the Privy Council, their direct administration is vested in the various Local Authorities throughout the country. The result of this has been that although there has been a

Q. 658
8397, 8683.
Q. 8348-9,
8690.

Q. 6526-7.
Q. 6620,
8895.

Q. 7074-6
8457-9.

Q. 6192.
Q. 7290,
9142.

Q. 4734-37.

Compensation for
dairy stock.
Q. 7030,
7419-21.

Q. 4675.

Q. 4164,
4169, 7266,
6075-80,
7789, 7892-
95.

Q. 7366,
7371.

Source of
compensation.

Q. 4625,
8752-3.

Great
Britain.

Q. 7824. uniformity in the Orders issued, there has been considerable diversity in the manner in which they have been carried out. We find that the Orders of Council have been most loyally and effectively administered in various counties, whilst we regret to say that the same vigour has not been in all instances displayed by their neighbours. An obvious hardship arises from this, inasmuch as the counties which loyally enforce the Acts are burdened with a heavy expenditure, without having that security which they have a right to demand against the importation of fresh disease from the adjoining counties. The complaints which we received from Aberdeenshire and other counties upon this point were sufficiently convincing.

Ireland. 67. The administration of the Acts in Ireland is practically the same in its method, being carried out by the Local Authorities under the Irish Privy Council. It will thus be seen that, so far as the administration of the Acts is concerned, Great Britain and Ireland are independent of one another. From this it may conceivably result, although we are happy to say it is not so at present, that an antagonism of opinion might arise between the English and Irish Privy Councils, which would be most detrimental to our prospects of finally getting rid of pleuro-pneumonia. Seeing the mutual dependence of Great Britain and Ireland, one as the importer and the other as the exporter of cattle, it is a matter of the highest importance that there should not be left any possibility of any such antagonism arising in the future. This, we believe, might best be secured by placing the administration of the Contagious Diseases (Animals) Acts in the United Kingdom under one central authority, as herein-after set forth.

Q. 5204,
5232, 5281,
6219-23,
6037.

Experiments.

Q. 4447,
4450.
Q. 4997-8,
6678.

Q. 4985,
8831.

68. In the evidence which has been brought before us we have found very conflicting opinions as to the necessity or practical value of experiments on inoculation as a remedy for pleuro-pneumonia. Many of the advocates of inoculation on the one hand declared that their faith in its efficacy required no confirmation, whilst its opponents maintained that, the only object being to get rid of pleuro-pneumonia as quickly as possible, it is undesirable and illogical to perpetuate the disease in order to carry out experiments, which after all could be valuable only on the most abstract scientific grounds.

69. Most of the witnesses, however, were decidedly adverse to any experiments being carried out if the policy of compulsory slaughter as at present being pursued were to be in any way weakened or impeded thereby.

70. With this opinion we desire to express our entire concurrence. We consider that if it should be deemed necessary or desirable that further experiments should be conducted, they should be commenced on the clear understanding that the investigation is undertaken entirely in the interests of science, and without any reference to the measures proper to be adopted for the extinction of the disease.

Q. 4952,
4982-88,
5177-9,
6032-5,
6051.

71. Having regard to the experience of all countries in which pleuro-pneumonia has existed, we do not think it likely that experiments would result in the discovery of any preventive measure which would be more effective, expeditious, or economical than the stamping-out system, which has always succeeded in extinguishing contagious maladies wherever it has been promptly and rigidly adopted.

Q. 6546.

Q. 5191-93.

Q. 4999-
5002.

72. It is, however, right to point out that for many years past inquiries and experiments as to the nature of pleuro-pneumonia, extending over a considerable period, have been conducted in this and other countries. We believe, and we are supported by almost all the evidence before us, that any experiments on the subject of inoculation would have to be extended over some years, and would be attended with considerable expense and a slight, but conceivable, risk to the cattle in the surrounding districts.

SUMMARY OF RECOMMENDATIONS.

73. It now remains for us to lay before your Lordship a summary of the recommendations on the subject of pleuro-pneumonia, which we have to offer, and which are based upon the considerations above detailed.

74.—(1.) That the system of compulsory slaughter be applied not only to all diseased cattle, but also to all cattle which have been in association with them, or otherwise in any manner exposed to the infection of disease.

75.—(2.) Compulsory slaughter should be accompanied by supplementary measures, such as restrictions on the movement and sale of cattle within, or coming from, infected districts.

76.—(3.) Any exception to, or modification of, the system of compulsory slaughter, as provided in the Slaughter Order, 1888, should only be applicable to cattle in the dairy yards, byres, and cowsheds of large towns, the owners or occupiers of which may claim in writing the privilege of exemption for their cattle from immediate slaughter, on the following conditions:—

- (a.) No head of cattle that has been brought into such dairy premises shall be removed therefrom, except for the purpose of immediate slaughter.
- (b.) In the event of an outbreak of pleuro-pneumonia, all the diseased cattle shall be slaughtered.
- (c.) All the remaining cattle on such premises where an outbreak has occurred shall be branded, and regularly subjected to the thermometer test; and whenever a continuous increase of temperature, rising above 104° , is shown, they shall be slaughtered.
- (d.) No fresh cattle shall be admitted into such premises while any of the cattle thus branded remain alive.

77.—(4.) Inoculation, for the reasons already detailed, cannot be recommended as a means of eradicating pleuro-pneumonia, nor as practicable under existing conditions. Although it is open to owners to inoculate their cattle, it should be distinctly understood that that operation shall not give them any immunity from the regulations above suggested.

78.—(5.) The scale of compensation for animals slaughtered compulsorily should remain as at present. In the case of dairy cows, however, compensation should be awarded upon the basis of their value for dairy purposes, and not of their value to the butcher.

79.—(6.) We recommend that, in order to put a stop to the frequent concealment of disease, a more stringent scale of penalties be put in force.

- (a.) That, for the first offence, the penalty should not be less than one-quarter of the present maximum penalty.
- (b.) For the second offence, not less than one-half.
- (c.) For the third offence, not less than three-quarters.
- (d.) The full penalty for any further offence.

The above to be irrespective of anything contained in the Summary Jurisdiction (Scotland) Act, 1881.

80.—(7.) The administration of the Contagious Diseases (Animals) Acts throughout the United Kingdom, so far as they refer to compulsory slaughter and to the treatment and control of animals in herds or on premises where an outbreak of pleuro-pneumonia has occurred, or in the surrounding area, shall be subject to, and under the direction of, a central authority.

81. Local Authorities shall continue to exercise all the powers that they at present possess, subject to the foregoing transfer of control to the central authority in the case of an outbreak of disease.

82.—(8.) In all cases of compulsory slaughter, compensation should be provided from a national fund, whether drawn from the Consolidated Fund, or from a national rate specially levied for this purpose. All other charges—such as for inspection, disinfection, &c.—should be defrayed from a local rate, as at present.

83.—(9.) It is highly desirable that the system of appointing veterinary inspectors by Local Authorities should be amended. Under each Local Authority there should be one responsible inspector, and care should be taken to secure the services of duly qualified and experienced veterinary surgeons.

84.—(10.) Throughout the United Kingdom district inspectors should be appointed by the central authority, under whose direction they shall be, and to whom only they shall be responsible. Whether this system be adopted for the whole of the country or not, it is, in our opinion, highly desirable that it should be at once put into operation in those districts which we have already indicated as specially infected with disease.

85.—(11.) A more rigorous and careful inspection of town dairies and cowsheds is most urgently needed. We consider that every encouragement should be given to the removal of such establishments from crowded centres of population, and we would suggest the advisability, where possible, of suitable buildings being erected by corporations or other authorities, and let out to dairymen and cowkeepers.

86.—(12.) A special system of inspection, and further restrictions upon the movement of dairy cows, should be immediately established in the Dublin districts.

87.—(13.) Wherever practicable, Local Authorities should be called upon to erect public abattoirs as a substitute for private slaughter-houses.

88.—(14.) Believing, as we do, that it is only by uniformity of action that we can hope to contend successfully with pleuro-pneumonia, we desire to express our firm conviction of the desirability of vesting the administration of the Contagious Diseases (Animals) Acts in a single governmental department, which should be sufficiently representative of the United Kingdom of Great Britain and Ireland.

89.—(15.) In the event of its being deemed advisable to conduct an experimental inquiry into the nature of pleuro-pneumonia and its preventive treatment by inoculation, we recommend that such inquiry should only be carried out under the following stringent regulations:—

(a.) By a board of experts duly appointed by the Government, and on premises specially set apart and licensed for that purpose.

(b.) No cattle entering such premises should ever be permitted to leave them except for the purpose of immediate slaughter, and under charge of an officer, who shall see that the slaughter is duly carried out.

JACOB WILSON (Chairman).
CLONCURRY.
GEO. MACPHERSON GRANT.
PATRICK STIRLING.
J. BOWEN JONES.
VICTOR HORSLEY.
G. T. BROWN.

RICHARD DAWSON (Secretary),
44, Parliament Street, S.W.
July 10, 1888.

II. TUBERCULOSIS.

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." Nomenclature.

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*, *pinning*, 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 parasitic micro-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 until 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. Vitality and power of resistance of the microbe.

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 98·5° to 100·5° Fahrenheit, but if the temperature falls to about 82° Fahrenheit such growth ceases. Though, however, cold thus prevents its development, it does not kill it, whereas if it be kept at a temperature of about 107·5° Fahrenheit 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,

* Some very slight differences have been shown to exist in the dimensions and the distribution in the body of the *bacilli tuberculosis* found in the human and bovine disease respectively. All authorities regard these differences to be due to the difference of soil in the two cases, and that no difference in the nature of the organism is thereby indicated.

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 dessication. Numerous experiments, however, have been made upon expectoration containing the bacilli. Such expectoration has been dried during very considerable periods, viz., 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.

Q. 4898,
5098, 8085,
8808
Paragraphs
24, 69, et
seq.

Food of the
bacillus.

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.

Animals
attacked.

12. The tubercle bacillus does not attack all domesticated animals equally. Arranging them in order of respective liability to the disease, they are as follows:—

Man.	Goats.
Milch cows.	Sheep.
Fowls.	Horses.
Rodents.	Carnivora, <i>i.e.</i> , dogs, cats, &c. (very rarely).
Pigs.	

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

Circum-
stances pre-
disposing an
animal to
attack.

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 heredity (*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 especial proclivity of milch cows to contract the disease is, to a considerable extent, due to this factor as well as to that expressed in Article 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 Q. 7528 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 sub-cutaneous or sub-mucous 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. Inhalation.

23. Co-habitation, 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. Swallowing. Q. 7529.

25. It is obvious, therefore, that the digestive fluids do not necessarily exert an injurious influence upon the poisonous bacilli. Q. 4909.

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* pars. 37 and 42). Direct introduction.

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. Q. 4891, 4892.

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. Heredity.

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 Johne, 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. Q. 2884.

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* Articles 79-80).

Q. 3932,
3634, 7551.

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 subsequently 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.

See Treatment,
par.67

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 pleuræ 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 the 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.

See Question and
Appendix.

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 tough fibrous tissue of the tubercular nodule is well seen in the grape-like 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 of both 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.

See also
pars. 24, 61,
73.

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 symptoms, such as a dry cough, &c.

Constitutional
symptoms pro-
duced by tuber-
culosis, and
mode of its
termination.

See Article
49.

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.

See Appen-
dix.

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 per-centage is still higher, in others lower. Among Ayrshire dairy cattle, 25 per cent., Question 835; 50 per cent., Question 4262; 30 per cent., Question 5371; 4·5 per cent., Question 5582; 3·5 per cent., Question 5360; 37·5 per cent., Question 7620; 2 per cent. of all animals, *i.e.*, cows, oxen, &c., killed at Edinburgh, Question 7684. 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.

See pars. 8,
9, 17, 22, 23.

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.

Q. 8013.
Q. 7947,
et seq., 8050.
Par. 70,
Q. 8048,
et seq.

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

Q. 2858,
4245.

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.

Q. 4233,
4848, 5062.

Q. 2863,
4470, 4560.

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.

See pars. 69,
70.

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.

See Q. 8029
and text-
books.

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.

1. Improved
hygiene of
cattle sheds.

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. 87), 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.

See Q. 2867,
2868.
2. The
exposure,
sale, and
disposal of
diseased
animals and
carcasses.

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 Health 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.

Q. 4302.

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 purposes 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.

Q. 8110.
3. Importa-
tion of
animals.

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 12 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. Q. 1741.

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. See Q. 8103, 8104, 8105, 8106.

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. Q. 2880. 4. Breeding.

B.—*Extirpation.*

80. In order to ensure 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:— To be scheduled in C. D. (A.) Acts.

(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. Notification.

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. See Q. 577, 837, 2861.

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. Q. 2879.

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.

86.—(3.) *Payment of compensation for loss of the animal.*—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. Compensation.

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.

* Sec. 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."

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.

We desire to express our thanks to Mr. Richard Dawson for the great assistance he has rendered to us as Secretary to the Committee, and to testify to the conspicuous ability with which he has discharged the duties of that office.

JACOB WILSON (Chairman).

CLONCURRY.

GEO. MACPHERSON GRANT.

PATRICK STIRLING.

J. BOWEN JONES.

VICTOR HORSLEY.

G T. BROWN.

RICHARD DAWSON, Secretary,
44, Parliament Street, S.W.
July 10th, 1888.

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.
2. Notification of the existence of the disease.

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 affected 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.

2. *Notification of the Existence of the Disease.*

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 ensure the thorough carrying out of the provisions of the Contagious Diseases (Animals) Act.

That deliberate non-notification should be punished cannot be doubted by anyone. 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.

VICTOR HORSLEY.

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