

Pleuro-pneumonia in cattle : extracts from various authorities as to the fitness of the flesh for food / Metropolitan Board of Works.

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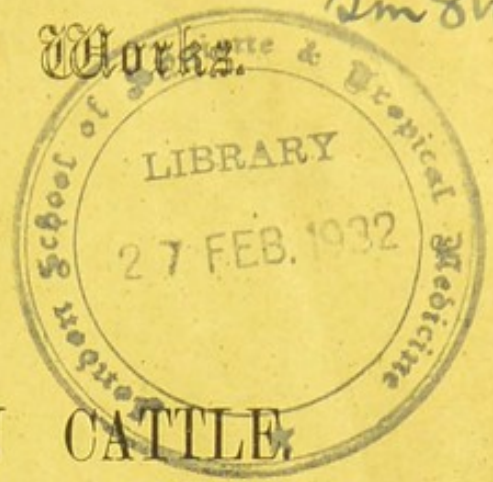
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Metropolitan Board of Works.



PLEURO-PNEUMONIA IN CATTLE.

EXTRACTS FROM VARIOUS AUTHORITIES

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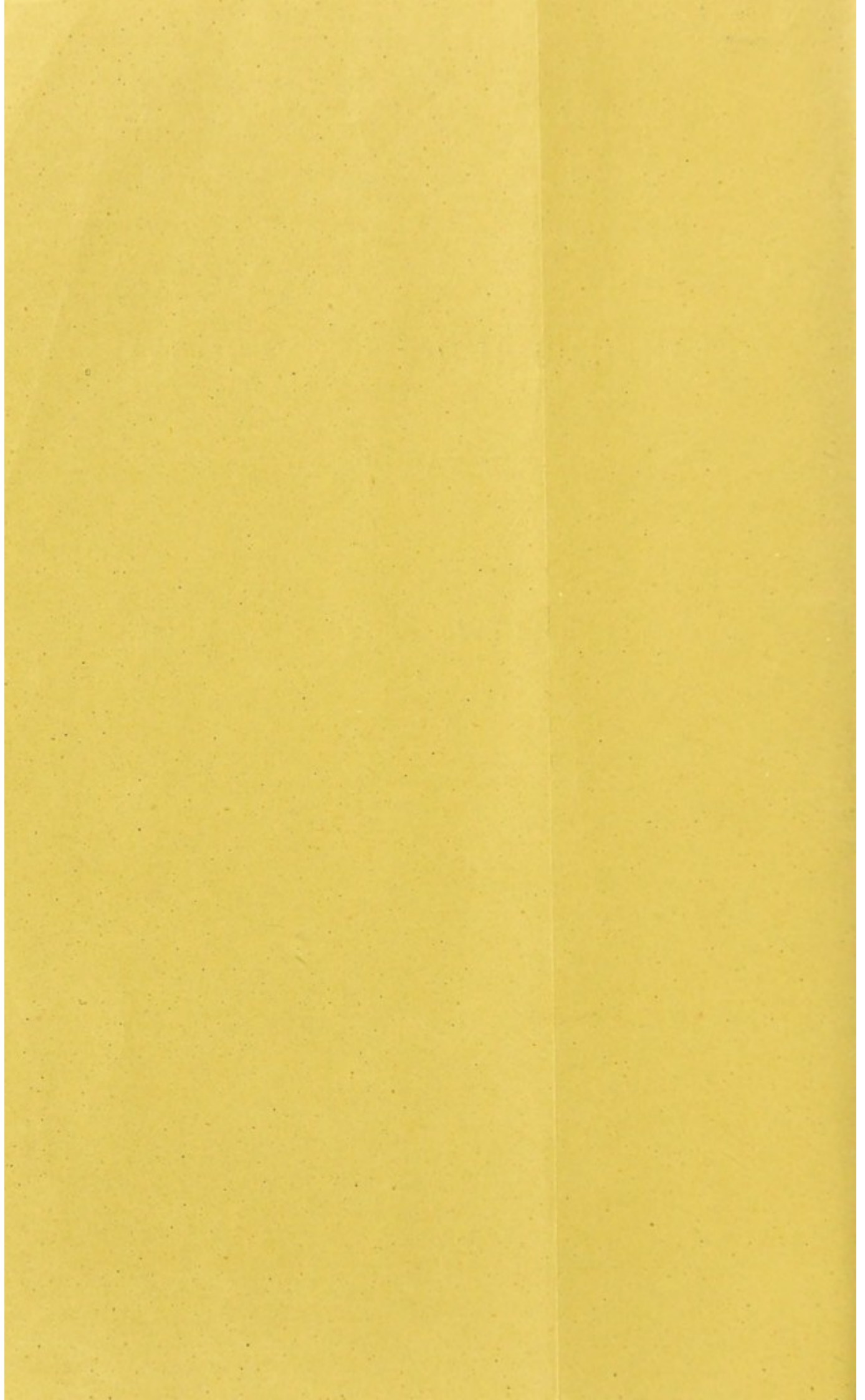
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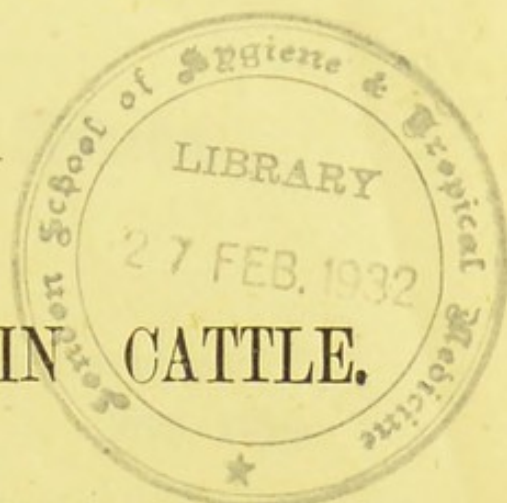
*Printed by order of the Special Purposes and Sanitary Committee,
4th May, 1880.*

[No. 953.]



Metropolitan Board of Works.

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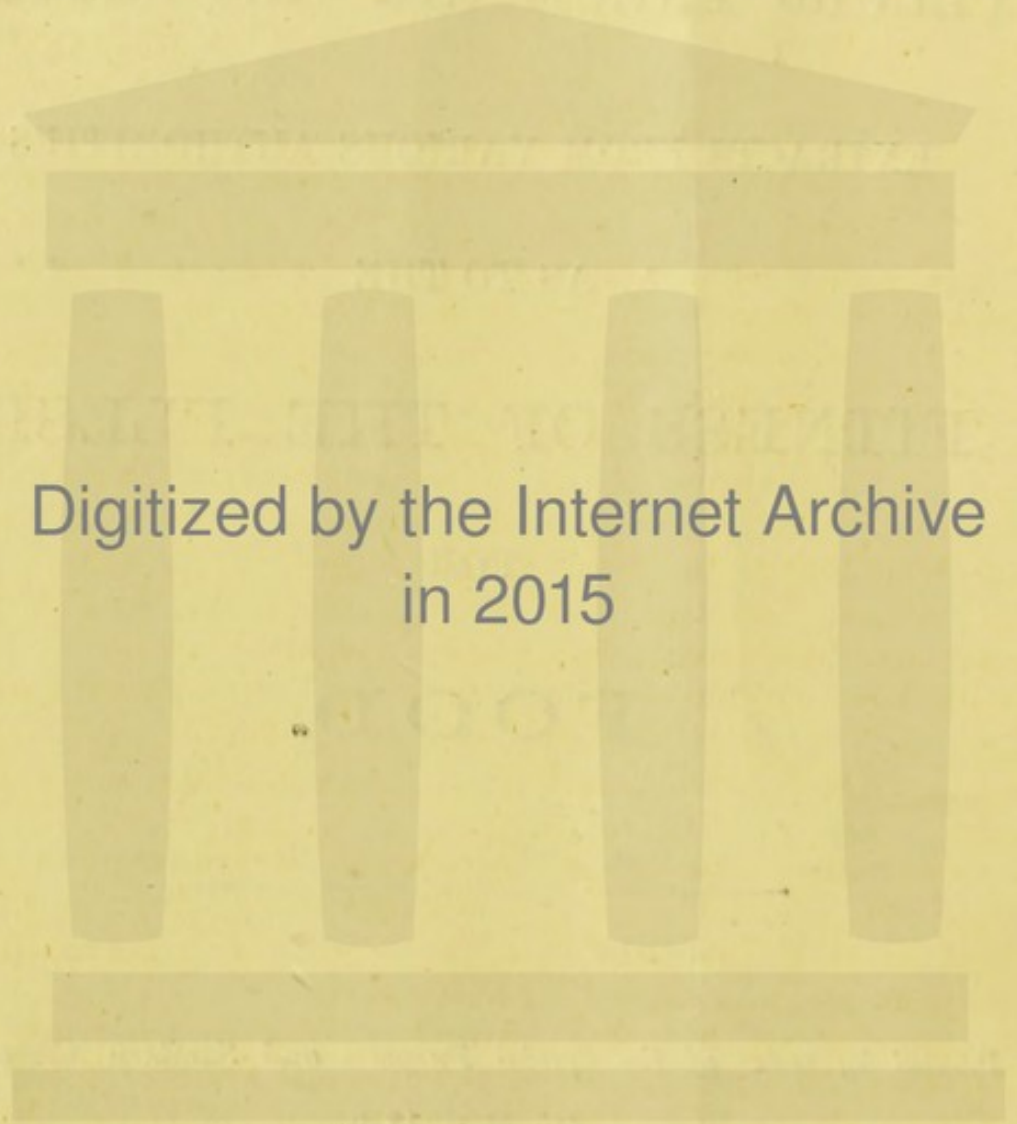
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Metropolitan Board of Works.

SPRING GARDENS,

May, 1880.

At a Meeting of the Special Purposes and Sanitary Committee, held on the 4th May, 1880, the following notice of motion given by Dr. Brewer was considered, viz.—“That it is not desirable that the Board should, in future, suffer the carcasses of the animals slaughtered by their order affected with pleuro-pneumonia to be sold for food.” After some discussion the Clerk was instructed to prepare a statement of any facts or authoritative opinions which he could ascertain bearing upon the use for food of the flesh of animals slaughtered in consequence of their being affected with pleuro-pneumonia, and to consult the Solicitor as to the obligations of the Board with reference to the sale of the meat. The information was to be printed and sent to the Members of the Committee as soon as possible.

In obedience to the foregoing directions, I have caused careful enquiry to be made whether any positive evidence, based upon actual experience, was obtainable, but I have not been able to find any.

It is admitted that pleuro-pneumonia was introduced into England in the year 1842, and has existed ever since, and that the carcasses of the animals slaughtered with such disease have always been sold and eaten for human food.

The earliest notice that I have been able to trace on the subject is in the fifth Report of the Medical Officer of Health (Mr. Simon) to the Privy Council for the year 1862.

I have also referred to the following authorities—

Dr. H. Letheby, on Food,

Dr. F. W. Pavy, F.R.S., a Treatise on Food and Dietetics,

Dr. E. A. Parkes, F.R.S., a Manual of Practical Hygiene,

Dr. C. B. Fox, Sanitary Examinations of Water, Air,
and Food,

Mr. Geo. Fleming, Veterinary Surgeon, Manual of
Veterinary Sanitary Science, and Police,

and so far as the books mentioned treat directly of the consump-

tion of the flesh of cattle affected with pleuro-pneumonia for human food have abstracted the following particulars:—

Extract from the 5th Report of the Medical Officer of the Privy Council (Mr. JOHN SIMON) for 1862.

DISEASES OF LIVE STOCK IN THEIR RELATION TO THE PUBLIC
SUPPLIES OF MEAT AND MILK.

Allegations have, during the last few years, been abundantly made, and have, with the progress of time, become more and more definite, that the flesh of animals slaughtered while in a state of disease, and likewise the milk of diseased animals, are extensively sold for human consumption in the United Kingdom. And the substance of these allegations has been submitted to the Lords of the Council. In 1862 their Lordships ordered an inquiry to be made in this matter, and under their directions I requested Mr. John Gamgee, Principal and Professor in the Edinburgh New Veterinary College, to report on it.

* * * *

In order to collect all requisite information for his Report, Mr. Gamgee was authorised to visit any principal markets and slaughter places in the United Kingdom, as well as any districts where he might believe that disease was particularly rife; and he was further authorised to visit certain parts of the Continent with which our stock trade is most active, and whence it seemed most possible we might be receiving infectious importations of stock.

Under the above instructions Mr. Gamgee has recently made a Report which I append. (See Appendix No. IV.) His evidence is in substance as follows:—that disease prevails very extensively in the United Kingdom among horned cattle, sheep, and swine; that the diseased state of an animal not only does not commonly lead the owner to withhold it from being slaughtered for consumption as human food, but on the contrary in large classes of cases (especially where the disease is of an acute kind) leads him to take immediate measures with a view to this application of the diseased animal; and that consequently a very large proportion (Mr. Gamgee believes as much as a fifth part) of the common meat of the country—beef, veal, mutton, lamb, and pork, comes from animals which are considerably diseased.

The diseases which figure behind the scenes of our dead meat market are of course various. And although for the purposes of this Report it is not necessary to enter upon much detail concerning them, yet, in order to discuss their probable effect on the quality of meat, the more important kinds of disease must be separately spoken of. And they are three—viz., first, *contagious fevers*; secondly, the so-called *anthracic and anthracoid diseases*; thirdly, *parasitic diseases*.

Of the *contagious fevers* of stock two are now widely prevalent in the United Kingdom, namely, the *pleuro-pneumonia or lung fever*, which is peculiar to horned cattle; and the *aphthous fever, or foot and mouth disease*, which affects indifferently and in common horned cattle, sheep and swine.

* * * *

It is, for obvious reasons, impossible, in the present state of knowledge, to state in detail what income of morbid product flows from each of the above-mentioned sources into the markets which supply us with food. But from Mr. Gamgee's Report, together with such other information as he has given me, I gather that so far as he can learn, the truth is about

as follows:—That horned cattle affected with pleuro-pneumonia are, much oftener than not, slaughtered on account of the disease, and when slaughtered, are commonly (except their lungs) eaten; and this, even though the lung disease has made such progress as notably to taint the carcase;—that animals affected with foot and mouth disease are not often slaughtered on account of it, but if slaughtered are uniformly eaten;—that animals affected with anthracic and anthracoid diseases, especially swine and horned cattle thus affected, are (except their gangrenous parts) very extensively eaten;—that the presence of parasites in the flesh of an animal never influences the owner against selling it for food.

* * * *

One doubt, however, may well be raised on the subject. A first popular impression would be, that if things are as described, pestilences must be bearing witness to the fact. Is it possible, may be asked, that cattle, having all the foulness of fever in their blood, or having local sores and infiltrations that yield one of the deadliest of inoculable morbid poisons, or having their flesh thronged with larval parasites,—is it possible that such cattle can be converted into human food, and yet not only the immediate scandal of a general poisoning be escaped, but even something not unlike general impunity be the result? Though the affirmative answer to this question may, at first sight, seem strange, nevertheless it is, with some qualifications, the true one. And doubtless the impunity, such as it is,—but it perhaps is far less general than it appears,—results from the operation of well-known chemical and physiological laws. Our animal food, before we take it, has, for the most part, been exposed to so high a temperature that any parasites which had their home in it are killed, and that whatever albuminous morbid contagium it contained has been coagulated and made inert. Probably, too, against small quantities of animal poisons—and against such as communicate small-pox and glanders, just as against the venom of the cobra and rattle-snake, the stomach has resources of its own;—for any such organic product entering the stomach is at once (as regards that mobile chemical constitution on which its efficiency depends) exposed to the strong disinfectant chemistry of digestion, and thus within narrow limits of quantity is likely to be rendered inert before it can soak into living texture. Both these influences may count for something, and the first-mentioned of them for almost everything in explaining the fact (so far as it is a fact), that many sorts of diseased meat are eaten with impunity. On the other hand it must be remembered that, in this theoretical explanation, the two protective influences do not cover the whole field of danger; for, in the first place, not all meat which is eaten has been exposed throughout (nor in every instance even at all exposed) to a temperature sufficient to kill parasites, and coagulate albumen; in the second place, even complete coagulation of albumen may, for aught which we know to the contrary, leave some morbid poisons in operation. In the third place it may very well be that, even where cooking can divest a meat of some original specific infectiveness, the meat may still not be susceptible of quite the same digestional changes as healthy meat when eaten undergoes. And thus the theoretical apprehension would be that, with our alleged large consumption of variously diseased meat, the impunity of consumers, though it were the rule, might be subject to considerable exceptions.

Accurate empirical knowledge in this matter is hitherto only beginning to be gathered, and will not yet warrant any general dogmatic statements as to the effects of diseased meat on human consumers. But for another purpose, as I shall proceed to illustrate, even that scanty knowledge is

not insufficient. Supporting, so far as it goes, the theoretical arguments which I have just used as to the possible dangers of the practice in question, it will at least suffice to justify much public caution on the subject. And in this point of view it may be convenient to notice under separate heads the evidence which now exists as to the injuriousness of each chief kind of diseased meat.

(c) As regards possible ill-effects from consuming in a well-cooked state the flesh of animals which have been suffering an *infectious fever*, small-pox, typhoid fever, pleuro-pneumonia, or aphtha, I have no inculpatory evidence worth quoting. And as regards the last two diseases common as they are in this country, I am of opinion that the absence of evidence is enough to show that immediate ill-effects of any considerable importance do not ordinarily follow the consumption of the meat. Indeed it is certain that on various occasions meat of this description has been consumed on so large a scale that, if the meat had been immediately hurtful, the consequent mischief could not have escaped observation. On the other hand I must repeat that till public attention is drawn to such subjects as these it is difficult to prove connexions which afterwards become evident, between evils and their latent causes. And particularly in this point of view I must advert again to the unexamined part of this question—the doubt whether chronic ill-effects (which of course would be singularly difficult to trace) may perhaps result, when febrile meat—meat which necessarily is of modified chemical constitution—becomes a considerable element in diet. An opinion is sometimes expressed that boils (perhaps with other like affections) are caused in the human subject by the consumption of such meat as I refer to. And though I have not yet found any fact which I can deem conclusive in support of this opinion, I must admit that the alleged connexion is not *primâ facie* impossible.

Extract from Professor JOHN GAMGEE's Report on the Diseases of Livestock in their relation to the public supplies of Meat referred to in the foregoing Report of MR. SIMON.

(a.) *Pleuro-pneumonia in Cattle.*

It is a contagious disease characterized by inflammation of the lungs and pleura peculiar to the ox tribe, and attacking all breeds of cattle without preference. It has been regarded by some observers as a malignant fever in which extensive inflammatory exudation in the lungs and pleural sacs ensues as a specific local manifestation.

1. *Meat from Diseased Animals.*

The public suffers in two ways from the sale of the flesh of diseased animals.

In the first place it is defrauded, and the money paid for nutritious meat is exchanged for deteriorated produce.

In the second place, the human health suffers from the consumption of the produce of diseased animals. This I can state on the authority of many of the most distinguished medical men in this country.

Professor MacLagan, of the University of Edinburgh, stated at a public meeting held in Edinburgh on the 29th of January, 1862, that in his practice both as a physician and a toxicologist he had met with instances in which several persons had been attacked simultaneously with irritant symptoms after having in common partaken of meat which on being

examined was found to contain no poison, nor to be in that state of putrescence which, as is well known, occasionally confers upon animal matters actively poisonous properties.

Dr. Alfred S. Taylor, F.R.S., in a letter addressed to me on the 12th of January, 1863, says:—"As a general principle, I think diseased meat "noxious and unfit for human food." He moreover adds:—"In the "course of my practice I have met with several cases of poisoning, which "appeared to be attributable to diseased or decomposed meat, more fre- "quently the latter. I can at present recall to my recollection only two "fatal cases—one from diseased mutton, the sheep having had the "staggers, and one from German sausages. Animal food has been fre- "quently sent to me with a view to the detection of poison, the persons "sending it having the impression that from the vomiting and purging "produced, poison must have been mixed with it. No poison has, how- "ever, been found to justify this suspicion."

* * * *

My own observations confirm the opinions of the eminent authorities just quoted. I have known in many instances where meat supplied to students in lodging-houses in this city (Edinburgh) has led to vomiting, purging, and severe colic. In the majority of instances such meat was cooked in the form of beef steak. Three of my own students were affected simultaneously one day in December last. Within a couple of hours after dinner they experienced colicky pains, purging, vomiting, and these symptoms lasted several hours. Bread, potatoes, and water were the only other materials they had partaken of at dinner. On another occasion two were affected, but did not attribute the injury to the steak until the next day, when the servant ate what had been left of the meat, and suffered severely. I am informed by Dr. Littlejohn, medical officer for the City of Edinburgh, that a respectable tradesman recently suffered so violently after eating meat that an inquiry was instituted and the meat analysed, with a view to determine the existence of poison in it. None was detected.

Extract from Dr. H. LETHEBY's Book "On Food," 1872.
2nd Edition, p. 212.

Effects of Diseased Meat.

During the Siege of Paris also, when there was but little choice of animal food, no one paid the least attention to the condition of the meat as regards disease; and, as far as observation went, no ill effects resulted from it; in fact, M. Decroix, who has published his personal experience of the matter, states that the flesh of horses affected with farcy or glanders was eaten with impunity; and that if there had been any real danger from the use of diseased meat all the population would have suffered. His notion is, that the morbid action of diseased meat is overrated, and that when it exists it is destroyed by cooking. This, he says, he has himself proved by eating the diseased meat which had been seized in the abattoir, and sent to the Jardin des Plantes for the use of the wild carnivorous animals which are kept there. Again, in this country during the prevalence of the *rinderpest* in 1863, enormous quantities of meat from the diseased animals were sent to market and sold and eaten. The same has been the case with the carcasses of animals suffering acute *pleuro-pneumonia*; and if, as Professor Gamgee says, the practice of making salvage out of diseased animals is so common that at least one-fifth of

the meat which is sold in the public markets is diseased, we may well ask, in the words of Mr. Simon, how is it that some sort of pestilence is not bearing witness to the fact? How is it that cattle, having all the foulness of fever in their blood, or having local sores and infiltrations, that yield one of the deadliest of inoculable morbid poisons, or having their flesh thronged with larval parasites, do not, when slaughtered and eaten, produce a general poisoning? Parent du Chatelet has commented, in very forcible language, on the apparent immunity from disease, even when the most foul and loathsome of animal foods are eaten. But is it not possible that the danger is averted by the operation of cooking? Not that the human stomach has not also a wonderful protective power in its own natural functions, for the deadly poison of the cobra or the rattlesnake may be swallowed with impunity.

Dr. Livingstone tells us that when the flesh of animals affected with pleuro-pneumonia is eaten in South Africa, by either natives or Europeans, it invariably produces malignant carbuncle. He states, indeed, that the effects of the poison were often experienced by the missionaries who had eaten the meat, even when the presence of the disease was scarcely perceptible; and in many cases when the Backwains persisted in devouring the flesh of such diseased animals death was the consequence. The virus, he says, is neither destroyed by boiling nor by roasting, and of this fact he had innumerable instances.

Extract from "A Treatise on Food and Dietetics," by F. W. PAVY, M.D., F.R.S., Physician to, and Lecturer on Physiology at Guy's Hospital. 2nd Edition, 1875, p. 158.

Animals killed in the early stage of the simple inflammatory affections may be safely eaten, and also, of course, those killed by, or as the result of some accidental injury. But what is the evidence for and against the deleteriousness of meat when a contagious poison has existed in the system?

On the one hand it is stated as an authentic fact that during the prevalence of the cattle plague or *rinderpest* in England in 1865 large quantities of the meat of animals killed in all stages of the disease were eaten without being followed by any ill effect. The same absence of ill effect is also stated to have been observed after the consumption of meat derived from animals affected with anthrax and epidemic pleuro-pneumonia—other virulent contagious diseases. It is even asserted that when the *steppe murrain* was prevalent in Bohemia some years ago, the carcasses of infected animals that had been killed and buried by order of the Government were dug up and eaten by the poor without any injury being sustained. On the other hand, instances have been placed on record where the most serious consequences have arisen from the employment of meat of this kind.

Extract from "A Manual of Practical Hygiene." By E. A. PARKES, M.D., F.R.S. 4th Edition, 1873, p. 199.

Epidemic Pleuro-Pneumonia of Cattle.

Much doubt exists as to the effect of this disease on the meat. It is hardly possible that the flesh should not be seriously altered in com-

position, but it seems certain that a large quantity is daily consumed without apparent injury. I have been informed by two most excellent authorities that the Kaffirs ate their cattle when destroyed by the epidemic-lung disease, which prevailed at the Cape some years ago without injury. Both my informants—Staff-Surgeon Nicholson and Assistant-Surgeon Frank—made very careful inquiries on this point. Dr. Livingstone, however, states that the use of such flesh produces carbuncle.

Extract from "Sanitary Examinations of Water, Air, and Food." By CORNELIUS P. FOX, M.D., late Medical Officer of Health for East, Central, and South Essex, 1878. Page 402, 408-11.

The Epidemic Pleuro-Pneumonia of Cattle is an infectious disease, the poison of which is eliminated through the lungs. The divergence of opinion that has prevailed in the medical profession as to what is and what is not wholesome meat, has expressed itself chiefly in connection with the flesh of pleuro-pneumonic cattle. Some would condemn meat that exhibited evidence of perverted nutrition, far short indeed of actual disease, whilst others would allow unsound meat to be eaten unless it exhibited such signs of disease as to excite disgust in the consumer. These are the two extremes of opinion, and both parties have much to urge in support of their opposite views. These unfortunate differences have led to great variations in practice—meat in precisely the same condition being confiscated in one part of London—for example, which is permitted to be eaten in another part. They have led also cattle dealers, farriers, and other interested individuals, to rebel against the opinion of scientific medical officers of health, of which we have recently had an instance in Dublin.

My own opinion is, that until it can be shown that the meat of animals, in the congestive and inflammatory stages of the disease, is deleterious to health, a medical officer of health has no right to have it destroyed. I could not, however, sanction the employment of the meat of an animal that had reached the suppurative and advanced stages of the disease.

Extract from "A Manual of Veterinary Sanitary Science and Police," by GEO. FLEMING, F.R.G.S., Member of Council and of the Examining Board of the Royal College of Veterinary Surgeons, &c. 1875. Vol. 1, p. 442.

The Flesh of Diseased Cattle as Food.

Since the malady (pleuro-pneumonia) has been recognized it may safely be asserted that the flesh of millions of diseased animals has been consumed as food in every part of the world, and yet there is not, to my knowledge, a single instance of any accident attending or following its use. In this country there has been a regular trade in cattle affected with contagious pleuro-pneumonia, in which the butchers have been the principal agents; and nothing has transpired to prove that the flesh of these animals was productive of bad results.

There can be no doubt, if the disease has made any marked progress before the animal is killed, that the flesh must be more or less depreciated in quality, and that its nutritive properties must be diminished; but that it will produce any injurious effects if utilized as food, there is no

evidence to prove. Loiset has pointed out that in the town of Lille during a period of nineteen years, the flesh of 18,000 diseased cattle had been consumed, and that the sanitary condition of the people was unimpaired.

According to Reynal, it has for more than twenty years been sold daily in Paris and the North of France, without any objection on the score of its unhealthiness to those who have consumed it. In this country it has been largely consumed since 1841, and nothing has been reported to its prejudice.

This innocuousness of the flesh of cattle which have been killed in consequence of being affected with the lung-plague is a very important fact; as in permitting it, under proper supervision, to be used as food, a great saving is effected, and two important ends are achieved—the public are not deprived of a portion of a most essential article of diet, and preventive or suppressive measures against the contagion are greatly facilitated, and rendered much less onerous.

There is then no reason to interdict the sale of such flesh as aliment, if care be exercised with regard to the extension of the disease to healthy cattle through this traffic.

Beyond the pathological appearances found in the cavity of the chest and the respiratory organs, there is nothing to indicate in the carcase of an animal which has even been affected to an extreme degree, that it has suffered from this disease. The flesh is in no ways different in appearance from that of a healthy ox in the same condition as regards fat, except that occasionally the muscular system may "look feverish."

So that there is no certain criterion to guide the sanitary inspector, unless the chest or its contents can be inspected. The condition of the lungs affords at once proof of the presence of the disease. If they have been removed, then a careful examination of the inner surface of the thorax will discover either the remains of false membranes, or testify to the attempts which have been made to remove them, either by cutting, scraping, or dissecting off the covering pleura.

Having ascertained that an enquiry was made into the subject in 1877 under the direction of the Medical Officer of Health to the Corporation of Dublin, I wrote to that gentleman (Dr. Cameron) and he has kindly favoured me with a copy of his Report from which the following extracts are taken:—

Extract from the "Report on the Use of the Flesh of Animals affected with Contagious Pleuro-Pneumonia as Food for Man," made to the Corporation of Dublin, (Nov., 1877), by Charles A. Cameron, M.D., &c., Medical Officer of Health and Analyst for Dublin.

With respect to the use of the flesh of animals affected with pleuro-pneumonia, I must say that I have seldom seen the carcasses sold when the disease was so far advanced as to affect the quality of the flesh. It must, however, be admitted that a few medical men consider that the flesh of pleuro-pneumonic oxen may be safely eaten. If they are correct in their opinion it is certainly very wasteful to destroy such flesh. The amount of positive evidence to show whether or not it is unwholesome is meagre, and as the question is of considerable importance, and may at any time become more so, it would be desirable to investigate the subject

thoroughly. A Royal or Vice-regal Commission might by inquiries, or the institution of experiments, decide the matter one way or the other.

At my request a circular letter was addressed to the medical men and veterinarians in Dublin, and to the Medical Officers of Health of the larger towns in the United Kingdom requesting their opinions as to the use of pleuro-pneumonic beef as food for man. Two hundred and ninety replied that under no circumstances should it be used, forty-five stated that it might be used, but with two exceptions they believed it unwholesome in the advanced stages of the disease. As it is rarely that the carcasses of animals affected with this disease are sold to the butcher in its early stage, it is clear that with very rare exceptions medical men are opposed to the use of pleuro-pneumonic beef.

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In the abstract it does not seem likely that the flesh of animals suffering from so serious a disease as pleuro-pneumonia is fit for human food. The malady is the result of a blood poison; the animal is in a highly febrile condition; the great purifying agents of its system are rendered more or less incapable of performing one of their functions, namely, the purification of the blood. It is alleged that even in the advanced stage of the disease no pus can be detected in the blood, but every experienced histologist knows how difficult it is to discriminate by the aid of the microscope between the colourless corpuscles of the blood and the pus corpuscles. It is further alleged that no injurious effects have been traced to the use of such flesh, but it is clear that under existing circumstances direct evidence as to its unwholesome properties is not likely to be obtained.

* * * *

According to the Registrar General of England, the deaths from carbuncles and phlegmons have increased enormously since the introduction of contagious lung distemper into England thirty-five years ago. *Apropos* of this statement, it is worth noting that boils, anthrax, and carbuncles have, during the last few months, been exceedingly common in Dublin. This is significant, for during that period the North Dublin Board of Guardians have been most active in selling, or at least in permitting to be sold, carcasses of oxen affected with pleuro-pneumonia to the Dublin butchers.

* * * *

Those who maintain that the flesh of animals affected with pleuro-pneumonia is perfectly wholesome have not given us any satisfactory proofs in support of their position. They state that thousands of such animals have been used as human food, and that no ill results have accrued therefrom. Such evidence is anything but conclusive. They have not undertaken any special experiments upon themselves for the purpose of proving whether or not diarrhoea or any other complaint would result from the *prolonged* use of this kind of flesh.

* * * *

If a certain number of persons were fed with pleuro-pneumonic beef for say one month, the results, whether negative or positive, would be useful, and might materially contribute to the solution of a difficult question.

* * * *

There are medical men who consider that the flesh of animals, even in an advanced stage of pleuro-pneumonia, may be eaten with impunity. A much larger number consider that it can only be safely used in the earliest stage of the disease. Lastly the great majority of physicians

believe that the flesh of such animals is under all circumstances unfit for the use of man.

In September, 1877, the Public Health Committee of the Corporation of Dublin addressed, at my suggestion, a circular letter to every medical man residing in the City or County of Dublin whose name was on the Medical Register, or who was known to be a resident in City or County, the following queries:—

1st, Do you consider the flesh of oxen killed whilst suffering from contagious pleuro-pneumonia fit for food for man.

2nd, If you consider that such flesh may be used under certain circumstances, please state whether or not it is fit for food in the second stage of the disease in which the lungs are usually much increased in size, partially hepatized and sometimes more or less infiltrated with pus.

228 out of the 258 medical men who expressed opinions upon the subject replied in the negative to both queries. That is 88·3 per cent. of the 258 medical men who replied were of opinion that the flesh of animals affected with pleuro-pneumonia was under no circumstances fit food for man.

The circular letter was also addressed to the Medical Officer of Health of every town of more than 20,000 inhabitants in the United Kingdom. There were received 75 replies; 8 of the Medical Officers of Health declined to express any opinion upon the subject; 56 were of opinion that the flesh of oxen affected with pleuro-pneumonia was unfit for food, and 15 considered that it might be used under certain circumstances. We shall see further on that the great majority of the 30 Dublin medical men, and the 15 Medical Officers of Health who stated that the flesh of pleuro-pneumonic oxen might be used as food, considered that in the second stage of the disease it was unfit for use.

I admit that there exists but *little* direct evidence that the flesh of oxen affected with contagious lung complaint produces disease in man, but I maintain that *no* evidence of a reliable nature can be adduced to prove that it does not produce bad effects sometimes. Under these circumstances we are necessarily obliged to form an opinion as to the fitness of such flesh as food for man upon general principles. The question is purely a medical one, and one upon which medical men may reasonably express an opinion. The returns to the circulars to which I have referred are sufficiently numerous to show that the opinions of the great majority of medical men are against the use of such flesh under any circumstances.

Individual opinions as to the unfitness of Pleuro-Pneumonic oxen as food.

Samuel Gordon, M.D., President of the King and Queen's College of Physicians in Ireland says—I cannot think that the flesh of animals suffering from contagious pleuro-pneumonia can be used under any circumstances.

William Stokes, M.D., D.C.L., LL.D., F.R.S., Regius Professor of Medicine, T.C.D., Physician to the Queen in Ireland. I do not consider such flesh fit food for man under any circumstances.

George H. Porter, M.D., ex-President R.C.S.I., Surgeon to the Queen in Ireland. It is absurd to suppose that the flesh of an animal suffering from a fever like contagious pleuro-pneumonia could be fit for food. No doubt (like other toxic agents) it does not always produce bad effects, but that is no reason why it should be used.

Edward Hamilton, M.D., ex-President, R.C.S.I., Surgeon to Steevens'

Hospital. I consider that it is not fit food for man. The flesh must be affected by the blood supplied to it. In this case the blood has to pass through the lungs charged with the virus of contagion. It is difficult to understand how muscular flesh, supplied with nutrition from such a source, can be wholesome food.

T. W. Grimshaw, M.D., F.K. and Q.C.P.I., Diplomate in State Medicine, Dublin University, Physician to Steevens' and Cork Street Fever Hospitals.

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It has been argued by some of those who consider the flesh of diseased animals fit for human food, that the processes of cooking to which nearly all flesh meat is subjected before being consumed by civilised man, are sufficient to destroy the virus of any contagious particles contained in the flesh. This argument cannot be admitted, and if admitted, it must be applied to the flesh of glandered animals, trichiniferous flesh and many other forms of diseased flesh, which no one has yet ventured to suggest, should be consumed for food. However, it is not yet proved that ordinary cooking processes do destroy contagion, and it is a notorious fact that large quantities of food are consumed without being properly cooked. Under all circumstances I consider it not only inadvisable, but running a serious and unknown amount of risk to permit the use of the flesh of diseased animals for food.

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W. B. Richardson, Fellow and Senior Examiner, Royal College of Surgeons, Surgeon to the Adelaide Hospital. I consider that the flesh of an animal killed whilst suffering from contagious pleuro-pneumonia is not fit food for man, because there is every reason for the belief that this form of pleuro-pneumonia does not depend solely upon ordinary atmospheric causes, but rather upon the presence of a specific poison which has entered the system of the animal and caused changes in its circulating fluid, having for their result the thoracic inflammatory action.

The pleuro-pneumonia, according to this view, must be considered a secondary process, effected by the presence of a poison, which has led to some mysterious alterations in the living molecular structures of the engaged parts, and which, in their turn, have acted upon the blood vessels of these parts and caused the secondary phenomena of the pleuro-pneumonia. I cannot recommend the flesh of oxen killed whilst suffering from contagious pleuro-pneumonia as fit food for man, the poisoned blood being present in all the tissues of the animals.

The non-professional reader may be here reminded that the poisons of the zymotic diseases to which man is liable, have a predilection for concentrating their action on certain tissues of the body, so that there would be nothing exceptional in the pleuro-pneumonia of the ox following the same rule.

I do not think that such flesh should be used under any circumstances, and as I consider the presence of a primary poison a sufficient cause for the rejection of the flesh, its use must be still more objectionable when infiltration of pus has taken place, from the liability of the tissues to additional contamination by the pyæmic poison, whatever that may be.

Thomas Hayden, M.D., Vice-President of the King and Queen's College of Physicians —

Most certainly I do not consider it fit for use in any stage of the disease, but positively dangerous when the lungs are infiltrated with pus.

Joliffe Tuffnell, Ex-President of the Royal College of Surgeons in Ireland, and Ex-Regius Professor of Military Surgery—

I consider that pleuro-pneumonic flesh, *in any stage of the disease*, is unfit food for man, as the blood, which necessarily remains after the most thorough bleeding, must contain the specific poison of a contagious disease.

A. H. Jacob, M.D., F.R.C., S.I., Editor of the Medical Press and Circular—

Decidedly not, I am aware that individuals may submit themselves to the pleuro-pneumonic poison as they may to other hurtful agents without being actually ill therefrom; but I am distinctly of opinion that such cases are exceptional, and that the blood poison contained in the diseased meat must do harm in the majority of cases.

Isaac Ash, M.D., Physician, State Lunatic Asylum, Dundrum, author of various prize essays—

I regard contagious pleuro-pneumonia as corresponding, not to simple pneumonia in man, but to typhus, with lung complications, and hence would consider the flesh unwholesome at any period of the disease.

Dr. C. M. Tidy, Medical Officer of Health for Islington, and co-author of one of the largest manuals of forensic medicine published, states—

I hold as the result of a very large experience (for six years of my life I spent from eight to ten every morning examining carcasses) that you are never safe unless you lay down one general law, viz.—“*That the flesh of all animals suffering from disease is unfit for human food.*” It may be said such food is often eaten, and no harm comes from it. Granted; but we have too much evidence to show that *harm may come from it.*

Dr. F. Vacher, Medical Officer of Health for Birkenhead, and whose writings on the nature of contagious diseases have secured for him a high reputation, makes the following observations—

I am able to answer your first question—No, as I certainly do consider that carcasses affected with contagious pleuro-pneumonia *as we ordinarily see them*, are quite unfit for human food. Still I think that at a very early stage of the disease it is possible that the meat may be wholesome. Practically, when the disease is epidemic, I should pass nothing in which pleuro-pneumonia is discovered.

J. Mitchell Wilson, M.B., Medical Officer of Health for Rochdale, says—

Pleuro-pneumonia is a contagious disease, affecting the whole body of the animal through the blood. The altered conditions of that fluid must affect the intimate structures of the flesh, and whether any contagious matter is there deposited or no, I believe the nutrition of the flesh is so injuriously affected as to allow of decomposition taking place more rapidly, and the bad effects of meat in this condition ought to be provided against by more effectual means than that of cooking, always more or less imperfectly done.

The rule in this neighbourhood is to destroy the carcase of every animal which has pleuro-pneumonia.

Veterinary opinions upon the subject.

Mr. Fleming, in his work on “Veterinary Police,” is strongly of opinion that pleuro-pneumonia does not render the flesh of oxen unfit for food. Professor John Gamgee is exactly of an opposite opinion, and Professor Ferguson, Director of the Veterinary Department of the Irish Privy Council, informed me that he had invariably found pleuro-pneumonic beef to produce diarrhoea in dogs fed with it.

Circulars were sent by the Public Health Committee to the 12 veterinarians who are known to be practising in Dublin and its suburbs. Six only replied, namely, Messrs. Josephs, Palley, M'Kenny, Allen, Mason, and Francis, all of whom considered the flesh of pleuro-pneumonic animals unfit for food in any stage of the disease.

Medical Opinions in favour of using Pleuro-Pneumonic beef.

Loiset, states (Reynal's *Traité de la Police Sanitaire*, Paris, 1873), that during 19 years, 18,000 oxen, affected with pleuro-pneumonia, were killed and used as food in Lille, without apparently producing ill effects—that is, the 150,000 inhabitants of Lille used annually, nearly 1,000 carcasses of pleuro-pneumonic beef, without apparent injury. No evidence is, however, given as to the continuous use of this diseased meat by any particular individual, or by any community; and no doubt, during 19 years, the 150,000 inhabitants of Lille, suffered from anthrax, boils, phlegmons, and diarrhoea, the cause of every case of which, or even of a small proportion of them, M. Loiset might have found it difficult to trace.

Dr. Greenhow, in a Report addressed in 1857 to the Board of Trade, states that he was not able to connect any case of disease with the use of the flesh of animals affected with "pulmonary murrain." Some other writers have made similar observations.

Staff-Surgeon Nicolson, and Assistant Surgeon French, assert that Kaffirs eat the flesh of animals of pleuro-pneumonia oxen without suffering ill effects therefrom.

Thirty medical men residing in or near Dublin, in replying to the circulars sent to them by the Public Health Committee, stated that the flesh of pleuro-pneumonic oxen might be used as food. Of these, three (Drs. Colles, Wheeler and Battersby), stated that they had never known or heard of cases of illness caused by its use. One doctor considered that unless the animal was killed within an hour after the appearance of the disease, the flesh was unwholesome. Dr. T. Collins believes that it might be used in the first stage, if "well boiled." Dr. J. Eustace says it should only be used in the "very first stage." Dr. Knipe, with "thirty years' experience of the disease," considers the flesh is poisonous in the second stage. "When pus is in the lungs," says Dr. Cloran, "I know it is dangerous." Dr. M'Cready asserts that it is unfit for use, except in a "very early stage" of the disease.

In October, 1877, a report was prepared for the Cattle Trade Association of Ireland by Dr. R. Macnamara, Ex-President and Professor of *Materia Medica*, R.C.S.I.; Dr. A. Macalister, Professor of Zoology, T.C.D.; and Dr. J. E. Reynolds, Professor of Chemistry, T.C.D. No new facts are given in this Report, but the reporters consider that the flesh of animals affected with pleuro-pneumonia may, in the early stages of the disease, be eaten with impunity. They do not, however, state at what period of the disease the animal's flesh becomes unwholesome. They acknowledge that the flesh decomposes sooner than that of healthy animals.

This Report called forth a rejoinder from the Dublin Sanitary Association. A Report was drawn up by Dr. T. Hayden, Vice-President of the College of Physicians, Dr. Grimshaw, Dr. J. W. Moore, Dr. Reuben Harvey, and Dr. Woodhouse, and the Society's honorary Officers. This document, which is elaborate, concludes as follows:—

1. That epidemic pleuro-pneumonia is a specific contagious fever and

therefore affects the whole system of the animal, including its flesh and milk.

2. That the flesh of animals affected with the disease, except in the earliest stages, is known to present unhealthy appearances,

3. That the flesh is specially prone to become putrid, and therefore dangerous as an article of food.

4. That it is not known with certainty at what stage of the disease the flesh first shows signs of infection.

5. That there is no evidence of a scientific character to prove that the flesh of oxen affected with the disease has not produced injurious effects.

6. That there is some evidence to show that the flesh when eaten has produced injurious results.

7. That the proposal to sell the flesh at a reduced price, and to make it less prone to putrefaction by careful bleeding is, if carried out calculated seriously to endanger the health of the consumers, especially the poor, and to leave a loophole for the sale of all kinds of diseased flesh.

We are, therefore of opinion that the flesh of animals which have suffered from pleuro-pneumonia in any stage, should not under any circumstances, be permitted to be sold for human food.

Dr. R. Travers, Fellow and Professor of Medical Jurisprudence, King and Queen's College of Physicians, states that in the first stages of pleuro-pneumonia the flesh "may probably be quite harmless if well cooked."

J. Roche, M.D., retired Surgeon-Major, H.M.I.A., writes strongly in favour of the use of the flesh of oxen affected with pleuro-pneumonia. He insists that the flesh, if well bled, cannot be distinguished microscopically from that of a healthy ox. He considers that there may be cases in which the flesh is fit for use even if *pus* were in the lungs. "The best test is that the beast has yielded up its blood well, and the next best is that of sight, touch, and smell."

The Rev. S. Haughton, M.D., F.K., and Q.C.P.I., Professor of Geology, T.C.D., states—

I consider such flesh to be frequently fit food for man. I would judge the fitness or unfitness of such flesh from an examination of the muscular fibres, without any reference to local symptoms in the lungs. In many fatal diseases the muscular tissues continue unaltered for a long period, and while so, may be safely used for food.

Dr. Frederick Pim considers that the flesh in the second stage of disease is fit for food if "properly cooked." This gentleman and Dr. Roche are the only respondents (out of nearly 350) to the circular, who consider the flesh of pleuro-pneumonic oxen fit for food in the advanced stage of the disease.

The 15 Medical Officers of Health who did not answer in the negative to both queries, vary very much in their opinion as to the stage of the disease in which the flesh of pleuro-pneumonic oxen becomes unwholesome food. Dr. Wade, Wakefield, says, in answer to the first query (Is the flesh fit for food in the first stage?)—"I do not, excepting in a very early stage." Dr. Davies, Newport, says "only in the early stage." Dr. Goldie, Leeds, states, "in the primary stage." Dr. Dougal, Medical Officer of Health, Kenning Park, Glasgow; Dr. Osborn, Southampton; and Dr. Bateson, Southwark, London, consider that the flesh may be used in the early stage of the disease, provided that it does not present an unhealthy appearance. Dr. Lord, Hampstead, Middlesex, believes that it may be used if the animal be killed at once, and had previously been healthy, he considers that in the second stage it should, on no account, be used.

Dr. Bitchett, Huddersfield, considers it a waste of good food to destroy the flesh in the first stage of the disease; but would not like to take upon himself the responsibility of advising it to be used as food in the fully developed second stage.

Dr. Seaton, Nottingham, would not prevent its use unless the disease had reached "the advanced stage of purulent infiltration," and also provided the flesh preserved the characteristics of good meat.

Dr. Tripe, Medical Officer of Health, Hackney, says—

I consider that it depends on the stage and the effect on the flesh. In the first stage, before consolidation and effusion into the pleuræ, I believe there is no evidence to show that the flesh is injuriously affected for, as far as I can learn, the meat is then unchanged as to colour, consistence, dryness, and taste. I have never seen the flesh of an animal killed in this stage.

If the meat be moist and dark coloured, the fat wet looking, and the cellular tissue more or less infiltrated, as I have seen it in the third stage, that is to say, when the lungs are infiltrated more or less with pus, I consider it undoubtedly injurious to health. In this stage, or even in the second (hepatization), if it has lasted some little time, so as to cause visible alteration in the meat, even if not to the extent above described, I consider it unfit for the food of man, and have accordingly seized it, have had it condemned, and subsequently obtained penalties. In all cases, however, in which I have done this, there have been alterations in the smell, dryness, colour, and consistency of the meat.

Opinion of Dr. Whitmore, Medical Officer of Health and Public Analyst, Marylebone, London—

I am of opinion that the flesh of oxen killed whilst suffering from pleuro-pneumonia, in the congestive state of the disease is unfit for the food of man. I am led to this conclusion from having personally inspected the muscular and other tissues of animals that have been slaughtered whilst suffering from the disease. I may state that my experience in this matter is not inconsiderable. Many oxen are killed apparently quite healthy, in which it is found but portions of the lung are adhered to the pleura-costalis; and there is more or less consolidation showing that the animal had been, at sometime of its life the subject of the disease; in these cases I think the flesh fit for food.

But when the disease has gone on to the second stage, and the animal is killed whilst the lung is hepatized, and there is purulent infiltration there, I am decidedly of opinion that the flesh of such animal is unwholesome.

Opinion of Dr. Bristow, Medical Officer of Health, Camberwell—

There is no evidence whatever, as far as I know, to show that it is unfit for food. Of course, we naturally revolt at the idea of eating diseased meat.

I think it may be used, but (in judging any special case) I should be guided by the condition of the flesh mainly. I suppose there is no doubt that the flavour would be impaired, and that there would be a tendency to more rapid decomposition than in health, and consequently that it would be important to cook it early. Naturally the more advanced the disease is at the moment of killing the animal, the less fit for food is the flesh likely to be.

Dr. Russell, Medical Officer of Health, Glasgow, says, that he permits it to be sold "if the carcase is that of a well-nourished animal, the flesh firm, and suppuration has not taken place in the lung tissue."

Dr. Littlejohn, Medical Officer of Health for Edinburgh, says, "only

in the early stages of the disease, before the character of the meat has undergone any change to the eyes and hands of skilled inspectors."

Dr. Taylor, Deputy Medical Officer of Health, Liverpool, allows the flesh to be sold, if not obviously affected by the disease.

I also caused a communication to be made to the authorities of fourteen counties in which the largest number of cattle had been killed on account of pleuro-pneumonia during the year 1879, as stated in the Report of the Veterinary Department of the Privy Council, asking for information as to the course pursued by them with respect to the disposal of the carcasses of the cattle, and if sold for food, whether any injurious effects are known, or suspected to have arisen from such practice, with the following result:—

COUNTY.	No. of cattle slaughtered.	How disposed of.	If any injurious effects known from eating the meat.
Cumberland ..	112	For food when certified to be fit	None.
Derby	111	Buried	No question raised in county of flesh being injurious
Essex	303	Unable to state	
Kent	226	For food when certified to be fit	None.
Lancaster ..	291	No reply	None.
Middlesex ..	101	For food, but buried if certified to be unfit for food	None, although hundreds have been eaten.
Northfolk ..	205	Ditto	
Stafford	167	No reply	None.
Suffolk	158	Do.	
Surrey	111	Not sold	
York, West Riding	360	For food when considered fit	None.
Aberdeen	262	No reply	Dr. Littlejohn states that none has arisen for 25 years, and that all cases of suspicious deaths are reported to him.
Edinburgh ..	185	For food when considered fit	
Lanark	121	Buried	

The Contagious Diseases (Animals) Act, 1878.

This Act makes it compulsory on local authorities to slaughter all cattle affected with pleuro-pneumonia, and also *to pay compensation of three-fourths* the value of the animals slaughtered. It is, however, expressly provided that the carcase may be sold, buried, or otherwise disposed of, as the condition of the animal or carcase may require or admit, and the money received on such sale is to be carried to the credit of the local rate. It is also provided that, in case the amount received by sale of the carcase exceeds the amount of compensation, the excess is to be paid to the owner. This could not possibly arise unless the carcase was sold for food.

This seems to show that the framers of the Act were not averse to the carcasses being sold for food, as they, doubtless, would have been had they deemed the meat unfit to be eaten as in the case of rinderpest, sheep-pox, and typhoid swine-fever.

Supervision of Slaughter and Disposition of Carcasses.

On the passing of the Act of 1878, the Board, to ensure the proper examination and sale of the carcasses, arranged with a respectable tradesman to truck, kill, and dress the cattle, and to sell the carcasses on the Board's account, and one of the Cattle Inspectors (a duly qualified veterinary surgeon) examines each carcase to ascertain whether it is or is not unfit for food. If he think it unfit it is his duty to see that it is sent to a knacker's and destroyed. The Board's Solicitor has been consulted as to the effect of Section 30 of the Act, and he is of opinion that the Board may cause the carcasses to be buried, or sold, or otherwise disposed of as they may direct. I may, perhaps, mention that it would be quite impossible to bury the carcasses, and that they would, if ordered to be destroyed, have to be boiled down at a knacker's.

Past and Present Existence of Pleuro-Pneumonia.

It is generally considered that the number of cattle slaughtered on account of being affected with pleuro-pneumonia has decreased since the compulsory orders for slaughter have been in force, but that a large number of cattle are still found affected with lung disease which are always sold for food.

In the communication received from the authorities of Norfolk it is stated that only one case has occurred in which the carcase of an animal affected with pleuro-pneumonia has been condemned by the magistrates as unfit for human food, although hundreds of carcasses have been sold in the county and consumed, and that if the disposal of the carcasses for food were prohibited it would result in a considerable money loss to the

county. In the reply received from Edinburgh, Dr. Littlejohn states that the carcasses are sold, except in those cases where the flesh was dark in colour, sticky, and imperfectly firmed, or watery and very pale in colour, or lastly, so vividly congested as to shew the presence of previous fever, when the animal was condemned and boiled down, and that if a hard and fast lime were followed of condemning the carcase of every animal which when killed, was suffering from the first symptoms of acute disease, the public, and especially the labouring classes, would be deprived of an enormous quantity of animal food.

The following is a statement of the approximate amounts received by sale of the carcasses and hides of the cattle slaughtered by order of the Board, on account of being affected with pleuro-pneumonia :—

Date.	No. of Animals slaughtered.	Approximate amount received.
1 Sep. to 31 Dec. 1873	88	£ s. d. 572 11 1
Year 1874	329	2,100 15 3
,, 1875	636	4,083 18 0
,, 1876	548	3,785 10 1
,, 1877	748	5,597 8 9
,, 1878	496	3,551 13 7
,, 1879	563	4,187 0 5
	3,408	£23,878 17 2

Being an average of £7 each. The accounts for the City of Edinburgh shew that £427 18s. 10d., was received for 79 carcasses, between October, 1878, and July, 1879, averaging £5 8s. 6d. each.

J. E. WAKEFIELD,
Clerk of the Board.

