TO THE RIGHT HON. THE LORD MAYOR, ALDERMEN AND BURGESSES OF DUBLIN.

REPORT

ON THE USE OF THE FLESH OF ANIMALS AFFECTED WITH CONTAGIOUS PLEURO-PNEUMONIA AS FOOD FOR MAN.

BY

CHARLES A. CAMERON, M.D., F.R.C.S.I.,

DIPLOMATE IN SANITARY SCIENCE, CAMBRIDGE UNIVERSITY; PROFESSOR OF HYGIENE AND CHEMISTRY TO THE ROYAL COLLEGE OF SURGEONS IN IRELAND; MEDICAL OFFICER OF HEALTH AND ANALYST FOR DUBLIN.

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CHARLES A. CAMERON, M.D.,

Diplomate in Sanitary Science, Cambridge University; Fellow and Professor of Chemistry and Hygiene, Royal College of Surgeons in Ireland; Medical Officer of Health and Analyst for Dublin, &c., &c.

Introduction.

For some months past the provisions of the "Diseases (Animals) Prevention Acts" have been in force in the North and South Dublin Poor Law Unions. Oxen affected with pleuro-pneumonia are slaughtered, and their owners in part compensated by the Boards of Guardians. Neglecting to report cases of the disease is an offence under these statutes and punishable by fine. In the Order in Council issued by the Lord Lieutenant, and by virtue of which the Acts were put into force in Dublin, permission is given to dispose of such of the carcasses of the slaughtered animals as may be considered fit for human food. No reference to such a use of the carcasses is, however, to be found in the Acts themselves.

A Veterinary Surgeon was appointed by the South Dublin Board of Guardians to inspect the animals reported to be diseased, to order them to be slaughtered, if he considered it necessary, and to decide whether or not they were fit for human food. He has "passed" as fit for use a very large number of carcasses of oxen, and some of them in an advanced stage of the disease. The carcasses have mostly been sold in country places, and brought into the city in such a way as generally to escape the vigilance of the Corporation Sanitary Officers. Several carcasses were however seized, and were ordered to be destroyed by the police magistrates. They were in a very advanced stage of disease, and, in my opinion, utterly unfit for food.

The Guardians of the North Dublin Union were displeased with what they appear to have considered my unwarranted interference with their officer. I think, however, that the general public are of opinion that the Medical Officer of Health is the proper person to determine whether or not the carcasses of diseased animals are fit food for man. It certainly never was intended by the Legislature that the "Contagious Diseases (Animals) Acts" were to repeal the statute which directs that the Medical Officer of Health is the person who is to determine whether or not food exposed for sale is sound, wholesome, and fit for the food of man.

The "Cattle Trade Association"—who appear to have sympathized with the Board of Guardians in this matter—procured the advice of three eminent medical men—Dr. Rawdon Macnamara, Professor of Materia Medica to the Royal College of Surgeons; Dr. J. Emerson Reynolds, Professor of Chemistry; and Dr. A. Macalister, Professor of Zoology, Dublin University. These gentlemen prepared

a report in which everything that could be fairly urged in defence of the use of cattle affected with pleuro-pneumonia as food was ably set forth. It was arranged that these gentlemen should examine the first carcass seized upon by the Sanitary Officers, and attend in court to support the Veterinary Inspector. The opportunity came in good time; the Inspector "passed" a carcass, which was seized subsequently by the Sanitary Officers and pronounced unfit for use (though much more highly diseased cases had previously been detected). The three doctors inspected the carcass, and declared it was unfit for human food. Since this *fiasco* their services have not been called into requisition by the Cattle Trade Association. This circumstance proves that the Guardians of the North Dublin Union permitted a carcass of the diseased animal to be disposed of as food for man, which eminent scientific gentlemen, acting on behalf of the Guardians, had decided was quite unfit for such a purpose. I am quite certain that they would have expressed a similar opinion with respect to every carcass sold by the Guardians but subsequently condemned by me.

From 1870 to 1876, inclusive, there were condemned in Dublin, 2,231,193 lbs. of diseased and otherwise unsound food; and 31 persons were sent to prison and 90 fined for trafficking in diseased meat. It is to be feared that the encouragement and support given by the Guardians to the sale of diseased carcasses, without submitting them to the inspection of the Sanitary Officers, will in future render it difficult to put a stop to the traffic in unsound food.

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 before the disease was so far ad-

vanced 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 Viceregal Commission might, by enquiries 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 of 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. 290 replied that under no circumstances should it be used; 45 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.

With respect to public opinion on this subject, it appears to be decidedly against the use of the flesh of diseased animals as food. Most persons, even if they were satisfied that it would be innocuous, would object to eat the flesh of a feverous animal. This, no doubt, is a prejudice; but prejudices are entitled to some degree of respect. Horses' flesh is believed to be as wholesome as ox's flesh; but it would be very wrong to make sausages

of horses' flesh, or otherwise to make people unwittingly eat that which, if they were aware of its nature, they would instinctively loathe. I think that on these grounds it is not right that the flesh of animals far advanced in so serious a disease as pleuro-pneumonia should be palmed off upon the public as that of healthy animals; for presumably the flesh exposed for sale in the shops is derived from healthy animals.

Causes of Excessive Mortality.

It would seem to be an inexorable law of our nature that out of every 1,000 persons living 11 must die every year. In country districts, placed apparently under the most healthful conditions, 17 persons per 1,000 living die annually; whilst in towns, and in some country places, from 18 to 35 persons die every year out of every 1,000 living. The causes that produce an abnormal death-rate amongst communities are numerous; some of them are but partially understood, and many factors in producing a high mortality are perhaps at present unknown to us.

Amongst the causes that largely contribute to swell the death-roll are foul air, impure water, and insufficient and unsound food. This is universally acknowledged, yet it is difficult to directly refer particular cases of death or illness to the use of impure water, and still more so to the respiration of vitiated air. When water contains the germs of some such disease as Asiatic cholera or enteric fever, it is comparatively easy to refer cases of illness from those diseases to the use of such water. Those maladies are serious and set in quickly, and therefore their immediate causes can be frequently discovered. When, however, as is far more generally the case, potable water is impure from the

presence of excessive amounts of organic matters, which have no specific infective properties, the bad effect which it produces upon the health, is, as a rule, only manifested after a considerable period of time has elapsed; and in the case of a large proportion of the people who use it, no apparent effect is produced. Water that is admittedly largely contaminated with sewage is constantly used by large numbers of persons, and when attempts are made to substitute for such impure water a purer liquid, the objection almost invariably raised is that no one has ever been known to suffer from drinking the foul water.

It is well known that fish out of season, or not quite fresh, putrid or musty food, flesh affected with parasites, and the milk of cows suffering from foot-and-mouth disease, often produce immediate, serious, and even fatal disease. Such being the case, it is by no means unlikely that the flesh of animals suffering from various febrile maladies may be a common cause of disease in man—disease not of sudden accession, such as is produced by a powerful animal poison, but slowly arising, and rarely assuming a malignant character. Unsound food is an acknowledged factor in producing diarrhœal complaints of various kinds; and it is likely that the flesh of animals killed whilst in the acute stage of inflammatory disease may produce diarrhœa, though, for reasons which shall be fully stated further on, it is rarely that in such cases the effect can be clearly referred to its cause.

Contagious Pleuro-Pneumonia.

This disease affects only the ox tribe. It has been known in Northern Germany and in Russia for a very long period, but in Ireland its appearance was not noticed before 1841. There are two kinds of pleuro-pneumonia

affecting the ox; one resembles the pleuro-pneumonia of the pig, sheep, and other animals, and is non-contagious. The other form is highly contagious and much more fatal. Its symptoms are well marked. The attack is generally ushered in with violent shivering; soon the animal begins to cough, not loudly at first, but with increasing force as the disease develops. The pulse is full, and at first increases from 70 or 75 to about 100 beats per minute; but in the later stages of the disease it declines and becomes feeble and indistinct. The temperature invariably increases, and acute febrile symptoms rapidly present themselves. In the severe stage of the disease there is usually a loud respiratory murmur, and the nasal cartilages rise spasmodically at each respiration. Pressure on the spine appears to occasion pain, as the animal bends deeply under the most gentle pressure. The dry, sonorous rale of ordinary bronchitis can be heard; and a sound, as if pieces of hard leather were undergoing friction may be observed until the last stage of the disease over a large portion of the thoracic surface. The animal refuses to eat, and often suffers from diarrhœa. The appearance of the animal changes during the progress of the disease; its hair stands out from the skin, and acquires a dull hue; the sight becomes dim and watery; and a discharge issues from the nostrils. If the disease be long continued the animal loses weight. The incubatory stage of the disease is probably about a fortnight.

The *post-mortem* appearances of the lungs are remarkable and characteristic. In the first stage the lungs are but slightly increased in weight or size. They contain infiltrated serum, very often in quantity; occasionally a little blood is found in the bronchi which has escaped from ruptured capillaries. A little lymph is generally

found between the pleuræ, but the adhesions between the costal and visceral pleuræ are very slight.

In the second stage the trachea generally contains false membranes, and the smaller bronchi are obliterated, and much destruction of parenchyma takes place, many of the blood-vessels are blocked up with lymph or coagulated blood. A most serious structural alteration takes place in the case of the lymphatic glands, they undergo fatty degeneration, and at the same time become enormously distended from the deposition of lymph. The pleuræ become more and more adherent to each other, owing to the more cohesive and compact nature of the exuded lymph. In some cases the effusion of serum into the cavity of the chest is enormous; on one occasion I have known it to measure more than two gallons.

The lungs now become partly hepatized—that is, acquire a consistency like that of the liver, but denser and harder. The pulmonary lobules acquire a reddish-brown hue, and being cemented by layers of lighter-coloured dense lymph, present a mottled appearance, not unlike that of Sienna marble. In general one lung is more largely hepatized than the other.

In the last stages of the disease the smaller bronchi can no longer be seen, the windpipe becomes narrowed, a large portion of the lungs loses all its structural character, blood-vessels disappear, the lymphatic glands are destroyed, the parenchyma becomes very dense, and the weight of the lungs is much increased. Pus is found in both the second and third stages, but not always in the second.

The effused serum contains bacteriod bodies of a very active character, judging from the vivacity of their movements.

In the healthy ox the lungs weigh about 14lbs.; in cases of pleuro-pneumonia they generally are more than doubled in weight. When reading a paper upon the subject of diseased meat, at a meeting of the Medical Society of the College of Physicians, in 1871, I exhibited the lungs of an animal that had died from pleuro-pneumonia; they weighed a little over 100lbs.

The pathological lesions observed in this disease, beside those referred to, are candiac pleuritis and ulcers of the stomach and lower intestines.

Is the Flesh of Animals Affected with Pleuro-Pneumonia fit Food for Man?

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, and its lungs—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 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, and for the following reasons:—In the first place the owners of cattle which are affected with this disease do not eat their flesh, neither as a rule do their servants; the diseased animals are often slaughtered and buried; but when they are

sold to butchers, they take good care not to inform the customers that they are vending diseased meat. I have never met with anyone yet who admitted that he had eaten the flesh of animals affected with contagious lung disease; though I have heard that persons have made such an avowal. I do not believe that the flesh of oxen affected with this malady is an immediate poison; it does not act like arsenic or strychnine. If it contain poison, it is a slowly acting one. In this respect it resembles water, which, though foul, nevertheless does not contain the poison of a specific disease. Such water produces diarrhœa and other maladies, but as a rule not in all cases, and generally only when used for some time. And as impure water, drank for years with apparent impunity by many persons, occasionally causes severe symptoms when a single draught of it is taken by a particular individual, may it not be that the flesh of animals affected with pleuro-pneumonia occasionally produces sudden and severe disease in individuals, though the great majority of its habitual consumers may enjoy apparent immunity from its toxic properties?

There is, however, evidence that the flesh of cattle affected with pleuro-pneumonia has produced disease in man. That eminent veterinarian and pathologist, Professor John Gamgee, states* that in a convict establishment, in which the flesh of animals affected with pleuro-pneumonia was constantly consumed, there occurred from 40 to 50 carbuncles per month amongst 1,520 persons. On the discontinuance of the use of diseased meat the carbuncles ceased to appear.

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* Fifth Report of the Medical Officer of the Privy Council. First Series.

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, anthraxes, 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.

In November, 1860, Dr. Letheby, Medical Officer of Health for London, traced to the use of one quarter of beef the illness of 66 persons, of whom one died. The cow from which the meat had been obtained had been affected with pleuro-pneumonia, and the meat had been no doubt made into sausages; but Dr. Letheby found that this had been done whilst the meat was quite fresh.

According to the late Dr. Livingstone, Europeans and natives who used the flesh of oxen affected with pleuro-pneumonia suffered severely from malignant anthrax. It has lately been asserted that Dr. Livingstone mistook the disease, and that it was really a carbuncular, or anthrax fever, because he speaks of the same malady in connection with the horse. As carbuncular fever and pleuro-pneumonia are very dissimilar diseases, it is strange that the doctor, one of the most acute of observers, and the holder of a surgical diploma, should have confounded them. It is remarkable that he terms the affection peripneumonia, a term applied to contagious lung disease by the German veterinarians. My opinion is that Dr. Livingstone knew perfectly the nature of the disease. He mentions at the same time the existence of an

epidemic of lung disease amongst horses. As the bovine contagious pleuro-pneumonia is incommunicable to the horse, it has been urged that Livingstone was also mistaken in his account of the disease of the horse. It it probable that the severe catarrhal influenza, accompanied with typhoid fever and lung complications, to which the horse is liable, was the disease described by Livingstone, for that malady is contagious. Nothing can be clearer than that Livingstone referred to two malignant diseases, one affecting the ox, the other the horse,* and both chiefly expending their venom upon the lungs. Unless the lung complaint in the former animal was the non-contagious pleuro-pneumonia (which is highly improbable, being epidemic), it was really what Livingstone described it—the peri-pneumonia of the Germans.

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* As an example of the severe epidemic diseases affecting its lungs, to which the horse is liable, I may quote the following description of a malady which lately prevailed amongst horses in Virginia. (Supplement to *Scientific American*, October 6th, 1877, page 1465.)

"A want of spirit in the animal is the first indication; then weakness in the legs and glassy appearance of the eyes. Soon the sight becomes impaired; frequently they become blind, with rapid and sometimes short laboured breathing—the breath very offensive. Restlessness marks the earlier stages of the disease; the legs become weak, stiff, and partially paralyzed; the animal staggers and desires to lean against something for support. Restlessness gradually yields to a disposition to stand rigidly upon stiff legs. They resist and seem to loathe to lie down, but when down, they seldom rise again, and death ensues rapidly with a spasm—sometimes breaking out in a profuse sweating. Cold extremities attend the latter stages of the disease. The pulse ranges from 56 upwards—not full, but weak. The bowels are constipated, and the animal appears completely prostrated from the very beginning.

"The *post-mortem* examination develops the lungs badly congested—generally but one, the right one. They are very offensive, and the air vesicles, on compression, exude a yellow fetid matter, indicating the second stage of pneumonia. They are so affected that, upon the slightest pressure, the finger passes through them. The liver is sound and healthy, though this is a malarial section. The pericardium is filled with a yellow liquid. All the membranes of the brain are badly congested. The most marked feature of this disease is that there is no cough attending the highly congested condition of the lungs."

Persons constantly complain to me that they have been made unwell by eating what they consider to be diseased meat. Sometimes the meat is putrid, occasionally it is quite fresh, but possesses a loathsome odour, and some or all of the characteristics of diseased meat. An odd time the meat *appears* to be perfectly healthy. At least 100 persons have made complaints to me with respect to the quality of meat—nearly always beef—which they alleged had caused them nausea and severe diarrhœa. I published some severe cases of this nature in the *Dublin Journal of Medical Science* for 1871, and I think few physicians in large practice have not met with similar cases. The reason that so many cases have come under my notice is simply because it is well known in Dublin that I take an active part in the suppression of the traffic in diseased meat. People observe frequently by the newspapers that I apply to the magistrates for orders to have carcasses of diseased animals destroyed. When they suspect that they have purchased or eaten diseased meat, they bring their grievances before me, either directly or through the police. Many successful prosecutions have resulted from these complaints—but how was it possible to prove in connection with any one of them that the meat complained of had formed part of an animal affected with pleuro-pneumonia! Surely the vendor would not admit that he had bought such an animal!

I am perfectly satisfied that many cases of diarrhœa and of other diseases result from the use of unsound meat, but as the diseases generally make their appearance after the bad meat has been consumed, it is all but impossible to trace beyond all doubt effect to cause in such cases.

Proof as to the Innocuous Nature of Pleuro-Pneumonic Beef.

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 diarrhœa or any other complaint would result from the *prolonged* use of this kind of flesh. Some of the Guardians of the North Dublin Union have signalized themselves by their advocacy of the sale of diseased carcasses of beef. These gentlemen have not approved of my conduct in interposing and procuring the destruction of carcasses sold as human food by their officers. I considered those carcasses unfit for food; they were of a contrary opinion. Why, therefore, did they not offer themselves as the subjects of crucial tests, whereby the problem—Is pleuro-pneumonic beef wholesome or not, might have been solved? 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. Clearly the *onus probandi* to prove that the flesh of *diseased* animals is wholesome food rests upon those who assert that it is so. Loose and general statements are not sufficient for that purpose. It must be shown that a sufficiently large number of persons had for a reasonably long period of time been fed with such meat (with due proportion of other and admittedly wholesome food) without sustaining

any injury thereby. Until by some such crucial tests, the wholesome character of the flesh of animals affected with pleuro-pneumonia is proved to a certainty, the general public may well be excused for objecting to use such flesh as food.

A Lesson from the "Pearl Disease."

A malady affecting oxen, and termed "pearl disease," has long been known on the Continent. In the last century a popular belief arose that pearl disease was identical with syphilis in man. People refused to eat the flesh of the animals affected with this complaint, and the use of it was prohibited by the authorities in Germany, Austria, and other countries. In 1782, Heim, a German physician, proved that there was no relation between pearl disease and syphilis, and two years later Graumann published a treatise in which he agreed with the opinion of Heim as to the innocuous character of the flesh of animals affected with pearl disease. The restrictions in reference to the sale of such flesh were consequently removed in the course of a few years by all the States of the Continent. The dislike of the people to eat the flesh of animals affected with pearl disease continued, however, unabated, notwithstanding the medical testimony as to its innocuous character—and in this matter as in so many others, the human instinct has been proved to be right. The admirably conducted experiments of Professor Gerlach of the Berlin Veterinary School, Professor Leisering of the Dresden Veterinary School, and Dr. Klebs, have proved that pearl disease is of a tubercular nature. They have shown that animals who eat the flesh of animals affected with tuberculosis are very liable to contract that disease. Experimental results have proved that the milk of animals

having pearl or other tubercular disease is capable of propagating tuberculosis. Tubercle, therefore, is highly infective, and as the most deadly form of phthisis in man is tuberculosis, it must sometimes happen that the milk or flesh of cows with tubercular disease gives rise to the same disease in man.

Now it is only quite recently that the poisonous nature of the flesh of tubercular oxen has been ascertained, though nearly a century ago medical men asserted that it was a wholesome food. May not the aversion which people now have to eat the flesh of pleuro-pneumonic oxen be founded upon as true an instinct as that which led the Germans and Scandinavians to loathe the meat furnished by animals suffering from the "Pearl Disease?"

Medical Opinions as to the Fitness of the Flesh of Animals Affected with Pleuro-Pneumonia as Food.

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?

265 replies were received, 121 of the circulars were returned* through the post office, and no replies were received in 190 instances.

Out of the 265 forms of reply returned to the circular, there were seven on which the writers stated that they would not or could not express any opinion upon the subject (one respondent stating that he would do so on receiving a fee).

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.

* They had no doubt been addressed to young medical men who had but lately registered their qualifications, and had subsequently left Dublin.

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 the Flesh 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.

Robert M'Donnell, M.D., F.R.S., President of the Royal College of Surgeons in Ireland—

Nothing would induce me (if I knew it) to eat the flesh of an ox killed whilst suffering from contagious pleuro-pneumonia. My objection, I admit, is merely an instinctive and insuperable prejudice.

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.

Richard G. Butcher, M.D. (Hon.), T.C.D.; Ex-President R.C.S.I.; Lecturer and Examiner in Operative Surgery, T.C.D.—

It is opposed to common sense to suppose that the flesh of an animal suffering from a serious fever, such as contagious pleuro-pneumonia is, could be wholesome food for man.

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. & Q.C.P.I., Diplomate in State Medicine, Dub. Univ.; Physician to Steevens' and Cork-street Fever Hospitals; Co-Author of *Manual of Public Health in Ireland*—

I consider the pleuro-pneumonia of cattle to be a form of specific fever, of which the chest affection is but a local manifestation; it bears the same relation to the fever that sore throat does to scarlatina, inflammation of the membranes of the spinal cord to malignant purpuric fever, or ulceration of the intestines to enteric fever. Under these circumstances, I consider the whole animal is impregnated with disease from the first development of the fever, quite irrespective of the condition of the animal's lungs.

It has only been *proved* in a few instances that contagious diseases among animals are communicable to human beings, but these cases are quite sufficient to suggest that many other forms of disease are also communicable from animals to man. There are also good grounds for believing that certain diseases in animals may produce, by contagion, diseases in man of a nature differing materially in progress and symptoms from those developed in the animals from which the contagion emanated, and *vice versa*. Such results have been found to take place in particular instances.

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 civilized 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.

I may add that there are good grounds for believing that a disease very analogous to the contagious pleuro-pneumonia in animals is met with in human beings, and occurs in epidemics. This disease I have named "*pythogenic-pneumonia*," and, in conjunction with Dr. J. W. Moore, have written a special memoir as to its nature and causes, to the *Dublin Medical Journal* of May, 1875. The evidence of such a disease among human beings makes it the more important that every care should be taken to guard against its being propagated by contagion, either from animals to man or man to animals.

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 pyœmic poison, whatever that may be.

Evory Kennedy, M.D., Ed. and Dub.; Ex-President of the King and Queen's College of Physicians—

I do not consider the flesh of animals contaminated or surcharged with typhoid inflammation of the lung or any other organ, and which partakes of the same character as typhoid or diffused inflammation in the human subject, as fit for human food *at any stage*, but least of all is it so fit when the stage of purulent infiltration has been arrived at.

I am aware that there is a distinction drawn between *common poisons* and *relative poisons*, and that it is stated that the poison of the viper, and possibly even that of a creature poisoned by hydrophobia, has been taken, or may be taken, into the stomach with impunity. But I should not like to follow such examples, and consequently cannot approve of the use of the flesh of animals surcharged with a fatal animal poison, as food for man, and certainly should not eat it myself.

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 Tufnell, 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.

John W. Moore, M.D., and Diplomate in State Medicine, Dublin University; F.K. & Q.C.P.I.; Physician to the

Meath Hospital; Co-Author of *Manual of Public Health for Ireland*—

No; because (to borrow the words of Dr. A. Wynter Blyth, author of *A Dictionary of Hygiene and Public Health*) I believe the "contagious," or "epidemic pleuro-pneumonia of cattle" to be "a blood disease; that some poison is taken into the blood, and that it culminates in the pulmonary tissues, the pulmonary air-cells being in this case the seat of election, just as in typhoid fever the bowels, in hydrophobia the spinal cord, and in small-pox the skin, as the organs to which, in some mysterious way, the poison determines, and in which it fructifies." Although Dr. Blyth is speaking in this passage of acute croupous pneumonia in man, I am of opinion that his description is in every particular applicable to the epidemic pleuro-pneumonia of cattle—a disease which is closely and strikingly analogous to "pythogenic-pneumonia," an affection described by Dr. Grimshaw and myself in the *Dublin Journal of Medical Science* for May, 1875. This analogy has been observed by many distinguished pathologists and sanitarians. Thus, Dr. Parkes observes—"Considering that the pleuro-pneumonia of cattle is propagated through the pus and epithelmic-cells of the sputa passing into the air-cells of other cattle, that even in man there is evidence of a pneumonia or phthisical disease being contagious; the floating of these cells in the air is worthy of all attention." The same writer, while he gives a doubtful opinion as to the injuriousness or otherwise of the flesh of cattle which have suffered from pleuro-pneumonia, remarks that "*it is hardly possible that the flesh should not be seriously altered in composition.*" (*Manual of Hygiene*, 3rd edition, page 192).

On the ground, therefore, that the blood is deteriorated in the pleuro-pneumonia of cattle, that, consequently, the various tissues supplied by the vitiated blood are altered from a healthy to a diseased state, I unhesitatingly answer the first, and necessarily the second query in the negative.

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.

S. M. MacSwiney, M.D., F.K. & Q.C.P.I.; Professor of Medical Jurisprudence, Catholic University—

Such flesh is, in my opinion, totally unfit for human food. We know that the milk of cows pasturing on poison plants may poison whomsoever drinks it; that the flesh of sheep feeding on deleterious herbage, and the honey of bees derived from poisonous flowers, have produced serious and even fatal results in man. We know that diseased animal matter applied externally, and thus absorbed, has often produced severe effects. From this we may infer that where a malignant disease has caused death in an animal, the blood must be greatly depraved; as a consequence, it is highly probable that a virulent animal poison is formed, and the flesh impregnated therewith. And this inference is supported, if not confirmed, by many well-observed and recorded facts.

Thomas P. Mason, M.B., F.R.C.S.I.; Lecturer on Anatomy, Ledwich School of Medicine; Physician to Mercer's Hospital—

I do not, for the following reasons:—The lungs are important organs to purify the blood from carbonic acid and other impurities; these structures, the lungs, being diseased, the blood in the exact ratio of the diseased state present will pass through the tissues (the flesh) in an imperfect state, depositing compounds calculated, I believe, when used as human food, to develop an unhealthy condition of the living system.

J. G. Burne, L.K. & Q.C.P.I., M.R.C.S.E.; Consulting Sanitary Officer, North Dublin Union—

I am of opinion that the flesh of animals suffering from pleuro-pneumonia would be very likely to cause diarrhœa or anthrax.

D. F. Buckley, A.B., L.K.& Q.C.P.I., L.C.P.& C.S., Ed.

A few persons—I am glad to say, for the credit of humanity, that they are very few—presumptuous cow-doctors, pretentious veterinary surgeons, and narrow-minded poor-law guardians, insist that the flesh of cattle suffering from this distemper is fit for human food, *because* it shows no appearance of alteration by disease; forgetting, or rather, perhaps, not knowing, that there may be textural and functional alterations without any physical appearances. This is the fallacy of my old friend the "water" doctor in a bucolic shape. If the filtering beds of the Vartry water-works were impregnated with a destructive substance, which poisoned the water as it passed through them, what water-doctor, cow-doctor, horse-doctor, poor-law doctor, or mountebank of any

designation would dare to proclaim that it may, without hazard, be used in the preparation of food? Now, pleuro-pneumonia is, undeniably, a contagious disease. None of those wiseacres, I believe, question its communicability. In fact, so much are they afraid of its spread, that they at once resort to the unscientific process of killing the animal affected by it. And yet they are not ashamed to say such flesh may be incorporated with the human frame without injury! Every throb of the heart of an affected animal sends throughout its body a wave of blood, which, instead of having been filtered in the lungs, has been therein rendered still more impure by contact with the diseased organs, and by washing off, and carrying along in its tide, some of the morbid matter. The tissues in every part of the animal's frame draw their nutriment from this feculent flood, become imbued with it, and receive tainted molecules to supply the place of their effete particles. They are thus seriously affected long before they exhibit any visible appearances of change, that is to say, before their functions are sufficiently perverted to re-act upon the textures so far as to produce palpable alterations in them. To say, therefore, that the absence of striking alterations in the flesh of an animal slaughtered while suffering from a contagious disease, which has its origin at the very fountain of life itself is a proof that it is fit for human food, is like asserting that a glass of water which contains a fatal dose of some deadly poison is good for health because it is fair and sparkling! If one or two of those persons who are so loud in insisting upon the wholesomeness of such food, would show that they are impelled, not by interested or parsimonious motives, but by pure benevolence, or perhaps the possession of some occult knowledge peculiar to an acquaintance with cattle, I know of no better *experimentum crucis* than their publicly eating some of this condemned meat *pour encourager les autres*. I do not, however, advise this, nor do I think their faith strong enough to urge them to do so. If they did, they would experience severe pain and colicky cramps in the bowels, tenesmus, cold sweat all over the body, giddiness, feeling of impending dissolution, faintness, deprivation of sight, and even loss of consciousness. Should the natural vigour of their constitution or prompt medical treatment save them from death by the help of repeated vomitings and a brisk diarrhœa, they will be "sadder and wiser men" for the remainder of their lives; but if they should unhappily perish, their memory will, doubtless, be perpetuated by the inscription of their heroism in the annals of cow-therapeutics and the books of poor-law literature. The symptoms I have mentioned are those which occurred in a case recently

. . . . . Quœque ipse miserrima vidi,
Et quorum pars magna fui:

and in which, on mature investigation, no other cause could be found than the use of beef, well-cooked, apparently sound, and purchased at a respectable butcher's in Blackrock. My observation and experience, fortified by those of other physicians, on the subject of blood poisoning, induce me to believe that society is not sufficiently protected, but that, on the contrary, some—perhaps much—of this diseased meat is unsuspectingly bought and consumed by the public to their grievous detriment.

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.

Is Pleuro-Pneumonic Beef freely sold in England ?

It was stated at meetings of the North Dublin Board of Guardians that the carcasses of oxen affected with pleuro-pneumonia and slaughtered under the provisions of the Contagious Diseases (Animals) Prevention Acts were openly sold in England. From returns received in answer to the circulars sent to English and Scotch Health Officers, it would seem that there was *some* justification for this statement ; but it would appear that the immense majority of Medical Officers of Health in the United Kingdom are opposed to the use, as food, of these carcasses in every stage of the disease. Most of them have expressed very strong opinions upon the subject.

Dr. Sedgwick Saunders, Medical Officer of Health for the City of London, states "that reason, analogy, and common sense suggest the entire unfitness for human food" of such carcasses ; and he adds, "that the persons who attempt to dispose of them in London are always and successfully prosecuted."

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.

(*a*) Gamgee has shown how in a convict establishment of 1,500 convicts where animals suffering from pleuro-pneumonia were eaten, forty or fifty cases of carbuncle occurred per month, and only stopped when the meat was altered.

(*b*) Deaths from carbuncle in England have been gradually increasing from 1842, when the pleuro-pneumonia in animals was first imported from Holland.

(*c*) The same is true according to the Registrar-General of Scotland, since lung disease made its first appearance there.

I confess the evidence is scanty, but the onus that it does no harm rests with those who make the assertion. Take it in two ways:—

1. Feed those butchers on it who assert its wholesomeness; or,
2. Ask Government to hand the prisoners over to the safe-keeping of experimenters (now they have robbed us of animals), so that we may feed them on pleuro-pneumonic meat, and note the results.

I have always acted on this opinion as the only safe ground of action.

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.

Dr. D. Davies, Medical Officer of Health for the City, County and Port of Bristol, states—

Decidedly not in any stage of the disease. Possibly no harm

might arise from the use of it after being cooked at a heat exceeding 212° Fahrenheit, but as this could not be guaranteed if sold indiscriminately to the public, the sale of it for use as food should be absolutely prohibited. The heat in the middle of a joint undergoing the process of roasting is not sufficient to destroy zymotic germs. I have known vaccine lymph to retain its properties after being in the middle of a leg of mutton whilst being cooked. In a boiled leg of mutton it lost its properties.

Henry H. Vernon, M.D., Ed., Medical Officer of Health for Southport, says—

Nothing has surprised me more than that it could ever have been a question whether the flesh of an animal suffering from a zymotic disease is fit for human food. In the case of an idiopathic or simple inflammation there *may* be a question, though it is doubtful if inflammation of serous membranes ever occurs except in connection with tubercular deposit or more or less septicœmia. How the flesh of an animal whose blood is the habitat of a malignant *contagium* in process of active multiplication, can be fit for food, I am at a loss to imagine.

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 carcass of every animal which has pleuro-pneumonia.

M. C. Fenton, M.D., Diplomate in State Medicine, T.C.D., Medical Officer of Health for Coventry—

In the absence of direct evidence as to the effect of eating such meat, I would argue that it is calculated to be injurious to health.

The disease, although manifesting itself in the pulmonary organs, cannot be confined to the thorus, &c., any more than scarlet fever or typhoid fever to the throat or bowels; through the medium of the blood, the infecting germs or virus is conveyed to every tissue

in the body, consequently the poison must be introduced into the body with the meat, probably, in an active condition, as we know that the infecting virus is capable of withstanding a very considerable amount of heat, so that it would not necessarily be destroyed by cooking.

Dr. F. W. Pavy, F.R.S., Medical Officer of Health for St. Luke's, Middlesex, and whose treatise on Food and Dietetics is a classical work, also condemns the use as food for man, the flesh of pleuro-pneumonic oxen.

Opinions of Standard Authors as to the Unfitness of Pleuro-Pneumonic Beef as Human Food.

The late Dr. Letheby, Medical Officer of Health for London, in his published works, asserts that it should not be used.

Dr. Parkes, F.R.S., in his *Manual of Hygiene*, after weighing the arguments for and against the use of the flesh of diseased animals, is of opinion that pluero-pneumonia renders flesh unfit for food.

Dr. Taylor, in his *Medical Jurisprudence*, says it is by no means improbable that among the poor of large cities the secret sale of decomposed and unwholesome meat is a very frequent cause of disease and death.

Dr. Pavy, F.R.S., in his work on Diet, says, that it is only right to look upon such meat as unsafe, and unfit for human food.

Drs. Woodman and Tidy (*Forensic Medicine*, p. 546), condemn pleuro-pneumonic beef.

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, and he certainly makes out a strong case in support of his views. Professor John Gamgee, the author of several works on veterinary

subjects, is exactly of an opposite opinion. Some years ago, when the first attempt was made in Dublin to prevent the traffic of diseased meat, an application was made to the whilom Lord Mayor (now Sir James Mackey), to order the destruction of the carcass of an oxen affected with pleuro-pneumonia. The animal was in the first stage of the disease, and was a fine heavy beast. Dr. Mapother and myself made the application, and we were forcibly supported by a distinguished veterinarian, Professor Hugh Ferguson, Her Majesty's Veterinary Surgeon, and now Director of the Veterinary Department of the Irish Privy Council. The application was granted. Upon that occasion Professor Ferguson informed me that he had invariably found pleuro-pneumonic beef to produce diarrhœa in dogs fed with it.

Circulars were sent by the Public Health Committee to the twelve veterinarians who are known to be practising in Dublin and its suburbs. Six only replied—namely, Messrs. Josephs, Paley, 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.

Mr. W. C. Josephs, M.R.C.V.S., who, as an Inspector under the provisions of the "Cattle Disease Prevention Acts," has had great experience, says :—

I am of opinion that the flesh of oxen, killed whilst suffering from pleuro-pneumonia, is not fit for food for man, because I consider the entire system is poisoned by a peculiar virus for some period previous to the appearance of the disease in the first stage.

I consider that the flesh of oxen suffering from pleuro-pneumonia in its second stage, in which you have a purulent secretion thrown out, to be not only unfit for food, but highly dangerous.

During my professional connection with the South Dublin Union, as their Veterinary Inspector, I made some hundred *post-morten* examinations in cases of pleuro-pneumonia, but could not pass a single case in the second stage as fit for human food.

Mr. W. Mason states :—

After many years' experience in the treatment of cattle suffering from pleuro-pneumonia, I believe that the flesh of the animal is not fit for human food. I have opened and examined many animals after death; and from what I have seen, it confirms my belief that the whole carcass is affected from the disease.

I do not believe that such flesh may be used under any circumstances.

Mr. Charles Allen, M.R.C.V.S., observes :—

As contagious pleuro-pneumonia is known as a specific disease of the blood, which fluid has been circulating for a long time in the minute tissues of the body in a poisonous state, previous to any symptoms being observed, and as the changes which take place in the lungs are simply due to their structure, I consider the flesh of such diseased animals unfit for human food, in the first or any stage of the disease.

Mr. James M'Kenny, M.R.C.V.S., in a long and very able letter, published in the Dublin *Freeman's Journal* for October, 5th, 1877, combats the arguments brought forward in a Report* upon the use of pleuro-pneumonic beef. The following is an extract from this letter :—

The indirect evidence quoted in the Report is—"That no case is on record wherein the flesh of cattle, slaughtered while suffering from pleuro-pneumonia in any stage, has been proved to give rise to disease in man, and this is not because the meat has not been extensively consumed. Authorities prove that the flesh of animals thus affected has been daily used in Paris for the last twenty years without any appreciable results." And again—"On carnivores in the Zoological Gardens the meat has produced no perceptible effect."† Now, in the first case, those who consumed the flesh of animals whose lungs were known by them to be in a putrid state, I have no hesitation in saying, the very first sight of them on some, would be sufficient to act most effectually as an immediate emetic, and those who had a knowledge of what they were eating, if they afterwards suffered from indigestion, &c.,

* A Report presented to the Cattle Trade Association by Doctors Macnamara, Macalister and Reynolds.

† This kind of flesh is only given to the jackals, vultures, and other *carrion* eaters : but not to the Felidœ, &c.—C.A.C.

would attribute it to the meat, and not to some vegetable, &c., which they also may have partaken of, which is often at present the case; and we would shortly have the medical testimony of thousands of cases of diarrhœa, &c., resulting from its effects. I do believe at present it would be the last thing a doctor would attribute any case of illness to, simply from the fact that no one would buy it if they knew it, and the butchers don't label it "Pleuro-Pneumonia Beef." Therefore such an argument at present is groundless; and it is simply madness to attach any weight to the effect of bad meat on carnivora, their digestive, &c., powers are so very different to those of men. Are the writers of the Report so satisfied with their inquiry as to be sanguine enough to take the responsibility of recommending hospitals and unions, &c., to be supplied with this "perhaps* harmless" meat, or advise it to their patients? The consideration of the second part of the subject does not seem to have been much reflected on by the authors of the Report—"the destruction of such meat is a wasteful expenditure," &c. This is only supported with the supposition that the meat is proved in the first case "perhaps harmless" to human beings; but the fact of the history proving that it is a contagious and most fatal disease, led the Government to think so seriously of the matter that they summoned a special meeting for the enquiry into the matter, and the result of the lengthened inquiries from various reasons, led them to form a very different opinion, so much so that a Council Order for the compulsory slaughter of such animals was issued. Now, if these animals are slaughtered for human food under the present arrangements, what would be the result? Why, the purchaser, in examining the animal to ascertain its value, comes in contact with the virus, which is capable of remaining on his clothes for a considerable time, so that when he goes to fairs and markets he carries that with him which is capable of transmitting the disease to all healthy animals he comes in contact with; and then, should he purchase the beast, its dying breath, &c., saturates the butcher's and onlookers' clothes with the virus, and they become thereby the means of perpetuating the disease. Now, if disease requires to be stamped out, this would not be the way to attempt it. In concluding, I will not sum up the evidence so as to prejudice anyone. I simply leave the foregoing facts for each and all to judge for themselves. Do they consider such meat fit for human food, and would they like to eat it themselves or give it to their families? And if so, is the saving of the flesh of one animal a wise or foolish course, as by so doing, most probably, the disease will be spread to many, and thus be a considerable annual loss, or would the exterminating of the disease by the first loss be a profitable or a wasteful expenditure?

* The word in the Report is "perfectly."—C.A.C.

Medical Opinions in favour of using Pleuro-Pneumonic Beef.

Loiset states (Reynal's *Traité de la Police Sanitaire*, Paris, 1873) that during nineteen 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 nineteen years, the 150,000 inhabitants of Lille suffered from anthraxes, boils, phlegmons, and diarrhœa, 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. Greenhorn, 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 Ffrench 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 sign 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 putrifaction 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 stage of pleuro-pneumonia the flesh "may *probably* be quite harmless if *well-cooked.*" In the second stage, he says—

The change of structure in the lungs necessarily impedes the functions essential not only to the health, but to the life of the suffering animal; the requisite purification of the blood becomes more and more imperfectly performed; a condition of increasing deviation from the healthy state ensues, certainly in the fluids and and very probably in the solids as a consequence. In such circumstances, the processes of cookery can no longer be regarded as capable of rendering the flesh of the diseased cattle wholesome. It has been observed that the injurious effects of *spurred rye* when it has entered into the composition of bread are not averted by the process of baking. The *Sarcozoa of swine's flesh* have survived after subjection to various operations of cookery in which they were exposed to high temperatures, at least to that of boiling water, and have afterwards successfully resisted the digestive power of the human stomach, so as to be still capable of development within the living system, producing a peculiar and incurable disease. The *Wurtemburg sausages* furnish us with another instance, in which is exemplified a similar failure of the processes of cooking to prevent the fatal consequences referable to the use of a vitiated article of food.

I therefore conclude that the flesh of cattle whose lungs present the changes of structure described in this query, and traced to the contagious pleuro-pneumonia, is unfit for, and ought not to be used as, human food.

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. I have seen the flesh of animals in an advanced stage of the disease become putrid within twenty-four hours after the death of the animal, notwithstanding that the carcass had been thoroughly bled. No amount of cooking could render such flesh eatable or remove its offensive odour.

The fifteen 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, except-

ing in a *very* early stage." Dr. Davies, Newport, says, "only in the early stage." Dr. Goldie, Leeds, states, "in the primary stage." Dr. Barry, Limerick, considers it only fit for food in the *early* stage, but considers that if the sale of such meat is authorized, it will create a "natural prejudice, which will effect a serious check to the sale of beef." 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. Lord bases his opinion upon "general observations and much experience." 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. Tribe, 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. I may also say that if the meat smelt of physic, I consider it would be unfit for food. I may also state that if I saw the lungs contained pus, although the meat were not altered, I should certify it to be unfit for human food.

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 stage 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 carcass 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.

APPENDIX A.

Names of Medical Men residing in or near Dublin, who consider the flesh of Oxen affected with Pleuro-Pneumonia unfit for Food under any circumstances.

W. O. O'B. Adams, M.D., F.C.P.; G. C. Armstrong, M.D., F.R.C.S.; Isaac Ashe, M.D.; Lombe Atthill, M.D., F.C.P.; Robert Atkinson, M.R.C.S.L.; J. M. Attkin, M.D.; H. A. Auchinleek, L.C.P., L.R.C.S.E.; Richard Austin, M.D., M.R.C.S.E.; J. A. Baker, F.R.C.S.; A. W. W. Baker, M.B.; A. Banks, M.B.; J. T. Banks, M.D., F.C.P.; J. Barker, M.D., F.R.C.S.I.; J. W. Barry, L.R.C.S. & C.P.I.; J. K. Barton, M.D., F.R.C.S.I.; J. P. Baxter, L.A.H.; C. P. Baxter, M.B., L.R.C.S.I.; J. G. Beatty, L.R.C.S.I., L.C.P.I.; C. A. Bell, M.B., L.R.C.S.I.; J. Hawtrey Benson, M.D., F.C.P.; M. C. Bernard, M.B., L.R.C.S.I.; Philip Bevan, M.D., Prof. Anat. Coll. of Surg.; John Blyth, M.D., L.C.S.E.; R. Browne, M.D., F.R.C.S.I.; C. T. Boland, L.A.H.; Wm. Boles, L.R.C.S., L.C.P.I.; Daniel Booth, L.R.C.S., L.C.P.I.; Wm. H. Bourke, L.R.C.S.I.; Wm. Boyle, L.R.C.S., L.C.P.I.; Hall Bredin, M.D. Ed., L.R.C.S. Ed.; E. J. Brock, L.A.H.; G. S. Buchanan, L.R.C.S.I.; D. F. Buckley, A.B., L.R.C.S. & P. Ed.; A. J. Burke, L.R.C.S.I.; J. G. Burne, L.R.C.S.I. L.C.P.I.; G. S. Burnside, L.R.C.S.I., L.A.H.; R. G. Butcher, M.D., F.R.C.S.; J. A. Byrne, M.B.; Wm. H. Byrne, L.R.C.S., L.C.P.I.; S. Carpenter, M.R.C.S.E.; Sir William Carroll, L.R.C.S.E., L.C.P.I.; W. J. Carroll, L.R.C.S. & P.I.; C. U. Carruthers, L.R.C.S., L.C.P.I.; J. H. Chapman, L.R.C.S., L.C.P.I.; F. Churchill, F.C.P.; J. R. Clarke, M.R.C.S.L.; H. Colgan, L.R.C.S., L.C.P.; F. H. Collins, M.D.; E. W. Collins, M.D., F.R.C.S.I.; C. Coppinger, L.C.P., L.R.C.S.I.; J. E. Corbett, L.R.C.S.I.; H. J. Coulton, M.D., L.R.C.S., L.C.P.; J. J. Cranny, M.D.; H. Croly, M.D., F.R.C.S.I.; A. Croly, L.R.C.S., L.C.P.I.; H. G. Croly, F.R.C.S.I.; M. W. Daly, M.D., F.R.C.S.I.; T. Darby, F.R.C.S.I., L.C.P.; B. G. Darley, M.B., L.R.C.S.I.; E. W. Davy, M.D., Prof. Roy. Coll. Surg. Dub.; H. Davy, M.B.; O'C. J. Delahoyde, L.R.C.S. & C.P.I.; John Denham, M.D. Ed., F.R.C.S.I.; W. H. Digges, L.R.C.P.E.; G. T. Duffey, M.D., F.C.P.; J. Dunn, L.R.C.S.I.; R. W. Egan, L.R.C.S. & L.C.P.; W. A. Elliott, F.R.C.S.I.; J. Evans, L.A.H.; W. R. Evans, M.B.; J. R. Ferguson, M.B., L.R.C.S.I.; J. M. Finny, M.D., F.C.P.; J. B. Fisher, L.A.H.; W. A. Fitzgerald, M.B., L.R.C.S.I.; H. Fitzgibbon, M.D.; T. Fitzpatrick, M.D., F.C.P.; Chr. Fleming, M.D., F.R.C.S.I.; A. W. Foot, M.D., F.C.P.; James Ford, L.A.H.; J. M. H. J. Franks, M.D., L.R.C.S.I.; Samuel Gordon, M.D., President, C.P.; S. T. Gordon, L.R.C.S. & L.C.P.; A. H. Gore, M.D., F.R.C.S., Surg. Major; H. J. Gogarty, F.R.C.S.I., L.R.C.P.E.; James Graham, L.A.D.; J. J.

Graham, L.A.H.; Surgeon Major Gray, F.R.C.S.I.; W. H. Griffiths, L.R.C.P. & S.E.; T. W. Grimshaw, M.D., F.C.P.; H. R. Hadden, M.D., F.R.C.S.I.; J. W. Halahan, L.A.H.; H. S. Halahan, L.R.C.S., L.C.P.I.; Edward Haliday, L.R.C.S., Ed.; C. Hamerton, F.R.C.S.I.; John T. Hamilton, M.D.; Edward Hamilton, M.D., F.R.C.S.I.; R. W. Harley, L.R.C.P. & S.E.; Reuben J. Harvey, M.D.; G. W. Hatchell, M.D., F.R.C.S.I.; Thomas Hayden, M.D., F.C.P.I.; W. J. Hepburn, F.R.C.S.E., L.C.P.I.; P. J. Hayes, L.R.C.S.I., R.C.P.E.; Wm. J. Holmes, M.D.; J. Hughes, M.D.; J. S. Hughes, M.D., F.R.C.S., Prof. Surg. Roy. Coll. of Surg.; A. H. Jacob, M.D., F.R.C.S.I.; W. B. Jennings, F.C.P.; Richard Johnston, L.C.P., R.C.S.I.; G. Johnston, M.D., F.C.P., M.R.C.S.L.; W. H. Johnston, M.D.; Evory Kennedy, M.D., F.C.P.; J. E. Kenny, L.R.C.S. & C.P.I.; M. J. Kilgarriff, F.R.C.S.I.; J. R. Kirkpatrick, M.B., F.R.C.S.I.; F. Kirkpatrick, F.R.C.S.I.; J. F. Knott, L.R.C.S., C.P.I.; H. Labatt, F.R.C.S.I.; E. Lapper, L.C.P.I.; E. Lawlip, M.R.C.S.L.; Edward Ledwich, F.R.C.S.I.; C. H. Leet, M.D., L.A.H.; J. Leney, M.D., L.R.C.S.I.; A. W. H. Leney, M.B., L.R.C.S.I.; J. Leonard, L.R.C.S., P.E.; L. E. Lipsett, F.R.C.S.L.; James Little, M.D., Prof. Medicine, R.C.S.I.; T. E. Little, M.D., University Anatomist; Edward Long, M.R.C.S.L., L.A.H.; P. W. Long, M.D., L.R.C.S.I.; A. H. F. Lynch, L.R.C.S., P.I.; A. V. Macan, M.B., L.C.P.I.; S. M. MacSwiney, M.D.; A. H. W. M'Clintock, M.D., LL.D., F.R.C.S.; J. M'Donnell, M.D., F.R.C.S.I.; R. M'Donnell, M.D., F.R.S., President, R.C.S.I.; W. C. M'Entee, L.A.H.; W. R. M'Nab, M.D.; J. F. M'Veagh, M.D.; R. B. M'Vittie, M.D., L.R.C.S.I.; T. More Madden, M.D.; R. Maguire, F.R.C.S.I., M.R.C.S.L.; H. W. Mahon, M.D., R.N.; S. Malassez, M.R.C.S.L.; A. H. Marks, M.D., F.R.C.S.; E. G. K. Marks, M.D., L.C.P.I.; C. F. Marks, M.D., M.R.C.S.E.; Ed. D. Mapother, M.D., Prof. Anatomy, R.C.S.I.; T. P. Mason, M.B., F.R.C.S.I.; S. R. Mason, M.B., L.R.C.S.I.; H. Minchin, M.B., F.R.C.S.I., Prof. Botany, Royal Coll. Surg.; Robert H. Moore, F.R.C.S.I.; William Moore, M.D., F.C.P., Prof. Medicine, T.C.D.; J. W. Moore, M.D., F.C.P.; T. H. Moorhead, M.D., M.R.C.S.E.; J. Morrison, M.D., F.R.C.S.I.; G. Morrogh, M.D., M.R.C.S.E.; J. W. Mullen, L.R.C.I.; S. Murdoch, L.R.C.S., P.T.; W. Z. Myles, L.A.H.; T. W. Myles, L.R.C.S., C.P.I.; Thomas Nedley, M.D.; J. M. Nicholls, L.R.C.S.I., L.A.H.; F. A. Nixon, F.R.C.S.I.; H. P. Nolan, M.D.; E. J. Nugent, L.R.C.S. & P.I.; H. O'Hara, L.C.P.I.; G. Oldham, M.D.; D. O'Leary, L.A.H.; W. H. O'Leary, M.P., F.R.C.S.I.; L. H. Ormsby, F.R.C.S.I.; Charles O'Rorke, L.R.C.S., P.I.; Sir G. B. Owens, M.D.; J. R. Palmer, L.R.C.S., P.I.; J. R. Panter, L.R.C.S. & C.P.I.; Alexander Paton, M.B., L.R.C.S., P.I.; W. B. Pearsall, F.R.C.S.I.; W. B. Peebles, M.B.; E. Peele, L.R.C.S., P.I.; J. F. Pollock, M.B., F.R.C.S.I.; F. A. Pope, M.B., F.R.C.S.I., &c.; G. H. Porter, M.D., F.R.C.S.I.; F. T. Porter, L.R.C.S. & P.I.; T. Purcell, L.R.C.S. & P.I.; G. C. Purcell, L.R.C.S. & P.I.; R. D. Purefoy, M.B.; E. G. Quinan, M.D., F.R.C.S.I.; F. J. B. Quinlan, M.D.; R. Rainsford, M.B., F.R.C.S.I.; P. R. Reid, L.R.C.S., P.E.; B. W. Richardson, F.R.C.S.I.; C. E. Ross, L.R.C.S., P.I.; C. H. Robinson, F.R.C.S.I.; Wm. Roe, M.D., F.R.C.S.I.; Thomas Rogers,

M.R.C.S.L.; G. Rowles, M.R.C.S.E., C.P.I.; J. Ryan, M.D.; W. B. B. Scriven, M.B., M.R.C.S.E.; N. Seward, M.D., M.R.C.S.E.; J. Shaw, L.R.C.S., P.E., L.A.H.; J. Shortt, L.R.C.S.I., L.R.C.P., Ed.; F. J. Short, Surg. Major, L.R.C.S.I.; W. J. Smyly, M.D., F.R.C.S.I.; P. C. Smyly, M.D., Vice-President, R.C.S.I.; W. H. R. Stanley, M.D.; W. H. Stock, L.C.P.I; W. T. Stoker, M.D., Fellow and Prof. Anatomy, R.C.S.I.; L. Stoney, M.D., F.R.C.S.I.; W. Stokes, LL.D., D.C.L., M.D.; William Stokes, M.D., Fellow and Prof. Surg., R.C.S.I.; H. R. Swanzy, M.B., F.R.C.S.I.; H. K. Swettenham, M.D., Dep. Ins.-Gen,; Wm. Thomson, M.D. F.R.C.S.I.; J. Todhunter, M.D., L.C.P.I.; J. Tufnell, F.R.C.S.I,; H. J. Tweedy, M.D., F.R.C.S.I.; H. Tweedy, senior, M.D.; J. W. Usher, L.C.P.I.; R. Wade, L.R.C.S.I.; F. W. Warren, F.R.C.S.I.; J. W. Webb, M.D.; S. H. Webb, F.R.C.S.I., L.C.P.I.; J. H. Wharton, M.D., F.R.C.S.I.; J. Widdup, L.R.C.S.I.; S. Woodhouse, M.D., F.R.C.S.I.; T. B. Worthington, M.B.; W. M. A. Wright, M.B., L.R.C.S.I.; G. Wyse, M.D.; J. W. Young, M.D., L.R.C.S. & P.I..

APPENDIX B.

Medical Officers of Health who consider Pleuro-Pneumonic Beef unfit for Food.

D. Ainley, M.R.C.S., L.C.P.L., Halifax; T. A. Alexander, L.R.C.P., S.I., Watton, Norfolk; H. E. Armstrong, M.R.C.S., Newcastle-upon-Tyne; G. P. Bate, M.D., F.R.C.S.E., Bethnal Green; A. W. Barclay, M.D., Chelsea; W. C. Barnish, M.R.C.S., L.S.A., Wigan; G. Bland, L.R.C.P.L., Macclesfield; A. B. Brabazon, M.D., Bath; S. Brown, J.P., M.R.C.S., Eng. L.C.P.I., Belfast; J. W. Browne, M.D., F.R.C.S., Derry; F. I. Burge, M.R.C.S., L.S.A., Fulham; J. W. Crane, M.D., M.R.C.P.L., Leicester; T. W. Cross, F.R.C.S., Norwich; D. Davis, M.R.C.S.E., Bristol; E. Davies, M.R.C.S., L.S.A., Swansea; J. Dixon, M.D.,L.R.C.P.L.,M.R.C.S.L.,Anerley,Surrey; J.Edmonds,M.R.C.P.L., M.D., St. James's, London; R. Elliott, M.D., F.R.C.P.L., Carlisle; A. Farr,L.R.C.P.,Lambeth; M.A.Fenton,M.D.,Dip.StateMed.,Coventry; J. H. Granshaw, M.D., M.R.C.S.L, Gravesend; A. Hill, M.D., Birmingham; W. Iliffe, M.R.C.S., L.S.A., Derby; C. E. James, M.B., Kilkenny; J. B. Jardine, M.D., L.R.C.S.E., Chatham; G. A. Kenyon, M.B., Chester; J. Leigh, M.R.C.S., Manchester; J. Liddle, M.R.C.S., L.S.A., Whitechapel, London; S. R. Lovett, L.R.C.P., L.S.A., St. Giles', London; J. MacDonogh, M.R.C.S., L.S.A., Clapham, Surrey; D. Mackay, M.D., L.R.C.S.E., Inverness; J. May, junior, M.R.C.S.E., Devonport; R. McNicoll, M.R.C.S., L.S.A., St. Helen's, Lancashire;

G. E. Nicholas, M.D., M.R.C.S., Wandsworth, Surrey; F. Ogston, M.D., Aberdeen; F. W. Pavy, M.D., F.R.S., St. Luke's Middlesex; C. Peres, L.R.C.S., L.R.C.P., Burton-on-Trent; H. N. Pink, L.R.C.S., Greenwich; E. Pochlington, M.R.C.S.L., L.S.A., Wimbledon; P. M. Rice, L.R.C.S., P.I., Galway; W. Sedgwick Saunders, M.D., London; E. Sergeant, M.R.C.S., C.P.L., Bolton; J. Shea, M.D., M.R.C.S., Reading; J. J. Skegg, L.R.C.P., M.R.C.S., St. Martin's, London; T. Stephens, M.R.C.S., Tynemouth; T. Stevenson, M.D., St. Pancras, London; J. Stevenson, M.D., M.R.C.S.E., Paddington, London; C. M. Tidy, M.B., Islington; F. Vacher, L.R.C.S. & C.P.E., Birkenhead; H. H. Vernon, M.D., M.R.C.S., Southport; J. N. Vinen, M.D., St. Olaves' Dist., Southwark; I. S. Walker, M.D., Hanley; John Wall, M.D., L.R.C.S.I., Cork; J. M. Wilson, M.B., Rochdale; J. E. Wilkinson, M.D., L.R.C.P., M.R.C.S., Sydenham; T. Wright, M.D., M.R.C.S., Cheltenham; H. J. Yeld, M.D., M.R.C.S., Sunderland.

APPENDIX C.

Dublin Veterinarians who consider Pleuro-Pneumonic Beef unfit for Food.

Charles Allen, M.R.C.V.S.L.; W. C. Joseph, M.R.C.V.S.L.; J. M'Kenny, M.R.C.V.S.L.; William Mason, V.S.; D. Paley, F.R.C.V.S.; W. Francis, V.S.

APPENDIX D.

Dublin Medical Men who consider Pleuro-Pneumonic Beef fit for Food under certain circumstances.

R. Battersby, F.R.C.S.I., Deputy Inspector General Hospitals; F. Battersby, M.B., F.R.C.S.I.; S. L. L. Bigger, M.B., F.R.C.S.I.; D. F. Brady, M.D., F.R.C.S.I; N. J. Butler, L.C.S.I., C.P.I.; H. Cloran, W. Colles, M.D., F.R.C.S.I.; T. Collins, L.R.C.S., L.A.H.; J. Daly, M.B.; J. Eustace, L.R.C.S., C.P.I.; W. Faussett, M.B., F.R.C.S.I.; J. Finegan, L.R.C.S.I.; Christopher Gunn, M.D., L.C.P.I.; Rev. S. Haughton, M.D., F.C.P.; H. Kennedy, M.B., F.C.P.; J. F. Knipe, M.R.C.S., L.C.P.I.; E. Le Clerc, M.R.C.S.L.; R. L. Lyon, L.A.H.D.; J. D. M'Cready, M.B., F.R.C.S.I.; P. J. M'Evoy, L.R.C.S., C.P.I.; G. M. Nixon, M.B.; R. G. O'Flaherty, M.B., L.R.C.S.I.; J. O'Flaherty, L.R.C.S.I., L.A.H.; F. Pim, L.C.P.I., M.R.C.S.; J. Roche, M.D.; J. W. Swan, M.B., F.R.C.S.; J. Toler, M.B., F.R.C.S.; R. Travers, M.D.; W. J. Wheeler, M.D., F.R.C.S.I.; R. N. Willes, M.B., M.R.C.S.

APPENDIX E.

Medical Officers of Health who consider that Pleuro-Pneumonic Beef may be used under certain circumstances.

Dr. Barry, Limerick; Dr. Bateson, Southwark; Dr. Bitchett, Huddersfield; Dr. Bristowe, Camberwell; Dr. Davies, Newort; Dr. Dougal, Kenning Park, Glasgow; Dr. Goldie, Leeds; Dr. Littlejohn, Edinburgh; Dr. Lord, Hampstead; Dr. Russell, Glasgow; Dr. Seaton, Nottingham; Dr. Taylor, Liverpool; Dr. Tribe, Hackney; Dr. Wade, Wakefield; Dr. Whitmore, St. Marylebone.