THE

CONTAGIOUS DISEASES

OF

ANIMALS:

THEIR INFLUENCE ON THE WEALTH AND HEALTH OF THE NATION,

AND

HOW THEY ARE TO BE COMBATED.

By GEORGE FLEMING, F.R.G.S.,
Veterinary Surgeon, Royal Engineers;
EDITOR OF
The Veterinary Journal and *Annals of Comparative Pathology.*

Read before the Society of Arts, February 23rd, 1876.

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Having had the pleasure of hearing Lord Alfred Churchill deliver a most instructive address, at the commencement of the present session of the Society of Arts, I was particularly struck with the reference made to the increasing demand for animal food, and the means which were being devised to import the flesh of animals from distant countries, where cattle and other food-producing creatures are abundant and cheap. But while much interested in the attempts that were made to accomplish this most important object, I could not help thinking, at the same time, that we were far too little concerned about home produce, and that we were not exerting ourselves as we ought to increase, and consequently to cheapen, our own food-productions. Neither do we appear to be at all alive to the terrible loss annually sustained in this country from the ravages of transmissible or "contagious," but preventible, diseases

among animals which furnish us with food, or yield us essential services as beasts of burden. And neither do we seem anxious to consider, as we should, the heavy embarrassment to cattle traffic, nor the danger to health, which some of these "catching" maladies inflict upon us—losses, embarrassments, and dangers which are yearly on the increase, and to which we calmly submit as if we were fatalists, or lived in the dark ages when medical or sanitary science did not exist. And, again, when looking to other regions for increased supplies—regions which can now furnish them, because their human population is as yet too sparse to require them for their own sustenance—we are apt to overlook the fact that some day this source may fail us, either because the supplies may be required on the spot where they are created, or the very diseases which now diminish our own contribution may abolish this source when they are introduced into these, as yet, uncontaminated countries.

These reflections, which did not arise for the first time in November last, but have been impelling me for many years to an earnest study of this subject in all its bearings, made me resolve to request permission to introduce this paper before your excellent Society, with a view to draw public attention to the serious issues involved in its consideration, and, if possible, to assist in indicating the most appropriate and efficient measures to

limit, or altogether suppress, the scourges of animals we designate "contagious diseases."

In this resolution I was confirmed by the remarks of Lord Alfred Churchill, and also by the knowledge that the subject was quite within the scope of your Society. For though, in some of its features, it may be deemed an essentially medical or sanitary question, yet, on the other hand, it is on the whole one of vast public interest and pressing urgency, and one with which the aims of your Society are closely allied. For the art of preserving human life from the operation of influences connected with the arts whose development you encourage, you have already praiseworthily recognised on many occasions, but on none, perhaps, so strikingly as in that intensely engrossing series of lectures now being delivered by one of the greatest medical philosophers of our age, Dr. Benjamin Richardson. The preservation of human life from accidents of all kinds has also largely engaged your attention; and to prove that your good intentions are not limited to our own species, I may with gratitude refer to the honourable distinction you conferred upon me last year, for a paper which had for its object the preservation of the horse, in so far as the art of farriery is concerned.

Besides all this, medical or sanitary science has pointed out that, in order to combat diseases, and especially those of a spreading kind, a most com-

plete and efficient organisation is absolutely necessary. For the invasion of contagious maladies s like that of a most wily and subtle human foe—powerful only in his subtlety, and capacity to elude observation until he makes his attack. Not only this, but every step gained by him forms a new basis, from which an advance may be made in all directions. Therefore, knowing this, we require a correspondingly perfect and skilled organisation to cope with him; and we may also have to control the districts he invades, even though they be our own. Here, then, the art of organisation comes into play, and this is an art in which, and particularly with regard to sanitary organisation, we as yet do not shine, because, I suppose, your Society has not included it among the arts it fosters and patronises. Let us hope that you may recognise it as one well worthy of your solicitude and advancement.

The daily increasing value of many of the domesticated animals, due to the greater demand for them as nations increase in numbers and civilisation, and the greater necessity for perfecting and preserving them, have been apparent for many years. Animal food has become more and more requisite for the busy physical or mental toiler, and animals have become more and more necessary as motor machines, notwithstanding the large number of non-vital machines invented by man to supplement or supplant them. Anything,

therefore, which diminishes our flesh supply, or hampers it, or reduces the services we require from these animals, is a matter of great moment in the conditions under which we now live. And when, besides this, we are at the same time exposed to serious—it may be fatal—maladies, through consuming their flesh or products, or coming in contact with them, then is the question greatly increased in importance.

I need not dwell at any length on the medical aspect of the subject, though I hail with delight a growing desire on the part of the masses to learn more pertaining to vitality—to life, health, and disease. It may, therefore, be sufficient if, in relation to what I am about to say, it is stated that transmissible maladies may only be so in respect to the same species, that is, from horse to horse, cow to cow, &c., or to one or two allied species; or from one to every or nearly every species. We have well marked instances of these. Again, a "catching" disease may be so intensely virulent, that the slightest contact of a healthy with a sick animal, or even a few minutes' stay some distance from it, or near anything which has touched it or has been in its vicinity, will produce infection in almost every animal so exposed; or it may be so slightly transmissible that prolonged contact, or even inoculation with some of the fluids containing the virus, is necessary to produce the disease in only a certain number. In this re-

spect every contagious disease has its special characters—its own individual potency and diffusibility. Some of these communicable disorders, again, are extremely fatal, and kill almost every creature they attack; while others only produce a slight and transient derangement of health. In this respect, however, they vary, malignant diseases being sometimes less deadly, and benignant ones occasionally very destructive.

The "catching" quality of a disease depends upon the presence of certain exceedingly minute living particles or germs—at least, for convenience sake, we will suppose it does. These are possessed of immense reproductive power, and more or less tenacity of life. Some of these specific germs possess the faculty of reproduction to such a degree, that a very few of them introduced into an animal body adapted for their reception, will, in a short time, have become so multiplied, that the whole of the tissues and fluids—it may be of an elephant—are impregnated with them. We have also diseases due to animals more or less minute, which take up their abode in different parts of the body, and give rise to particular disorders; and which again, if they obtain access to another animal, when this eats the flesh or any of the products of the one they infested, may give rise to great inconvenience, or a more serious form of disease. We have, likewise, transmissible diseases due to vegetable growths in the interior or on

the surface of the body. Some of these contagious diseases may affect the entire mass of an animal, and the poison exist in the flesh, secretions, breath, &c., or only certain organs, tissues, or fluids may be involved.

The poison, germs, parasites, or whatever the agents may be upon which the disease depends for its maintenance or multiplication, may gain access to a healthy body through the breathing apparatus, stomach, skin, a wound, &c.; and before its effects are manifest, a certain period—in some diseases pretty well defined, in others not so—generally elapses. The disease may, or may not, be communicable during this latent period.

Some of these diseases are, in the present state of our knowledge, incurable; all are more or less prejudicial to the animals they affect, either by killing them outright, or when curable, depreciating them in value, permanently or temporarily: diminishing more or less their products or their services, or rendering their flesh or products of less value, or even dangerous, as food for man or other creatures.

Though certain diseases are transmissible from man to animals, yet a far greater number are communicable from these to man, and some of them are extremely fatal when so transmitted.

Some of these diseases of animals are indigenous to the country, and may be developed "spontaneously," through unsanitary or other influences;

while other of these maladies are "exotic," or foreign to our soil, and are, or have been introduced from countries where they are more or less prevalent. These exotic diseases are by far the most serious, and have proved a most terrible scourge to this country; they cannot be developed here by any combination of circumstances or conditions, but depend solely for their maintenance on their contagious properties.

A knowledge of this undeniable fact is of great moment, in connection with their suppression; for badly informed people, who fancy these can be "generated" in different ways in this country, would also have us believe that it is useless trying to suppress them like other contagious diseases. This was the painfully erroneous notion which also prevailed when the cattle-plague was introduced twelve years ago, and the injury the silly idea wrought we can all remember; we can also recollect how it was proved to be utterly destitute of a shadow of probability by the manner in which the plague was eventually stamped out. The same ignorance yet prevails with regard to the exotic diseases from which we now suffer, and the baseless notions are working as much harm every year as they then did. The people who entertain such fancies, when they are not moved by interested motives, cannot know anything of the history or the nature of such maladies.

It is only quite recently that these foreign con-

tagions have been introduced among our more valuable animals. On the Continent of Europe, the events of war, but more especially the greatly extended intercourse brought about by railways and steamboats, have been carrying these diseases from their birth-place, and gradually diffusing them all over the world. For the most serious of them have a wonderful power of adaptation, and they can maintain themselves in a great range of climate, and under extremely variable and diverse circumstances.

The most formidable and harassing of the exotic contagions of animals of which we have as yet had any experience, are three in number—the rinderpest or "cattle-plague," and what are commonly known as the "lung-plague," and "foot-and-mouth" disease. The rinderpest has made only one great invasion of this country during the present century; and then, through the most unpardonable ignorance and supineness, it wrought an amount of destruction and ruin which is absolutely appalling, when we consider the short time it was allowed to revel unchecked among our herds and flocks. In the cattle-plague invasion of 1865 and 1866, we may set down the money loss from its ravages at something between ten and twelve millions of pounds. Indeed, it is scarcely possible to compute the total amount of damage it inflicted, as we had not very trustworthy means of arriving at the truth.

Yet this is a purely contagious, and therefore a preventable malady.

But if the rinderpest caused such startling havoc in such a brief space, it must be confessed that the two other diseases—"lung-plague" and "foot-and-mouth" disease—have been no less serious scourges; inasmuch as, owing to their less fatality and their having been for so many years domiciled in these islands, they have not attracted so much attention, though they have become none the less universal, and their ravages have been yearly on the increase.

For reasons which will be presently alluded to, we are unable to arrive at anything like a correct estimate of the damage inflicted on the national wealth by the two scourges just named, since their introduction some 36 years ago. Until within the last eight or nine years, no effort was made to ascertain the exact loss they were causing; and though it is now attempted to give a statement of this loss, yet the returns cannot be accepted as affording us any more than a very faint idea of the money swallowed up by these two contagious but preventible scourges. In fact, we are almost in the dark as to the actual damage, in pounds, shillings, and pence —to say nothing of the embarrassment to trade— which these two diseases occasion.

The "lung-plague" is pretty well a concealed disease, and one with whose prevalence the small cattle dealer and petty butcher are better acquainted,

perhaps, than the police or other kind of inspector. Yet it has been calculated that in Edinburgh alone, the annual loss from it is between £200,000 and £300,000. For the six years ending with 1860, it has been estimated that there perished considerably more than a million of cattle in the United Kingdom, the value of which must have amounted to at least twelve millions of pounds. The tables of an English Cattle Insurance Company prove that from 1863 to 1866, the death-rate from this scourge was from fifty to sixty-three per cent. annually. If we can form any judgment from these figures, it will not be too much to assert that the "lung-plague" costs us at the very least £2,000,000 a year.

The malady has been carried from Great Britain to her colonies; and in Australia it is estimated that the stock of cattle is reduced by a million of pounds annually.

But we have no time to notice this disease further than to observe, that what with its long duration in those attacked, the slow and protracted convalescence when they chance to recover, the consecutive disorders—perhaps permanent loss of condition—the non-productiveness of the animals for months, all this makes it one of the most disastrous plagues than can afflict a cattle-producing country.

The other exotic malady, "foot-and-mouth disease," though not nearly so fatal, is yet, per-

haps, a greater destroyer of the national wealth than the "lung-plague." We cannot arrive at anything approaching exactitude with regard to the damage it inflicts, as a large number of the outbreaks are never reported. Little is known as to the loss incurred from it previous to 1869; but from the attempts that have been made to arrive at a proximate estimate of the destruction it and lung-plague occasioned for the thirty years preceding that date, we may infer that both maladies had cost the country at least £84,000,000. If we add to this the ravages of the cattle-plague in 1865-66, we shall not be far wrong if we put down the damage sustained, from 1839 up to 1870, as £100,000,000.

But the ravages of foot-and-mouth disease have been almost yearly on the increase since then. In 1871, according to the report of the Veterinary Department of the Privy Council (which, however, cannot be relied upon, as it is certain to be below the mark), no fewer than 519,523 cattle, or 10 per cent. of the entire stock of Great Britain, were attacked. Somersetshire, however, reported 12 per cent. attacked; and it is possible that some other counties had more. In 1872 the malady was so prevalent among cattle, sheep, and pigs, that in England and Scotland the direct money loss from it was rated at the astounding sum of £13,000,000; and even this enormous figure is supposed to be under the actual amount. In Leicestershire, for

example, where an attempt was made to obtain returns of the number and species of creatures affected, and where the loss on each bovine animal was put down at the low figure of £2, and sheep and pigs at 10s., it was computed that a sum total of upwards of £340,000 would not have covered the loss in that county alone. In Cheshire, in the same year, one-third of the total horned stock was attacked, the money loss being valued at 9 to 10 per cent. of the whole head of cattle in the county. In Herefordshire, in that year also, it was ascertained that more than 35,000 cattle, 108,000 sheep, and 9,000 pigs were affected with it, the loss being estimated at £156,000. In Ireland, for the same year, though the cattle reported as diseased must have been a mere tithe of the number actually infected, the loss is reckoned at about £442,000. What the loss was in 1874 it is impossible to say, the Veterinary Department of the Privy Council having given up recording the outbreaks of the malady since 1871. It must certainly have been very great, as, in thirteen parishes around Shaftesbury alone, 10,000 cattle, or nearly one-fourth of all the stock in them, were attacked, the loss being at least £15,000 in this small district. In 1875, owing to the disease having been more widely diffused than it ever was before, the damage inflicted by it must have been considerably over eight millions of pounds. From east to west, and north to south, it raged with a violence and viru-

lence which showed that time does not modify its intensity like some other contagious diseases. The county of Somerset alone lost £150,000 through it; while so far north as Aberdeen, the very lowest estimate shows that in this county 7,731 cattle and 8,954 sheep were attacked, the damage probably not being less than £65,000. Other counties, doubtless, suffered to a similar if not to a greater extent.

These astounding losses from three imported foreign diseases, which owe their maintenance and diffusion solely to their contagious properties, will testify at once to the immense importance of the subject I have brought before you, from a money point of view alone. Two preventable contagions, which rob the country of four, six, eight, ten, or twelve millions of pounds annually, cannot be designated anything less than scourges of the greatest magnitude.

Some superficial people have tried to make light of "foot-and-mouth" disease, merely because it is not always very fatal. But they little know what it is among the cattle, sheep, and pigs of farmers who are not wealthy, or among the dairy stock of those whose living depends upon the produce of their cows. When it is considered how rapidly animals lose condition, especially fat stock, what losses occur when it appears among milch cows, cows in calf, and oxen, sheep, pigs, and even poultry, and the embarrassment it may, from its

presence, occasion to agriculture and the cattle and milk trades, as well as the expense of curative measures, it cannot be denied for a moment that, even under the most favourable circumstances, this malady causes greater loss than the cattle-plague itself.

But we have other contagious maladies which, though they may be imported from abroad, like the three just alluded to, may yet be said to be "indigenous." One of these is the horrible disease "glanders" of the horse—which is transmissible to other species and also to mankind.

We are in the dark as to the extent to which this dangerous malady prevails, as here also the returns of the Veterinary Department of the Privy Council are not reliable. In London, where it exists to a far greater extent than is perhaps dreamed of, it is supposed to destroy horses to the value, annually, of £5,000; and in other parts of the country the loss may be set down at £20,000 more.

The ox suffers from scrofula, and some forms of blood disease which are contagious and destructive, but are not included in the Privy Council list.

The sheep is affected with some serious contagious maladies, but chiefly with a parasitic disease of the skin, that occasions much loss.

It may be said that thousands of pigs perish every year from contagious diseases which are not recognised by the authorities; and we do not know

the extent of the loss they occasion, nor even the nature of the diseases.

Rabid dogs cause much destruction to property, and numbers of people die every year from hydrophobia; yet rabies is a terrible disease not mentioned in any of the official records of the Privy Council.

In fact, we are altogether uninformed as to the injury inflicted on the national wealth by many maladies which are very serious and alarming, and are yet preventible.

With regard to the influence of the contagious diseases of animals upon the health of the nation, I am sorry I can say but very little indeed. The sanitary science of man is only in its infancy, while the sanitary science of animals scarcely exists; and until these two most important branches of medicine have attained a greater development than they can at present boast of, we shall not be in a position to estimate the amount of injury to health we suffer from in our dealings or our contact (external or internal) with animals.

The money loss from the more prevalent and serious of the diseases which attack cattle, sheep, and pigs must, to a certain extent, affect the public health, and especially that of the poorer classes, as it has a tendency to heighten the price of food, and to place that of good quality beyond their reach. What is originally an individual loss—a loss to the breeder or feeder of animals—becomes in this way a public loss, which increases as it extends out-

wards: from the cow-shed or pasture, to the lowly dwelling in the close, foul alley, because it is made a pretext for higher prices than the occasion really requires.

But the poorer classes suffer still more, perhaps, from the low-priced flesh of unhealthy animals, which they are compelled to buy. There cannot be the least hesitation in asserting that a regular traffic in diseased animals is carried out on a large scale in town and country; and if the flesh from them is not absolutely hurtful, it is at the very least less nutritious than that of healthy, properly-conditioned animals.

But there is every reason to fear that much of this flesh must be credited with increasing the bills of mortality to an extent that we cannot at present imagine. It is only now and again, and by mere chance, as it were, that instances of the traffic we have mentioned are lighted upon; and that we hear of the poisonous flesh of animals which have died or been killed in consequence of a fatal malady, being seized by an inspector. It is more rare to hear of poor people actually suffering from consuming this kind of flesh. Yet, comparatively speaking, very few cattle, sheep, or pigs, which die from, or are slaughtered for disease, find their way to the knacker, or are buried. It is, we fear, not at all unusual to kill and dispose of the flesh of these creatures after they have been medically treated, and made to

swallow drugs which will act as poisons on those persons who are so unfortunate as to consume this flesh; and when the animals are suddenly seized with a fatal malady, it is the custom to call in the butcher to kill them, and dress their carcases for the market.

The flesh of the ox, sheep, pig, and goat may be injurious, nay, absolutely poisonous, from disease; or it may be most pernicious from the presence of parasites, which will infest the bodies of the people who consume it.

Recent researches have shown, in the clearest manner, that scrofula or tuberculosis—a contagious disease—is very common in cattle, and especially in dairy cows—and that not only will the flesh of these produce consumption in other animals fed upon it—and particularly young animals—but that their milk also will infect. We dare not experiment upon human beings, to ascertain whether such a terrible result is possible with them, but judging from analogy, we cannot venture to doubt it. The flesh and the milk of scrofulous cattle enter regularly into the diet of probably thousands of people every year. That contamination may take place from the milk is, perhaps, the most serious reflection, as this is rarely boiled; for it has been proved that a high temperature will destroy the infective property, and hence the flesh, if thoroughly cooked, may be rendered inert.

When we remember that milk is the staple diet of

young children, and that infantile diarrhœa and glandular affections of a scrofulous nature annually carry off large numbers, while phthisis in young people and adults is a wide-spread and fatal malady, we are brought face to face with the serious question as to the share the flesh and milk of diseased cattle may have in the production of this mortality.

Not only this, but some other diseases or local conditions infect the milk, so much used as an article of diet. Evidence in abundance goes to prove that in "foot-and-mouth" disease the milk is positively injurious; it will kill young animals, and it affects children, and even adults, who partake of it.

There cannot be a doubt that the manner in which cows are kept has a great influence, not only on their own health, but also on that of those who consume their produce. Unsanitary conditions may render such secretions as the milk very hurtful, and poisons may even be conveyed through the medium of that fluid, without the animals themselves exhibiting much, if any, disturbance. We are only on the threshold of our inquiries into these alarming but, nevertheless, necessary to be recognised facts in sanitary science.

We have now to consider what, under the circumstances, we require to protect the wealth and preserve the health of the country, in so far as the contagious diseases of animals are concerned.

The prime essential of such a protection is a sanitary organisation that will meet both requirements. At present this does not exist, and has never existed in this country. And yet in no part of the world has the necessity for it been more evident or more urgent during very many years. Though two of the destructive diseases we have more particularly alluded to, and which are now always with us, invaded the country some thirty-five years ago, I cannot discover that any steps were taken, up to 1865, to check their ravages, limit their extension, or properly ascertain their nature and mode of diffusion.

Had the sanitary science or medicine of the lower animals been what it might and should have been, in 1839, the country would have been spared the invasion of these diseases; as they were well known on the Continent, and had been recognised as serious contagions years before they were introduced to us. Our insular position should have insured our exemption from them had veterinary science been on a proper footing, and competent to afford advice as to the measures necessary for their exclusion from our shores, or extinction when they did appear. As it was, they were not recognised, and were permitted to spread with all the rapidity and virulence that marks the course of newly introduced contagions of this description. Up to 1865, the two diseases were allowed to exist and to be carried

about evidently without let or hindrance. In that year, however, the introduction of the cattle-plague caused a great panic, which, in 1866, led to suppressive measures being adopted for the extinction of that malady; and these measures also had the effect of pretty well extinguishing the "foot-and-mouth" disease and "lung-plague." The sharp lesson taught by the "cattle-plague," directed attention to the damage wrought by the other diseases, which began to prevail again as soon as the restrictions were removed, and fresh importations of contagion allowed. A Veterinary Department of the Privy Council was formed during the cattle-plague panic, and this undertook the control, more or less, of these maladies. For various reasons, which are not far to seek, however, neither the prevalence nor the virulence of contagious diseases appear to have been modified to any appreciable extent; indeed, since 1866, the country has been more severely scourged than before that year. The attempts made to limit the destruction of these diseases have failed, simply because it was impossible they could succeed; while the endeavour to carry them out has been attended with serious inconvenience to the country, and heavy expense.

Any one possessing the slightest acquaintance with these contagious diseases, of sanitary science, of the traffic in animals, and of the character of many of those who own or deal in these (for con-

scientious scruples appear to be abolished when such maladies prevail), could have foretold that the attempts would not only have been utterly futile, but that they would also prove onerous and unsatisfactory in every way.

In the first place, those most concerned were not informed as to the nature and more important features of the diseases to be combated; in the next place, the carrying out of the measures was left to the local authorities, who, perhaps energetic in the extreme in one county, may have been as supine and negligent in another; and, thirdly, there were very few competent men employed to carry out the necessary sanitary operations.

The latter was, perhaps, the most serious omission; for instead of the authorities entrusting such important duties as the tracing and controlling outbreaks of disease, and guarding against its extension by every means which science and intelligence can alone suggest, this was left chiefly to policemen, who, when in doubt as to the nature of the malady an animal was suffering from, called in a veterinary surgeon or "cow-leech" (for qualifications are not essential) merely to settle that point. The members of the veterinary profession must, as a body, disclaim all responsibility for the enormous losses the country has sustained for so many years. Indeed, if they could lift up their voice, they would complain bitterly of the neglect with which their science and their services have been

treated by the country during all this time of national loss and embarrassment.

Veterinary science has been allowed to struggle into existence, or perish in the attempt to maintain itself, in Britain, as if it was of no value or consideration. And in 1865 and 1866, during the reign of the cattle-plague, its graduates were exposed to the grossest abuse and indignity to which a profession has ever had to submit in any land, merely because they spoke truthfully, and, declining to pander to the mistaken notions of those who ought to have known better, they pointed out the real nature of the malady. And yet they had at last to be called in to extinguish that pestilence, when physicians, amateurs, empirics, policemen, and local authorities had failed to cure or check its spread. No sooner had they done so, than they were once more placed in the background, where they will remain, in all probability, until the same heterogeneous forces have broken down in their futile endeavours to rid the country of the scourges which now afflict it.

It only remains to say that the measures now in force, and the machinery at work in carrying them into operation, will never effect the object with which, we presume, they were devised—the suppression of contagious diseases, until an efficient sanitary organisation is established, in which well trained veterinarians, under Government direction, and independent of local influences, shall play the

chief part, and be held responsible for the sanitary condition of their districts: advising the local authorities on important questions, watching the movements of cattle, keeping a careful eye on fairs and markets, superintending personally the more essential operations needed for the extinction of a contagion when it suddenly manifests itself, and directing the police while carrying out instructions in sanitary affairs, instead of being directed by these functionaries. Until this is done, which is not now done, we shall never rid ourselves of these scourges, nor save ourselves from loss and embarrassment. On the contrary, we may expect to see them yearly on the increase, and have perpetually exemplified the painful results of a "penny wise and pound foolish" policy.

It is a grave mistake to suppose that the exclusion of foreign animals alone would rid the country of its contagious maladies. Foreign countries suffer less from them than we do, as these diseases are not so prevalent in them, and are more energetically dealt with. If our importations from the Continent were stopped to-morrow, we should scarcely be better off; because, for want of proper measures and proper means, we cannot extinguish the disease germs, which are either active or latent in every county, every district, and nearly every cowshed and pasture throughout the land. If we had to export to the Continent, I fear our neighbours across the Channel would find us indeed

dangerous importers in the matter of contagious diseases.

What we require is the sanitary service I have mentioned; and this, besides rendering other benefits of a most important character than those pertaining to contagious diseases, would scarcely cost us a fraction of the money loss we now suffer. In addition to this, we require a more energetic, responsible, enlightened, and efficient central administration. There should be no permissive legislation for the control of contagious diseases by local authorities, who often have no interest in their exclusion and suppression; but more frequently have every inducement to wink at their existence, in order that they may obtain credit for keeping down county rates. Whatever measures may be necessary should be universally applied throughout Great Britain and Ireland, and if possible with more rigour to those parts which export.

It is a grave mistake to omit any part of the country from the operation of laws which may be deemed necessary for the suppression of contagious diseases, and especially if that part is much infected. Such an omission must not only be fatal to success, but will prove a serious hardship to other parts where the measures are attempted to be rigidly carried out.

Information as to the prevalence of disease among animals is urgently required, and this could be obtained by the organisation I have described,

and would be found much more exact, interesting, valuable, and reliable than that procured by uneducated policemen.

While extinguishing contagious diseases within our own shores, care must be exercised that they are not introduced from without. With this object in view, animals which are imported for fattening or other purposes that require their admission into the interior of the country alive, should be drawn, whenever possible, from uninfected regions; or if this cannot be done, then they should certainly undergo a period of quarantine. Animals fit for immediate slaughter should, if they must be carried alive to our shores, be killed at the port of debarkation. There need be little difficulty in this. No country in the world is better situated for the carrying out of such a proposal. With numerous excellent ports studded in most favourable situations all round our coasts, and railways traversing the country in every direction, there is no reason whatever why the present inconvenient, and only too often very cruel system, of conveying ship-exhausted, and perhaps diseased cattle long distances in railway trucks all over the land, and at great risk to home stock, should be continued. To abolish it should tend to cheapen flesh from foreign sources, diminish the chances of introducing fresh supplies of contagion, and would certainly prove most humane and economical.

I have no faith in port inspection for the detec-

tion of contagious diseases, and am convinced that it is a fallacy. It is impossible for any inspector to detect disease in a latent form, or to discover if apparently healthy animals have herded with those which were sick; and unless he can do this, in very many instances his services must be worse than useless.

The details which are absolutely necessary to be observed in the suppression or prevention of contagious diseases, I cannot touch upon here. Suffice it to say that they are not observed in the country at present, and they can only be carried into effective operation by the sanitary organisation I have indicated.

With regard to the preservation of the public health, so far as its relation to animal diseases is concerned, this also must be left to the management of such an organisation. None but the best-trained veterinarians can protect the public in this direction; and until the inspection of meat and milk, dairy, stable, kennel, and pasture, slaughter-house and butcher's stall, are placed under their supervision, the public must incur risk and suffer loss. Here one of the first essentials is the establishing of public slaughter-houses in every town and city. The majority of private slaughter-houses are simply an abomination, and a disgrace to the age we live in. They are a fertile source of contagious diseases among animals; from their situation, and the way in which they are kept,

they are nothing less than a public nuisance, and it is in them that animals diseased, or otherwise unfit for food, are prepared for the market.

In public slaughter-houses animals can be inspected before and after they are killed; and if found to be suffering from a contagious disease their origin can be traced, and perhaps foci of contagion be in this way discovered and extinguished. The abolition of private slaughter-houses would spare unfortunate animals an amount of torture of which the public has no idea.

Such are the remarks which I have ventured to bring before you on one of the most important subjects connected with sanitary science and the welfare of our country. I have endeavoured to do so without blaming unjustly either governments, professions, or individuals. Governments are swayed in such matters as this by their advisers, and these, doubtless, advise to the best of their knowledge. In direct proportion as their knowledge is exact, and as their advice is adopted by governments, so does the public benefit. But conflicting interests may often baffle statesmen, and render them hesitating, and inclined to adopt temporising or half-measures. In the presence of such contagious diseases as have scourged this country during this century, half measures are worse than useless, and incline the public to lose faith in sanitary science altogether. The stern fact must be looked in the face, that for ten years, imperfect attempts, whose

only recommendation was that they were cheap, have not only failed to diminish the prevalence of these maladies, which have rather increased, but they have been a source of great embarrassment to trade, and have materially tended to increase the price of food. We appear to avoid looking at things as they really are, and to shut our ears to the truth. Political, class, or party considerations should have no place in such a question as this. The loss and embarrassment may first fall upon, and be most severely felt by, the breeders, feeders, and owners of animals, but these are quickly shared by the whole nation, and the result becomes a public calamity.

No country in Europe has, possibly, sustained greater loss during the last thirty-five years than our own; yet no country, perhaps, should have suffered less. With the finest breed of horses, and the most magnificent herds and flocks in the world, and a teeming population, whose health and wealth are largely centred in these, we have almost entirely neglected to protect them from the ravages of diseases of home and foreign origin, by forgetting to foster and encourage that science which alone can accomplish this. That neglect has cost Britain and her colonies untold millions. Until it is acknowledged, the omission repaired, and veterinary science placed in its proper position, so that it can yield its benefits to the full, we must be prepared to record annually the heavy damages

to health and wealth inflicted upon us through the influence of the contagious diseases of animals.

At one time the British army suffered the greatest losses from disease among its horses. Through the enlightened influence of those who commanded it, veterinary science was allowed to come into play; and now disease is scarcely known, while the efficiency and durability of the animals are vastly increased. This is merely because there is an organisation of trained men, and a competent central authority to guide and direct them. What holds good in the one case must hold good in the other. Let us trust that, through your influence this evening, the public may be led to recognise this incontrovertible fact. If in the army we acted in regard to this matter as you do in civil life, our troop stables would soon be converted into hospitals, and the knackers would drive a flourishing trade. It only requires a patriotic resolution, enlightened views, and a well-organised service, to preserve the wealth and protect the health of the country, so far as the domesticated animals are concerned. Surely these can be forthcoming!

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