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# “INFECTION.”

BY

SIR J. CLARKE JERVOISE, BART.,

WITH

## REMARKS

BY

MISS NIGHTINGALE.

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SECOND EDITION.

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## P R E F A C E.

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IDSWORTH, HORNDLEAN,

HANTS,

*Feb. 13<sup>th</sup>, 1882.*

IN compliance with the suggestion that I should republish the pamphlet "Infection," (which I wrote anonymously in the year 1867) with my name and address, and in consideration of "how many things have happened since then," I do so in the hope that the cause of truth and science may be promoted thereby.

J. CLARKE JERVOISE,

*Magistrate and D.L. for the County, and late  
M.P. for the Southern Division of the  
County of Southampton.*



# INFECTION.

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SOME Members of Parliament and others having said that if I would write out my observations on the subject of infection they would read them, I have determined on putting them into print; and I am the more encouraged to do so by the following extract from "The Lancet" in a county paper for May 18th, 1867:—

## THE LOQUACIOUS HAMPSHIRE MEMBER ON INFECTIOUS AND CONTAGIOUS DISEASES.

"When Chloroform was first introduced into the practice of medicine, objection to its use in obstetrical and other cases was taken, on the plea that suffering was not only natural, but was even ordained to be the lot of mankind. This argument, fallacious as it is, has some ground, however uncertain, to rest upon. The objectors to the use of chloroform do not deny the fact that it relieves pain, but they deny that it is right that that relief should be given. Sir C. Jervoise has not even this shallow foundation on which to base the arguments he adduced the other night in the House of Commons against taking precautionary measures to limit the spread of infectious and contagious diseases.\* The hon. baronet did not 'believe' in infection or contagion, and characterised as 'cruel' and costly the efforts which have been made to stop their progress. Lord R. Montague disposed of the 'belief' of Sir C. Jervoise in a few trenchant and common-sense remarks. It would be a matter of very little moment what were the articles of belief of the worthy baronet upon a subject which he certainly does not understand, were the influence they exert not most injurious to a large class of the ignorant and unthinking."—*Lancet*.

I have never seen a number of the "Lancet," but the word reminds one of *letting blood at spring and fall*, and other practice, done in good faith, but against common sense. I am much indebted to the Editor of the "Lancet" for his "trenchant" criticism. For my own part, I have only to say, that I never doubted the benefits conferred on suffering humanity by the discovery of chloroform, and its predecessor (ether); but, if it had been prescribed, without effect, for

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\* *Contagious diseases* are expressly excluded, unless to define the difference between the meaning of the term, as distinguished from *Infectious diseases* thus confounded with them by "The Lancet."

stamping out a disease which subsequently raged for two years, and then recommenced, I should doubt the quality of the physic or the qualification of the physician. When Gil Blas, in good faith, was practising the system of his Master Sangrado, his patient said, "Hold, Gil Blas, for though I have not a drop of blood left in my body, I don't feel better. "I see clearly that I must die, but do let me die quietly."

On the 3rd May I moved an address to the Crown (No. 1, in the orders of the day), but in consequence of the superior claims to attention of the supposed cases of hardship and cruelty to the Fenian prisoners in Mountjoy prison, I did not rise till between 9 and 10 o'clock, "impransus," to address an audience, indifferent, or hostile, as I believed, with two successive governments opposed to me, as well as foregone conclusions, popular belief, or perhaps superstition, *the old faith*, which is known to survive even the language of a country; and to move a resolution which, if carried, would be an admission of the *unnecessary loss, groundless alarm, and wanton injustice*, which had been inflicted on the country in consequence of action being taken on hypothesis, unsupported by demonstration.\*

I have no complaint to make of the report of my speech, and no regret at having brought the subject forward. Neither have I any fault to find with the answer I received from the Vice-President of the Committee of Council on Education.

Motion and Answer:—

#### CONTAGIOUS AND INFECTIOUS DISEASES.

"Sir J. C. JERVOISE rose, according to notice, to move 'that an humble address be presented to Her Majesty praying that Her Majesty will be graciously pleased to cause such inquiry to be instituted as may lead to the better distinction between contagious diseases and such as are termed infectious, so as to obviate, as far as possible, the loss, alarm, and injustice consequent on the theory of the infectious nature of certain diseases when unsupported by demonstration.' The subject of the conveyance of disorders by some mysterious agency from one person to another in our state of society must, he thought, be regarded as one of the most important matters

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\* "It was one thing to say a few words there surrounded by kind friends, and quite another to get up in the House of Commons where every one wished you to sit down." (Lord G. Cavendish, "Times," Oct. 6th, 1874.)

which could engage their attention. It affected people in every position in life, every association, and every meeting of persons in every capacity, whether at home, abroad, or in the colonies; and it might be viewed in its bearing not only on persons who were at liberty, but on a class of persons whose case had been under discussion that evening—viz., those who were placed in confinement. Nothing could be more shocking, if the theory alluded to in his notice of motion were true, than the idea that persons locked up in gaols should find themselves subject to the influence of infectious disorders. The hon. member referred to a tale written by a French author about a poor leper and his sister, who were shut up in a tower and condemned to a miserable life of seclusion on account of their fearful malady. Their only companion was a little cur dog, and the sister having died, the brother was left alone with the pet dog, which, however, the authorities ordered to be destroyed, in order to prevent the infection from being carried elsewhere; and the wretched man at last committed suicide to relieve himself from an insupportable existence. That tale was founded so much upon fact that it might be said to be almost a true representation of the state of things in certain eastern countries. The infectious nature of leprosy was believed in in many parts of India, where great cruelties were inflicted in connection with the precautions adopted in regard to those who suffered from that malady. The hon. baronet who addressed the House a considerable time, and was almost inaudible, avowed himself a disbeliever in infection, and was understood to depreciate specifics prescribed and recommended to protect persons supposed to be especially exposed to it. He derided precautions that were too complicated or costly for general adoption by those upon whom they were urged, and asked, for instance, what was the use of urging that no water should be drunk that had not been boiled if people were destitute of the means of boiling it. He also referred to the outbreaks of scarlet fever at Southampton, Aldershot Camp, and elsewhere, with the view of showing that medical men, trained nurses, and others in immediate contact with patients, escaped the communication of the disease; and noticing the supposition that medical men carried it to their own children, remarked that if such communication were probable the patients of medical men were exposed to danger quite as much as the members of their own families.

“Lord R. MONTAGU said that a commissioner had been sent to Russia to inquire into ‘the black disease,’ and this gentleman reported that the disease was not infectious, so that it did come under the motion of the hon. member. It was true that in the other House, Earl Granville said a great many persons had died from it; but this was a mistake. Earl Granville was alluding to another disease which also existed in Russia, and which was highly infectious. This disease broke out among cattle, and was communicated to human beings; and, according to the last reports, upwards of 70,000 cattle were killed by it during the year and 30,000 men. As to the cattle plague, this was not the time for a cattle plague debate, the proper occasion for which would be when a Bill was introduced on the subject. He was sorry to say, however, that there had been recently a fresh outbreak of cattle plague in London. The existence of the disease here was suspected for some little time owing to the removal of cattle from some dairies. At last it was discovered that the disease existed in one London dairy where there were 39 cows, which all had the disease, and all of which were killed. This happened in the preceding week, and he trusted that the slaughter of these cattle had prevented the further spread of the disease. With regard to contagious and infectious diseases, the

two terms were treated pretty much as convertible; but infection was the term, being, in fact, the genus, while contagion was the species. Infectious diseases were those which were communicated from man to man, or were generated in the air, or by means external to man. Yellow fever was not contagious, though it was infectious; and what possible harm, therefore, was there in Dr. Seaton's visit to the ship at the Motherbank? The disease was communicated by the air and not by contact with persons. Perhaps the hon. member would say, 'Why, then, impose any quarantine?' The answer was, that it was not a medical but a commercial quarantine; it was imposed, not through fear of the spread of yellow fever, but in order that our ships and merchandise should not be exposed to quarantine abroad, and subjected to the loss which that would entail. The laws connected with the communication of diseases were pretty well known by this time. There might be some few special diseases upon which additional knowledge was required. But surely the Health Office, in which there were two or three medical men of great scientific attainments, afforded a better means of investigation than that proposed by the hon. member—a Commission composed of a chemist and a lawyer. (A laugh). He did not know what would be the business of the lawyer, except, he supposed, to impose the restrictions of law upon the spread of disease. But the hon. gentleman would see that with men who had spent all their lives in the investigation of the subject, and with all the appliances at their command, the Privy Council had means at their disposal much better than the commission which the hon. baronet recommended. The hon. baronet had alluded to cholera. He was happy to say that upon this important subject most careful and accurate investigations had been carried on, the results had been tabulated, and in a few days a voluminous report would appear, which, he trusted, would be satisfactory to the hon. baronet. There were other points to which the hon. baronet had called attention, but, as he had considerable difficulty in hearing the hon. gentlemen's remarks, he trusted that would be sufficient excuse if he desisted from pursuing the subject further."—*Times*, May 4th, 1867.

The motion for an address was then withdrawn.

Whatever notice might be taken of the motion, it was certain to be productive of some gain.

A fact or a fallacy must needs be drawn forth, and, by the process of "*quod erat demonstrandum*," or by that of "*quod est absurdum*," the cause of truth must be a gainer. In the question of the communicability of disorders, politics do not enter. Both parties have been either right or very wrong in their legislation and administration. It may be presumption in me to think I am right, but it is not impossible. For a long time it was considered that "Nature abhorred a vacuum," and, although I may not aspire to the position of a Torricelli, I may to that of the sceptic, who, while the Royal Society were puzzling over the problem



propounded by the Merry Monarch, "*Why a carp of a given weight does not cause the bucket of water into which it is thrown to weigh heavier?*" suggested that the experiment should be tried. I shall, I am confident, be pardoned, if I am not altogether acquitted, for having brought the subject, however imperfectly, before Parliament and the country.

I have, from time to time, *asked Questions in the House of Commons*\* on the subject of the communication of disease by the process of *infection*, and I had intended to use the Questions as landmarks to guide me on my road, but speaking without notes, the first reference I made to these documents showed me that I could not read what a few hours before, in the daylight, had been legible enough. But I will not compromise by naming one who seconded me (unasked) in the daring heresy of supposing that the statement in the Sixth Report of the Medical Officer of the Privy Council—"And though the present and other illustrations cannot increase knowledge (which has long been conclusive) with respect to the causation of disease"—is not to be accepted as a dogma, or of suggesting that a chemist and a lawyer might be as good a tribunal to inquire into the nature of the so-called infectious diseases of man and beast, and to judge of the value of the evidence adduced, as the *two or three gentlemen connected with the Board of Health, of great scientific attainments, who had pretty well ascertained the nature of all diseases, whether contagious or infectious.*

Availing myself of the subject of the preceding motion to suggest the shocking idea of confining prisoners in a gaol affected, by what is deemed an *infectious disease*, I had in memory what occurred the previous year in Mountjoy Prison. I am happy to have preserved this extract in refutation of the thought.

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\* Mr. Gladstone, "They (Questions) have now become a very serious, and I am bound to add, a very important part of the business, and therefore not frivolous or trifling" (hear, hear).—"Times," July 2nd, 1831.

“Dr. F. R. CURRIE, writing in the ‘British Medical Journal,’ gives details of the recent outbreak of cholera in Mountjoy Prison. They will serve to correct various erroneous statements that have been made on the subject. There has been no new case since December 27. The attack commenced on Sunday, December 23, the health of the establishment having been previously quite satisfactory. The epidemic lasted five days, during which time nine cases of Asiatic cholera, with collapse, occurred, and four terminated fatally. The inhabitants of the prison are convicts, together with about 140 untried prisoners, now confined under the Habeas Corpus Suspension Act. Most of the cases of cholera occurred among the convicts. The outbreak was immediately notified to the Government, and the most active sanitary measures were at once put into force, under the direction of the medical officer of the prison, Dr. Robert M'Donnell. To the promptitude and energy with which these measures were carried out undoubtedly may fairly be attributed the rapid subjection of the attack. Perhaps the most interesting point in connection with this particular visitation is the difficulty in tracing its origin. No case of cholera has taken place among the officers of the establishment or their families. The prisoners in the various divisions of the prison do not communicate with each other, nor with the same officers; nevertheless, cases arose simultaneously in these divisions. The water supply is derived from the reservoirs of the north side of the city. It is received in a supply-tank, from which it is pumped by a steam-engine to cisterns on the top of the building. This supply-tank is pumped empty every 24 hours. From its situation it is absolutely secure from all risk of contamination from sewage, &c. The adjoining Female Convict Prison is supplied from the same tank. But no case of cholera occurred in the Female Prison. The food recently supplied has, on examination, been reported of unexceptionable quality. The different divisions of the prison are not on the same diet, neither is the food for them cooked in the same vessels. Nevertheless the disease appeared in all the divisions. The disease could not be ascribed to atmospheric influences, for the prison is on one of the healthiest situations in Dublin.”—*Times*, January 8th, 1867.

Since I brought the subject before the House some progress, as I consider, has been made in the road which I travelled over, as will be seen by the following from the “Pall Mall Gazette” of May 22nd, 1867:—

#### OCCASIONAL NOTES.

“Mr. Cave explained to the House of Commons last night that our quarantine establishments are kept up for no useful purpose whatever, but wholly and solely to satisfy the prejudices of other nations. The Mediterranean countries would put us into quarantine at once if we did not keep up a quarantine ourselves. In 1825 Mr. Huskisson took upon himself to issue free pratique to ships in Portsmouth, Southampton, and London; and the result was that the whole of the United Kingdom was put into quarantine at all the Mediterranean ports. This, and not any anticipated danger from the importation of yellow fever, is the real reason why we relegate the unhappy passengers in our West India steamers to the Mother-bank, whenever, during the homeward passage, a stoker dies of yellow fever engendered by rum, over-work, and miasma, whilst coaling at St. Thomas's.”



The argument in favour of infection, deduced from the number of victims, is disposed of by the accounts of a terrible outbreak of yellow fever at Mauritius, in the journals of May 23rd, 1867, from February 10th to April 17th—total, 13,564. “Quinine advanced to the enormous price of £12 per ounce.”

On March 28th, on the occasion of the second reading of the Artisans’ and Labourers’ Dwellings Bill, I gave the following definition (not original), which was allowed by a very influential Member (who has taken an active part in sanitary questions), and not disputed at the time, to be correct:—\*

*Contagion is the communication of disease from an unhealthy to a healthy subject at an inappreciable distance.*

*Infection is the communication of disease from an unhealthy to a healthy subject at an appreciable distance.*

I learnt, from the reply to my motion on May 3rd, that the two terms were treated pretty much as convertible; but *infection* was the large term, being, in fact, the genus, while *contagion* was the species.

If this be the decision of the “two or three gentlemen of the Board of Health, of great scientific attainments,” there is nothing in common between us. We are at cross purposes, and the question falls.

In the definition given by me there is no convertibility of terms. In every case of communication, however, something in the shape of a medium is required; in *contagion* it is touch, in *infection* it is generally supposed to be a *germ* or a molecule passing through the air which serves the purpose. Even in spirit-rapping, a medium, and sometimes a stout one, is requisite for purposes of communication. †

In vaccination, the “*point*,” or the virus on the lancet performs the duties, but I have never heard that it was a matter of indifference whether this disease was to be conveyed at an *appreciable*, or at an *inappreciable* distance.

\* Henry Austin Bruce.

† Alluding to a very portly clairvoyant of the day.

Danger from infection during the operation is not contemplated.

The Turk who taught us inoculation did not trust to exposure to the small pox at an *appreciable* distance for the comparative safety he obtained by inoculation, and I have never heard it admitted as an excuse for the victim of one of the most contagious diseases known, that he had caught it in a visit to a hospital devoted to the cure of specific disease; though in past centuries this was believed to be possible.

There is also authority for stating, that in the 17th or 18th century, the gout was believed to be infectious. I am not called on to prove a negative. All I requested was inquiry, and I now repeat with a little amplification what I then said, in order to show that something might still be learnt on the subject of Infection, and even if it turned out that

“All that we know is, nothing can be known,”

it would still be of use in saving us from “loss, alarm, and injustice,” the consequence of action unguided by demonstrable evidence. In bringing forward my motion on May 3rd, 1867, I am reported to have alluded to the importance of the subject of the communication of disorders *by some mysterious agency*, and to have illustrated the remark by reference to the beautiful tale of the “*Lépreux de la cité d’Aoste*.” It contains a moral that may be considered as comprising the whole question. I ask every one who has not read that story to do so. It will be found in the “*Voyage autour de ma Chambre*,” by Xavier De Maistre. But as I quoted from it in English and from memory, may I be pardoned for making a paraphrase with the book before me? \*

In the war of the Alps, 1797, a military officer finds himself in the presence of a leper confined, with his sister, to the precincts of an ancient tower resting on a wall of the town of Aosta, called the “Tower of Fear.” The leper is astonished at the boldness of the officer approaching one who is deemed,

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\* I have caused this beautiful story to be translated with a preface and appendix.

and who deems himself an object of danger and dread to all the world. He and his sister (made so hideous by disease that they dare not behold each other's face) fix their affections on the only living thing with which they are allowed to associate, a little dog which, on account of its ugliness, had been turned out from other quarters, and had been forced to the leper's lodgings for refuge. The leper encourages the officer to pick some flowers which he cultivates, "as he will run no risk in touching them," for although the leper loves to sow and water the flowers, he never touches, for fear of contaminating them. When the children come to rifle his little garden, he withdraws into the old tower, "lest he might frighten or injure them," and when they depart they look up towards him and say, "Good day, leper, laughingly," and that rejoices him a little. The sister dies, and the leper stands alone in the world, with no living thing to console him but the little cur dog. The medical authorities, however, of the town of Aosta, see danger in the dog, and considering it might carry the "*germs*" of the disease among the inhabitants of the town, the dog is stoned to death in sight of the leper, whose grief at the moment only permitted him to see cruelty, in what he avows was a just, though severe, order. He meditates a crime, not revenge, but self destruction, for he had contaminated the earth long enough, and wishes that it may swallow him up and "leave no trace of his detestable existence." This story is a fiction founded on the facts of that day, but they are also the facts of the present day, as may be seen by the extract.

#### "LEPROSY.

"A report on leprosy by the Royal College of Physicians has been prepared for Her Majesty's Secretary of State for the Colonies. It is a very bulky, very elaborate, and very valuable contribution to our knowledge of this intricate subject. The College have performed this great labour at the request of the Government. The suggestion arose out of a letter from the Governor of Barbadoes to the Duke of Newcastle, stating that this fearful malady is on the increase in that colony, and suggesting that, hopeless as the case of the unhappy leper may be, the collection of reports from all the colonies on the character and progress of the disease, the treatment and dietary observed, and the general regulation of leper-houses, might be

attended with some possible advantages, and tend to ameliorate the condition of these unhappy sufferers. The College assured the Duke of Newcastle of their willingness to co-operate in this humane work. On the nomination of the president, Dr. Budd, senior censor, Dr. Owen Rees, Dr. A. Farre, Dr. Gull, Dr. Milroy, and Dr. Greenhow were appointed a committee to frame interrogatories and report on the disease. These were dispatched to all the colonies, and a considerable mass of evidence has thus been obtained, and is here elaborately digested and collated. One most important conclusion at which they have arrived discredits entirely the belief that leprosy is contagious or communicable by proximity or contact with the diseased. The evidence derived from the experience of the attendants in leper asylums is especially conclusive on this point. Thus there is not in this great mass of reports from all parts of the world 'anything which justifies measures for the compulsory segregation of lepers.' In India no such segregation is attempted; but in many countries, including some British colonies, the slightest ascertained taint of the malady carries with it a seclusion tantamount to banishment from the rest of the community, or even to perpetual detention in a lazaret. Enactments for the arrest and imprisonment of lepers have been proposed or passed even within the last few years in some of our Indian colonies. In the villages of Syria lepers are required to go to Damascus, or some other town where there may be a public asylum; and if they will not conform to this rule, they are made to live in a cave or hut outside the village, where they remain in perpetual quarantine.' All such enactments or regulations should be abolished."—*Times*, December 29th, 1866.

I may here say that the report in question is not distributed to Parliament, because it regards the Colonies only.

If the belief in the *infectious* nature of yellow fever and the "old faith" in leprosy have thus succumbed to truth, is it unfair to expect that some other disorders may still fallaciously be considered *infectious*? But is the name of Lazar-house, and Pest-house, and Leper-house so clean passed away as to render fiction stranger than truth?

Is there no *quarantine*, no *isolation*, no *seclusion* enjoined? No *germs*, said to carry disease among the inhabitants of a town? No dogs slaughtered, in order to stamp these germs out? Is there no wretchedness endured, and no cruelty perpetrated under the watchword of "security" for the public health? Is there nothing lamentable in the following caution, and no moral to be deduced from these remarks, about *infection*?

#### "DEATH FEES IN FOREIGN HOTELS.

"Our contemporary, the 'Builder,' remarks that 'it may be an essential service to those whom the fear or the presence of pulmonary disease drives to seek an Italian winter, to call their attention to one of the modes in which

Italian housekeepers often effectually slaughter the gold-dropping bird,' the type of Æsop's goose who laid the golden eggs. It seems that the Italians have most conveniently imbibed the notion that consumption is contagious; and should unhappily a phthisical patient die in an hotel, the bill but too often contains the singular item—'Indemnité pour refraction des meubles et de la chambre occupée par le defunt, £100 sterling.' As the 'Builder' very justly observes, the most curious part of the affair is that a consumptive patient may have lingered for months in a suite of rooms, may have left even but an hour before death, and no charge will be made; but should he chance to die there tranquilly in his bed, the necessity for burning the furniture, for scraping, lime-whiting, and papering the walls, arises from that sad and simple fact. The ground upon which such a charge, the most exorbitant of any that has been manufactured for many a long day, rests, is utterly untenable, and, of course, the demand should be at once repudiated. At the same time a little care is needed to prevent surprise, for in those cases in which a house or an apartment is taken by agreement for any length of time, the legal document which binds the contract may contain a clause to the effect that the tenant is expected to pay the extortionate sum which we have named in case of death occurring from consumption, and we notice the matter that the profession may put clients on their guard."—*The Lancet*.

The leper's dog was believed to carry the *germs* of disease. What are these *germs*, for they are said to be the cause of communication of disorder both in man and beast? Is the language figurative only? Then let me quote what was said by Liebig twenty-seven years ago. He was a chemist! "These *figurative expressions*, with which we are so willingly "and easily satisfied in all sciences, are the foes of all "inquiries into the mysteries of nature; they are like the " '*fata morgana*,' which show us deceitful views of seas, "fertile fields, and luscious fruits, but leave us languishing "when we have most need of what they promise."\*

But it is said there is no figure of speech in the matter. These *germs* are *vital*, *organic*, and *organised*. It is true that in looking after them, Dr. Beale, with a lens which magnified upwards of 2,500 diameters, and which was said to make a child of three years old as big as Mont Blanc, could see nothing of them. Dr. Angus Smith, "pretending "to no knowledge, such as is required of a man who treats

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\* Chemistry in its applications to Agriculture and Physiology. Edited from the Manuscript of the Author by Lyon Playfair, Ph. D.F.G.S., 1843. — R. Hon. C.B., F.R.S., LL.D., (Edinburgh and St. Andrew's Universities), Chairman of Ways and Means, and Deputy Speaker of the House of Commons, &c., &c., &c.



“disease, but who speaks as a *chemist*,” found himself “unable to proceed because of other duties, and requested the “Commission (“Cattle Plague Third Report”) to seek the “aid of Dr. Crooks, F.R.S.,” and he has decided that “the prodigious procreative power of the original particle “(of infectious disease) belongs only to the nature of an “*organised germ*, capable of producing multiples of itself by a process of nutrition and subdivision;” and Dr. Letheby informs us, that the germs or molecules are 100,000 part of an inch in diameter.

Now, as for the microscopic examination, it was made without result by Liebig, as I have already stated, twenty-seven years ago. and it seems with no better luck now by Dr. Beale and others. As for the *vital germs*:—

“The best definition of life involves something more “than mere reproduction, namely, the idea of an active “power exercised *by virtue of a definite form and production*, “and generation in a definite form. By chemical agency, we “can produce the constituents of muscular fibre, skin and “hair, but we cannot form by their means *an organised “tissue, or an organic cell.*”—Liebig.

To generate life, life must precede it.

*Nature works by uniform laws*, and the law of disease and its communication as laid down by the medical officer, and promulgated by the Privy Council, is that *each disease had originally its parent from which it has descended as regularly as dog from dog, and cat from cat. A dog cannot breed a cat, nor a cat a dog. “To talk of testing spontaneous generation, is as if one talked of spontaneous combustion amid a continuous discharge of fireworks.*” This illustration is not very happy. Spontaneous ignition constantly takes place under circumstances apparently adverse. Hay-ricks take fire by moisture, and recently a house was set on fire by water. Some lime was placed in the attics for repairs to the roof, rain entered, slaked the lime, and spontaneous ignition followed.

But what have “the two or three gentlemen connected

“ with the Board of Health, of great scientific attainments, “ who have pretty well ascertained the nature of all diseases, “ whether contagious or infectious,” been about, to allow such a theory as that of vital germs proceeding from putrid matter, to remain uncontradicted? It is making corruption put on incorruption and for an unworthy object. What have the bench of bishops been about, what have the clergy of Great Britain and Ireland been about, in their learned leisure or active duties, that they do not protest against this mode of dispensing with the necessity of a Creator? It is scarcely necessary to state, that the wonder of creation does not consist in the size of the animal. There is no more difficulty in making a whale or an elephant, than one of those minute creatures of which it is said:—

“ Great fleas have little fleas upon their backs to bite ’em.  
“ And they again have other fleas, and so ad infinitum.”

In the Assyrian bas reliefs, the Warrior is the biggest man. The biggest man is not always the best man in these days.

The seclusion, isolation, &c., in the story of the *Leper of Aosta*, to avoid danger to the public health, is recommended strongly by the Medical Officer of the Privy Council, at the end of a Report “ On Diseases prevailing, or said to be prevailing, in the North of Europe,” but which had, in fact, nothing communicable about them.

“ The very alarming rumour which excited his Lordship’s (President of the Council) vigilance,” caused two gentlemen to be employed, at a cost of £396 15s., on a mission to Russia, for the purpose of investigating certain diseases, Meningitis spino-cerebralis for one. The conclusion, however, arrived at, was that, because no danger was to be apprehended, therefore a *system of inland quarantine would be very desirable.*

“ Such reasoning falls like an inverted cone,  
Wanting its proper base to stand upon.”

“ Have you a strawberry mark on your arm? No! Then

come to my arms, my long-lost child!" This is what is meant by being, "on the safe side;" and how many follies and cruelties are committed on this side? It was *the safe side* on which the Priest and the Levite passed. It is *the safe side* that is advocated in a letter signed, rather equivocally, J. O. B., in the "Pall Mall Gazette," August 18th, 1866, during the cholera visitation. Under the head of "Village dangers," the writer says they have everything they can wish for in the way of medical attendance in his village—nurses, comforts, &c., but the poor people will visit each other in affliction, and say, "I am not afeared, and I like to be neighbourly." Job is "afeared" of a sickly child in a perambulator, and anticipates that disease and death will follow in its wake. He has kindly spared us the recital of what followed.

Many travellers may recollect our Consul (Mr. Cartwright) at Constantinople some forty years ago. He had the *plague*, and underwent the "lodgment and seclusion" advocated by the Privy Council. But of all the horrors of his experience, when his friends died around him, and when passing his hand over his body he felt the fatal lump under his arm, there was one trial greater still reserved for him, and that was when he returned into the town, convalescent, and perfectly free from taint of disease, longing for the society of which he had so long been deprived, and to which he contributed so much; as he walked down the streets, he saw his friends passing on the *safe side*. What has become of the plague? Eöthen was in the midst of it. He survived, but the plague is defunct, or, at least, its terrors are.\*

But let me give a fact or two illustrative of the action of quarantine. Supposing that the Vice-President of the Committee of Council on Education was not entirely correct in saying, "Quarantine was instituted on commercial grounds alone."

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\* I revoke this statement. Its terrors are not defunct. The so-called Astrachan Plague has had its commercial as well as political terrors and panic fears to suit Russian Diplomacy and a British nobleman.



Take the case of

A CHOLERA SHIP OFF SYRA.

“ A few days, very few, before the steamer’s time had expired, a ship arrived from Alexandria which actually had the cholera on board. Twenty or more had died and were thrown overboard on the voyage, as we afterwards learned, and several more were sick. As she came into the quarantine anchoring-ground and cast anchor she dragged some distance, and seemed in a fair way to drift against the armed cutter which was doing duty as *guarda-costa* and *capo-guardiano*. The brave fellow (I hope he wasn’t a sailor) ran out his guns, and prepared to sink the ship and all on board, lest she should come into contact with him. That scene is one I can never forget and hardly ever forgive: the huddled passengers driven on deck by the pestilence and heat, and, doubtless, already in a frenzy of fear from the perils within, found themselves met on the threshold of deliverance from their awful fellow-voyager by the open mouths of Greek carronades. Women shrieked and men howled with fright; all prayed, supplicating the gods and the captain; the *guarda-costa* people were in a worse panic, if possible—shouted orders and counter orders, ran out a gun and ran it in again, threatened, prayed, and cursed, as though doom was on them. This horror of the cholera seemed to have become a madness in the Greek mind. Our sailors gave the wretches the benefit of much good and strong English, which, I fear, was sadly wasted, and would have been equally so had it been equally good Greek, but I noticed that our *guardiano* was stricken with fear at the bare idea of the vicinity of the infected ship. What the extent of the contagion was we knew not, of course; but the hurrying and trepidation of the people on board and in the boat which came alongside made it evident that something unusual was going on. The boat lay far off, and the officers shouted very loudly; and we heard afterwards from the quarantine boat that there were four or five dead of cholera on board, whom they wanted to send on shore to be buried, but this was refused as dangerous; then to be permitted to sink them in the sea—this was still less to be allowed. They begged for a doctor—no one would go; *guardiani* even would not go on board, for any compensation, and they rowed away, leaving her to her fate. We shortly after received an intimation that by reason of this new arrival all ships in quarantine at that time must stay fourteen days more . . . . Here was the ship of the ancient mariner, in sooth—anchored only, but with anchors almost useless on that tranquil sea, the fiery sun above, and the glassy water below, and nothing to break that awful monotony but the merciless quarantine-boat coming to ask and refuse. We could see the people on the ship gather on the fore-castle and in the rigging, looking out to the land, which, brown and dry as it was, was to them a refuge. The second and the third day came, and the dead multiplied, until ten or a dozen corpses were on board. Still no physician, no landing, no burial even; and the plague stricken ship and its dying cargo lay still under the August sun. The third day the crew received permission to put the bodies overboard, tied with ropes, that they might not drift away and carry to some accursed Greek community the plague it merited. I may be unjust, but those days have made me detest and abhor the very name of Syra and its people. We saw the dead lowered overboard, one by one, and with glasses could see them floating alongside, horrible to sight and fancy.”—*Cornhill Magazine for February, 1866.*

But they rather overdo the thing in Greece, while they are too lax in Turkey. We shall find common sense in America; and this is how they perform

#### QUARANTINE AT NEW YORK.

"We have already called attention, with some warmth, to the manner in which the sick were removed from the Virginia to the hospital ship Falcon. The formal report on this matter rendered yesterday by Dr. Dalton to the Board of Health will, if we are not mistaken, cause public indignation to turn fiercely against whoever is to blame for this stupid and cruel proceeding. Nothing in heartlessness, laziness, indifference, and want of contrivance in the history of Turkish and Oriental quarantines ever surpassed this. Here, as Dr. Stone remarks, comes into port, 'a poor devil of a captain, with a pest-house under his command, and he dare not move here or there lest he should violate some law, and nobody is there to tell him what course to pursue. So a thousand human beings are imprisoned many hours longer than they need be, in the midst of death in its most fearful forms.' For thirty-six hours this floating pest-house lay without succour or message from the shore; the steerage was crowded with the sick and the dying, and the dead towed in boats at the stern. These hundreds of poor men and women, thus forced to cling to what they considered a charnel-house, without proper medical aid, are constantly on the verge of riot and mutiny, in order to force their way out from the poisonous ship. The first supplies that came from the shore, we are assured by a passenger, were three barrels of saw-dust! When at length the sick are to be removed, there is no steamtug or proper means of transference. The poor dying emigrants are tied into a rude seat made from a hog'shead and lowered from the yardarm, under the hot sun, after much difficulty, into one row-boat, and then again hoisted into the Falcon. Three persons on an average are thus transferred in three-quarters of an hour. One poor woman died during the process, and no doubt the majority of the others died afterwards. It forcibly occurs to the quarantine officials that this is a very slow and cruel process, and on the urgent representation of the sanitary superintendent of the city, they condescended to request the captain to assist them with the ship's boats. We cannot wonder that after this performance the cholera raged fearfully in the hospital ship. . . . There ought to be some place where, after the weary voyage, the quarantine patient can step on shore, and where the poor steerage passengers can escape the effluvia and poison generated in those close holds after a long crowding of human beings together."—*New York Times*, May, 1866.

Here, however, is the true balm of Gilead:—

"The Custom-house officials of New York are furnished with small vials, containing each an ounce of some greyish cholera mixture, with which they immediately dose each person, sick or well, who arrives in that port."—*Pall Mall Gazette*, August 4th, 1866.

This is acting on the *safe side*.

But, how do we act in England with regard to the cholera? In his 8th Report, the Medical Officer of the Privy

Council says, "I have no hesitation in asserting that England ought to resist cholera by Quarantine." The *ineffectiveness* of the disease belongs to the dejecta of cholera patients, "which acquire their maximum of infective power, while undergoing decomposition." The "Pall Mall Gazette," writing in May, 1866, has this article, anticipating by two or three months the Report.

#### QUARANTINE FOR CHOLERA.

"The 'Post' trusts that the Order in Council for placing the 'Helvetia' in quarantine at Liverpool may not be, and may not be construed to be, an indication of any disposition to return to the system on the part of this country. In truth, the time of quarantine has passed away. It is now recognized that of all methods of preventing the spread of infection none can be more unwise—as undoubtedly none can be more ungenerous—than to intensify the disease where it already exists by keeping the victims shut up together in the narrow walls wherein it first appeared, debarred from all the chances of recovery that the succour of the rest of the world can give, and at the same time to condemn those of them not yet infected to the peril of a forced contact with those—and those only—who are already suffering from the infection. The mental torture of such a situation might well be enough to induce disease even where there was no predisposition to it. Quarantine regulations have been and are disappearing, one by one, from the statute books of all enlightened European nations. The public mind is apt to take very sudden and somewhat unreasoning alarm on matters of this sort, and there does not appear to be ground for indulging in panic at present; but at any rate, if it should hereafter appear that the cholera is to be expected—of which we shall certainly have good warning from the Continent—it would be the wisest plan to render compulsory the erection in every considerable seaport town of hospitals such as that at Liverpool, where the sick can be properly attended, and have at least all those chances of recovery which human skill and care can give, instead of seeking to resort to the barbarous system of cutting off from them all chance of recovery by keeping them cooped up together, and cut off from proper succour, in the narrow limits of their vessel. As regards the 'Helvetia,' the 'Post' thinks the Privy Council have acted with prudence and discretion, and trusts that they will not be induced to do more than that, at any rate, in order to meet the fears which are so easily excited upon slender grounds, and with so much difficulty allayed."—*Pall Mall Gazette, May, 1866.*

The "*safe side*," however, was taken at Liverpool.

"The National Steam Navigation Company have resolved to burn all the fittings and the beds on board the 'Helvetia' at once, and also those on the 'War Cloud' and 'Jesse Munn,' as soon as their occupants are removed. The emigrants' luggage has been landed and handed over to them. All the vessels will be thoroughly fumigated."—*Times, May 17th, 1866.*

Why was this pestilent young woman allowed to go at large, "not afeard and liking to be neighbourly?"

"Among the emigrants at Birkenhead there is a young woman, about twenty-five or twenty-six years of age (a German), who can speak the English language. This young person, without hesitation, offered her services not only to interpret, but as a nurse, and in both these capacities she acted until the appointment of a regular interpreter and a staff of nurses. Her noble and disinterested services on behalf of her suffering countrymen having become known in Birkenhead, a number of benevolent persons raised a subscription, and on Tuesday Dr. Robertson, the Medical Officer of Health, as their medium, presented her with about £10, and informed her that it was also intended to give her a gold watch, bearing a suitable inscription, as a reward for her exertions to alleviate the sufferings of her fellow passengers in a strange land."—*Times*, May 17th, 1866.

I recollect an analogous case occurring (with different results) during a cholera visitation in Rome. A young surgeon went about doing what he could to benefit his townfolk. The report spread that he was disseminating the disease. The people rose, and tore him to pieces in the public streets, *to be on the safe side*.

But here is another case for condemnation (?): The Cottage Hospital, North Ormesby, Middlesbrough.

#### "REGULATIONS FOR PROBATIONERS AND NURSES.

"10. To attend the sick, both poor and rich, at hospitals or private houses, by night or by day. After eight weeks' attendance upon *infectious cases* the nurse must return, or be exchanged for another."

In the "Pall Mall Gazette" of August 25th, 1866, will be found a letter, signed Forbes Winslow, M.D., "On the Depressing Passions in Relation to Cholera."

I will take the liberty of adding, that it is a common tradition, in the *home of the King Cholera*, that he was met coming out of a village in which a number of deaths had occurred, and was accused of being the cause. He stoutly denied the charge, adding, that he had only killed one, while fear had killed the rest.

It has been said, too, with some truth, as I venture to submit, that King Dirt and King Drunkenness have often as much to do with disease at home as the arrival of the parent disease from abroad. At any rate, the suggestion is worthy



of consideration. At Mauritius “the most stringent quarantine regulations are in force, but sanitary regulations in the town are overlooked. The Coolie population is dirty in the extreme.”

But as I do not affect originality, I shall do best by giving the following extract from a Southampton paper of December 15th, 1866. I have refrained from mentioning names, or I could have adduced the authority of men of great practical knowledge (at Southampton and elsewhere), who have written, conclusively, as I think, on the non-infectious nature of the cholera and yellow fever. The latter is now admitted at head-quarters.

#### “CHOLERA AND YELLOW FEVER.

“As the question of the contagiousness and possible importation of such diseases as the above has recently formed the subject of discussion in our columns, our readers will doubtless be interested in the perusal of the following extracts from a very able work recently published by Dr. Shrimpton, of Paris, upon ‘Cholera; its Seat, Nature, and Treatment.’ Having quoted the opinions of several eminent physicians of the Indian Army, together with a number of irresistible facts adduced by them to show the non-contagious character of cholera, Dr. Shrimpton says:—

“When we see the disease breaking out on the same day, September 19th, 1865, at Cette, Arles, Aix, and Courbevoie; on October 1st, at Nancy and St. Cloud; the 5th, at Melun; the 6th, at Caen and St. Germain; appearing simultaneously at distances so great from each other, how is it possible to prove that contagion spreads ‘gradually from commune to commune, from house to house, from individual to individual?’ No, the disease is not propagated in this way. Not only does the disease appear suddenly in persons the most distant from each other, but one or more persons may be attacked at the same time in a family, in a house, or in a public establishment. No one has ever seen cholera transmitted from one individual to another. Cases are well known of children that had been suckled by their mothers affected with cholera until the last moments of their existence, without having taken the disease. Again children at the breast that have died of cholera have not given the disease to their mothers (*de la Berge et Monneret Compendium*, page 272).

“If we were now asked what was our personal opinion on the manner in which cholera is propagated we would answer as follows: the disease is not propagated by contagion, by infection, by poison, or by any emanation from the bodies of cholera patients.

“Everything in cholera seems to preclude the idea of contagion; there is no period of incubation, no virus, no miasma; even the nature of the disease itself, its seat, and its mode of propagation are quite opposed to all the principles of action of contagion.

“*No infection.*—Where are the ferments, the effluvia, the miasmata of cholera? No one has ever discovered the least trace of these mephitic

gases, of these microzoaires, of which there has been so much talk. The atmosphere has not the least been infected with antiseptics and preparations of chlorures, &c., under the pretext of destroying these supposed microzoaires, and neutralising the supposed gases, of which there never has been the least trace discovered. Finally, have we not seen, and do we not every day see, that cholera respects the most unhealthy places, and devastates others which are in the most perfect sanitary condition ?

“*No poison.*—We cannot help saying that in the embarrassment of finding a means of propagation for cholera, and being determined that there should be one, the contagionists have been obliged to declare that there is poison, but the presence of this poison has never been shown, nor its nature explained.

“*No emanation.*—There is no emanation from the bodies of cholera patients ; this would be equally impossible during life and after death.

“During life the bodies are dried up and are cold, even below the temperature of the surrounding atmosphere ; the laws of chemistry as well as the laws of life are suspended, the very breath is cold—icy cold. Under such circumstances it is very evident that there never could be any emanation.

“After death the bodies of cholera patients do not immediately enter into decomposition, for after the cessation of the disease by death, the animal heat which could not be obtained during life, returns to the body for a short time, and thus prevents immediate decomposition. It is evident then that the bodies cannot produce those fetid emanations so much dreaded from deaths from zymotic causes.

“*Mode of propagation and etiology.*—If cholera were a contagious disease, we should be able easily to follow its course from place to place, from date to date, to show how it was imported ‘by Arab pilgrims,’ and even that it ‘came by the fresh water canal from Fell-el-Keber by the market-women.’ But as such is not the case, our task is much more difficult ; we shall have to follow it in all its meanderings, its erratic course, without any guide, in the hope of discovering something of its mode of propagation and its etiology.

“The disease always makes its appearance in different distant parts of a country at the same moment, frequently even before it has visited the neighbouring countries. It is impossible to trace out its direct route. It leaps from north to south, from east to west, in every direction, and often to immense distances without touching the intermediate country.

“It is impossible to establish the filiation of the disease when it declares itself suddenly in a city, in the centre of a country, where there has not been one single case of cholera. Cases occur at the same instant in places not only the most distant from each other, but also without any possible communication between the patients ; in the cells of prisons, in convents, in hospitals, &c., &c., in the most healthy as well as in the most unhealthy places ; amongst all classes of society, the rich and poor ; the valid and the invalid. Thus this terrible disease appears to us to break through all the laws that contagious diseases are subject to.

“Is it not then most unreasonable to inflict the rigours of quarantine laws on nations, to interrupt the intercourse between people, and to create terror, which never fails to spread the disease ?

“Then as to the supposed efficacy of disinfectants, Dr. Shrimpton thus expresses himself :—

“With regard to disinfectants, as a preventive measure, we reject them altogether. All the experiments which have been abundantly tried have

sufficiently proved their thorough inefficacy. The fumigations of chlorine would appear to be not only inefficacious, but really injurious, 'all the men employed in some laboratories in the preparation of this substance (chloride of lime) died.' (*Cholera Morbus*, Fabre, p. 222). The enormous quantity of chlorate of lime which is found in every corner of the streets of Paris, serves only to infect the atmosphere and frighten the people. There is nothing in cholera to disinfect, and under all circumstances, there is but one absolute disinfectant, and this is cleanliness.

Dr. Shapter, of Exeter, had previously given publicity to very similar opinions with respect to yellow fever, in one of the original dissertations contributed by him to 'The System of Practical Medicine.' Therein he expresses himself in favour of the theory of non-contagion, and says:— 'From what has just been said upon the causes of this fever it may be well understood that we should not be inclined to estimate among its preventives the system of separation entailed by the quarantine laws, with their train of hardships and inconveniences. \* \* \* \* Experience has shown that very little reliance is to be placed upon the disinfecting mixtures that have been proposed with the view of altering the constitution of the atmosphere, and by this means destroying the malaria which may exist in it.'

"We commend these opinions to the attention of the authorities who have recently enforced quarantine regulations at this port to an almost unprecedented extent; and at the same time we would respectfully suggest that they might be combated, if possible, by those who proclaim their belief in contagion and disinfectants."

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"The water cholera theory of the Registrar-General is not yet accepted by scientific men as proved, for a good many reasons, of which we shall probably hear more as the more deliberately worked out reports of the medical officers of health and the special commissioners of the Privy Council are completed and published. Meantime it has been a matter of difficulty to merely practical and unscientific persons to understand how, amongst a population of whom a very small proportion ever drink unboiled water, the cholera should be so widely spread by that agent. Will the prevalence of adulteration help to solve the difficulty? Beer, we all know to be largely adulterated with unboiled water, and London milk equally or more so. Even country milk, it appears from a statement in a medical contemporary, is not free from admixture with water drawn from surface-wells suspiciously near to cesspools, and dungheaps, and drains. We have no hope of stopping this sophistication; but may we appeal to the consciences of the adulterators—or such remnants of conscience as may be presumed to be in their possession—to boil the water before they adulterate our beer and our milk? It would, perhaps, be too great a stretch of indulgence to expect that it should be filtered through charcoal."—*Pall Mail Gazette*, December, 1866.

And the Report of the Rivers' Commission, May 6th, 1867, gives very poor encouragement to the water-poisoning theory.

But, interesting as is the subject of cholera, I must leave

it for another Question in the House on scarlet fever, June 18th, 1866.\*

“SCARLET FEVER.

“Sir J. C. JERVOISE asked the Vice-President of the Committee of Council on Education whether his attention had been directed to the statement of the medical officer of the Privy Council (First Report, Cattle Plague Commission, p. 46)—‘We constantly see in our practice that the physician carries home scarlet fever to his children without taking it himself, carrying the infection in his dress or about his person;’ and what measures were contemplated to arrest this source of danger to the public health?

“Mr. BRUCE said that the Government did not see their way to any effective legislation on this subject at present.”

The Question implies such carelessness on the part of a profession “that has pretty well ascertained the nature of all diseases,” that we can only hope the statement is incorrect. That it is so, we may conclude from the “Report of the late Epidemic of Scarlet Fever among Children at Aldershot Camp, April 20, 1866,” from which the following is an extract, given to the Vice-President of the Council on Education, on notice of the following Question, March 26th, 1867:—

“INFECTIOUS DISEASES.

“Sir J. C. JERVOISE inquired of the Vice-President of Council on Education whether his attention had been called to the report of the commission on yellow fever at Bermuda, 1856; report of committee on yellow fever at Bermuda, 1864; report of the late epidemic of scarlet fever among children at Aldershot, 1866; and what conclusion was to be drawn from these reports as to the infectious nature of the diseases referred to?

“Lord R. MONTAGU said that he did not think that these reports led to any novel conclusions as to the infectious character of diseases.”

“No nurse nor mother was affected.

“Dr. Barry can give no information as to the manner of the introduction of the disease into his family.

“Has no reason to suppose he conveyed the infection into any other family he attended. Mothers and other relatives were admitted to see patients, and to go back-wards and forwards, yet in no instance was disease known to be communicated in this way.”

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\* When the Jews were persecuted, villages plundered, old and young drowned in the Danube, a representation was made by Lord Stanley to M. Bratiano, at the time Minister to Prince Charles of Roumania. His reply was that they were vagabonds who spread Cholera.



How comes it that medical men, not named, carry scarlet fever in their clothes while they themselves are unaffected, and yet that a medical man, whose name is given, who had the disease before him, "with an opportunity rarely occurring "of attempting to trace the history of scarlet fever in its "progress through a given population," could not, by any possible means, detect its infectious qualities?\*

We already are informed that the *infectious* nature of yellow fever is negatived, but the reports, such as that of which I gave the extract above, did not lead the Privy Council "to any novel conclusions as to the infectious character of diseases." The profession have decided that their members, knowingly, are constantly carrying home to their children scarlet fever. To how many of their patients, then, must they have communicated the disorder before doing so to their own families? The number is only limited by the daily arrangement of their visits. The country practitioner can make no such arrangement. "First come first served:" he carries on for the rest of the day a hodge podge of disease, escaping miraculously himself. In reply to my Question on this subject, in 1866, the Vice-President of Council on Education did not see any way to legislation on this subject.

Leprosy, consumption, yellow fever, have ceased to be considered *infectious*, unless bad air is meant by the term; but a foul well, a sewer, will kill those who enter it, and so did the Black Hole at Calcutta. A long course of breathing foul air is admitted to be the cause of typhus, or typhoid fever. No *germs* are required for this. If disease originates spontaneously in one case, it may in all, and no proof can be found of its subsequent spread by *infection*, supposing always that the definition, as given by me, be correct. Quarantine will be useless if this proposition be true. That it is kept up for other than sanitary purposes is admitted. Commercial interests are involved in its main-

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\* A review at Aldershot was put off in consequence of Her Majesty the Queen being advised of the danger.

tenance, perhaps political also; at least I inferred so when I saw the anomalous conduct of the French authorities, referred to below.

#### THE CHOLERA.

“SIR J. C. JERVOISE asked the Vice-President of the Committee of Council on Education whether the attention of the medical officer of the Privy Council had been directed to a statement in the ‘Morning Star’ of the 25th of October, 1865, that the Emperor and Empress of the French had visited the cholera hospitals at Paris, and that M. Gustave Girard had made experiments in demonstration of the non-infectious nature of the cholera.

“MR. BRUCE said that the medical officer of the Privy Council was cognizant of the conduct of the illustrious personages in question, whose courage and humanity on that occasion had excited such general admiration. He was also aware of the daring experiments made by M. Girard, who had placed upon his tongue the moisture of the brow and the fur from the tongue of a man who had died of Cholera. But, in the first place, such an experiment only proved the insusceptibility to that disease of M. Girard, and by no means proved that the experiment might be tried with equal safety by other persons. Even, if held conclusive on that point, it did not in the slightest measure invalidate the position taken by the medical officer of the Privy Council with respect to the infectiousness of that disease. The hon. baronet had, moreover, overlooked the fact that, as the French Government was at present strongly advocating quarantine precautions against cholera in the East, it might be presumed that their medical advisers entertained the same opinion as the medical adviser of the English Government on the subject of M. Girard’s experiments.”—*Times*, April 20th, 1866.

In the paper quoted, and on the same side of the sheet, was the account referred to, in an article headed “Paris,” in which it was stated that M. Drouyn de L’Huys had proposed a Cholera Congress at Constantinople. The first notice of this Congress informed us that the French had suggested an energetic course—namely, armed ships in the Red Sea, to watch the Egyptian and Arabian coast; and what is still more extraordinary, England was one of the first nations to object to this hopeful precaution! I have asked this year the Foreign Secretary\* when the Report of the Congress would be distributed; but though the Congress concluded its labours in October, 1866, and though the public journals have talked of its Report, it has not “reported.” The English Commissioners have “reported,” but the Congress has not “reported;”

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\* Lord Stanley, afterwards Lord Derby.

when the "Congress" does "report," then the "Report" will be distributed. I confess, from the first time I read about this Congress—and it was in a column of the "Star," alongside of the one which mentioned the Emperor's visit to the Cholera Hospitals—I have not believed in the sincerity of the proceeding; it struck me as very improbable that the Emperor of the French would risk his valuable life by exposing himself to cholera infection, if he thought it communicable at an *appreciable* distance. Nor would M. Girard have placed on his tongue matter taken from cholera patients, if he thought it communicable at an *inappreciable* distance. The anomaly of the suggestion for a Cholera Congress did not strike me as extraordinary, but my suspicions, as to watching the Egyptian and Arabian coasts, are probably as unworthy as those of which France complained in 1820-1. A large force was collected on the frontiers of Spain, on the ground of sanitary precautions. Spain remonstrated; France said they were unworthy suspicions, and in 1822 invaded Spain with that *cordón sanitaire*? to the cry of "God and St. Louis," there having been (in Spain) *an infectious disorder* of a political character, from the *germs* of which France was anxious to be protected, and so "stamped them out." But I am anticipating what it is unfair to suppose—namely, that the Cholera Congress are not anxious to report. So far as we are permitted to know, the English Commissioners have reported, and their report is openly characterised as "unpractical and irrational."

The history of small pox in the Small Pox Hospital is not much known. It is not a Government institution. No one is likely to volunteer inspection.

"For over all there hung a cloud of fear;  
A sense of loneliness the spirit daunted;  
And said, as plain as whisper to the ear,  
The place is haunted."

It will be some consolation, however, to know that for thirty years no case occurred among the attendants. Vaccination will not secure this, nor inoculation either.

Besides, there are other places—barracks, camps, ships, &c., where only a very lax system of quarantine can be kept up.

We must hope that direful consequences do not always follow the breach of these observances, that they have not been found necessary in the case below, on which I will not comment further than to add that I suggested the possibility of such an occurrence when the Public Health Bill of 1866 was going into Committee of the House.

“THE SANITARY ACT OF 1866.

“The Linslade Bench of Magistrates have just made the *first* conviction, under the 38th section of this Act, which enacts that ‘any person suffering from any *dangerous infectious* disorder who wilfully exposes himself, without proper precaution against spreading the said disorder, in any street, public place, or public conveyance, shall, on conviction of such offence before any justice, be liable to a *penalty* not exceeding £5.’ It appears the case was taken up *at the instance of the Aylesbury Board of Guardians*, who proceeded under the above clause, against Emanuel Cook, of Wingrave, under these circumstances:—Cook had been for some time an inmate of the ‘*contagious ward*,’ or ‘*pest-house*,’ attached to the Aylesbury Union Workhouse, and was under treatment for small pox by *Mr. Robert Ceely*, the medical officer of that establishment. The man had expressed a desire to go out and see his friends, but Mr. Ceely, being *of opinion* that such an act would *neither facilitate* the patient’s recovery *nor be conducive* to the public health, strictly forbade his leaving the premises. Regardless of this veto, however, Cook managed to elude the observation of the parties in charge of the pest-house, and escaped, proceeding while in that condition along the high road, through several populous villages, as far as Wingrave, where he *incautiously called* at people’s houses, and, as they were aware of his state, set the whole population in a *terrible fright*. He was taken back to the workhouse, but *repeated his offence*, which led the Guardians, in the *interest of the public health*, to institute the present prosecution. The Bench severely commented on Cook’s conduct, and as this was the *first known case* of the kind which had come under the magisterial observation, he was fined in the mitigated penalty of 5s., and 12s. 6d. costs. The Bench intimated their intention on the *recurrence* of any similar case to impose a much heavier penalty.”—*Times*, May 11th, 1867.

And I now hope all the parties, and the country with them, are not “compromised.”

It will be found that public health and public wealth are more properly “interchangeable terms” than *infection* and *contagion*; and to seek security from precautions of quarantine tends only to mislead, and sometimes to generate the very malady against which it professes to guard. I avow myself, then, to be a disbeliever in *infection*, and I will shortly state

the reasons for the want of faith that is in me. Communication of disease by inoculation is capable of demonstration, logically and practically; it is founded on a rock.

*Infection and Contagion*, meaning by the former the communication of disease at an appreciable, and by the latter at an inappreciable, distance, by mysterious protoplasmic or germs, which have never been proved to exist, are alike untenable. *Credo quia incredibile* is the only foundation I can find for these hypotheses.

It is certain that there were, during the late outbreak in London and at Southampton, audacious men who doubted the infectious nature of the cholera. At a meeting at the Mansion House a reverend gentleman suggested a mutton chop and a glass of brandy and water as a remedy, while the authorities elsewhere were pointing out poisoned water as the cause, and (as a preventive) boiling every drop that was drunk by a population that had scarcely a stick to burn in the depth of winter to warm themselves with. At Preston lime-wash and brushes were supplied, instead of the mutton chop; and the streets of London were watered with an infusion of carbolic acid to kill the *germs*.

An evening paper confesses that to hint at cholera existing in a provincial town is ruin to it, but adds, that Southampton should have published the fact, instead of causing danger to the public by not proclaiming its visitation. It did, however, mention a clear case of "Asiatic Cholera."

The mate of a ship died the day after landing in perfect health. He had only eaten eighteen eggs and two pounds of cherries for supper.

To revert to the cholera poisoning the water of a community. This is an old belief of the Middle Ages, and the remedy was to burn a few Jews, which gave great comfort to those of another creed, and generally the disease was "stamped out" by these means, in a longer or shorter time. But these were superstitious times. Science works on solid ground. *Science is that which may be taught as well as learnt.*



We are taught, and we learn by the statements referred to in my questions of March 7th, here given.—Question 1, to Secretary of State for Home Department, and answer.—Question 2, to Vice-President of Committee of Council on Education, and answer :—

#### INFECTIOUS DISEASES.

“SIR J. C. JERVOISE asked the Secretary of State for the Home Department whether the statement in the weekly report of the Registrar-General, November 17, 1866, that Dr. Frankland had investigated some of the physical properties of cholera-stuff (cholerine) was exactly true; and whether it was the intention of Her Majesty’s Government to introduce any measure tending to obviate the loss, alarm and injustice consequent on the theory of the infectious nature of certain diseases, when unsupported by demonstration.

“MR. WALPOLE said he would not undertake to say whether the report was scientifically true; but as soon as the notice of the question was put upon the paper, he sent to the Registrar-General to make inquiries respecting it, and he (Mr. Walpole) had been informed by him that the report of Dr. Frankland, who was a very eminent chemist, was, no doubt, in the appendix to the Registrar-General’s report of November last, and that he considered it a very valuable document. Perhaps he (Mr. Walpole) had better read the paragraph of the Registrar-General’s letter, which would be a more complete answer to the hon. gentleman’s question :—‘I consider such publication tends to put the public on their guard, with a view to exercise greater care in destroying what is supposed to increase the number of cholera cases.’ I am not aware of any bill upon this subject which it may be advisable for her Majesty’s Government at present to offer to the consideration of Parliament.”

#### CHOLERA CONTAGION.

“SIR J. JERVOISE asked the Vice-President of the Committee of Council on Education whether his attention had been called to the report of the medical officer of the Privy Council (1866), in which he states, pp. 39-40, the mode in which cholera-contagium is generated; whether the discoverer had divulged his method of obtaining that deadly agent; and, if not, why not; and whether the annual report of the medical officer, which was not accessible to members till towards the end of July in the last, would be so at an early period in this Session.

“MR. CORRY said the opinions expressed in the paragraph referred to were not those of a single discoverer, but were the results of the investigation of a number of scientific men. With regard to the report, he could not hold out any hope that it would be laid upon the table much earlier than it was last year.”

Dr Frankland had been trying experiments with cholerine, and science informs us that by words ending in “ine” organic bases are understood, “as morphine, quinine, nicotine, &c., &c.”

The Medical Officer of the Privy Council, too, has been trying experiments with “Cholera Contagium,” and science

tells us that by words ending in "um" metallic elements are named, as potassium, sodium, magnesium," &c., &c.

We have thus two great discoveries in chemistry. (The latter was not that of a single discoverer.)

There is a story of an ingenious artist having discovered the method of rendering glass malleable. On taking it to his sovereign he was asked whether he had divulged his secret to anyone else, and on his replying in the negative, the despotic ruler ordered him off instantly to execution, for, said he, such an invention would supersede the use of all other materials and cause ruin to thousands. Fortunately we live under a milder rule; the former of these discoverers is not in danger of his life; nor is it probable that the number of scientific men will be rewarded. But what becomes of the answer of the Home Secretary to my question? He would not undertake to say whether it was true or not, but it was published as a *very valuable document tending to put the public on their guard in dealing with what were supposed to be cholera cases.*

Am I wrong in classing this statement among the pious frauds we have heard of, asserting what is not true, that good may come of it?

That the Report of the Medical Officer of the Privy Council should be withheld so long, and at such a juncture as the present, is unreasonable. No doubt the gentlemen at the Board of Health "have pretty well ascertained the nature of all diseases;" but why should we be kept so long in ignorance of what is going on there.

Nature acts by uniform laws. "We must get by what we know, to what we wish to know." Whether I have picked up a pebble on the shore of the great ocean of science, or only found a *mare's nest*, I leave it for others to decide. If only the nest, I shall not stand alone. One hundred years ago Smollett was on the look-out for Halcyon's nests floating on the sea off the coasts of Nice and Genoa, but he did not succeed in finding one. He did, however, discover at Mont-

pellier (a place with the name of which everything that is salubrious is still associated, and at that time celebrated for the most skilled practitioner in Europe), "a very treacherous climate, and an ignorant and rapacious quack doctor."

If it be admitted that the spread of a number of diseases in man has erroneously been attributed to infection, may we not infer that the diseases in cattle are open to the same mistake? It is pretended that the diseases of cattle are best understood (as they ought to be), by veterinarians, but not to the exclusion of physicians. Such exclusive dealing would repudiate the maxim of "*Fiat experimentum in corpore vili*," and make vivisection a piece of wanton cruelty. Vaccination would be relegated to the care, and to the advantage of the cow-leech. And this reminds me that (in the 'Third Report of the Commissioners on Cattle Plague, celebrated for the beauty of its chromographs), there is a portrait of Mr. Hancock's hand, as it appeared after having been inoculated with the virus of that most terrific disease. The result being that it was a complete, but simple case of vaccination. Neither more nor less.

But to the pebble, or the mare's nest.

In the second part of the volume, on Fermentation, Putrefaction, and Decay, by Liebig, he suggests that diseases in the blood may originate by a similar chemical fermentation. For example, in the process of malting, the saccharine fermentation is set up in the insipid barley. The wort made from this undergoes the alcoholic fermentation and becomes beer. This will again run into the acetous fermentation and turn to vinegar, and that again into the putrid fermentation; and so into decay and dissolution. I have omitted the use of yeast, because, though it might represent the contagious element, it is not necessary for the fermentation of beer, wine, or cider.

These may be regarded as so many diseases occurring spontaneously, which having passed off, the beer is less likely to undergo them a second time.

*Similia similibus curantur*; and this has been alleged as



a ground for expecting security from small pox by inoculation and vaccination; but homœopathy does not pretend that *similia* promiscuously administered in infancy will secure immunity from *similibus* in after life. Liebig mentions a terrible disorder caused by eating the sausages of Wurtemberg, which from their composite character, are very liable to ferment; putrefaction taking place in the centre of the sausage, and communicating itself to the person who eats it in this state. The victim is consumed by a fermentation brought about by chemical action, in which likewise the disease itself had its origin.

But the gas emitted in each of these examples of fermentation, differing entirely from the matter in which it originated, cannot produce a similar chemical fermentation or disease. Each process produces its own specific results alone.

The gas which is generated during the fermentation of beer will suffocate before it will inebriate. Although the sausage, fermenting spontaneously (if the statement be true) is the parent of a dreadful disease, it throws out no *infectious* vapour or *molecule*; no poisonous matter can be detected in the sausage; "boiling water and alcohol destroy it, without acquiring similar properties." There is no *sausagine* denoting its active principle. "It is equally impossible to obtain such a principle from the virus of small pox or plague."

What then becomes of the illustration, and the argument founded on it, by the Medical Officer of the Privy Council, when he says that diseases descend as regularly from a parent as dog from dog and cat from cat, and that it would be as irrational to look for the spontaneous origin of any disease, as it would be to look for spontaneous combustion during a discharge of fire-works. According to this theory we must look for the cause of the cold caught in a damp bed to the damp person who has slept in it. "When a known cause produces the same action in all cases submitted for examination, we must revert to the same cause in considering the same actions in cases not examined, for we have no right to assign to it a new cause, in order to save

“ us the trouble of a closer investigation.”—*Liebig*. But “ we must get, through facts that we know, to those we want “ to know.”—*Mill*.

In the year 1856-57, papers relating to the history and practice of vaccination were presented to both Houses of Parliament. The writer (Mr. Simon) states that “ lymph, “ under the influence of air and moisture tends, like other “ dead organic matter, to putrid decomposition,” &c., &c. Used in this state, it produces the same effect as that which occurs sometimes in the dissecting theatre to the surgeon who wounds himself in the operation. The disease which follows (dangerous though it be) is not communicable, “ unless it be by similar process.” In the Appendix to these Papers will be found the following evidence by Dr. Jenner:—

“ Reflecting that the operations of nature are generally uniform, &c., I now discovered that the virus of cow pox was liable to undergo the progressive changes from the same causes precisely as that of small pox, &c., the specific quality being lost.

“ Here the close analogy between the virus of small pox and of cow pox becomes remarkably conspicuous; since the former, when taken from a recent pustule and immediately used, gives the perfect small pox to the person on whom it is inoculated; but when taken in a far-advanced stage of the disease, or when (although taken early) previously to its insertion, it may be exposed to such agents as, according to the established laws of nature, cause its decomposition, it can no longer be relied on as effectual.”—*Evidence given before a Committee of the House of Commons, March 22nd, 1802, by Dr. Jenner, pp. 1, 2.*

From these facts, we may safely infer that the gas proceeding from what is termed an *infectious disease* could not resist the action of *such agents as, according to the established laws of nature, cause its decomposition.*

We cannot suppose that the emanation from the virus of small pox or other disease remains unchanged and unchangeable through all the phases of the disease thus enumerated—*invasion, incubation, eruption, desiccation, and desquamation.*

It is difficult to imagine, for instance, how, when the dry skin is peeling off, in scarlet fever, “ desquamation ” can be “ the most dangerous time; ” whilst the virus of small pox loses its activity as readily as is here represented by Jenner. We may fairly hope that, in the act of ventilating the sick

room, the *germs* of disease are not sown broadcast over the land; for it is absurd to suppose that, with this transformation of the substance, the shadow of *infection* would resist change.

Well, then, I "go by the facts that we know, to those we wish to know," always supposing the "vital organised germ" theory to be a myth.

In the year 1857, the Customs' Report stated that (in consequence of a contagious and infectious disease having broken out among the cattle) an order from the Privy Council prohibited their importation from the Baltic ports, and ordered that all hides, horns, hoofs, and bones should be destroyed. The upshot was, that a few hoofs were sacrificed to the demands of a groundless alarm, at a small injury to commerce, but at a great sacrifice of consistency; for only a few hoofs were destroyed. A great principle was involved in this transaction. Could it be true that the virus of disease remained in activity amongst these hides, &c.; and if so, why were they not all destroyed?

Shortly afterwards it was proposed to add a medical officer to the staff of the Privy Council. Mr. Simon was named. I did not know Mr. Simon, but I considered that one who had written as he had, and quoted what Dr. Jenner had written, viz., that "nature works by uniform laws," and that "virus exposed to the air will lose its specific quality," could never encourage the belief that these hides, hoofs, horns and bones, &c., were disobedient to the laws of nature. For the future, I thought that, at least, laws enacted during a panic, as was the case with the 7th and 8th Victoria, cap. 112, will no longer be enforced by arbitrary power unguided by science. From time to time these laws were renewed. At last the matter was brought home to my own door by the outbreak of small pox in sheep, 1862. It appeared first in Wiltshire, and our Hampshire house was next to the one on fire; but a great authority in these matters (Mr. Gamgee), said that, like the cattle plague, it came from Russia. The Customs' Report of 1863, however, says "the rumour that prevailed in the "summer when the *variola ovina*, or *sheep pox*, broke out

“among the sheep in Wiltshire, attributing it to the foreign importations, was, we are satisfied, entirely devoid of foundation.” Mr. Gangee states that “the disease broke out about shearing time, both in England and on the Continent.” The summer was very wet, and one of the coldest ever known. The grass cut for hay lay on the ground soaked with water, but so cold was the weather, that the hay received little injury. Fruits, if they ripened at all, had no flavour; the potato disease prevailed. Are we then to look to foreign origin for cause of such a disorder; and is it necessary to believe the statement in the appendix to the Report of the medical officer of the Privy Council, namely, “that small pox and sheep pox spread entirely through contagion and infection; that it is not safe for a healthy flock to come within 500 yards of a diseased one; that human beings carry the disease for miles, and shepherds have often communicated the malady to distant flocks;” “that *hares* and *rabbits* are subject to this disorder, and may be the carriers of the contagion; sheep dogs certainly can be the means of transmitting the virus;” and that “every writer of merit in Europe attributes this disease to the introduction of diseased animals across the Russian frontier, into Poland, Hungary, Prussia, Pomerania, &c. ;” and that “it is a malady that never has, and never will originate spontaneously in this country?” Is there no connection between the outbreak and shearing time; driving the sheep to the wash, wetting them through in running water, depriving them of their fleece, and exposing them in this state to the wet and cold of the summer 1862? Is there nothing to be learnt from the following extract?—

## CLERKENWELL.

“Mr. William Warbey, cattle salesman and dealer, of the Metropolitan Cattle Market, was summoned before Mr. Cooke, at the instance of the secretary of the Royal Society for the Prevention of Cruelty to Animals, charged with cruelty to animals by exposing sheep for sale at the Metropolitan Cattle Market without proper covering, they having been recently shorn.

“Mr. Ricketts, solicitor, of Frederick Street, Gray’s Inn Road, instructed by Mr. Love, prosecuted; and Mr. Field, Solicitor, of Finchley, defended.

“Last week it was proved that the sheep were exposed in the cattle market on a bleak, cold, and wet day, the ground being covered with snow, without any clothing on them, the sheep having been recently shorn. To prove that the defendant had been guilty of cruelty, Professor Spooner, of the Royal Veterinary College, was called, and he deposed as follows:— I consider the acts narrated are very cruel, and that the animals must have suffered a great deal. I have examined meat from animals that have been so exposed, and have found that it was very much deteriorated. The very fact of the animals standing with their backs arched, their heads hanging down, and shivering, would show that they were suffering great pain. The skin of the sheep is highly sensitive and thin, and the removal of the wool would expose the nerves. The present practice of shearing sheep in cold weather is a most cruel one, and ought to be suppressed.”—*April 11th, 1867.*

And we must recollect that not only were the sheep exposed to the wet and cold of the season 1862, but the grass on which they fed was grown under circumstances adverse to its wholesome properties.

Some practical men do not hesitate to characterise the disease as that well known (possibly in a milder form) by the name of Scab, “a disorder full of terrors to the flock masters in Great Britain and the colonies.” At the Peel River, in 1864, the Government having decided to suspend the operation of the penal clauses of the Scab Act, rendering the destruction of diseased sheep imperative, and to adopt a modified course, allowing the use of curative measures instead, “grave doubts are entertained by many flock owners as to “the disease ever being thoroughly eradicated;” but in 1865 it is stated, “the disease of the Scab, which at one time “caused so much alarm to flock owners, has happily abated, “and the Return of the Inspector-General exhibits a great “diminution in the number of sheep affected throughout New “South Wales.” The remedial measure seems to have been as beneficial in its operations as the punitive. The example, however, set by the mother country of stamping out a disease, “the origin and nature of which is still unexplained,” has been lately followed by the colonists with all the energy of youth, as will be seen by the following extract referring to the cattle plague:—



## "ROCKHAMPTON.

"From our files of Rockhampton papers, we quote the following:—

"NOVEL IMPORT.—One of the new arrivals by the Great Pacific brought ashore on Friday a monster Tom cat without submitting him to the formality of any official inspection. Fortunately, however, for the peace of the town, Mr. Macpherson, the Sheep and Cattle Inspector, seeing Tom on the wharf, and knowing that a late regulation forbids the introduction of any quadrupeds from Europe, arrested him on the spot, to the intense disgust of the owner and a large mob of sympathising admirers of Grimalkin. The Inspector marched off his prisoner at some risk to himself from the claws of the brute. On returning from the races, on Friday, he found the owner of the cat and about 50 men and women at his house. The cat was demanded, and a good deal of threatening language used. The Inspector, however, was firm, and showed his authority to the belligerents, who thereupon subsided and submitted to the fate destined for their favourite. He was put into a bucket of water, from which he sprang on to the Inspector's shoulders, and after a good deal of trouble was finally drowned in another bucket. He was then consigned to the earth by his late owner and admirers."—*Northern Argus*.

In addition to the precaution carried out as above, we have the fact of three canary birds being kept in quarantine at Brisbane, for fear of the Rinderpest from England!

But to return to the *infectious* nature of the small pox in sheep; the question was put in Committee on the Cattle Plague Prevention Bill, at my suggestion, (for I had not the honour of serving on that Committee), about the disease being communicated *at the long range of 500 yards*. The answer was that the fact was proved thus:—"I have had cases in my experience abroad. You have stock going up to pasture, through one road, another stock going up to another pasture, quite distinct from the other, by another road, and these two roads being, say, within 400 or 500 yards; and the disease has been propagated from farm to farm." It will be recollected, that the Leap at Rhodes took place abroad. But why not try an experiment at home? A circle with a radius of 1,000 yards from the centre of infection would allow of the 500 yards range, and 500 beyond for the sake of security. Plumstead Marshes would afford space enough.

The disease being small pox, experiments in vaccination were ordered by the Lords of the Council; the report on the vaccination of sheep was sometime in preparation (the experiments commencing in October, 1862, and concluding in



Michaelmas, 1863), and was not delivered till July, 1864. In February, 1864, in answer to my question, the Vice-President of the Council on Education,\* says:—

“The experiments in vaccinating sheep concluded last Michaelmas, and I am sorry to say the result is exceedingly unsatisfactory. I am also sorry to say the report is not yet ready to be laid before Parliament. The framing of that report is in the hands of a gentleman who is not officially connected with the Government, and who, I think, has taken a great deal more time than was necessary in its preparation. I am, assured, however, that it will be ready by Easter. As I am not able to produce the report, I may state its general effect. The experiments that have been made are of two kinds. One has consisted in vaccinating sheep with lymph taken from the human subject, and this has succeeded in some measure. The sheep took the disease, though in an irregular and abnormal form (laughter), but when we came to test the value of that vaccination we found that the sheep took the virus either by inoculation or in the natural manner from other sheep, so that vaccination thus accomplished appears to be futile. The next plan was to inoculate cows with matter taken from sheep, in order, if possible, to produce a vaccine disease in cows which would stand in the same relation to sheep as cow-pox does to the human subject. But we entirely failed in producing that disease (laughter), and therefore the result of the experiments was altogether unsatisfactory.”—*Times*, February 23rd, 1864.

The question is disposed of amidst “laughter.”

The report, consisting of 27 pages, a greater portion of which are occupied with the record of previous failures in 1848, concludes “that vaccination is useless, that segregation “is almost impracticable, that slaughtering and burying of the “infected animals is justifiable only in the very earliest “invasion of the flock, and in those cases in which the disease “assumes a confluent character, &c.” The disease being well known in France, and all that related to it described by men of the greatest eminence more than 150 years since.

That the only remaining conservative measure (recommended by those who believe in infection) is “*inoculation, which if rightly carried out, offers considerable advantages.*” And this for disorder communicable at 500 yards distance?

In the case of pleuro-pneumonia, we have statements equally terrible with those which characterise the small pox or variola, and cattle plague; the proof of its infectious nature is demonstrated by the exhaustive argument of the writer to

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\* Mr. Robert Lowe, now Lord Sherbrooke.

the Editor of the "Times," in this extract on the foot and mouth disease. May 5th, 1863.

I may state in proof of its infectious character, that a neighbour who recently bought 30 beasts in a fair had the whole of them diseased directly they reached home.\*

If you think this worth insertion I shall feel obliged. I inclose my card, and am, Sir, yours obediently,

Warwickshire.

H. T. C.

A Bill was prepared by Her Majesty's Government, February, 1864, for further provisions for prevention of infectious diseases among cattle. It contains this definition:—  
 "Contagious or infectious diseases shall be deemed to mean *the several diseases mentioned in schedule hereto, and such other diseases as may from time to time be declared to be contagious or infectious by order of H. M. in Council;*" a despotic power to which the Privy Council is hardly entitled.

The claim to infallibility is again set up in a Bill presented by the Lord President to the House of Lords, 14th May, 1867, in these words, "*any disease shall be deemed to be contagious and infectious, which is from time to time declared to be such by the Privy Council.*"

The Bill of 1864 went into committee of the House before the report of the Select Committee was distributed; but it got so mauled there that the Vice-President of Council on Education good humouredly remarked, "that although he was prepared for a stand-up fight, he was not prepared to be knocked down at every round," the Bill was withdrawn and the country deprived of a measure for the prevention of cattle diseases. What that means will be learnt by referring to the Appendix to the Fifth Report of the Medical Officer of the Privy Council. "Very startling results are obtained by calculating the losses this country has sustained since the importation of cattle and of contagious diseases, &c."

"Thus the deaths among stock in the United Kingdom probably represent an annual amount of *more than six millions sterling.*"

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\* This writer asserts the development of disease as the proof of infection. This is merely begging the question.

The Bill for the amendment of the law relating to the importation of diseased cattle and unwholesome meat was at the same time withdrawn with all its securities "for the destruction and disinfection of any animals, or "parts thereof, of any hay, straw, fodder, and of all meat, and "any article contact with which *shall be calculated to produce "disease ;*" but while the country was frightened by these contemplated measures, the borough of Birmingham coolly talks of pleuro-pneumonia as being caused in many instances by animals being brought out of warm places, where they have been fed, and exposed to cold draughts in severe weather in markets and fairs, and particularly in railway-trucks, when they are shunted on to sidings for many hours together. Thus attributing the origin of the disease to spontaneous origin. "The diseased meat seized is produced before the "justices, and if ordered by them to be destroyed, it is carried "to an appointed knacker's yard by a sanitary inspector, and "boiled down in his presence with horse-flesh and other offal. "The destruction is so effectual as to prevent its use as "human food," without regard to its infectious nature or the consequences.

I may as well make a short extract on the subject of pleuro-pneumonia, from the Second Report of the Cattle Plague Commissioners:—"4426. The London dairies are never free from pleuro-pneumonia for many weeks together." "4427. I think it is the result of unnatural feeding." And this is the evidence of an experienced person on the subject of a disease about the foreign importation, and the subtle and infectious nature of which, together with the poisonous quality of the meat, &c., nothing less exaggerated was stated at the period of its prevalence, 1863-4, than in the case of the Rinderpest, 1865-6-7. We cannot prove *non-infection*, but we may show the necessity of sifting the evidence on which the theory of *infection* is founded.

In 1865 the Cattle Plague Commissioners began to take evidence and issued their first report, 31st October, 1865. It

was not, however, distributed till after the meeting of Parliament. In looking into the evidence on the Steppe Murrain, I cannot find any of the authorities have been in the Steppes. Mr. Murray, our Consul at Odessa (setting aside the story of the black spider), says the disorder originates in the hard usage and hard life the cattle are subject to, suggestive of spontaneous origin; and it would be much to be wondered at (if the description of that country be correct) should the cattle there escape disease. The extremes of heat and cold, dust and mud, wet and dry, repletion and starvation, constantly succeed each other, but such natural causes are set aside for the more wonderful origin of disease by descent, the process of which is as regular as that by which "dog breeds dog, and cat breeds cat," as exclusive as that by which "dog never breeds cat, nor cat breeds dog;" and "prospectively we are able to predict certain results of exposure to contagion, as definitely as the results of any chemical experiments."

On the 5th February, 1866, the second Report was issued, in which one of the witnesses states that "he has four or five neighbours, some within 40 and 200 yards from him, who have escaped the plague altogether, whose cows have been mixed with diseased and infected cows. A new stock of cows succeeded, within three weeks, the old stock dead of the plague, placed in the same pastures in which the diseased cows died, trod in their excrement, and were only parted from the infected herd by a low hedge." No disinfection, no precaution was used, and no evil consequences followed.

"That it is difficult to distinguish between pleuro-pneumonia and cattle plague; that a professor was the inspector who allowed them to treat the case when it first broke out, in spite of the Orders of Council, with the remark, 'If you cure that cow, it is such a decided case of plague, we will give you a pension;'" and that cow was living at the time the witness gave his evidence, which went to the effect that he had not got his pension!

On the 31st May a Third Report appeared—"The preparation of this Report has, from its nature, devolved mainly on the medical men of the Commission; and their colleagues necessarily rely on them for the soundness of the views expressed in it, on questions of medicine, chemistry, and physiology." I have already referred to the ill-success of these gentlemen, except in the case of *organised germs*.

Ireland escaped for a time, but in order to be prepared for an emergency, in January, 1866, arrangements were made for sending to England proper, qualified persons\* to make themselves acquainted with the symptoms, and to observe and consider the most successful mode of treatment of the cattle disease. Three professors in London attended the three gentlemen from Ireland. On the 13th January their experience commenced. On the 15th they examined several bullocks, affected with foot and mouth disease, with the Inspector of the Metropolitan Market. "Very many of the beasts in the market had reddened eyes, due probably to injury, or to the irritating effects of the chloride of lime in the railway trucks." "We next examined the body of a cow which was stated to have died with the plague, and in so doing found, by the absence of characteristic appearances, that this was not the case, but that the beast had accidentally perished from an accident to its neck." I submit that this, though a strong, is not the only case of mistake that has occurred during the time the Rinderpest has lasted.

But, in spite of all precautions, the Rinderpest breaks out in Ireland, in May 1866, and no one can account for its introduction. Later in the month, "one of the cows pronounced by the medical inspector to have been affected with the Rinderpest was, without doubt, found to have died from pleuro-pneumonia."

"Diseases not unfamiliar have, in consequence of the long severity of the season, assumed an aggravated form."

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\* E. G., Dr. Mapother and others.



In June it is announced that the cattle disease has broken out again, "the farmers allege that the disease was conveyed "by the inspectors themselves."

There is no excuse for this. In September, 1865, the Lords of the Council directed a document to be prepared by Dr. Thudichum on the principles and practice of disinfection. It will be found in the "Times," September 13th, and is worth reading carefully. I want to know whether that document concluded with the Doxology, and, if so, why was it suppressed?\*

That the cattle plague should break out in Ireland is extraordinary after all the forewarning and forearming that country received, and after all the precautions of quarantine, isolation, segregation, lodgment and seclusion, enjoined or practiced. I have no proofs that these were excessive, and that they failed will be urged on the other side as a proof of how subtle was the disease and how *infectious*.

But it is to Scotland and Aberdeenshire that we have to look for the great authority of the infectious nature and method of stamping out the disease. Aberdeenshire claims to be the inventor of the principle of compensation. It is, however, in the years from 1747 to 1749, at which period the cattle plague invaded Staffordshire, Derbyshire and Cheshire, that we find Aberdeenshire anticipated in its measures for stamping out the disease and compensating those who agreed to the sacrifice of their cattle, as we learn from the papers at Arley Hall, Cheshire, printed for private circulation, but kindly supplied to me by the owner. Aberdeenshire boasts of the marked success attending the measures for the suppression of the cattle plague, and they were recommended for adoption in England by the highest authority; but after two months' successful stamping out, on February 5th, Aberdeenshire was revisited by the plague. "No idea can be formed how the disease reached Mindurno." But shortly

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\* *The Cattle Plague and Disinfection.* See Appendix, p. 52.

afterwards, the mode of its communication was announced by a veterinary surgeon, inspector for the county. It was a "pack-sheet," which after being removed from the beef rolled up in it, was thrown aside for some time, when "one of the servant girls took and used it (unwashed) as an apron, for a considerable period before the first cow got bad, and was carrying kale in it to the cow after it was taken bad." The pack-sheet we must suppose was destroyed, after doing all the mischief, and so the plague was stayed, but

"Aberdeenshire, after a fortnight's freedom from rinderpest, has again been visited by the plague, a fresh case having been reported on Saturday at Peterculter on Deeside, about five miles from the city. Immediate measures were taken to stamp out the disease, and accordingly the stock which had been in contact with the first animal attacked, numbering 16 head, have been slaughtered. It is presumed that the disease must have been carried to the present farm, Oldford, by dung carted from Aberdeen.—*Times*, Feb. 15th, 1866.

Again, on February 22nd, the "Times" reports—

"The disease has again appeared in the parish of Foveran. It was reported by the district constable, as far back as the 11th inst., that a cow on the farm of Hill of Fiddes, occupied by Dr. Ruxton, was observed to be ill, and was separated from the rest of the stock. On the 14th the animal was killed; and on the following day another cow showed similar symptoms. Mr. Hay, the county inspector, was called on the 17th, and pronounced the disease to be rinderpest. On Saturday several of the other animals were observed to be affected; and on Tuesday the committee resolved to have all the stock slaughtered, except the cows in the byres, which will be allowed to remain until they show symptoms of the disease. The cause of the outbreak on this farm, which is three miles west from Pitmillan, the last centre of the disease in the parish of Foveran, is as yet unknown.—*Scotsman*.

On February 16th, 1866, the Honorary Secretary of the Aberdeenshire Rinderpest Association, writes to the "Times," that it is probable "that in the days of high winds and high temperature, with no rain, minute particles of infected matter were carried by the wind from the district of Fettercairn, scattered in the line of the wind, and took effect wherever they found a susceptible subject, which in every case was a cow or heifer in calf.

"If we are justified in tracing this outbreak to the infected centre of Fettercairn, we cannot resist the conclusions that we have in our midst, a disease so virulent that the germs

“ retain their vitality, after being carried by the wind 30 or  
 “ 40 miles, and so penetrating that it finds its way unaided,  
 “ save by the wind; but in the Second Report of the Cattle  
 “ Plague Commissioners, it is specially noticed that the  
 “ disease has travelled commonly in a direction counter to  
 “ that of the prevailing winds.”

In the Report from the Veterinary Department of the Privy Council, March 20th, 1866, the writer (speaking generally of the unsatisfactory nature of the returns sent in by the Inspectors) says:—“ the difficulty there has been in selecting  
 “ anything useful from such a mass of conflicting evidence,  
 “ consisting of more than 10,000 different papers.”

“ With reference to the *origin* of the cattle plague in this  
 “ country, we have not read any evidence of a satisfactory  
 “ and conclusive character. Whether the disease is of spon-  
 “ taneous origin, or whether it has been imported into  
 “ this country, has been the subject of a large amount of  
 “ correspondence, containing most conflicting statements.”

As regards “ Aberdeenshire,” the Report says there had been eight outbreaks of the disease.

“ The *stamping out* in this county can scarcely be said to  
 “ have been attended with that success which had been  
 “ anticipated. Up to the 30th December the disease had  
 “ existed for 24 weeks, and in that period 265 animals wer  
 “ attacked, whilst in Hampshire, where the disease had  
 “ existed for the same number of weeks, and the *stamping*  
 “ *out* had not been attempted, only 276 were attacked during  
 “ that period; and in Devon, where the disease had existed  
 “ for 26 weeks, and where the percentage of *killed* is even  
 “ smaller than in Hants, only 158 cases occurred during the  
 “ period.”—(Scotland).

In the meantime, the Inspector of Constabulary reports that “ the police force of this county (Aberdeen) has been  
 “ very actively engaged, and with considerable success:  
 “ several outbreaks of the plague having been immediately  
 “ ‘stamped out.’ ” Forty-two extra constables have been

employed to assist the regular constables in carrying out "this duty." While, on the other hand, the Chief Constable for Hants reports, April 2nd, 1866, "since the 14th January only 48 cases have been reported by the Inspectors, and I have good reason to believe that many of these were improperly classified as cattle plague."

With all its claims to prudence and generosity in compensating the sufferers, I have from the very first considered Aberdeenshire as an example of the great error in supposing the disease originated in infection from without, or that it could be "stamped out" by any measures adopted within the county.

In vain did we look for information in the House of Commons on the second reading of the Cattle Plague Bill. The cry was, "don't discuss the disease, but pass the Bill." One of the Commissioners, however, told us that the infection was "a question of geography, and not of traditional jurisdiction." Another, that "the contagion, as medical men call it, is not supposed to be anything in the nature of gas, but is propagated by very minute molecules which float in the air. These are capable of being carried by the wind and dropped, and picked up again." But the same Commissioner signs his name to the Report which states "the disease has travelled commonly in the direction *contrary* to that of the prevailing winds;"\* and then, having adopted the theory of molecules, says (*apropos* to flies), "*de minimis non curat lex.*"

If we look to the geography of the disease, we ought to look to the chronology also, and we cannot stop short of the Ark and Ararat. We find a concurrent evidence that we are justified in this supposition, in the fact that Mount Ararat is in the Russian dominions. A *cordon sanitaire* drawn round it would have prevented all diseases. Nothing is too difficult of belief during a panic. I am content, however, to think that

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\* Mr. Robert Lowe, now Lord Sherbrooke.

fresh meat and vegetables, tea, and potatoes have done more to stamp out disease, and that good air, good food, and good habits, good lodgement, moderation, and cleanliness, which is next to godliness, will do more to stamp out disease than even if the Ark had been placed in quarantine.

As for stopping the movement of cattle to prevent the spread of disease, because "it is propagated by very minute molecules," and at the same time ignoring the danger of flies acting as carriers of the virus, because *the law does not take notice of trifles*, I must observe, that when Newton deduced his great law of gravitation from the falling of an apple, he did not say "*de minimis non curat lex.*"

There has been many a "grievous murrain" in the land, and many a "sore famine." Free Trade has mitigated the latter visitation, and never aggravated the former. At a frightful cost we have been "stamping out" the cattle plague, for two years, without success. The medicine failed from the first, and so the proposed remedy is to double the dose! I would suggest that this system should be discontinued, and that the Noachian theory of the transmission of disease by descent should receive further examination into its Ætiological pedigree. Finally, I will hope the day may not be far distant when we may have something more definite as to the term *infectious disease* than that of "any disease" which is from time to time declared to be such by the "Privy Council."

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## APPENDIX.

The question is whether any disease is communicable *from the sick to the healthy at an appreciable distance?* Is there such a thing as *contagium*, caused by *organised and specific germs of disease?* The preceding pages abundantly prove that none but a negative answer can be truthfully given.

The late Professor Laycock, of the University of Edinburgh, a constituent of Dr. Lyon Playfair, suggested the inoculation of swine and cattle with leprous products to prove infection! Professor Owen of King's College, London, trusts that medicine will, in time, reach the height of a real science.

Infection is a myth. Grote says, *the origin of myths arises out of the readiness of mankind to accept plausible fictions as absolute facts.* The Royal College of Physicians declares that *there is nothing in the reports from all parts of the world to justify the segregation of lepers.*

“We live,” says *The Times* of October 8, 1874, “in an age of Congresses. We are all interested in Public Health, and unfortunately, are still in this matter too much at the mercy of ignorance, stupidity, greed and chicanery.”

When ignorance, stupidity, greed and chicanery are removed in any considerable degree from the highest stratum of the medical profession, then the cruel superstitions of infection and contagion by disease-germs, and the mischievous legislation affecting the health and even the life of the child, the liberty of the father, the rights of the citizen, and the sacredness of his home, based upon these chimeras, shall have received their death-wound.

## THE CATTLE PLAGUE AND DISINFECTION.

(From "THE TIMES" of September 13th, 1865.)

The following document has been prepared by direction of the Lords of the Council. It is headed, "Memorandum on the Principles and Practice of Disinfection, as applicable to the present Epidemic of Cattle Disease. By J. L. W. THUDICHUM, M.D."

### "I.—PRINCIPLES OF DISINFECTION.

"1.—The term 'disinfection' signifies the removal and destruction, or destruction and subsequent removal of the products of destruction, of all matters actually being or containing products of disease capable of reproducing disease in other animals.

"2.—If the same processes and means, as used for this purpose, are applied to the purification and deodorization of places and things not actually infected, but capable or suspected of being infected, then these preventive measures are practically and properly included under the definition of disinfection.

"3.—The reproducers of the infectious matter or contagion are all kinds of cattle of the ox tribe, which also are at present in this country the only animals liable to its specific effects. It is probable that the contagion adheres with particular pertinacity to all secretions and discharges from sick animals. For this reason, fæces or droppings, urine, ruminated food, all secretions from the mouth, nose and eyes, and any sore parts of the surface of the diseased animals must be considered as the principal and primary carriers of the infectious matter or plague poison. It is also probable that many parts of animals which have died from the cattle plague, or have been killed during advanced stages of the disease, are infectious, some because they are primarily imbued with the contagion, others because they have been in contact with it after the death of the animal. Skins, hides, hair, horns, and hoofs must therefore always be treated with precaution. The chances of infection by flesh, fat, cleaned guts, and blood are, perhaps, more remote, but cannot be lost sight of.

"4.—The cattle plague, although affecting every part of the

animal, shows its visible effects most extensively in the intestinal canal. It is believed, and apparently upon good grounds, that the intestinal discharges are the principal agents, upon the distribution of which mainly depends the spread of the disorder.

“5.—It follows from the above that all articles which have been in contact with a diseased animal, or any of its discharges, particularly its fæces, are capable of carrying the infection for an indefinite time, and must be looked upon as being actually infectious to other healthy animals. Such are racks of wood or iron, cribs or mangers of wood, iron, or stone; articles used for fastening animals, leather collars and straps, ropes and chains; all harness of any animals used for drawing, and all carts, waggons, and carriages which they have actually been drawing; the stalls or sheds in which animals have been standing; the whole lengths of the gutters and drains through which their urine has been flowing; the entire surface over which their manure has been drawn, and all implements with which the removal has been effected; the entire dung-heap upon which infected manure has been put, and the fluid contents of the manure pit or of the special receptacle for the urine; yards or sheds in which cattle have been kept to tread down long straw, and the whole of such straw and manure, as also the ground beneath them; paths and roads upon which diseased cattle have walked or been carried; fields and meadows upon which they have been grazing; all carts, carriages, trucks, and railway trucks in which diseased cattle have been conveyed, and all the platforms, railings, bridges, and boards upon which they have been moved thereto; as also all apparatus which has been used to pen, tie, lift, haul, lower and fix them; the clothes, and particularly shoes and boots, and iron-pointed sticks of drivers and their dogs; the apparel of all cattle-herds or attendants, particularly their shoes and boots; the shoes and boots of all persons visiting places where diseased cattle are or have been standing; and in general the clothes of all persons visiting infected places, ships and all parts of the platforms, stages, stairs, and bridges, hoists and cranes used for embarking and landing the animals; markets, and all sheds and pens and implements used in contact with cattle; slaughterhouses, and all persons and implements in them which have been employed upon sick cattle, as also sundry parts or organs which come from sick animals killed in slaughterhouses; knackers' yards, trucks, or carts, horses, men, and implements which have been employed in the disposal of sick or dead animals; wells and ponds from which diseased animals have been drinking, or into which any portion of their excreta has had any opportunity of flowing directly or indirectly; all fodder, grass, hay, straw, clover, &c., and particularly remnants of fodder upon which diseased cattle have been feeding; and, in general, all persons, animals, places, buildings, and movable things which have been in contact with matters proceeding from diseased cattle, or with

such diseased cattle themselves. To the above-mentioned places and things any of the processes and agents enumerated and described in the following may have to be applied.

## “II.—PRACTICE OF DISINFECTION.

“*A. Disinfection by Earth.*—1. Burying.—All matters that can be buried, so as to remain covered with a thick layer of ground or earth, are innocuous. The ground chosen for such interment should be dry. The quickest and cheapest, and most certain way of disinfecting an animal dead from the plague is to bury it entire.

“2.—The droppings and all straw and other matters contaminated therewith may also be buried into ground where they are not likely to be disturbed for a long time. The places from which such droppings have been removed to be cleaned and disinfected, as will be described below.

“3.—Manure heaps and the down-trodden manure of cattle yards, if they have become infected by even a small quantity of the droppings of a diseased animal, should be carefully shifted to a suitable piece of ground, and there be transformed into compost heaps. A layer of manure one or two feet in thickness should be covered all over with six inches of dry earth, ashes and mineral rubbish; upon this another layer of manure may be placed, and then again a layer of earth, and so forth, until the whole of the manure is stacked; it should be covered all over with a continuous layer of earth of from six inches to one foot in thickness. If the manure heap or yard manure cannot be shifted it may be covered on the spot with a layer of dry earth, after which all animals are to be kept away from it.

“4.—If the floor of any shed or stable in which diseased cattle has been standing is not constructed with special watertight and impenetrable material, it must be assumed to be infected to the depth of at least six inches. This ground should therefore be removed, together with any stones, pavements, or woodwork which may have been in contact with it, carted to a piece of dry land and buried. Half rotten wood is a particularly favourable carrier of infection. Mortar, bricks, loam, or any other lining of the sides of a pen in which a diseased animal has been standing should be broken out and buried.

“*B. Disinfection by Fire.*—1. Burning.—All infected articles of a minor value, or made of incombustible materials, can be disinfected by exposing them to a heat which will char organic matter. To this class of articles may be reckoned racks of wood or iron; cribs or mangers of wood, iron, or stone; leather collars and straps, ropes and chains; dry manure, residues of fodder from which diseased cattle have eaten; and all such small articles of little value which can easily be replaced by new ones. Chains may be exposed to a dull red heat.

All other articles may be heated over a fire of coal, brushwood, or straw until well scorched. All new articles of ironware should be bought in a galvanized state to prevent the formation of rust, the accumulations of which form convenient seats for infectious matter, and for the same purpose it is desirable that iron articles which have been disinfected by heat as above should afterwards be either galvanized or, at least, while hot, be treated with resin, to cover them with a durable varnish, or should be varnished or painted.

*C. Disinfection by Chloride of Lime.*—Chloride of lime, or bleaching powder, is the most powerful, the cheapest, and most easily managed of all artificial disinfectants. It can be had everywhere, and at any time, and in quantities sufficient for every purpose. It should as much as possible be applied in solution, of a strength varying somewhat with the particular purpose for which it is to be employed; and, after it has been allowed to act upon the surface or matter to be disinfected a reasonable time, should be washed off, together with all products of decomposition. As chloride of lime does not destroy only the infectious matter in a mixture, but destroys all organic matter without distinction, it is not applicable to large quantities of matter, such as the manure of cattle, dung-heaps, &c., inasmuch as twice or three times the weight of these matters of chloride of lime would be required for their effectual destruction and disinfection. It is further inapplicable to all matters rich in ammonia, particularly putrid urine, as it destroys the ammonia and evolves a large amount of gases, some of which have a repugnant odour, and are, perhaps, not quite innocuous. But for the disinfection of surfaces of things and places no better or more suitable agent than chloride of lime is at present known to science.

*D. Special Directions for the Disinfection of Stables, Sheds, Vans, Railway Trucks, and Cattle Ships, and of Persons and Things connected with them.*—1. After such a place has been cleaned by mechanical means, scraping, &c., as much as possible, and all manure and dirt has been carefully buried, the entire surface which has been contaminated, or is likely to have been contaminated, should be covered with a layer of chloride of lime in powder. The powder should be worked about with a broom until equally distributed. It is intended to disinfect the water to be used in the washing process which is now to commence. Clean water from a hose in which it flows under pressure, or from a force pump, garden engine, or from large watering-pots, or water-cans, or poured freely from buckets, should now be applied to the entire surface by one person, while another at the same time scrubs the entire surface, and particularly all crevices, joints, and irregularities. The washing water and chloride of lime are then to be worked down the gutters into the sinks, cesses, or natural watercourses. No washing water from any infected place or thing should ever be allowed to flow into any cesspool, urine-hold, dung-heap, pond, sewer, or natural water-



course without having previously been mixed and stirred with a liberal amount of chloride of lime. When the place has thus been scrubbed, until the water flows off clean, it is ready for effectual disinfection.

“2.—For this purpose a solution of chloride of lime in water, in the proportion of one pound of the powder to one gallon of water, is made. For the lair of one animal from six to ten gallons of such fluid should be prepared. This fluid is now distributed over the whole surface, to be disinfected gradually by squirting from a syringe, or by pumping through a force-pump, garden-engine, or by watering from a watering-pot or can with a finely-pierced rose. All woodwork, stones, bricks, cement, mortar, all fixtures of whatever material, should be well wetted with the solution and immediately be scrubbed with a hard brush. Floor and ceiling are also scrubbed, and the whole is left in this wet state covered with the chloride of lime solution for at least one hour, during which time care is taken that no parts become dry.

“3.—As the chloride of lime and the products of its decomposing action upon infectious matter may be hurtful to cattle, these matters have to be carefully washed off by a second and final flushing. For this too much water and too much scrubbing cannot be employed. Care should be taken to apply the clean water always to the highest parts, so as to cause it to flow thence to the lower parts, and to wash away the waste from the lower parts before applying any fresh water to the upper parts.

“4.—Care should also be taken to rinse and flush every broom which has worked away sediment and waste from the lower parts into and through the gutters and drains before applying it again to the clean upper parts. Care should also be taken that the working persons should not step from the dirty or partially-cleaned places on to the clean ones, as this may suffice to bring infection back to the disinfected place.

“5.—Lastly, all persons employed in this work, having swept and flushed the gutters with the same care as the lairs, are collected, together with all the engines and tools which they used, as near as possible to the sink or place of final egress of water from the premises, and there disinfected as will be described.

“The tools, such as hooks, forks, spades, hoes, barrows, &c., are scrubbed with the above solution of chloride of lime, and subsequently water, until clean; they are then repeatedly wetted with the solution, and after it has had time to disinfect the entire surface of them they are washed clean and laid up or hung up to dry.

“The workmen then, having finished the disinfection and flushing of all objects and surfaces, effect their own disinfection in the following manner:—They wash their boots most carefully with chloride of lime and water, scraping the soles and scrubbing the seams where the soles join the upper leather. They wash their hands and arms, and by means of clean rags or sponges they remove

any splashes from their clothes. After this they go indoors, remove all clothes from head to foot, wash their bodies, and particularly their hands, faces, hair and feet with plenty of soap and water, and put on fresh clothes and linen. The clothes and linen which they have taken off should be treated as infected, set to soak immediately in boiling water, and afterwards disinfected, or in water containing two ounces of chloride of lime to the gallon in solution, or containing four ounces of Condyl's red permanganate of potash fluid in solution; or the clothes and linen should be put in a copper and boiled, and subsequently washed. All articles of little value which are much soiled should be burned on a bright fire.

“*E. Disinfection of Live Stock.*—1.—Live cattle may carry infection in two ways: first, by being themselves infected with the plague and reproducing the poison; and, secondly, by accidentally carrying the poison from other animals in a dormant state upon some part of their surface, their hair, and particularly their feet. These latter animals may therefore infect others without being or becoming themselves subjects of the plague. All persons, therefore, buying new animals should disinfect them before allowing them to enter their premises. In a similar manner, if in a stable there has been a case of plague the healthy or apparently healthy animals should all be disinfected.

“2.—The mode in which live animals may be disinfected consists in washing them with disinfectant solutions of such strength as will destroy the contagion without injuring the surface of the animal. A solution of two ounces of chloride of lime in a gallon of water is a proper solution for washing the coat of animals. A mixture of four ounces of Condyl's red permanganate of potash fluid with one gallon of water is also a proper disinfectant solution. For full-sized cows and bullocks, &c., several gallons of either of these solutions should be used. Great care should be taken to keep the solution away from the eyes, nostrils, mouth, and tender parts. When the entire surface is washed and disinfected, all disinfectant is removed by the application of great quantities of clean tepid water to all parts. The animal is given a warming and refreshing drink, and is conducted by a clean attendant to the clean quarantine shed. There it should receive fodder, both dry and green, and sop, and plenty of pure cold water, and be rubbed dry with whisks of straw and hay.

“*F. The Quarantine Shed.*—1.—The quarantine shed is intended to keep the new and suspected cattle separate for a period of at least ten days, in order to afford the security, to be obtained by observation alone, that it is not actually infected with plague. While, therefore, disinfection of the surface of cattle removes one kind of danger, another which cannot be removed can only be kept circumscribed or penned in, and this is done by the quarantine shed. But the keeping of cattle in the quarantine shed would not disinfect its

surface with certainty even during a much longer period than ten days; disinfection of the surface, therefore, cannot supply the precaution of the quarantine shed, and a rigorous quarantine cannot supply the effect of surface disinfection. Both precautions are necessary for perfect security, although either of them, without the other, obviates a particular kind and a certain amount of danger.

"2.—The quarantine shed should be situated in an isolated part of the premises. All manure and urine from it should flow and be carried to a particular place separate and distant from the common dung-heap, and be buried daily.

"The utmost cleanliness should be observed in the shed. All tools, pails, currycombs, &c., used in this shed should be used in it exclusively and nowhere else. The person attending the quarantine shed should not be allowed to go into the shed where healthy stock is kept, or permitted to approach healthy stock. No person attending healthy stock should be permitted to approach quarantine cattle, or to go near or into the quarantine shed. But should unfortunately only one person be available for both duties, that person should be allowed to approach quarantine cattle only when clothed in the safety-dress immediately described.

"*G. The Safety Dress.*—1.—This consists of strong water boots reaching up to the knees, well greased all over; of a waterproof coat, buttoned close all the way up in front, and closing tightly round the neck and wrists. The head is to be covered with a cap which takes the hair well in.

"2.—Every person having occasion to visit sheds in which there is diseased cattle, or suspected cattle, or quarantine cattle, should be provided with the above dress, put it on when entering the place, take it off when leaving the place, and have it disinfected immediately. This precaution should be strictly observed by all inspectors, all veterinarians, or others called in to attend sick cattle, by all dealers and butchers entering sheds, yards, or meadows for the purpose of sale or purchase, and by all other persons coming on the premises on business in connection with cattle.

"3.—The owners of stock should not allow any strangers to enter their sheds, yards, or meadows, except in disinfected safety-dresses; and in case this should give rise to difficulties, they will do well to have themselves one or two such safety-dresses at hand, and to cause all persons whose business compels them to enter their sheds to leave their own boots behind, and put on the long boots, waterproof coat, and special cap. Only thus can they hope to exclude all ordinary and obvious chances of infection from their previously healthy sheds, yards, and meadows.

"*II. Measures to be Taken on Premises where Plague has Actually Appeared.*—1. When the plague has actually appeared in any shed, yard, or place, the sick animal should at once be removed with all due precautions. It is certainly the safest and best to poleaxe the

animal at once, and to bury it entire, and then to disinfect the particular lair as above described, clear out the stable or shed, disinfect the whole of it, and all the apparatus, also all the animals, and only to let the animals enter the shed, &c., again after it is completely sweet and dry.

“ 2.—If, however, a proprietor is desirous of keeping a sick animal because its illness does not appear severe or fatal, he should place it in a separate shed, which must not be the same as, or near to, the quarantine shed, and be distant from all healthy animals, and so situated that the prevailing wind does not blow from this hospital shed towards the healthy or quarantine shed. The water should also not flow from this hospital shed towards the others, or the yard, or any meadow, but should be carefully drained away and sent off the premises by a special sink.

“ 3.—To prevent the scattering of feces by infected animals (and also by suspected animals and all animals suffering from diarrhœa), their tails should be so tied to one or other of their horns as to protect them against being soiled by the intestinal discharges, and to prevent them from distributing such discharges by the ceaseless motions peculiar to these organs. The spattering of feces should be prevented by a copious supply of rough straw, with some sand, sawdust, or ashes placed behind and underneath the animal. The straw and feces should be dealt with as has been described. Animals affected with plague or diarrhœa should not be led along the streets, highroads, and paths, as they would be certain to drop infectious feces, which would then be distributed over the entire length of these roads by the feet of men and animals, and the wheels of vehicles.

“ 4.—The sick animals should be disinfected repeatedly; their pens should be cleaned and disinfected repeatedly during the course of the illness. This should be done by persons either guarded by the safety-dress, or (and this is safest), by such as may not come into contact with healthy cattle, or have to enter healthy sheds. All tools, pails, fodder, &c., to be used in the hospital shed to be kept for that purpose only, and never to be used with healthy, or quarantine, or only suspected cattle.

“ 5.—If the proprietor of any dead piece of cattle, whether it has died naturally or been killed, should decide upon dismembering it instead of burying it entire, and upon utilizing the hide, horns, tallow, and bones, he should disinfect the skin, horns, and hoofs, by steeping them for one hour in a strong solution of chloride of lime, containing 1lb. of the powder in each gallon of water, and afterwards washing them. The tallow should be thickly powdered with chloride of lime all over, and be sent directly to the boilers. It should not be boiled in any vessel employed on the farm. Under all circumstances, it is advisable to let this dismemberment of dead and fallen cattle be performed at the knacker's yard.



"6.—Flesh, blood, guts, lungs, and the bones of the head of infected animals should not be trafficked with, as they cannot easily be disinfected. They should always be buried.

"1. *Disinfection of Meadows, Fields, Roads, &c.*—1.—Meadows infected by diseased cattle should be carefully cleaned of all dung, by burying each dropping on the spot where it lies, cutting out the round piece of turf with the dropping on it, and turning it upside down. The grass on the entire meadow should then be cut and burned. It should then be left without any cattle for at least a month, including at least two wet days.

"2.—All roads, paths, streets of towns, or villages should be carefully and frequently scavenged. All carts, vans, or waggons used for carrying manure should be watertight, caulked, and painted, and should not be permitted to ooze and drop their fluid or semi-fluid contents on the road over which they are drawn. They should be kept clean and disinfected, as a precautionary measure, by the proceedings above described.

### "III.—GENERAL RECOMMENDATIONS.\*

"In conclusion, it must be pointed out to farmers, dairymen, and all persons having charge of cattle—

"That the same great measures which are known to maintain and restore the health of human beings will also maintain and restore the health of cattle.

"Pure air: dry, spacious, well-ventilated and well-drained clean sheds, clean and dry meadows: plenty of pure water: frequent currying and washing: the prevention of the development, by the destruction of the germs, of internal and external parasites, particularly entozoa: proper food in suitable quantities, and at proper times: protection from inclement weather: the utmost cleanliness in the removal of manure: the storing of the manure at a great distance from the cattle shed, and, in addition, the most conscientious observance of the precautionary and disinfecting measures above described. All these measures and agents together will secure the utmost possible health of stock, and the prosperity of the agriculturist and dairyman. But the neglect of any one of them will make the stock liable to become infected, and the more so the more several or all collateral conditions of the healthy existence of animals are neglected. The negligent man is therefore certain to lose, to injure his neighbour by defeating his precautions, and to damage society; but the watchful and painstaking man will be rewarded, not only by the preservation of his property, but particularly by the consciousness that it has been preserved by his own care and attention, and that thereby he has also benefited the State."

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\* In "Read and Think," June 4th, 1873, I suggested that Dr. Thudichum and other physicians should comply with the directions as to the "Safety Dress" in cases of "Infectious Disease," in which, however, a lighter material might be permitted. J. C. J.



REMARKS

BY

MISS NIGHTINGALE,

ON A PAMPHLET ENTITLED

“INFECTION.”

*Anon.*

1867.

## REMARKS.

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THIS Pamphlet is ably written. It reminds one very much of the arguments which in the middle ages might have been brought by an enlightened man against witchcraft, as a cause of disease.

The disease-germ-fetish, and the witchcraft-fetish are the produce of the same mental condition; both of them considered simply as superstitions, or harmless theories; both of them spring from the same source, a desire to group together a number of detached phenomena, so as to make a kind of raft on which weak minds can float. This view can easily be confirmed, by reading any of the trials for witchcraft, and comparing the facts and inductions, in the Cattle Plague Report, and in other medical treatises on so called Contagious Diseases. But when either the witchcraft hypothesis, or the disease-germ hypothesis is made the basis of legislation on the assumption that any public good can follow from any Acts of Parliament, then the matter becomes very serious indeed; and the fact of such legislation being possible can only be considered as a striking proof how rapidly the (so called) scientific mind of England, is sinking into a condition of abject superstition.

This is not the only evil; commerce will inevitably suffer to a greater extent than heretofore from these absurdities unless a check is put on them.

It cannot be otherwise, because the germ hypothesis, if logically followed out, must stop all human intercourse whatever, on pain or risk of disease or death.

The germ hypothesis, moreover, is directly at variance in its results with ascertained sanitary experience, and to adopt it as a basis of legislation is, in strict logic, to declare that the Public Health Act, the Local Government Act, and all other Local Acts for improving the public health, have been founded on error.

This Pamphlet is the first protest made publicly against this downward course.

The Author deserves great credit for his audacity, and one can only hope that it will open the eyes of other members of the House of Commons to the course on which they have entered.











