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By His Honor's command,

ALFRED GREENFIELD, Provincial Secretary.

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THE SUPERINTENDENT directs the publication of the following memorandum on Pleuro-Pneumonia, for general information.

ALFRED GREENFIELD,
Provincial Secretary.

MEMORANDUM ON PLEURO-PNEUMONIA.

BY DR. CUSACK.

In offering any opinion on pleuro-pneumonia, I shall have in view, and contrast it with, the human diseases of which it appears to be the bovine equivalent, both because I am more competent to deal with it from that aspect, and also because I observe that a similar method was adopted by most of those who reported to the Privy Council on the late cattle plague in Great Britain.

Pleuro-pneumonia in man is an inflammation of the lung (*pneumon*) and its investing membrane (*pleura*), and occurs—

1. As an uncomplicated acute inflammation, caused by exposure to cold, or some such non-specific agent.
2. As an incident of certain specific diseases, such as typhus and enteric fevers, of which it is to a greater or less degree a usual complication.

The former is a sporadic disease of comparative rarity, the latter (typhus and enteric) are very common, and at times assume the dimensions of a wide-spreading contagious epidemic, but it is not always possible to discriminate between them, except by the previous history of exposure or non-exposure to the poison of typhus, &c.*

* If signs of pneumonia be discovered, the typhoid symptoms may be ascribed to the local lesion, unless the patient has been exposed to the poison of typhus, and then the diagnosis must be doubtful. Ch. Murchison, M.D., *Treatise on Continued Fevers of Great Britain*, 1862, p. 215.

On referring to treatises on the diseases of animals I find that cattle are in like manner subject—

1. To uncomplicated inflammation of the lungs and their investing membrane, a sporadic non-specific disease, caused by exposure to weather, fatigue, surfeit, &c.
2. To the same disease, having for its cause a specific poison emanating from other animals, and having a tendency to spread as an epizootic over extensive districts.

But while in typhus, enteric fever, erysipelas, &c., in man, the rash and other lesions for the most part distinguish their intercurrent pneumonia from the non-specific variety of the disease, the like indications are not pointed out (in any treatises to which I have access) as existing in the bovine diseases, and therefore the diagnosis is more difficult.

Under these circumstances I am of opinion that in the bovine pleuro-pneumonias, we must in all cases rest our diagnosis on the previous history of the cattle, whether exposed to specific contagium or not? and that if the previous history be doubtful, the experiment of exposing healthy animals to the contagium generated by the reputed diseased animals, would be, if fully carried out, an undoubted means of discriminating between the sporadic and epizootic diseases, and would, if the healthy animals become contaminated, justify Government in at once enforcing a rigid quarantine.

One experiment of this kind has already been tried.

A number of cattle from a reputed infected locality, Queensland, were confined for some days in the hold of a ship coming from that place to Nelson, under the most favorable conditions for the development of the contagium of pleuro-pneumonia, if the germs of the disease were present: under similar circumstances in the case of human beings, had the contagium of typhus been present, a very large number would have sickened and died; in this case, as only a few animals died during or after the voyage, there is a strong *prima facie* case for assuming the non-specific nature of the disease from which they did die, more particularly as at this season animals removed suddenly from a warm confined atmosphere to the open pasture are likely to contract sporadic pneumonia.

Another experiment on a smaller scale has been tried with opposite results. A few of the reputed infected beasts were placed on a farm with a few others previously healthy, and one or two of the latter were soon after attacked with inflammation of the lungs and died. This experiment was on so small a scale that, though it is suggestive of caution and further inquiry, it is, in my opinion, inconclusive as regards establishing whether the disease from which they died was simple sporadic pneumonia, or had its origin in contagium generated by previously diseased animals.

From these two experiments it seems probable that the epizootic (if it be such, which as yet I doubt) is produced by a contagium of but little diffusive energy, resembling that of human enteric fever, in being propagated by water contaminated by the discharges of similarly diseased individuals, and therefore having no great disposition to spread; rather than that of typhus, which may be diffused through the air or carried by fomites for re-diffusion; and that if proper precautions are taken it will be safe and expedient, instead of destroying suspected animals, to remove them in a wagon (to be used only for that purpose) to some convenient place, where they can be observed, and a few healthy animals enclosed with them as a test of the communicability of the disease.

I have no opinion to offer on inoculation as a test. The period of inoculation, the part of the body from which the contagium is to be taken when mature, and the result—whether a like specific disease or only a non-specific one, similar to the necrosis or diffuse inflammation in man caused by accidental inoculation of certain postmortal fluids during dissections—being, so far as I am informed, undecided points amongst the most authoritative veterinarians.

Pending any further information it is desirable that some definition of the leading symptoms of pleuro-pneumonia should be placed before the public. In the autumn of 1865, when the cattle plague broke out in England, the veterinary committee of the Royal Agricultural Society of England published a circular for general information, descriptive of the several "Epidemic Affections to which Cattle are Subject," from which I take the following definition:—

"Pleuro-pneumonia, or Lung Disease."

"The attack is mostly insidious, the animal appearing at the outset to be but little affected; the eyes retain their brightness often to the termination of the illness, the appetite is generally diminished, but rarely lost, excepting in the advanced stage of the disease. A short dry husky cough is one of the earliest symptoms, it continues throughout, and is easily excited by moving the animal, especially if such movement is sudden. There is rarely any discharge from either the eyes or nostrils, the breathing is greatly increased and becomes painful as the disease advances, a dull sound is emitted on gently percussing the side of the chest over the diseased lung. Firm pressure applied to this part will also cause the animal to shrink. There is little or no alteration in the fecal evacuations, excepting in the last stages of the malady, when a diarrhoea comes on. The warmth of the body and the extremities is often retained to the last hours of the illness. In milch cows the quantity of milk is lessened, but the animal will frequently yield a fair amount to the very last. The affected animal will sometimes live for weeks."*

In the preceding observations I have endeavored to enunciate these broad and general principles, which everyone conversant with analogous human epidemics is competent to do, but I have expressed myself with reserve and caution on some minor matters of detail, with which, not having access to any very authoritative veterinary treatises, I have had no means of acquainting myself. In the following remarks I shall express my opinion without reserve, the question being one on which, as a medical man, I am able to offer an authoritative statement.

During the last year many cases of indigestion, diarrhoea, and other forms of impaired health, have come under my observation, which persons who took but a cursory view of them, in the absence of any more apparent cause, were disposed to attribute to atmospheric influences. Being myself of opinion that no such influences exist in our eminently healthy climate, I felt it necessary to seek for some other explanation, and in doing so have come to the deliberate conviction that much actual disease, as well as deficiency of bodily and mental vigor, which I have of late had to treat, was caused by the very unwholesome bread and meat which every one has more or less been compelled to use for some time back. Excepting to make due allowance for it, as one of the causes in operation, it would be foreign to the scope

* Published by authority of the Veterinary Committee of the Royal Agricultural Society of England, in *The Veterinarian*, page 633, October 1865.

of this memorandum to make further allusion to unwholesome or malted bread; but I have to state my distinct opinion that much of the mutton consumed in Nelson is unwholesome, in the sense of being almost destitute of the requisite elements of nutrition; the sheep are often, previously to being driven off the farm or station, old and ill-nourished, and, before reaching the Nelson market, from long driving and repeated irritation of the skin by the application of poisonous and pungent washes, an irritative fever is set up, from which they have seldom time to recover, and regain a healthy amount of fatty and muscular tissue.

To those who can afford it, it is generally possible to obtain good meat, but to working men, to whom 1d. or 2d. a pound is a large consideration, the importation of cattle has, in my opinion, been a great boon. Mr. Johnstone, the enterprising merchant who has lately imported cattle into Nelson, is an utter stranger to me, but as some prejudice exists against his beef, it is my duty, for the information of that portion of the community with whom its lower price is a consideration, to state my impartial opinion, that all of it that I have had an opportunity of seeing or tasting was sound and wholesome, much more so than a great deal of the mutton lately sold in Nelson. If carefully stall-fed and tended on board ship, I am aware of no reason why most of the animals, if previously healthy, should not be landed in sound health at Nelson.

Some will doubtless contract inflammatory affections such as pneumonia, but if the disease had gone far enough to deteriorate the quality of the meat, symptoms the same as those given above, in the definition of epizootic pleuro-pneumonia would be seen, and the animal ought not to be used for human food. It will be the duty of Government, if it has any such powers, to look to this; and it will be the interest of importers and butchers to invite inspection.

I shall conclude by pointing out what I should consider a conclusive sign, and evident before any other, if called on to express an opinion on whether a suspected beast be fit for human food or not.

A few months ago Professor John Gamgee and Dr. Sanderson, when enquiring into the cause of the cattle plague, made the very important discovery that there is an exaltation of temperature, distinctly recognisable by thermometers constructed for the purpose, at a time when to use their words "no other indication is observable that the animal is in any way ill," though I am not aware whether this test has been applied in bovine pleuro-pneumonia, for it has only very recently come into use even among physicians, yet from my experience during six or eight months of its value in the diagnosis of human specific and inflammatory affections, and having regard to the homologies of bovine diseases, I have no hesitation in stating that the following extract from a review of Professor Gamgee's treatise on cattle plague published in 1866 will apply, with no practical variation, to the analogous disease of pleuro-pneumonia. "The practical importance of watching for this phenomenon in a suspected herd, is illustrated by Professor Gamgee in the instance of a farm near Lanark, where on examining forty-two cows, several of which were eating and ruminating and others giving a full quantity of milk, he found all with the exception of one exhibiting a temperature varying from 104° to 107·8°. This was on the 18th of November, only five of the whole herd were alive by the 25th."*

I may mention that the natural temperature of a beast, exhibited by a thermometer in the rectum is about 102° Fahr. and that anything beyond 104° would indicate grave disease even though other symptoms were wanting.

I shall be happy to place in the hands of any person authorised to inspect diseased beasts or conduct further enquiries, thermometers constructed for these observations.

S. A. CUSACK.

Nelson, June 26, 1867.

* *British and Foreign Medico-Chirurgical Review*, October 1866, page 310.