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ON THE
NATURE AND TREATMENT
OF THE
CATTLE PLAGUE.

BY
R. H. ALLNATT, M.D., A.M.



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MDCCCLXV.

THE HISTORY OF THE
JEWISH PEOPLE
BY
J. E. ADLARD

PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

P R E F A C E.

As these pages are passing through the press, I am happy to see, by the Report of the Metropolitan Plague Committee, the members of which met on the 26th ult., at the Mansion House, that the following resolution was unanimously passed. — “We acknowledge the courtesy shown by the Lords of the Council, but complain that the opposition mainly of one man, Professor Simonds, has frustrated all our efforts to establish sanitariums, believing as we do in the *curability of the disease*, which he denies.”

There can be little doubt, that the government representative of the veterinary art has not exercised at this momentous crisis, a salutary influence on the deliberations and acts of the Lords of the Council.

In the following brief observations I have avoided, as far as possible, all needless technicalities, being desirous that every one may be capable of readily comprehending

the matters of fact with which I have had to deal. They are thrown together without strict order of arrangement, as I have been anxious to lay them, with as little delay as possible, before the public.

R. H. ALLNATT.

FRANT, SUSSEX;

October 2nd, 1865.

ON THE
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OUR Veterinary practitioners, one and all, from the so-called "professor" to the humblest farrier of the country village, have manifested the most grievous misapprehension of the first principles of Treatment of the Cattle Plague which is now decimating our flocks and herds.

How is this? We have to contend with a disease whose nature is stated to have been clearly developed and ascertained, and one would suppose that some suggestions bearing an analogy to that acknowledged fact might have been adduced.

This reticence is the more to be lamented, because opportunity has been afforded the pathologist of gaining full knowledge of the action of the typhoid leaven upon the circulating fluids of the animal body.

In 1832, Dr. William Stevens published a work, which then created a profound sensation, on 'The Healthy and

Diseased Properties of the Blood,' from which the most valuable information may be drawn on the specific condition of that fluid in typhous and analogous malignant fevers.

The practical facts deduced are not hypothetical abstractions of a fanciful theory, strained to meet possible contingencies which may never happen, and dovetailed in heterogeneous disorder, but are the result of careful analyses and well-matured experiments, carried out with zeal and ability, and may be taken as safe guides by every physiologist who aspires to something higher than a practice essentially empirical.

To me it appears surpassingly strange that this acknowledged *typhoid* disease should have been by our veterinarians involved in such impenetrable mystery as to have banished altogether even an approach to correct principles of treatment. Nay, even any attempt at treatment at all! We have been gravely advised by one, who, it appears, is deemed an authority, that the plague, "having been *imported from the Steppes of Russia*, is not amenable to any kind of treatment;" and so, the only remedy suggested by this dogmatic assertion has been the surrender of the suffering animals to the barbarous operation of the pole-axe!

Thus our country, from pure ignorance, is being decimated of her flocks and herds, and a foundation laid of future famine.

Under these conditions, I deemed it my duty to transmit the substance of the following 'Observations' to the Lords of the Privy Council, and I received the usual official acknowledgment of its receipt:—

"Privy Council Office, Whitehall;
"16th Sept., 1865.

"SIR,—I have to thank you for the 'Observations on the Nature and Treatment of the Cattle Plague,' which accompanied your letter of the 15th inst., and to inform you that they shall be laid before the Lords of the Council.

"I am, Sir,

"Your obedient servant,

"ARTHUR HELPS.

"To R. H. Allnatt, Esq., M.D.,

"Frant, Sussex."

OBSERVATIONS, ETC.

In a brief communication, which appeared in the 'Times' of the 8th inst., under the signature 'M.D., Sussex,' I endeavoured to press upon the notice of holders of stock in this country, the necessity which existed of adopting a more rational mode of treatment than that which was practised in the prevailing cattle disease, which is so fearfully extending its ravages throughout England.

Our veterinary practitioners are pursuing the most diverse and contradictory courses, without rational principle to guide them in forming a diagnosis, and without practical knowledge of the *modus operandi* of the therapeutical agent which they employ. Thus we read of gallons of whiskey, brandy, port wine, and such like fiery drenches, having been administered to the suffering *Graminivora*, to the decided aggravation of the malady and the hastening on of the inevitable catastrophe. One 'Hospital Physician' gravely recommends the administration of beef tea!

At length, in the 'Times' of the 13th inst., a practical farmer told his simple, true, and unvarnished tale, which was in unison with scientific and strictly inductive facts. He wrote thus:—"Two of my cows were recently affected with the disease. As soon as the first symptoms manifested themselves—namely, total loss of milk, running at the eyes and nostrils, much languor and groaning—my man administered the dose stated below, and effected in both instances an entire cure; my cows being again in milk and perfectly healthy. I should state that he had to give one of them a second dose before she recovered, and that he advises its application in the first stage of the disorder. The recipe was given to him, as one of great value, thirty-five years since, by an experienced farmer and cattle breeder in Wiltshire, and is as follows:—

" $\frac{1}{2}$ lb. *Table salt*; $\frac{1}{4}$ lb. *Epsom-salts*; $\frac{1}{4}$ lb. *Brimstone*; 2 oz. *Ground ginger*; 2 oz. *Nitre*; 1 Quart old ale."

It happened, by a somewhat curious coincidence, that the active ingredients, which were followed by so beneficial a result, were identical with those which I had previously recommended in a letter to the 'Times.'

As the subject is of surpassing interest, let us take a brief view of the probable origin of the malady.

At intervals during the last two months the elemental conditions of the atmosphere have been precisely adapted to the production and propagation of the germs or leaven of epizootic disease. The air has been for days together stagnant, thus fostering under the rays of a burning, unclouded sun the fretting products of decomposition, and confining their pestilential influence to the lower stratum of earth's atmosphere. Above, in high atmosphere, radiant

cirri, saturated with elemental electricity, have isolated it to the higher regions, and deprived the air in immediate contact with the earth of its normal quantity of ozone, which is known to be the greatest natural purifier existing.

EFFECTS ON THE SYSTEM.

When an animal breathes an infected atmosphere, a portion of the aërial poison is taken with the air into the arterial blood, and enters the circulation. The diseased condition of the blood thus produced is the sole cause of the subsequent disordered state of the vascular solids, for this black and poisoned blood paralyses the heart and the whole of the vascular organs. It is this that causes the cold and shrunken state of the animal in the latter stages of the disease, and diminishes the functions of the brain and of every other organ in the system.

All those detrimental agents that are attracted into the circulation by the lungs mix immediately with the current, and change the physical properties of the blood according to their character; and as animal heat is produced by the union of pure oxygen with carbon in the lungs, it is clear that anything which impedes that union must, *pro tanto*, tend to lower the vitality.

The first effect of inspired air in healthy lungs is to remove the carbonic acid from the circulation, and when that is effected, the blood is converted from venous to arterial.

It is supposed by Dr. Stevens that certain aërial poisons which produce fevers, act primarily as *sedatives*, not as stimuli; and thus the subsequent disease partakes of the nature of the exciting agent, and assumes a typhoid type of low vitality.

In malignant fevers produced by aërial poisons the blood at first is so vitiated in the lungs as that it loses the power of stimulating the heart so as to keep up its healthy action. The vascular organs, also, by the action of the poison, lose the power of either feeling the stimulus or reacting with force on the morbid impression communicated to their internal surface by the vitiated blood. In such cases, in place of increased excitement, there is loss of action in the whole system.

The aërial poisons, then, which produce typhoid fevers, darken the blood, and lower the vitality of the whole systemic circulation. How are these effects produced?

The blood is the most complicated of all organic fluids, and is consequently most prone to decomposition. This is counteracted, however, by two causes :—its vitality, and the saline ingredients, which mutually co-operate in preserving it in a healthy condition. But when it happens, as in the last stage of fever, that this vitality is diminished, as well as the quantity of antiseptic salts, there is in the whole circulating current a risk of fatal decomposition ; and this result can only be effectually prevented by the copious introduction of saline matter into the system.

All the natural salts of the blood enter the circulation, and may be obtained in their original form either from the serum or the secretions. Nitrate of potass passes through the digestive organs and enters the circulation without being assimilated, and is subsequently found to be unchanged in its properties. When used internally it reddens the whole circulating current almost immediately.

A case is recorded where a person swallowed an ounce of nitre by mistake for Glauber's salt. The excitement produced was so great that the blood which flowed from a

vein was completely florid, and remained as fluid as if the nitre had been added to it out of the body.

According to Dr. Prout, warm-blooded animals possess the power of spontaneously generating certain salts, independent of the supply which they receive from their food; and these salts are essential to the healthy condition of the blood. They are not merely the cause of the red colour, but also of the fluidity of the solid ingredients, and one cause also of its stimulating quality. When these saline particles are lost or greatly diminished, as in the last stage of fever, or cholera and typhus, the blood becomes black in proportion to the diminution of its saline matter; and when this is diminished to its last extent, the vital current becomes so vitiated as to be incapable of stimulating the heart.

The aeriform poisons, which are the remote cause of malignant fevers, decompose the *saline matter*; *destroy the red*, and give a *black colour even to arterial blood*.

Effects of Ardent Spirits upon the Blood:—

ALCOHOL: *Brandy, Whiskey, et id genus omne*, added to the living blood just drawn from the body, and before coagulation, do not only injure its structure, but instantly *destroy its vitality*; when these are used internally, a portion enters the circulation and acts the same destructive part. “In malignant disease, when life is trembling in the balance, and where the weight of a straw may decide for life or death, they render the body no longer fit for the habitation of the principle of vitality.” (*Stevens, ante cit.*)

ACIDS in every shape, mineral or vegetable, in malignant fevers, act detrimentally. They blacken the blood, and

produce, in certain stages of the disease, speedy dissolution. In the marsh fevers of the West Indies, for example, acids have been tried and found to produce most destructive effects.

TONICS.—Low malignant fevers, of a typhoid type, cannot be cured by a nervous impression made upon the solids by the most powerful tonic medicines. We are only successful when we attend to the diseased state of the vital fluid; and those remedies which produce their effects upon the universal circulating fluid will speedily act upon the solids.

Dr. Stevens sums up the result of his experiments by the following conclusions:—

1st. That—ALL ACIDS darken the colouring matter of healthy blood; and in proportion to their strength, they change the colour from red to black, as certainly as they do vegetable colours from blue to red. (When any one of the acids was diffused in a small quantity of water and then mixed with the fluid blood, the colour of the whole was immediately changed from red to black. Even the vegetable acids so completely blackened the blood that the addition of a little water converted the whole into a fluid exactly resembling the black vomit.)

2nd. That the *pure alkalies* have a similar effect with the acids in changing the colour of the blood from red to black, though not in the same degree.

3rd. That the whole of the *neutral salts* immediately change the venous blood from a dark Modena red to a bright arterial scarlet.

4th. That even those salts which contain an excess of alkali, the subcarbonates, for instance, immediately changed venous blood from black to red.

5th. That when the neutral salts were mixed with the dark and dissolved blood that had been taken from the heart of those who died from yellow fever, even this black and dissolved fluid was immediately changed from black to a colour that was highly arterial.

PRINCIPLES OF TREATMENT.

It should always be borne in mind that aërial poisons which cause fever have an *acid reaction* upon the blood, and both darken its colour and give a deranged appearance to it before they excite absolute disease. This is the "*period of incubation*," when the animal begins to droop and show signs of lassitude and general ill health.

The black colour of the blood may also be taken as a certain indication, either of the entire loss or great diminution of its saline ingredients.

The poisons which produce fever darken the vital current by mixing with the blood, and change its qualities by giving new properties to the whole circulating mass; and the resultant fever is so far from commencing with inflammatory action that the first effect of the poison is to paralyse the heart's action, and this paralysis is attended with want of circulation over the whole system; animal heat is not engendered in sufficient quantity, the surface becomes cold, and there is complete torpor. In making experiments on the animal vitality, if the normal quantity of oxygen, contained in atmospheric air, be diminished, the carbonic acid of the blood is not removed, but acts as a poison in the left side of the heart; the animal breathes with difficulty, its blood is not purified, and it speedily dies.

Active medicinal agents enter the blood, mingle with the circulating mass, destroy the morbid poisons, and thus cure diseases which had been produced by an excess of those agents which are destructive to animal vitality.

It is not essential to our present purpose to enter into the vexed question about the *origin* of the disease; whether it be an exotic, imported from the Eastern Steppes, or whether it sprang up indigenously, or whether it be purely epidemic, matters not; one thing appears quite clear, the resultant fever is of the typhoid type, and is rapidly spread either by the atmosphere or by contagion, or both, amongst our flocks and herds. Whatever may have been the origin of the disease the measures of precaution, and the principles of treatment, are the same.

It appears to me to amount almost to an impossibility that any animal should have recovered under the irrational treatment which has hitherto been generally pursued. Glimpses, indeed, of the truth have here and there manifested themselves; *neutral salts* have been accidentally administered, and recovery has followed; but these favorable reports are few and far between, and the uneducated men who have tended upon the dying cattle have closed their eyes to all such manifestations.

In the 'Times' of the 27th inst., an anonymous correspondent has stated the true facts, and summed up the gist of the whole matter in the concluding paragraph of his letter, thus:—"My belief is that if those who, at their wit's-end, at no inconsiderable expense, forced down the throats of Miss Coutts's cows the component parts of a gin-shop, had tied their legs and thrown them on a good bed of straw, and poured down at short intervals *the component parts of the blood which were passing away* in undue quan-

tities, and by which the remaining parts of the blood could be restored to their intended functions, many of the dead cows would now be alive."

I will go a step further, and declare my conviction that if true prophylactic measures had been adopted from the beginning, more than half the now dead host of our cattle would have been saved.

In one of the 'Medical Gazettes,' about the year 1832, Dr. Prout, in writing of the diseased state of the blood in malignant fevers, speaks of the important effects which are produced by the administration of the *neutral alkaline salts* which even in the latter stages of the disease enter the circulation, and act directly upon the poisoned blood. They not only redden its colour, but add to its power of stimulating the heart, and thus maintain the languid circulation. In fact, they correct the diseased properties of the vital current, which alcoholic stimuli are utterly incapable of effecting.

When the vital power of an animal becomes prostrate, as in the last stage of typhoid disease, it is necessary to maintain the action of the vascular organs; but if we trust to the transitory excitement produced by wine, brandy, and other alcoholic stimuli, we are generally deceived, for it is almost invariably followed by fatal debility. These agents are incapable of sustaining the circulation, because they cannot redden the poisoned blood.

It is now almost universally known that all warm-blooded animals have a strong natural craving for salt; the saliva, the gastric and pancreatic juices, the bile, &c., all contain salts identical with those that exist in healthy blood; and it has been ascertained that even in animals which have been long deprived of food, the chyle contains salts which

will find their way into the circulation through the medium of the thoracic duct.

A curious fact, illustrating the necessity of preserving a due proportion of saline matter in the serum of the blood, is mentioned by Dr. Paris, in his 'Pharmacologia.' He says:—"Lord Somerville, in his address to the Board of Agriculture, gave an interesting account of the effects of a punishment which formerly existed in Holland. The ancient laws of the country ordained men to be kept on bread alone, *unmixed with salt*, as the severest punishment that could be inflicted upon them in their moist climate. The effect was horrible: these wretched criminals are said to have been *devoured by worms* engendered in their own stomachs."

Dr. Baker, of Portland, in a paper published many years ago in the 'Medical Repository,' states, that he had used the alkaline carbonates in fevers, and that under the treatment he had scarcely lost a case during three years' extensive practice.

But it is needless to multiply proofs and reiterate facts, *ad infinitum*, of the poisoned state of the circulation in pestilential fevers; and of the *specific* agency of the neutral salts, upon the contaminated blood. The facts are upon record, and have stood the test of experience for more than a quarter of a century.

TREATMENT.

We have seen, then, that in typhus fevers the blood is poisoned, and, during the latter stages, blackened and deprived of its saline ingredients, by the operation of the aërial poison.

The indications of treatment, therefore, are simple and obvious, and point to the necessity of at once relieving the system by the introduction of those saline matters which will enter the mass of the circulating fluid.

Chloride of Sodium ; or Common Salt, is the chief saline ingredient of the blood, and in the last stage of malignant disease its quantity is found to be greatly diminished. Hence, in all remedial measures the value of this agent in combination.

Nitrate of Potassa : the Common Nitre of commerce. This neutral salt, which is a combination of mineral acid with an alkaline base, does not, as I have already remarked, undergo decomposition in the stomach, but passes through the circulation in its pure state. When this is given in diseases which blacken the blood (and the blood is always black in the last stages of typhus), a portion of the nitre will remain in the circulation and produce the same change both in the colour and properties of the blood, as it does when mixed with this fluid out of the circulation. This fact has been proved by the experiments of Dr. Stevens.

Carbonate of Potassa has the effect, also, of reddening blackened blood. It, moreover, has the advantage of relieving the stomach which is often fretted and irritated by an acrid and decidedly *acid* secretion. Hence the necessity of administering this agent in combination with other neutral salts.

Chlorate of Potassa. This salt passes also into the circulation, and exerts a manifest effect upon the diseased and blackened blood. It is not decomposed in the gastric organs, or changed in its properties by the vital principle.

Sulphate of Magnesia : or, Epsom Salt, is a saline pur-

gative which, in small doses, corrects the disordered secretions, acts upon the blackened blood, and sometimes restores the suspended action of the kidneys. A portion is taken into the circulation and stimulates the solids to healthy action. In fevers, all the secretions cease in proportion as the blood loses its saline impregnation, but the action of the kidneys frequently recommences when saline matters are thrown into the circulation.

As prophylactic measures, or means of prevention, I should recommend when once the disease has attacked a member of a flock or herd, that some of the salts I have mentioned should be immediately administered to the whole herd indiscriminately in their common drinking water, and the solution should be as strong an impregnation as the animals will spontaneously take.

The most tasteless, and, perhaps, the most effectual, would be the chlorate and nitrate of potash, in combination, half a pound of each of which may be dissolved in four gallons of water, and form the common drink of both sheep and oxen.

The specific formula for an ox or a cow labouring under the disease, will be as follows, which may be administered in any stage of the attack :—

| | | | | |
|-----------------------------------------------------------------|---|---|---|------------|
| Chloride of Sodium | . | . | . | 3 oz. |
| Nitrate of Potassa | . | . | . | 2 oz. |
| Carbonate of Potassa | . | . | . | 3 oz. |
| Chlorate of Potassa | . | . | . | 2 oz. |
| Sulphate of Magnesia | . | . | . | 4 oz. Mix, |
| and dissolve in two quarts of boiling water, and give lukewarm. | | | | |

The quantities must, of course, be modified according to

the age and strength of the animal, and after the primary effects of the full dose, administered in subdivided proportions.

All wild animals have a strong natural craving for salt, and are instinctively led to immense distances in pursuit of it. It is the natural stimulant to the digestive organs. It was once the custom, on almost every farm throughout England, to use what were denominated "*Salt Lickies*." Large boulders of crude crystallized rock-salt were exposed in mangers and other feeding-places to which all the domesticated cattle had easy access.

It is astonishing with what avidity they resorted to these lickies, and how sleek and healthy they became under the continued use of the saline.

The good old custom has, I fear, become obsolete; if so, let it be at once revived, for it was founded on wise and salutary physiological principles.

In conclusion, it affords me great satisfaction to state that no less an authority than Dr. Henry Letheby has, in the '*Times*,' of the 28th ult., borne testimony to the efficacy of the principles of treatment advocated in the foregoing pages. "The treatment," he writes, "which has been adopted has been very simple and apparently very successful. In the first place, the animals have been supplied with troughs containing a moderately *strong solution of salt and water*; this they have drunk as soon as the febrile symptoms have appeared, and their resorting to the water is often the earliest sign of infection. It has been found

necessary to cleanse the animal from discharges by frequent sponging with a mixture of Macdougall's powder in water. Under this treatment about *two thirds* of the animals *have recovered*; thus showing how barbarous and destructive is the proposition to 'stamp out' the disease by killing every infected animal."

This testimony to me is the more satisfactory as I did not see Dr. Letheby's communication until my manuscript was in the hands of the printer.

It appears, from all the collateral evidence adduced during this dreadful cattle plague, that the only successful results which have been recorded were obtained by PURIFYING THE POISONED BLOOD through the agency of SALINE MATTERS thrown into the system. And so convinced am I of the efficacy of this most rational and scientific mode of treatment, that I would solemnly impress upon the holders of stock throughout England the necessity of carrying it out, to its very fullest extent, in all the phases of this fell disease.

THE END.