Extracts from an essay on the nature, causes, & cure of the cattle plague, which raged in this kingdom from 1744 to 1756 / originally published by Daniel Peter Layard ; containing the symptoms, also the method of cure and remedies which then proved successful in curing the disease, and now re-published from family documents and the original essay by Lieut.-Colonel Layard.

EXTRACTS

FROM AN

ESSAY ON THE NATURE, CAUSES, & CURE

OF THE

CATTLE PLAGUE,

WHICH RAGED IN THIS KINGDOM FROM 1744 TO 1756,

ORIGINALLY PUBLISHED

By DANIEL PETER LAYARD, M.D.,

PHYSICIAN TO H.R.H. THE PRINCESS DOWAGER OF WALES,
M.R.C.S.L. AND OF THE ROYAL SOCIETIES OF
LONDON AND GOTTINGEN,

CONTAINING

THE SYMPTOMS, ALSO THE METHOD OF CURE AND REMEDIES

WHICH THEN PROVED SUCCESSFUL IN CURING THE DISEASE,

AND

NOW RE-PUBLISHED FROM FAMILY DOCUMENTS AND THE ORIGINAL ESSAY BY LIEUT.-COLONEL LAYARD, CHIEF CONSTABLE OF EAST YORKSHIRE.

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INTRODUCTION.

THE deep anxiety felt by all parties on the subject of the present "Cattle Plague," or "Rinderpest," will, I am sure, prove sufficient excuse for my venturing to reprint the following Extracts from Dr. DANIEL PETER LAYARD'S Essay on the "Cattle Plague" which visited England during the last century.

In 1744, it first made its appearance, and continued its ravages till 1756; at which time Dr. Layard, M.D., was residing at Huntingdon, and practising there as a Physician, of considerable eminence. And, by permission of a neighbouring Farmer, he investigated the disease, and was present at the *post mortem* examination of several cattle that had died. Dr. L. then undertook the treatment of some belonging to Mr. M——, of Godmanchester, who had lost ten head of cattle; and out of seven which he treated, five recovered. This success induced him to pursue his investigations; and, in 1757, he published an Essay on the subject, addressed to The Right Hon^{ble} John Earl Granville, President of the Privy Council of that day, from which the following chapters are republished, viz: "Of the Symptoms;" "Of the Method of Cure," and "the Remedies;" with "Observations on the result of such Treatment."

The following Extract from the Narrative of Dr. Layard's Services from 1769 to 1777, will fully prove the success of his treatment of The Distemper, and the appreciation of the same by the Government of the Day; together with the fact of his having been appointed, by the King, Corresponding Secretary with The Foreign Courts, which post he held to the time of his death in 1794.

EXTRACT.

"The general distress occasioned all over the Kingdom by the Mortality among the Horned Cattle, from the year 1744 to 1756, drew the attention of every humane Physician who was at hand to offer any relief. It then cost the Nation above one hundred and fifty thousand pounds, exclusive of the heavy loss to individuals. The difficulties which attended a proper examination prevented that success which might have been expected from the abilities of several worthy and experienced Practitioners in London; vague opinions and unsuccessful attempts were the consequence of trusting entirely to the report of Farmers and Cowkeepers. Dr. Layard having long seen with concern that nothing effectual had been satisfactorily observed; by mere

accident met with an opportunity of examining this calamitous distemper. Being settled in practice at Huntingdon, he attended the sick family of Mr. John Mehew, at Godmanchester, who a third time was losing his cattle by the contagious illness. Dr. Layard offered to investigate the nature of the disease, and having with the utmost care applied himself to the examination of its symptoms and progress, discovered the illness to be such a regular Small-Pox, as is known to affect the human body. His directions were successful ; and the perusal of several authors, afterwards confirmed him in his opinion. He therefore published an Essay on the Nature, Causes, and Cure of this contagious distemper, in 1757, treating that sickness in a methodical manner. The distemper having totally ceased in 1756, was again brought into England in 1769, when the late Earl of Worthington gave notice to the Privy Council of its breaking out in Hampshire. The Privy Council being informed of Dr. Layard's Essay, and of his residence in London, applied to him for his advice and assistance. He was consulted in the drawing up those Orders of Council, and Acts of Parliament, which being put into immediate execution stopped the spreading of the contagion, and totally extirpated it in less than six months out of Hampshire, and soon after out of Banffshire, in 1770 and 1771, at the small expense of under three thousand pounds. For this service, the Honourable House of Commons voted Dr. Layard £500. From this success, His Majesty, on application of his Ministers in Foreign Courts, was graciously pleased to appoint Dr. Layard to correspond with the Dutch, Flemish, French, and all such other countries where the contagion should appear ; and he was also ordered to communicate his proceedings and their event, to Baron Wolcken, the Swedish Envoy. During the correspondence, which has continued by order of the Secretaries of State above seven years, and still continues, Dr. Layard has with the greatest attention and application confirmed his opinion : and ascertained his method of treating, of preventing, and use of inoculation in this sort of Small-Pox. In 1774 and 1775, when the contagion was brought into Norfolk and Suffolk, the same Rules and orders and Acts of Parliament being put in force, those counties were soon cleared of the Distemper at less expense than two thousand pounds."

In offering this pamphlet to the Public, I beg to say I do so in the simple hope that it may be found efficacious in preventing and curing the disease now so prevalent; and I shall be amply repaid if it prove of any service.

B. GRANVILLE LAYARD,

Lieut. Col., and Chief Constable
East Riding of Yorkshire.

Hurn Cottage,
Beverley, Oct 26th.

N.B.—Lieut.-Col. Layard would feel obliged to any Inspector or Cattle Owner, who may use the following Remedies with success, to communicate the fact to him, that he may furnish a statement to the Government.

EXTRACTS
FROM DR. D. P. LAYARD'S ESSAY.

CHAP. I.

OF THE SYMPTOMS.

As we observe in the small-pox, and all other putrid or eruptive fevers by which human nature is affected, a regular progress; so in this pestilential fever is the course of the contagion, through its several stages, to be traced by the symptoms.

All are not equally seized; many reasons may be assigned for a slight or violent infection; but, according to the degree of infection, the diagnostics, or signs are more or less the same. The first appearance of this infection is a decrease of appetite; a poking out of the neck, implying some difficulty in deglutition, a shaking of the head, as if the ears were tickled; a hanging down of the ears, and deafness; a dullness of the eyes; and a moving to and fro in a constant uneasiness. All these signs, except the last, increase till the fourth day. Then a stupidity and an unwillingness to move, great debility, a total loss of appetite, a running at the eyes and nose, sometimes sickness and throwing up of bile, a husky cough, and shivering. The head, horns, and breath are very hot, while the body and limbs are cold. The fever, which was continual the three first days, now rises and increases towards evenings; the pulse is all along quick, contracted, and uneven. A constant diarrhœa, or scouring of fetid green fæces, a stinking breath, and nauseous steams from the skin, infect the air they are placed in. The Blood is very florid, hot, and frothy. The urine, or stale is high coloured; the roofs of their mouths and barbs, are ulcerated. Tumours or boils are to be felt under the panniculus carnosus, or fleshy membrane of the skin: and eruptions appear all along their limbs, and about their Bags. If a new Milch Cow be thus ill, her milk dries up gradually, her purging is more violent, and on the fourth day she is commonly dry. There is such acrimony or sharpness in their dung, that a visible irritation is to be observed during some time in ano; they groan much, are worse in the evening, and mostly lying down. These symptoms continue increasing till the seventh day of the invasion, on which generally, though sometimes protracted till the ninth, the crisis or turn takes place.

And now, to be as concise as possible I proceed to point out in the next chapter, the method of cure.

CHAP. II.

OF THE METHOD OF CURE.

The nature of the disease directs the intention of cure, and every different stage of the distemper points out the several curative indications.

The analogy between this distemper and the small-pox will afford a rational process, and Rammazini's directions authorize this practice.

Those who treated this as an inflammatory disease, and some who acknowledged it to be infectious, have recommended bleeding in large quantities, and repeatedly. In this they followed the rules of practice, confirmed and approved by experience, in the treatment of inflammation.

Leonardus Botallus, and Sydenham, were their guides, who bled freely in pestilential cases; but these sagacious and truly honest physicians have distinguished the stages wherein blood was to be drawn; *and if they be attended to, it will appear that they did not mean to direct bleeding at all times, and in all cases;* but have expressly noted, that when critical eruptions are formed, bleeding is not only useless but prejudicial, especially when the fever and other symptoms abate. Bleeding, therefore, will be found necessary only when the inflammation is so considerable, and the fever so high, that nature is obstructed, and cannot expel the morbid matter; and, whenever such symptoms are apprehended, prudence will require bleeding to prevent this coming on according to the constitution, strength, and age of the beast. Blisters have been recommended instead of rowels and setons. The acrimonious salts of the cantharides would only serve to increase the fever; could their application on the skin of these creatures be effectual? The viscidity which follows the first seizure of the disease is removed by a moderate and timely bleeding, and by the fever in time of despumation as Sydenham names it, or of ebullition, so called by the Italian authors: in this case, the texture of the blood is sufficiently broke, by the course of the illness as appears by the grumous blood found in the carcasses which blood is of a loose texture, the violent scourings having carried off the serous fluid part of the blood. Blisters are inconsiderable by their discharge, not easily to be kept on the hairy coverings of beasts, and very prejudicial if they increase the fever.

An absolute impossibility of vomiting the horned cattle has been demonstrated in the chapter on Dissections, as also, what an irritation an attempt of that sort, or a rough drastic purge, must inevitably occasion in their several stomachs. Should necessity require the unloading the primæ viæ, lenient means must be used: and it may not be improper to remark here that though the stomach and intestines of those creatures may lose their digestive faculties by this putrid distemper, yet they are not overloaded, nor stuffed up with such acrimonious saburra as the first passages in the human body generally are. The reason is plain, their food is simple and has neither the putridity nor acrimony of the human. Their fæces also have not so high a degree of putrefaction. All the vomits and purges in the world cannot remove the caked pabulum in the paunch. Dilution and strengthening

the fibres of that stomach must enable it to digest, or rather when once duly separated, to belch up the fodder that it may be chewed afresh for digestion.

The use of Nitre in the first stage may contribute to lessen the degree of inflammation, but given in any other stage it will check the progress of the exanthemata, or pustules, and prevent suppuration; sometimes brings on a scouring, consequently a reabsorption of the putrid matter from the abscesses, and either kills the beast or expose it to a marasmus. Camphor, though an excellent medicine, in acute diseases, especially when dissolved with acids, I did not direct; choosing to prefer such remedies as were cheaper, easier to come at, and not so disagreeable to the stomach. Chalk, or testaceous powders, I made no use of, first, because since the learned and accurate Dr. Pringle has so clearly proved the septic quality of chalk and the testacea, they are seldom given in putrid fevers, lest they should increase the putrefaction. Secondly, as they would only serve to clog up the primæ viæ, without answering the intention, for which medicines of another form were better adapted. The same reasons made me prefer medicines of a liquid to those of a solid form.

White Vitriol, Mercurials, and Antimonials have proved equally prejudicial, through their irritating quality, as oils and balsamics, by increasing the relaxation of the primæ viæ.

Having considered the inutility, nay detriment arising from the administration of improper medicines, I shall next lay down the particular method which I directed.

THE CURE.

Immediately upon the first appearance of the distemper as mentioned in the foregoing chapter of the symptoms, the beast is to be put into a Barn or Stable, well littered; which litter must be thrown up morning and evening, and changed for fresh straw every day: the place the cattle are housed in should be spacious: and they must not be crowded, that the air may be neither too warm, nor too offensive by the steams of the infection. In warm weather, the stable or barn-door might be left open half an hour; an opening of about a foot square should be made at the top of the barn to the southward, and one at the bottom to the north-west, in order to give a free passage to the foul air, and entrance to the fresh; but the cattle must be so placed out of the course of the air, that they may not receive cold: shutters may be contrived to let down at night, or in a cold day. Bunches of sweet scented flowers or aromatic herbs, may be hung in the stable. A thin woollen or a coarse linen cloth, should be fastened on the bodies of distempered cattle, rather loose than too tight, leaving always sufficient room for a steer to stale, and not to press the bags of a cow.

If the beast be full grown and fleshy: if a cow very big with calf, and of such colour as denote strong fibres, then take away two quarts of blood from the neck. From a strong yearling calf, one quart, and so in proportion to age and strength: but neither weakly calves nor poor thin cows, especially white ones, are to be bled so much, if at all.

The beast must then be washed all over with warm water and vinegar, to clear the hair from filth and insects, and rubbed quite dry with a cloth or straw. The steams of hot vinegar and water, with aromatic herbs in it may

be placed in the stable, to revive the cattle. During the whole illness, the beast must be rubbed a quarter of an hour both morning and evening, with a dry woollen or linen cloth, or straw, to promote perspiration. The cattle are so sensible of the relief this rubbing affords them, that they stand up with great satisfaction all the while their keeper is rubbing them. They may also be curried the three first days, before the pimples come out; and the bags of a milch cow should be anointed morning and evening with warm oil, to preserve the milk; taking care to cover the bags from cold, and to draw off any fullness of milk, which might occasion an abscess. As soon as conveniently can be done, and the sooner the better after bleeding, let a rowel be made in the dewlap, in the following manner. Take a skein of hemp, tow, or twisted packthread, a foot long, and as thick as a man's thumb; let a hole be made in the dewlap, and this rowel be passed through it, so that the ends may hang out at about three or four inches from one another. The rowel is first to be greased with hog's lard, and not to be moved of twenty-four hours. To prevent cold coming to the rowel, put over it a plaister of tar and hog's lard, spread upon linen or tow.*

The next morning dress the rowel thus: draw first one end then the other, backwards and forwards, greasing that part of the skein which passes through the wound with an ointment made of the best Venice turpentine, and a sufficient quantity of yolks of eggs mixed together to the consistence of a soft ointment. In the second stage of the distemper, the rowel will swell, and then run; if the flux of matter be considerable, and the part much swelled, it will be proper to put over the swelling a poultice made of bread milk, with a little hog's lard, and dress the rowel twice a day, till the swelling be abated. The rowel should be kept in at least a month after the recovery of the best, not only that all the putrid matter may be discharged, but to prevent such disorders as arise from a fullness of the vessels, generally observed upon the recovery from acute diseases, and owing to a quick digestion, and speedy secretion of chyle, whereby the quantity of blood is much increased.

Should the beast be hot, hang down its head, breathe with difficulty after the bleeding, dung hard, and the skin feel tight and thick, which is called being hide-bound, then it will be very proper to give a gentle cooling purge in this first stage. The following may answer the purpose.

I.

Take four hands-full of bran, boil it in five pints of spring water to two quarts; then strain the liquor, and dissolve in it two ounces of lenitive electuary, and half an ounce of Glauber's salt, which give to the beast luke-warm

An hour or two after may be given a draught of water gruel, in quantity about three pints or two qnarts. When the beast has voided the hardened dung, by this purge, or, if it should not have wanted purging, the following drench is to be given.

II.

Take of madder-root three ounces; of turmeric and horseraddish-root, each one ounce; of fanugreek seeds, bruised, two ounces; of chamomile

*Rowelling in this manner is preferable to pegging, and taking a piece.

flowers, dried leaves of feverfew, rue, and sage, of each one handful. Boil them half an hour in a gallon of small ale, well hopped, to three quarts; then strain the liquor, and give the beast three pints in the morning and the remainder in the evening.

No dry or solid fodder is to be given till the beast cheweth the cud. Between these drenches, a quart or two of vinegar-whey must be given frequently in the day, to dilute the hardening fodder, and strengthen the coats of the stomach. The vinegar-whey is thus made:

III.

Take equal quantities of milk and spring water, and when boiling, pour in a sufficient quantity of distilled white wine vinegar to turn the mixture; then strain off the whey, and always give it lukewarm.

The three first days elder-vinegar will be most suitable, and afterwards I would prefer garlic-vinegar; but whether with or without these, the vinegar used must be distilled, that it may be the purer, and free from dregs or insects.

The beast may also drink hay-water, which is an infusion of hay, made by pouring boiling water on cut hay, and letting it stand till the water be brown like bohea-tea, or beer-wort. In this case I would recommend the adding chamomile flowers sufficiently only to give the liquor a pleasant bitterness. This hay-water is not instead of the vinegar-whey though both are proper, yet the whey, besides being very agreeable to these distempered creatures, is of greater efficacy in this putrid disease: therefore both hay-water and vinegar-whey are to be used alternately.

I prefer vegetable to mineral acids for these beasts, on account of the first being more at hand, not corrosive, less sharp and irritating; there requiring no other exactness in the mixing them, than taking care not to make the hay-water, or any other mixture, too sour.

The authors of l'Histoire Naturelle tell us that the horned cattle are naturally so fond of wine, vinegar, and salt, that they greedily eat up a dressed salad. And I observed that the beasts I saw, so far from requiring any force to get the medicine or whey down, regularly looked for them, and licked up even the last drop they could get out of the pail. Great care must be had, twice or thrice a day, to cleanse the mouth, barbs, and nostrils of the distempered cattle. The following mixture was made use of:

IV.

Take of Malaga raisins, and figs, each two ounces; mustard-seed, bruised, half an ounce: boil them in three pints of milk and water to a quart; then add two ounces of honey of roses, and half an ounce of spirit of salt ammoniac, with this mixture let the mouth, barbs, and nostrils be washed and cleansed by means of a brush or sponge.

Continue this till the ulcers about the nose and mouth begin to scab; then washing with sage-tea, sweetened with a little honey of roses, and made tart with vinegar, will be sufficient. Should the acrimony of the disease be so severe, and the blood be so much broke in the progress of the disease, that the ulcers bleed, then to the sage-tea should be added enough powdered roch-alum, to give the tea a considerable roughness.

On the fourth day, if the beast be heavy, dull, shivering, no pimples or knobs arise, and a purging be coming on, the following drench must be given about eight o'clock in the evening, and repeated three or four nights, as occasion requires, agreeable to Sanctorius; who advises medicines which promote perspiration, to carry off a looseness.

V.

Take of Virginia snake-root, contrayerva-root, chamomile flowers powdered, of each half an ounce; Venice treacle, six drams: mix all these in three pints of vinegar whey, and give the drench luke-warm. Let a person sit up all night with the beast and give it frequently a quart of vinegar-whey.

Mr. Montgomery furnishes six instances, out of seven, which were cured by Venice treacle; and tells us plainly, that the seventh was killed by giving a lump of Tar with Oil of Turpentine, which checked the operation of the Venice treacle, by clogging up the stomach.

The former drench No. 2, directed to be taken twice a day, is to be given early in the morning, and about three or four in the afternoon, that it may not interfere with the Venice treacle drench, Hartshorn drink may be given a quart at a time, frequently in the day.

But when a mortification is apprehended, by the dark and relaxed appearance of the mouth, the coldness of the beast, the black fetid dung, insensibility, sanious discharge from the mouth and nose, thickness of the eyes, the bark must then be instantly given.

Dr. Wall, guided as I was by the analogy there is between this contagious distemper, the small pox, and Dr. Fothergill's account of the sore throat, attended with ulcers, recommends in his own name, as also in Dr. Cameron's, and of the other physicians at Worcester, the administering the bark in this disease.

The Doctor directed "one ounce of Jesuit's bark, finely powdered, to be "given in a decoction of one ounce of myrrh boiled in three quarts of water "and vinegar to half the quantity; and to be repeated every four hours." The drench I prescribed is as follows.

VI.

Take of Oak bark, two ounces, Peruvian, otherwise called Jesuit's bark, Myrrh, each one ounce. Let the barks be both beat to a coarse powder, and the myrrh bruised. Then put the barks into five pints of spring water, and boil gently till the quantity decreases to two quarts: then add the myrrh and let the whole boil gently to three pints. Strain the decoction through a coarse linen cloth, and add two drams of Roch-allum, powdered. Let the beast have this drench luke-warm every four or six hours as occasion may require, A half pint of Red Wine lees may be added, if the purging be considerable, and the beast weak.

Vinegar-whey, oatmeal-water, and hay-water with chamomile flowers infused and acidulated with Vinegar, are to be given in the intermediate times. Holding the mouth and nose of the beast over the hot steams of the water, vinegar, tincture of myrrh, and honey of roses, and conveying those steams into the throat by means of a large funnel, will answer the intentions; it being very difficult, in this bad state, to keep up the head long enough to cleanse the mouth and throat.

Nature frequently deposits the morbid matter in the horns, if after the fourth day, when the violent symptoms abate, the head still is hung down more on one side than the other, sometimes the eyes and nose run much, and a heat is felt in the horn while the body feels temperate, there is reason to think an abscess is formed in the horn; then let the horn be bored two or three inches below the tip, without wounding the pith, and bore in the same manner on the opposite side about half an inch lower: cover these openings with a linen cloth dipped in oil, and a piece of soft leather tied over it, to prevent the air rushing in, and watch if any matter maketh its way through these openings, in which case the discharge must be encouraged; and if these openings be not sufficient to let out the matter no danger will follow the making more holes, even at the root of the horn, with the former caution, if this be found to be the depending part of the abscess. There are instances of all the horny parts having been thrown off, and the beast has recovered which it otherwise might not, if the matter pent up in the horn had been absorbed, and circulated into the blood, occasioning such relapses as shall be mentioned hereafter. I have had the cattle bored in the first seizure, without any bad effect, though I see no absolute necessity for this boring, before the time of suppuration.

Abscesses in the nose may be broke and discharged by sternutatories. Asarum leaves, dried and powdered, have been used successfully for that purpose at Norwich. In the last stage, on the appearance of an emphysema, a swelling or puffing up of the skin, distended with a thin purulent sanies, and putrid air, as mentioned already, and which is the last effort of Nature to throw off the morbid matter; it will be proper to open the swelling, whether on the back, lengthways, or under any other part of the skin, according to the direction of the limb. The matter must be all let out by a sufficient incision, and the cavity filled with pledgits of tow, dipped in an ointment made of turpentine, yolk of egg and myrrh powdered; over which a poultice of oatmeal and stale ale sprinkled with spirits of wine, is to be applied very warm, and renewed twice or thrice a day. These dressings are to be continued till the ulcers digest properly; and then must be treated as other suppurating abscesses usually are.

After the crisis takes place in this and all other putrid fevers, Nature generally discharges itself of part of the morbid matter, by unloading the intestines of the fæces. In some cases a scouring ensues, which is not to be hastily stopped though diligently watched and restrained, lest it weaken the beast too much. The following purge may be given to cleanse the stomach and bowels:

VII.

Take of rhaponicum, or monk's rhubarb, one ounce, or of the best Turkey rhubarb, half an ounce; of senna, half an ounce; of liquorice-root sliced, and aniseeds bruised, each an ounce. Boil these in two quarts of small ale gently, to three pints; then strain the liquor and give it to the beast.

Let the beast drink water-gruel lukewarm, and be kept on dry meat, though sparingly: and at night give an ounce of electuary of scordium, commonly called diascordium in a quart or three pints of small ale, warm.

But if after the crisis, the beast is costive, and the skin be dry, harsh, and tight on the flesh, dunging may be procured by giving in the evening a mash of bran with a handful of beans bruised, and an ounce of Epsom salt. How-

ever, I cannot avoid recommending the greatest exactness in observing that the crisis is over; for the least laxitive medicine, or opening food given at the axon, or height of the disease, and consequently in the former stages of expulsion and maturation, will certainly bring on a scouring, attended with fatal consequences, or at least very difficult to be removed. An instance of this will be produced hereafter.

VIII.

Take of aloes, aniseeds bruised, rhaponicum, or monk's rhubarb, of each an ounce; or, instead of the rhaponicum, of the best Turkey rhubarb half an ounce; senna, and liquorice-root sliced, each half an ounce: boil all these over a slow fire in two quarts of small ale to three pints; strain the liquor, and add half an ounce of soluble tartar, and give it warm to the beast.

When a purge has worked briskly, it will be proper at night to give the beast a quart of small ale warm with a moderate quantity of spices, and bread crumbled in it.

Milch cows recovering from the distemper, are not to be violently purged. especially if the owner should be desirous the milk should return; to affect which, the beast must only be purged with the gentle drench already directed, No. VII., and on the following days and intermediate ones from the purging. A quart or two of milk-pottage three or four times a day, together with good sweet hay if in winter, and an hour's grazing in dry pasture morning and evening if in summer, will be the likeliest method to recover the milk; beans, peas and chaff, being too hot and dry, will not answer the purpose. The beasts must also be allowed a sufficient quantity of warm water, or water gruel, to drink as much as they choose. It being only for want of proper fluids and good chyle, that the blood-vessels and the glands of the duggs do not secrete the milk as usual; these blood and secretory vessels being all along in a state of relaxations, whenever the tone of these vessels is recovered, and they are supplied with proper fluids, milk is produced anew. For the ease of the beast, and to encourage a flow of milk, the duggs should be washed twice a day with warm milk and water or water with bran boiled in it, and cloths dipped in such warm liquor should be applied to the duggs about a quarter of an hour each time. To prevent any inconvenience from too much milk being in the bag at once care must be taken, as soon as the bag begins to swell to milk the cow; beginning by drawing the beast moderately and continuing morning and evening by degrees, till the milk flows as usual. This method will secure the beast from a stagnation of milk in the duggs, and of course from abscesses forming in them.

In winter time the cattle, upon recovery, should not be fu.ned out at once into the pasture grounds, let them be never so dry: towards the middle of the day, in fair weather, turning them out two hours, and then bringing them in again, will gradually use them to the open air. In summer, morning and evening will be the most suitable time; for the heat of the sun, or excessive cold, may bring on other disorders. There are two, which, for want of this attention many have fallen into and been lost, I mean a Vertigo dizziness, or swimming of the head, and a Marasmus or Consumption. The vertigo, dizziness or swimming of the head, so well described by Mons. De La Mettrie, and which it would be unnecessary here to treat of at full length, is, in the case before us, owing to a relaxation of the blood vessels, and nerves, and also to a fullness of blood from the quick secretion of the juices

into chyle, and the increase of blood; whenever therefore the beast turned out to graze hangs down its head, the force of the circulation of the blood in the vessels of the eye, particularly on the inner coats, the uvea and choroides, is such, that it produces vibrations and undulations on the retina, whereon the object is represented: this agitated motion varies the distance and form of the object, creates a confusion in the nervous system, so that the beast, affrighted, cannot direct its motion, but frequently mistakes the way, and runs headlong to its destruction.

Cattle have often been found drowned in ponds, fallen into ditches or precipices, there killed or maimed, from no other cause but this vertigo; nay, their keepers have been witnesses of these accidents coming on so suddenly, that they were not at hand soon enough to prevent the mischievous consequences.

To avoid this disorder, and likewise a frenzy, or delirium, which cold by obstructing perspiration and increasing the circulation of the blood might occasion, the first remedy I would propose is drawing two quarts of blood from the neck of the beast, before it be turned out to grass; not to put it out till a week after the crisis, and then a few hours at a time first, and only in the day-time, especially if the season be wet and cold and the pasture in low and marshy grounds. All the while the beasts are out, a herdsman should be with them to hinder them eating much grass, or hanging their heads down long together. It would be far preferable to begin by tying them up in the open air, and feeding them on dry hay in a close, making them walk also to and fro—gently, by way of exercise,—and rubbing them down morning and evening with straw.

The following drench, given morning and night during a week, will strengthen and nourish the beast.

IX.

Take of sage, rue, and rosemary leaves dried, each one handful; four cloves of garlic, bruised: boil these in two quarts of small ale to three pints; then mix two eggs into the strained liquor, and give it warm.

Eggs and wine have been recommended by Columella for diseased horned cattle. Our small ale, well hopped, will answer better the purpose of our climate than wine. Their small Italian wine was well adapted to that warm climate, where the cattle must perspire more than in these kingdoms. Our small ale is both strengthening and nourishing, and also to be had at a much more reasonable price than even bad wine could be bought for.

Milch cows will be less liable to this distemper, if constantly milked twice a day; and with dry fodder, bulls, oxen, young heifers, and calves, will require gentle and moderate exercise.

A Marasmus is a wasting or Consumption of the beast, whereby so far from thriving by all the nourishing fodder it takes, that it daily grows leaner, and dies quite emaciated in a month or two.

Sometimes a husky cough, wheezing, and shortness of breath,—at other times a constant scouring accompany this disease. The first may be occasioned by obstructions, and may produce abcesses on the lungs, by remains of the sharp acrimonious and putrid matter lodged in the bowels. In both cases, if the beast be hot, and not very weak, take two or three quarts of blood from the neck, according to the strength of the beast, and to be repeated if occasion requires.

For the cough and shortness of breath, let the beast have a drench, morning and evening, of three pints of tar-water; in which two eggs, beat up, be well mixed. Mashes of scalded bran, common barley boiled, barley water, milk pottage, and sweet hay, are to be frequently given in the day-time, and all the liquors warm. The rowels must be continued until the beast be recovered, and if it had none before, one must immediately be made in the dewlap. The beast must be walked out every day, and housed at night with a loose covering.

The following balls may be forced down twice a day with a drench of two quarts of bran-water, barley-water or water gruel poured down after them.

X.

Take of liquorice-root powdered, flowers of brimstone, and brown sugar candy, powdered, each two ounces; elecampane-root powdered, one ounce; balsam of turpentine with aniseed, half an ounce. Mix these powders altogether, then add the balsam. Make these into balls with fresh butter, and cram down half the quantity in the morning, and the remainder in the evening, pouring one of the above-mentioned liquors; or dissolve the ball in the said warm liquor.

These must be continued some days. Should an abscess be formed in the lungs, it may be brought to suppuration and broke, by adding to those balls saffron, myrrh, turmeric, and yolks of eggs.

After the use of these balls, it will be proper, in a few days to purge the beast, before it be turned out to grass, with the purging drench No. VII., to which may be added syrup of buckthorn, if a stronger purge be requisite.

For the scouring after bleeding, give the purging drench No. VII., and afterwards at night the ale drench, with electuary of scordium. Both the purge and drench are to be repeated, till the sharp humour is carried off, and at such distance of time as the strength of the beast may require. Then the tar-water, as before mentioned, with eggs, may be given twice a day; but should the scouring continue, a drench of burnt hartshorn, with a crust of bread and cinnamon must be forced down. A quart of small ale, with a pint of red wine lees, has proved efficacious in this disorder. Dish-wash, or which is still better, two quarts of fat mutton-broth should be frequently given. The beast must eat no grass, nor be drove while the scouring is on. Malt mashes, with bruised beans, or parched peas, are good; and after the scouring, to prevent the beast from being hide-bound, the beans or peas may be given with scalded bran.

Rubbing and currying the beast will be of no use. Notwithstanding all imaginable care, the strength of the beast will frequently be so impaired by this disease, that after gradually wasting a month or two the beast dies, especially if the season be unfavourable.

Worms often found in the stomachs of horned cattle may produce fevers, and other disorders, but as there doth not appear any symptoms, whereby one should imagine worms have the least share in the production of this contagious disease, there can be no reason to administer medicines against them. Moreover, in pestilential fevers and the small-pox, after the crisis, in the first discharge of the excrements, worms are frequently observed to be voided dead; and those persons who were troubled with them before, have, by the putrid disease, been totally freed from them: from whence may be inferred,

that some degree of putrefaction is adapted by its fermentative heat to the purposes of hatching and nourishing them, while a more exalted degree of putrefaction kills them, and destroys their very nests, which come away like bags of jelly.

I never met with any who saw worms voided by the distempered cattle, in this contagious disease. After recovery, worms may be conveyed with their fodder into the stomach and intestines, and there may increase both in size and number. Mercurials, antimonials, and tin will destroy them; but these medicines being improper, in every stage of the disease now under consideration, and worms a particular distemper, I shall dwell no longer on the subject.

CHAP. III.

OBSERVATIONS.

A faithful narration of facts, and repeated experiments, which are the proper vouchers, is the best authority to confirm and establish the method of cure. Without these, all the reasoning is no more than a vain and trifling hypothesis; the practice inconsistent, fallacious, and empirical.

Let the following observations, wherein are fairly related both good and bad success, serve as a test whereby to judge of the efficacy or insufficiency of the method proposed.

A considerable farmer in Godmanchester, near Huntingdon, who ten years before had the contagious distemper among his cattle, and then lost seventeen head, was visited again in February last, 1756, by the carelessness of a neighbour, who having a cow dead of this disease suffered her to be twelve hours unburied, close to the wall which separated both farm-yards. Ten head of cattle were immediately seized: some were housed, others left to run about the rick-yard. All the stock were instantly bled; milk pottage was given in plenty. Every one of the first ten died. Two of these, and two more, which died some days after, were the first carcasses I ever saw opened. Of those who fell ill subsequently to these, I observed that all had not the distemper in the same degree. I shall instance the cases in the order they happened.

A calf was seized with the usual symptoms, and was taken little notice of till the scouring came on about the fifth day. It was suffered to run about the rick-yard till being represented to the farmer that the infectious matter might be lodged about the ricks, and the calf should be sheltered from the cold wind, he had the calf penned up under shelter at night. Vinegar-whey alone was given twice a day, the scouring stopped, the boils or pustules which were very numerous, and began to flatten when the beast scoured, now filled again, ripened, and discharged much fetid purulent matter. The calf chewed the cud, and took its fodder, soon after the crisis, and recovered without giving any trouble.

A black cow which had been suffered to run about, was at the time of the crisis taken with a violent scouring, and lay in the corner of a hovel with its head down to the ground. The cowkeeper gave her up for lost, though the symptoms had been all along very favourable. I had not then directed for this cow; but looking on the beast I saw the nose and mouth were scabbed, the last dung was of a better consistence, and that the beast began to chew the cud, and prick up her ears. Upon which I desired some dried peas might be offered her: she took a few. A mash of warm malt was the only thing recommended, and to keep her warm. Few boils were to be felt. Contrary to the opinion of the cowkeepers, and to the farmer's great joy, the cow recovered perfectly well. The scouring in this beast was the only critical discharge; and it is plain that by keeping up her strength, and housing her, nature was supported, while she expelled that way most of the morbid matter.

A white cow, about eight months gone with calf, was seized with all the symptoms of poking and shaking its head, refusal of fodder, running of the nose and eyes, stupidity. and groaned much. The stale was clear, the dung neither hard nor loose. This cow having been bled when all the stock were, no more blood was drawn; and indeed I saw no beast whose urine was so high coloured nor heat so great as to require a second bleeding. This cow was pegged, and strong digestives were applied to the ulcer; but the discharge was very small, as was also the running of the eyes and nose. The aperient drench No. II. and vinegar-whey, were regularly poured down. She was constantly rubbed down from the time of housing, but seemed insensible of any relief. She began to scour on the fifth day, and died in a few hours without slipping calf. Upon opening this cow, the uterus seemed chiefly infected, where there were ardent signs of gangrene; the rest of the viscera were highly inflamed and disposed to gangrene, but yet were affected in a less degree than was observed in others, the uterus being the chief seat of infection. The calf was dead, but perfect.

A large fine red cow, above eight months gone with calf, was seized at the time and rowelled in the dewlap. The discharge from eyes and nose was very great. She was housed and covered in the same stable with the former, but in a stall by herself, and was rubbed down constantly morning and evening; during which rubbing she stood up, as if relieved and invigorated by it. She took the drench No. II. regularly, the vinegar-whey, and oatmeal water. On the third day she threw up above a pint of greenish bile; the rowel swelled to the bigness of a twopenny loaf, and the cowkeeper feared it would come to a gangrene. But seeing the great flux of putrid matter to that part, I directed only a softening poultice to be applied warm, which encouraging the discharge, emptied the turgid vessels and decreased the swelling in a few hours. The running from this rowel was very considerable the whole time of this illness, and few boils were to be felt. To prevent a scouring and promote the pustules, the drench with Venice treacle was taken at nights, during the stage of maturation. This cow was one of those so fond of the drenches, that she always rose and looked towards the door whenever it opened and never required any of the drenches to be poured down, but drank up eagerly every drop, licking the pail to get whatever might stick to the sides. On the seventh day this cow began to chew the cud, the dung being discharged of a proper consistence. About three weeks after, she slipped a dead calf, and recovered perfectly well.

In another stable a black cow was placed who was treated in the same manner with the former; all the symptoms were regular and mild. On the day the crisis was expected she began to chew her cud, and look brisk. The cowkeeper informed me she had not dunged of four days, and feared she was hide-bound for want of dunging. I told him, that probably the critical time had not yet come; and, upon inquiry when the beast was first seized, I plainly demonstrated to the farmer, and others present, that the seventh day would not begin till the next morning, and desired that we should wait till then, to see whether the cow dunged or not: but the cowkeeper's importunities, and my unwillingness to be accused of suffering the cow to be lost, determined me to consent that the cowkeeper should that night give the cow a mash of warm bran, with a handful of bruised beans in it,—hoping this would not relax till the crisis had taken place, being of a solid form, and

likely not to pass the stomachs till morning. The mash was accordingly made, and the cow had it that evening; but instead of remaining any time in the stomachs, it passed so quickly like a purge, that in a few hours a violent scouring came on, which lasted twelve hours; and notwithstanding all the astringent, sudorific, and opiate drenches poured down, the cow died.

Now this accident convinced me of the ill-consequences which must attend purging before the crisis be performed. The whole deposit of the infectious matter was not made in the external parts: Nature was disturbed; the matter turned into another channel, by emptying the intestines, and inviting the absorbed matter to run off that way. Thus was the strength of the beast quickly destroyed, and medicines had no power of preserving life. Supposing, on the other hand, this unlucky mash had not been given, and the cowkeeper's fears had been well grounded, a few hours would have determined whether the beast had dunged or no: it would then have been soon enough to give her a loosening mash, and in case of heat, or being hide-bound, bleeding and proper diet would have removed the complaint, without endangering the life of the beast.

Other beasts in the same Farm were attended in the manner above mentioned, and did well, except one calf, whose case is not unworthy relation.

A brisk bull calf a year old, was seized with the contagious distemper as the others had been, and should have taken the drenches; but the apothecary who sold the ingredients having at that instant none by him, a neighbour prevailed on the farmer's wife to give this calf some Godfrey's cordial; a strong opiate too frequently used among the poor in this neighbourhood, in the small-pox, for young children in all cases; and, I may say too often given to grown people, with as little judgment and benefit. However, the good woman's advice was listened to, and the calf had every night a dose of the cordial, and milk pottage in the day-time. The first four days the calf stood up strong, and would have run about the stable it was so brisk. The farmer's wife imagined a much shorter and cheaper method was now discovered to cure their cattle, than the one I had advised, and was not pleased at my desiring her to wait the event; assuring her that if the calf did well, I would gladly embrace this discovery, and communicate to those I should converse with. I found out that this briskness observed in the calf, was only occasioned by the exhilarating power of the opium; and, when the effects of this medicine had ceased, that towards evening the calf grew dull. The running at the eyes and nose was inconsiderable; but attended with frequent irritations, that made the beast shake its head strongly. The breathing was difficult at times, the stale high-coloured, no dunging, and a moisture to be felt all over the skin and hair, attended with shivering and cold. These were the symptoms; some of which being contrary to those generally attending distempered cattle, encouraged the good woman to flatter themselves with success; but how great was their surprise, when, on the fifth day the calf suddenly died, notwithstanding the regular and constant administration of Godfrey's cordial.

Whoever will recollect the effects of opium, which, by rarifying the blood, increasing circulation, exhilarating the spirits, and distending the vessels, of course increases the inflammation in the first stage of this disease, and, if continuing the plethora, locks up the malignant humours, rather than pro-

motes a cuticular discharge, must easily account for the effect of the cordial on this calf.

Dr. Young, in his excellent Treatise on Opium, has clearly stated the times when, in small-pox and other diseases analogous thereto, opiates may be either beneficial or hurtful. He illustrates very ingeniously the great Sydenham's practice, and secures his doctrine from the imputations of such as may have miscarried by misunderstanding that sagacious Physician's rules. I cannot do better than to recommend Dr. Young's treatise to every one, who desires to be thoroughly and candidly informed of what relates to the effects of opium.

It is evident then that the blood of this strong young calf was naturally viscid, and must in this first stage be rendered more so by the opiate, that, far from allowing nature to assimilate and dispumate the blood by continuing the plethora, and the repeated increase of circulation, the serous part of the blood was forced out, the grumous became more glutinous and the coats of the vessels unable, by their preternatural distension, to contract as usual, yielding to a stagnation that soon clogged up the springs of life. In the stage of maturation, to forward the discharge of the morbid matter through the pores of the skin, the drenches, with Venice treacle were given at night; but then, in the day-time, vinegar-whey was plentifully poured in, to brace up and preserve the elasticity of the fibres. Lancisi recommends, with the same view, that alexipharmics should not be given in this stage of the contagious distemper, without acids. The distemper was communicated from this farmer's yard near his house, to three cows, all with calf, which were kept in another yard belonging to him, at the other end of the street, without infecting any of the neighbouring cattle between both yards. It was therefore most probably carried by the cowkeeper, or servants, going to and fro from the infected beasts to those kept separate, or by the dogs which followed them. The first that fell sick was a red cow, eight months gone with calf. She no sooner began to hang her head down, and poke her neck out, than she was housed, well littered, and rubbed down. She was rowelled in the dewlap; but did not discharge much by that drain. The running from the nose and eyes was very considerable; but the difficulty of breathing not so great as might have been expected. The medicinal drenches were given very regularly; and on the seventh day, the symptoms having been mild during the whole course of the distemper, the crisis was as favourable. About three weeks after, this cow calved a live calf, which was so weak it could not stand. Milk pottage was instantly poured down its throat with a teapot, and by this nourishment constantly and frequently fed, the calf is grown as strong and likely to live as any of the herd, without ever having had, since drawing its first breath, the least symptoms of the disease.

A black cow in the same yard was next seized with this contagious disease. She was immediately housed and rubbed down; but was not rowelled, the cow leech being out of the way: the medicinal drenches were also omitted, for want of ingredients; so that all the assistance she had was a constant supply of vinegar-whey and hay-water, both warm. The running of the eyes and nose was great; the difficulty of breathing and stupidity considerable at times: however, after four days costiveness, the crisis was performed by a gentle discharge of the fæces on the seventh day; and having on the ninth day slipped a dead calf, about nine months old, she was recovered by means of malt mashes. warm ale, &c.

A fine large cow, beautifully speckled with small red spots on a white ground, near nine months gone with calf, was running about the same farm yard, at the time these two last-mentioned cows were ill. I should have been glad if this beast could have been moved from thence, fearing, I told the farmer, that from her big state and colour, she would not overcome the disease: but such removal being contrary to the laws, and liable to injure the neighbours' stock, I desired she might be penned up in a corner of the yard, distant from the stables where the other cows were sick, and out of reach of the morbid effluvia arising from them. This direction was neglected, and the cow was found frequently near the doors of the stable, but whenever she came within the smell of the distemper, would run away hastily, though she returned again, whenever she heard the noise of her companions. My prognostic was too soon verified; she was infected in the usual manner. On the appearance of the first symptoms, she was housed and rowelled, and rubbed twice a day. The running from the rowel, nose, and eyes, was considerable; the breathing not very difficult. She took the drenches regularly, and was very brisk till the fourth day, then a weariness and dullness came on succeeded by a stupidity, and frequent lying down. On the fourth day she was seized with a scouring, attended with shiverings and coldness of the limbs. The Venice treacle drench was given at night. In the day-time, vinegar-whey, and a decoction of bark in small ale. This treatment seemed to revive the beast: but on the seventh day the scouring returned, and a mucous discharge from the vagina indicated an approaching abortion. The Venice treacle drench was repeated, with one ounce of the compound powder of myrrh, to promote the slipping of the calf; but in a few hours the cow died. She was immediately opened; and no sooner was the skin cut, than a great quantity of putrid air rushed out, with such an intolerable stench as to oblige every bystander to seek fresh air to breathe in.

The membrana adiposæ was quite cleared from any fat in its cells; the flesh appeared in some places, of a dark red, tending to a mortification; in others of an intense red, highly inflamed; black clotted blood was found extravasated in the brain, in the ventricles and auricles of the heart, as also in the large blood-vessels. The nose, mouth, organs of respiration, stomachs, and guts, were in a state of ulceration; but the virulence of the disease showed itself particularly on the uterus or womb, wherein a perfect bull calf was contained, and turned, as if Nature had made a weak effort to expel it. The womb was gangrened, all its vessels greatly distended with grumous blood, and the waters containing the calf were putrid and stunk much. From this, and the foregoing observations, it appears that little hopes are to be had, whenever any creature in a pregnant state is seized with a putrid disease. Whatever be the manner of its operation and progress, it is evident that the blood-vessels which always increase in their dilatation during the time of gestation, wherein they grow relaxed and less able to contract, are, by a putrid fever, still more distended, weakened, and deprived of their contracting power; so that consequently, whenever the parts have less strength, which commonly are such as are remote from the heart, and abound with blood vessels, there will be the greatest stagnation of dissolved blood and the seat of the mortification.

Not only therefore are creatures in a pregnant state, carefully to be kept out of the reach of all putrid disorders, but should any unfortunately be

seized, the whole intention must be, not to weaken the creature by too violent or repeated evacuations; to avoid increasing the fever by too hot medicines; and lastly, so to direct as to preserve the strength of the creature against the attacks of the disease, and especially at the time of abortion, if Nature endeavours to expel the fætus.

N.B.—A white cow generally gives most milk; but then, being more serous, it is neither so nourishing, nor so proper for making butter or cheese. The red cow's milk is more elaborated, though less in quantity, consequently affords more nourishment. The black cows may not yield so much milk as the two former; but it will be thicker, of a richer substance, and best adapted for the uses of the dairy. Yet it may be necessary to mix these several sorts for the different purposes intended. —*Histoire Naturelle, tom.* 4, *p.* 456.

OBSERVATIONS:

BEING THE RESULT OF DR. LAYARD'S SERVICES FROM 1769 TO 1790.

The result of Dr. Layard's services consists—

1.—In ascertaining his opinion formed in 1756, that the distemper among horned cattle is similar to the small-pox in the human body: to be managed in like manner as that illness and as the plague.

2.—That by killing the cattle without effusion of blood, by strangling them, and burying them deeply with their whole skins, and avoiding communication of persons and beasts,—are the surest means of extirpating the calamity.

3.—That by inoculation the sound cattle may be preserved, as is positively confirmed by the great success in Denmark, &c.; but that practice is not to be allowed of except when the contagion is become general in any country.

4.—That the utmost attention is requisite to prevent the admission of infected cattle hides, hay, straw, or cloth package from foreign countries, lest that illness become naturalized and fixed in these kingdoms as in Holland, during many years, which has ceased in Europe since 1780.

5.—That the varilous contagion is a different disease from the Gullsey, which is a putrid sore-throat, natural to and common in Great Britain and Holland; as Dr. Layard observed, in 1788.

KEMP AND SON, PRINTERS, BEVERLEY.