The cattle plague : the history, prevention, and treatment of the Rinderpest, or Russian cattle plague, including practical observations for the prevention of contagion, and cure of this diseases / by G.B. Mead.

THE CATTLE DISEASE.

THE HISTORY, PREVENTION, AND TREATMENT OF THE RINDERPEST, OR

RUSSIAN CATTLE PLAGUE,

INCLUDING PRACTICAL OBSERVATIONS FOR THE PREVENTION OF CONTAGION, AND CURE OF THIS DISEASE.

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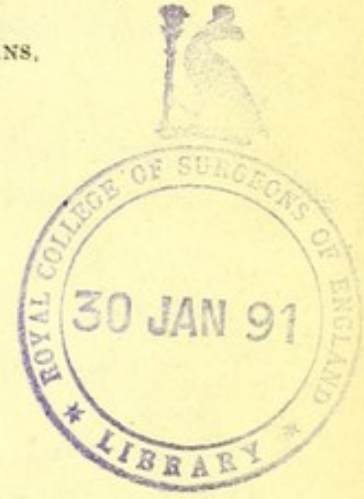

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THE CATTLE PLAGUE, &c.

CHAPTER I.

History of the Origin of the Disease; with Short Description of the Countries where it first appeared. Its Ravages in Europe and Asia during the past and present centuries.

THE disease now decimating the herds of this country is not indigenous to England, but one of foreign importation; it has been known upon the continent of Europe for ages, occasionally ravaging various parts of central Europe, at other times driven back to its true home, the Steppes of Siberia.

In Russia it is known as the Schelvaki, or Yas va Sibirska; in Germany, as the Rinderpest; in this country, as the Cattle Plague, or Murrain.

On examining the map of Europe, at the upper part, will be found a long mountainous range, extending nearly one-third the length of the map: these are the Ural or Oural Mountains. The vast plains, extending for a considerable distance towards Central Europe, is Russian Siberia. On the other side of the Ural mountains may be seen a second, and still larger plain, extending to the borders of the Chinese Empire: this is Asiatic Russia and Tartary, better known under the general name of Turkistan. These countries are almost boundless in extent; thinly inhabited by wandering tribes; and on the Russian territory are a series of fortified posts, scattered at wide intervals over the vast dominions, occupied by handfuls of troops, said to be in the aggregate 40,000 in number. The mass of the population consists of native tribes, subject to the Russian Empire, to whom they pay a small tribute, and in return are allowed to retain unmolested their habits and pursuits.

The vast plains, of which these countries principally consist, are called Steppes: they present a dead uniformity of level, resembling that of the deserts of Arabia and Africa, but entirely differing in the soil. They have scattered over them innumerable saline lakes, are very marshy, and covered with long, succulent, quickly-growing grass, and dwarf shrubs, generally of an aquatic character. Wild animals abound: indeed, Siberia and Turkistan are specially distinguished by the abundance of animal life. The climate is variable;

the heat being most intense during the summer, causing quick evaporation and complete and rapid dessication of the soil, and intestinal discharges of cattle covering it, forming an almost impalpable dust, which, rising in the air, is conveyed in clouds during the dry season, over the country.

The Tartars, as the inhabitants are called, have no fixed residence, but wander over an immense extent of country. They have moveable huts, and with their flocks travel even as far as the left bank of the Danube. In summer many move towards the mountains, or cooler countries of the North; in winter they remain on the plains, or seek the warmer regions of the South. Wherever they go they carry their *all* with them. Their houses or huts go upon wheels, and are drawn from place to place by oxen, of which they have immense numbers. The huts are made of wattled rods and wicker-work, and are in form like common beehives. They have a single door in front, with a curtain of felt painted with vines, trees, birds, and beasts. Some of these houses are so large as to require as many as twenty-two bullocks to draw them. Rubruquis, a celebrated traveller, who visited this country in 1253, has written a very interesting account of the habits and customs of these people; and, though six centuries have elapsed since it was written, it is considered still the best and most correct picture we possess of Tartar life. Marco Polo, John Bell of Autermony, and Timowsky, besides many authors of more recent date, confirm most of Rubruquis' details

In travelling the oxen were not harnessed in pairs like our coach-horses, but drew eleven or more abreast. One man stood on the waggon in front of the house-door, to urge on the bullocks nearest the wheel, and another man or boy, or frequently a girl, walked ahead of the leaders. The houses, at the end of the journey, had the wheels taken off, and were set on the ground. The doors, from some religious notion, being turned to face the south, and the waggons and attendant carts were drawn up in two compact lines—one in front, the other behind the habitations.

Old Dutch prints exist, representing lines of these dwellings while travelling, and again dismounted and stationary. The dismounted houses, with their parapets of waggons, look like little fortresses; numerous flocks are scattered far around; men are seen scouring the plain, on long-tailed and long-maned horses; and another wheeled town is seen in the horizon.

One Moal, a rich Tartar, is said to have had as many as a hundred of these waggon houses, in which he carried about his many wives, his children, and all their female attendants. Rubruquis says, when the camp was formed, the house of the first wife was placed to the west, and all the others, according to their degree, extended to the east, the last wife's house being most easterly. Some of the wives had most beautiful waggons and houses. Each house had one or more large chests; these were square and made of small split wicker, with arched cover and a small door at the front end. These were the family storerooms. Near the door of every house was the figure of a cow's udder. They ate all sorts of flesh, even that of animals dead of disease. Skins, wool, and horse-hair, were the principal materials of their manufactures. Their main wealth was in their herds, which were prodigious. Their encampments, from the neglect of all sanitary precautions, and the numberless head of cattle by which they were surrounded, soon became most filthy; there was also a great personal want of cleanliness; the skin garments which they principally wore, though often of great richness and highly ornamented, were filthy in the extreme. Even less care was bestowed in this respect upon the cattle; and this, added to their enormous numbers, renders the development of contagious disease nothing to be wondered at.

Though it had doubtless existed long before, the first known mention of the Cattle Plague was by Gruelin, in 1760, who discovered it on the banks of the Rivers Irtish and Tobol. Since this time it is known to have been a permanent scourge of Western Siberia, breaking out annually in the hot season. In 1798, following the course of the River Ural, it extended to the Europian Shores of the Caspian Sea, and to the Ukraine, devastating the herds of Keiv, Podolia, Poltava, and Kharkov, penetrating to the shores of the White Sea, Lithuania, and even to the Baltic. In 1811, following the track of the Austrian wing of the Allied Armies, it passed through Germany and the north of Europe, where the mortality was frightful; by Belgium and the Rhenish provinces of Prussia, up to the very walls of Paris. This was the first time that the French were ever known to have suffered from this deadly scourge.

In 1823 it ravaged the provinces of Kasan, Cherson, and Taurida, extending to the Volga, Astracan, St. Petersburg, and along the shores of the Gulf of Finland, to Mezane and Archangel, on the White Sea.

During the Crimean War immense droves of cattle were drawn from the Steppes to feed the Russian Army in Moldavia, Wallacia, and the Crimea. These carrying with them the germs of disease, sickened and died by thousands in their course, and communicating it to the herds of the countries through which they passed, spread the contagion widely. It was carried into Turkey and Egypt. In the valley of the Nile the mortality was so great that the whole cattle tribe were threatened with extermination.

It has a great disposition to follow the lines of large rivers, running along their banks with a fatal rapidity. On reaching the waterside, it pursues a course both up and down the stream with equal vigour.

In 1864, during the hot weather in June, more than 100,000 cattle perished in Russia alone, though the Government dispatched eighty Veterinary Surgeons to the infected districts, to offer advice and medicines gratis.

The illustrious Haller, in 1773, wrote a pamphlet on the Cattle Plague; and Camper, Spinola, Roll, and other illustrious men on the continent; and in our own country the writings of Layard, Mortimer, in the past century; and Symonds, Budd, and Murchison, of the present day, may be consulted with advantage by those interested in the literature of the disease.

CHAPTER II.

History of the Disease in England, from 1745 *to* 1757.

In a discussion at the Royal Society, Jan. 9, 1746, Mr. Theobolds, said to be "a diligent inquirer," stated "That the first infection of this dreadful distemper among the cow kind was brought over from Holland in 1745, by means of two white calves which a farmer at Poplar, near London, sent for, in order to mix the breed. The infection got to Maidenhead, in Berkshire, by two cows brought out of Essex, and sold at a fair there." Mr. Hoffman, a Dane, "Said the infection was first carried into Denmark by raw hides of cattle, dead of this distemper, rubbed with wood ashes, in order to preserve them for tanning, which were brought from Flanders. That some cows sickened a few days after unpacking these hides in Denmark, and they had already lost 50,000 head of cattle."

Mr. Collinson said, "A farmer in Essex, whose cows had the distemper, requested a neighbouring farmer to assist him in giving them drenches; he did so, and as he was walking home, passing through a field where his cows were, he no sooner entered than they left off grazing, and ran to the farther end, snorting and flinging up their noses, shewing the greatest uneasiness at his approach, and endeavouring to avoid him. The very next day many of them fell sick, and died in a few days."

In 1747 the disease ravaged the counties of Suffolk, Nottingham, and Lincoln; in the latter county a receipt for its treatment was ordered to be left by drovers in every town through which they passed. On Jan. 15 an order in Council was issued that no ox, bull, cow, calf, steer, or heifer, whether fat or lean, be suffered to pass the Humber and Trent northward, from Jan. 19th to March 27th, and the Justices were required to cause strict watch and guard over all bridges, fords, ferries, on the said rivers. It was further ordered that no cattle be put out to pasture, or removed to other pastures, except a certificate be given that they are in good health by the inspector, and such certificate be delivered to the churchwardens or overseers. Parish officers had power to stop suspected cattle; to cause diseased cattle to be shot; the hides slashed and buried; the owners to be paid for the same.

In Feb. an Act was passed to continue an Act passed the preceding year, authorising the appointment of inspectors to prevent the spreading of the distemper among cattle, and providing for all charges for expenses and compensation being paid out of the County rate.

April 16, an Order of Council was published, which, after observing that the distemper had entirely ceased in Middlesex, but continued to rage in other counties, and had lately spread in Derbyshire and Nottinghamshire, north of the Trent, authorised any four Justices or Commissioners of the land-tax to prevent the selling of horned beasts in fairs till June 24. It also permitted ox teams, on certificate of freedom from the distemper for two months, to be driven within three miles of any place where the distemper was, it having been represented that a former Order of March 12th, which restrained them to 20 miles distance, would prevent all traffic; the carrying of hides and skins westward over the river Severn was forbidden.

By another Order in Council, any four Justices or Commissioners of the land-tax were empowered to forbid, if they saw fit, the holding of any fairs for the sale of cattle in their division. All hay, &c., on which infected cattle had breathed, or straw or litter which they had touched, was ordered to be burnt. All persons who had attended such cattle were forbidden to go to sound in the same clothes; the houses where they stood were to be cleansed with vinegar, water, wet gunpowder, pitch, tar, or brimstone, burnt therein, and no fresh cattle introduced till after two months, the infected dung to be buried deep. Owners complying with this order to be allowed half the value, not exceeding 40s. for each cow, and 10s. for the hide and horns; and not exceeding 10s. for each calf.

Aug. 10. A great number of cattle, whose owners could not produce certificates of health, were driven out of Smithfield as unfit for sale.

The plague having greatly increased through neglect of the enforcement of the foregoing Orders, Sept. 8, another Order in Council prohibited the removal of all lean-horned cattle after Sept. 20, from one parish to another in all the counties of England; none were to be bought, sold, or exposed to sale, except fatted cattle, in any fair or market. Fatted cattle to be sold with certificates of health, and killed within ten days. This Order was to be in force three months, and read in all churches.

The fair annually held Sept. 21 at Guildford, Surrey, called Catherine Hill fair, was set aside on account of the plague, and the

weekly market prohibited till Nov. 1. There had already died in Lincolnshire and Nottinghamshire above 40,000 cattle, and the infection was got among the horses.

Dec. 21. These Orders were continued to Feb. 1, 1748, permission being given to remove sound cattle from Fen lands destitute of pasture to the owners of farms, if the owner entered into a recognance of £10 for each beast so removed that they shall be kept in separate pasture for two months. Cows might be driven to bull, if both were certified to be healthy. The time for burial of diseased dead cattle was enlarged from 3 to 8 hours.

1748.—Jan. 1. The Orders in Council of Dec. 11 were continued to March 1, and on Feb. 27 were further extended to March 14. On March 22 it was ordered that a list of infected places be fixed up in markets and highways for public information, and the orders and regulations read in every church and chapel.

In June several persons in various parts were arrested for forging passes for cattle, by which means the distemper had been spread in various places.

Aug. 30. The Justices of the Peace of several counties where the distemper had raged certified to the Privy Council that the infection had ceased; but Sept. 22 it was announced that it had broke out afresh about Burton-on-Trent, in Buckinghamshire, and near Camberwell, in Surrey.

In December a distemper, but varying in character from the plague, appeared in Ireland.

1749.—In Flanders, there being great scarcity, the flesh of cattle, which had died of the disease, was given to condemned soldiers, who ate of it without ill effect. Some was introduced into the English markets, but the butchers were heavily fined for doing so.

In April the disease raged at Settle, in Yorkshire; at Newcastle, and at Bowden and Cleadon, Durham; and in September reached Lancashire, while it still continued very severe in Yorkshire and Durham. In Ireland, many of the cattle died, and pigs drinking their blood were "instantly killed." During September it broke out in above 20 parishes in Suffolk. The Justices published advertisements to have dogs confined, and strictly enforced the Orders in Council. One Murdock was fined £10 for moving cattle by night. The distemper appeared again in Middlesex, and was more or less in every county in England, except the west.

Dec. 14. An Order of the King in Council stated the distemper not only to have spread to most parts of the kingdom, but that it then raged with a malignity and violence little short of when it first broke out; that the principal cause of this was the neglect of the inspectors in enforcing the Orders already issued. It was, therefore, ordered that from Jan. 14. 1750, till after March 14, no ox, bull, cow, calf, steer, or heifer within England, whether fat or lean, sick or well, be removed from the places where they were on Jan. 14, except only such sound and fat cattle fit for slaughter as should be removed to be slaughtered at some uninfected place. Such animals only to be removed by virtue of a certificate, granted after due inquiry on oath by a Justice of the Peace or Commissioner of the Land-Tax. Parish officers were empowered to stop cattle and enforce all the orders. Wales, Somerset, Dorset, Devon and Cornwall were exempted from this Order. The Order of March 22, 1747, as to disinfection and killing and burying infected cattle, was confirmed, and the Order directed to be read in all churches and chapels, and dispersed by the post-masters in the most expeditious manner.

In an article on the disease, published January, 1750, the value of dairy cows was estimated at £5 each, and of fat steers at £7 each; of those attacked by the disease, it was computed one-third would recover. Great complaints were made that cattle dying from accident and other diseases were returned to have been distempered cattle, through ignorance, or to get the 40s., and it was mooted publicly to withdraw the premium. A writer, in reply, estimates dairy cows as being worth nearer £3 10s. than £5, and cattle at full growth, except near London, £4. The number of cattle killed and dying in consequence of the distemper had so reduced the herds as to excite serious apprehensions, lest nearly the whole of the cattle of the kingdom should perish; and in April it was proposed to establish public hospitals for the treatment of infected cattle. In May an Act was passed, enacting that no persons should sell any live cattle unless they obtained a certificate under the hand of some Justice of the Peace or Commissioner of the Land-tax, specifying the colors and number of head, whence they came, where they were to be sold, the owner's name, and proved them to have been in their possession 40 days; and give an attested copy of such certificate to the buyer, under penalty of £10. Jobbers were required to take out licences, and not allowed to buy unless possessed of land sufficient to keep the cattle purchased for three

months; if more purchased than licensed for, to pay a fine of £5; to obtain certificates, specifying their name, place of abode, and number of beasts intending to buy, and give sureties in the sum of £100, to observe the Acts and Regulations relating to the distemper. During November a distemper prevailed among horses in London and all over the country; and the Cattle Disease raged severely in the Isle of Ely and some parts of Suffolk. At Warwick, boring the horns was tried with success, matter being discharged from the holes.

January, 1751. The disease was very severe at Epping. The farmers tried boring the horns, but without effect. Some sawed them off, but it did no good. In Worcester and Salop the inhabitants were restrained by Sessions Orders from selling cattle. During April there was a great mortality amongst cattle; and in Sussex, among sheep,—one farmer losing 400 lambs from the coldness of the season.

August 8, an Order in Council was issued, forbidding the sale of cattle at Barnet and Harlow Bush fairs. By Quarter Sessions Orders, issued in October, it appears that the Plague still raged in the counties of York, Westmoreland, Lancaster, Wilts, Monmouth, Gloucester, Dorset, and at Bristol; also, it had again broken out near London.

In a letter, dated Berks, Feb. 3, 1752, the writer requests "intelligence once a month of the distemper among horned cattle;" for, as a Clergyman, he is "required to read the prayer on that occasion," and has "sometimes omitted it when he had heard nothing of the distemper for three or four months, but found afterwards that it should have been continued." In February the infected places were Ashchurch and Beckford; in Gloucestershire, Buckinghamshire, and the adjacent counties; in Holland, and other parts of Lincolnshire, the counties of York, Lancaster, and Derby. In April the distemper was said to have much abated; in Wiltshire,—it had totally ceased. In Somersetshire sixteen head had died in the parishes of Chinnoch and Glosworth, and the Justices had enforced the Orders of Council in those parts. April 12, Mr. Dunne, Clerk of the Peace of Somerset, and Mr. Oak, by Order of the Quarter Sessions, caused all the infected bullocks in the parish of East Chinnock to be shot dead, their skins slashed from head to tail, and immediately buried, seven or eight feet deep; then bought the remainder of the cattle that had herded with them, and caused them to be killed in like manner. May 9. 'Tis hoped the distemper among the cattle at East Chinnock is stopt—not one having been taken ill

for three weeks. Great care has been taken by the Justices to prevent the calamity from spreading,—all fairs having been stopt for some time; and above twenty shot, by order of the Clerk of the Peace. The cattle were appraised, and the owners paid out of the County Stock. One of the oxen in an ox waggon, carrying the soldiers' baggage from Sherborne, falling down dead, the other five were immediately shot. May 31. The distemper was reported to be raging near Reading, in Berkshire.

Besides these Orders, an annual Act of Parliament was passed, for 12 years, commencing in 1745.

Notwithstanding the energetic measures taken, the disease lingered in the country till 1757; but all being alive to the danger, and the measures for prevention being enforced with the utmost severity, it then happily became extinct, though some assert that isolated cases occurred to an even later date.

CHAPTER III.

The Disease does not arise spontaneously, but invariably from Contagion. It is both Infectious and Contagious. Modes in which Infection may be spread. Communicable by Inoculation to Human Beings.

To those whose herds are at present healthy, it is of the utmost importance to know how contagion or infection may be prevented, and for them to be enabled to avoid the introduction of the pest within their yards, fields, &c.

This is one of the most eminently contagious and infectious diseases of modern times; the scale on which this scourge of animal life operates is truly enormous. In Europe it is computed to have destroyed 200,000,000 head of cattle during the last century, excluding those who perished in Siberia and Tartary. In Germany about 28,000,000 perished. In 1864,* during the hot weather of June, 100,000 perished in Russia, only 478 of those attacked being saved, though the Russian Government dispatched eighty Veterinary Surgeons to the infected districts, to offer medicines and advice gratis. In Egypt, in April, 1864, it is computed, a murrain said to be Rinderpest, killed not less than 1,700,000 head of cattle. Dr. Ogilvie, of Alexandria, was appointed by the Pasha of Egypt to inquire into the subject, but it does not appear that his report has been published. The cholera appeared in Egypt less than one year after the murrain. *This fact is most ominous.*

On the Continent, notwithstanding the vigorous adoption of measures directed against contagion, the aggregate mortality is tremendous.

It can be inoculated like small-pox; is communicable by the slightest contact; and so prolific are the germs of the disease—unseen and invisible as they are—that from a single case of Cattle Plague great outbreaks often spring, which in a few months overrun vast tracts of country spread over whole kingdoms, and count their victims

* Mr. Helps, Clerk to the Council, in his letter of August 2, 1865, to Lord Tredegar, says: "Returns have been furnished to this office, by which it appears that in 1864 159,476 cattle were attacked by this disease in Russia, out of which 104,714 died."

by tens and hundreds of thousands. It is the opinion of competent observers, that this disease cannot be produced spontaneonsly; that the presence of the specific contagious germ is absolutely necessary for its production; that no circumstance of climate, country, condition, or contingency of cattle life have ever, without this, been able to produce an outbreak. The present outbreak in this country, we have the authority of Professor Symonds for stating, there was no doubt arose from contagion, and contagion only. The cattle that brought us the Plague came direct in a steamer from Revel—a Russian port; and one or more shewed signs of the malady before leaving that country; others were affected in the Baltic; and more on landing in England. They came a six-days' voyage, after travelling 200 miles to the port of embarkation, and were drawn directly from districts in which the disease was raging. They were taken to the Metropolitan Cattle Market, whence the disease was imported direct to the London dairies, and to Norfolk, Suffolk, Shropshire, and other counties.

The slightest contact of sound with diseased animals is sufficient to convey the disease; even for them to pass over highways, by which infected cattle had recently travelled. The intestinal discharges are particularly infectious. Horses, sheep, dogs, cats, poultry, and other animals, crows, jackdaws, and small birds, may serve as a medium for conveying the germs of disease. In one case, where a distance of 400 to 500 yards intervened between two herds, though every precaution was taken to prevent communication, the sound herd took the disease; and it was believed, by careful observers, that the infection must have been conveyed by flies, and this is by no means impossible, when we recollect that these little pests are capable of conveying by their bite to human beings, malignant and fatal disorders. The recent case of the unfortunate Veterinary Surgeon, at Stamford, will be recollected by many. If this is possible, during hot seasons, a new source of danger is disclosed,—the case really amounting to this, that the infection may be conveyed as far as it is possible for flies or birds to travel.

Neat herds, Farriers, Sanitary Inspectors, and other persons employed about stock, may be the means of conveying the infection about in their clothes. The manure from infected homesteads has an especial virulence, and there is no doubt that the conveyance of such manure, by canals and roads through meadows in the country, has

been the source of many unexplained outbreaks. The ships, wharves, cattle trucks, markets, and public roads—tainted by the fluid discharges of the diseased animals—are therefore sources of contagion, and render it advisable that owners of stock should avoid moving them off their own farms as much as possible. Running streams may also be a means of infection, by the waters becoming tainted; and it is not impossible that the tubular system of drainage of our towns, unless carefully trapped and disinfected, may prove a source of danger. Hot seasons are unfavourable; dry, favourable to the spread of the infection. In this respect it resembles other contagious poisons, which, when dried, retain their properties for very long periods.

In Holstein, where it appeared some years since, at the first alarm the Government sent Veterinary Surgeons to inspect all the cattle on the farm, and the most stringent quarantine was at once imposed; the cattle in an adjacent farm were attacked, when, on strict inquiry, it was found a lad employed in feeding the cattle had, contrary to the express injunctions of the farmer, gone to pay a visit to a friend on the infected farm, and thus carried the disease, which soon manifested itself in so virulent a form as to carry off all the stock.

In like manner, farmers and owners of cattle, curicus about the new and fatal malady, which had stricken the herds of their neighbours, have, on the Continent, in many instances, been themselves the means of conveying the pest to their own yards. The places in which the sick cattle are kept, being flooded with the intestinal and other discharges, it is readily seen that those visiting and inspecting such cattle may easily carry away upon their shoes and clothes infection enough to taint the air and soil of hitherto healthy places. Therefore those who come across diseased cattle involuntarily, as in markets and other public places, or visit sheds or yards where they are kept, should, before going near healthy stock, wash and change their clothes, especially their shoes. This particularly applies to Sanitary Inspectors, employed to visit the dairy stock of a town like Cambridge, otherwise they themselves may be the means of promulgating the very disorder they are employed to prevent. In the event of an outbreak at Cambridge, it appears that one Inspector ought to be employed solely to visit the infected places, and that should a case of disease be discovered in any cowhouse, the Inspector ought at once to cease visiting for that day, and to be careful to be thoroughly disin-

fected, both in person or clothes, before resuming his duties. It may be urged this course would entail expense; to this the reply is, that we are in the face of a malady of no ordinary kind,—one which, if allowed to extend, will be a national calamity of such a character, that should our herds be destroyed, the health of the whole nation must and will suffer, and that no expense can be too great to check this disorder. To shew the infecting power of animal poisons, may be mentioned a case which occurred during the Plague in 1666. Some cloth was sent from London to Ramsey in Huntingdonshire, and made into a coat for Colonel Oliver Cromwell, cousin of the Lord Protector, then the owner of Ramsey Abbey. The wearer of the coat died, the tailor and his family who made it, and about 400 persons in the town.

Further than this, the disease not only endangers human life indirectly, by threatening to deprive us of an important and necessary article of human diet, but there is direct danger of this fearful pestilence being communicated by inoculation to human beings. At Stamford a Veterinary Surgeon, named Fisher, a most respectable, steady, careful-living man, perished through being bitten on the arm by flies, while examining the carcase of a horse which had died from a similar disorder. And the following case from the *Times*, of September 1, in our own immediate neighbourhood, is fearfully illustrative of the perils to which all who come directly in contact with diseased cattle are exposed:—

Shocking Death of a Veterinary Surgeon.—The Borough Coroner for Sudbury held an inquest on Tuesday afternoon, on the body of Mr. Robert John Plumbly, Veterinary Surgeon, of that town. The evidence proved that death was occasioned in a very shocking manner. The Cattle Plague has broken out in the neighbourhood of Sudbury, and on Thursday Mr. Plumbly was asked to visit some animals which were affected at the farm of Mr. Raffles, Long Melford. He did so, and shot a cow which was in a very bad state. Subsequently, he used a small scalpel in making a *post-mortem* examination of the carcase, and by this means got a quantity of blood upon his shirt-sleeves. He returned home, and the same day was attacked with sickness and acute pains in the head and chest, together with a feeling of soreness in the bones. On the following morning he appeared somewhat better and attended to his business, but suffered a relapse towards evening. On Saturday he was so much worse that he called in medical assistance. Saturday night he slept in a tolerably composed manner, and rose about ten o'clock on Sunday morning for the purpose of having his bed

made. At this time he seemed in good health and spirits, but immediately afterwards he was seized with a fit, and expired. Decomposition set in with such rapidity that on Tuesday morning the surgeons who had been directed to make a *post-mortem* examination of the body could not do so. The medical gentlemen in their evidence stated that the body presented the most horrible sight they had ever seen. It appeared from the statement of a nurse who had been attending the deceased, that before he went to the farm of Mr. Raffles he had been suffering from a boil on the arm; but, although a poultice was removed from the place on the Thursday morning, he refused to have any plaster put on, and therefore the blood-stained sleeve came in contact with it. The jury returned a verdict: "That the deceased, Robert John Plumbly, died from the effects of the absorption of virus or poison into his system upon the occasion of his making a *post-mortem* examination of a cow which had died from a certain disease called or known as the Cattle Plague."

Beef, butter, and cheese at famine price, is a very serious matter for every household. Such a state of things is not pleasant to contemplate; thousands of English homes experienced this one hundred and twenty years since, in bitter reality. It is our duty to do all we can, both nationally and individually, to avert such a catastrophe as the loss of these stately herds, which are at once the glory and pride of the splendid pastures of our noble island home. Terrible, indeed, would be the stroke to our national welfare should the "Roast Beef of Old England" cease from such a cause to be the staple of our diet. The stalwart arm of the British workman would be robbed of half its strength; our little ones would pine for their accustomed nutriment, if the rich milk of the cow, on which they thrive so well, and which enters so largely into their diet, could no longer be procured. It is not the herdmaster alone who would suffer, but every member of every household in the land would be affected by the catastrophe.

CHAPTER IV.

Importance of Sanitary Measures, and their Influence on Contagious Diseases. Precautions to be adopted to prevent Contagion.

THE history of epidemics amongst human beings in this country is this, that as an almost invariable rule they prove most virulent in those places where there had been the greatest previous neglect of all the ordinary sanitary rules; that in low, ill-drained, ill-ventilated dwellings, surrounded by stagnant filth, in narrow ill-cleansed streets, the mortality is heaviest, and the risk of infection the greatest. Where in other countries is the greatest havoc created by such diseases as the cholera? In Constantinople, Pera, and other Eastern Cities, where the sanitary arrangements are the worst, or rather there are no sanitary arrangements whatever, where filthy garbage covers the narrow, ill-drained streets, which reek under the tropical sun with poisonous odours; the drains, if any exist, are choked up with filth, and when the cholera appears the people die like rotten sheep. At Mecca and Medina the Mahommedan Pilgrims to the Holy Places are encamped for weeks, amidst piles of decaying animal matter, the refuse and entrails of sheep, slain by thousands as sacrifices to their Prophet, these Pilgrims considering it a religious act to refrain from all ablutions and change of raiment during their residence at these shrines. Is it wonderful that amidst scenes like these King Cholera reigns; that there he reaps his fearful harvest by wholesale; that the death rate rises from one or two per cent. to seventy or eighty per cent.?

What is the history of typhus and typhoid fevers? That in close, ill-ventilated places, in narrow courts and chambers, it strikes down with a fearful rapidity a large per-centage of all who reside in them. The great friend of these fevers is foul air. Their great enemy, the greatest aid in robbing them of more than half their power, is fresh air. The decomposition of human effluvium in the midst of filth, poverty or famine, great heat and moisture, overcrowding, and a stagnant atmosphere, these are the circumstances which tend to create fevers and render them malignant.

In a pure atmosphere the miasm or infectious poison engendered in a vitiated atmosphere, saturated with effluvia and a load of exhalations from dirt and filth, soon becomes dissolved. The fouler the atmosphere, the more malignant the disease. Nothing is so contributory to the preservation of sound health as pure air; nothing tends so much as foul air to prolong or aggravate diseases of this kind. Typhus and typhoid fevers become more severe in proportion as they spread and impregnate larger spaces of atmosphere. .

In rooms or buildings where sick persons or animals are placed the risk of communication to others is in proportion to the crowding. Thus, if in a building of a certain size, containing air enough for one healthy animal, one diseased is placed, there will be some danger of infection; if two were placed in the same area, that risk would be trebled; if three, it would be nine times as great; and if four, the danger and intensity of the poison would be increased twenty-seven times, the increase of the risk being in a geometrical proportion, not simply doubling It is this fact which has been proved over and over again that is so important in providing hospital accommodation.

Observers agree that the cattle pestilence is evidently absorbed and conducted by an affinitive atmosphere, and that the state of the atmosphere undoubtedly is acted upon by and re-acts upon the disease; many scientific men, while admitting the infectious nature of the disease, are inclined to think that its rapid spread has been accelerated by mephitic nuclei floating in the atmosphere, and that there is danger by fungus fomites of its being carried from one end of the land to the other. The previous history of the disorder, however, happily negatives this conclusion.

These remarks, therefore, tend to establish the fact that when disease, whether of an epidemic or contagious and infectious character, is threatening a country, a careful attention to the improvement of the sanitary arrangements is a measure of the very first importance. That by this, disease if not averted altogether, may be materially checked and robbed of its malignancy.

To those threatened by the approach of the disease, indeed to all who keep cattle, it may be said, give particular attention to the yards, sheds, and lodges in which your cattle live; let them be kept clean and dry; let their interiors be, if practicable, well lime-washed; get rid of filthy smelling pools and stagnant ditches, if there be any in the neighbourhood; let the animals be kept personally clean, and do not

let them stand in filth, but let them have dry beds, and drink pure wholesome water.

Where large herds of cattle are kept, let them be divided into manageable lots, so that should contagious disease appear there may be less risk of infection, and it be easier to isolate the diseased animal or animals.

Make your servants fully aware of the risk of contagion, and do not allow them to visit out of curiosity places in which the disease may break out. After attending cattle markets or fairs do not visit your stock in the same clothes you wore while there. Do not pasture your stock within 400 yards of a navigable canal or public road; in short, place them as near the centre of your farm and as far off any other stock as you possibly can; keep your gates shut, and allow no stray stock upon your land. If you purchase stock, place it in quarantine at least 14 days, and, if possible, avoid doing so.

Provide an isolated shed or yard where any cattle shewing signs of disease may be placed, and appoint a person who has nothing to do with the healthy stock to attend such animals. If one or two shew signs of disease, and it is probable that by their being killed and buried the disease may be got rid of, this is the best course to adopt.

That those who have stock on unenclosed commons where cattle, the property of different owners are pastured, such owners should co-operate together to adopt precautionary measures; where a public road runs through such land, steps should be taken to prevent infected animals passing along such road, that the cattle be driven over the road as little as possible, and in event of disease appearing in the neighbourhood the cattle be removed as soon as possible to the owners' premises, and there placed in quarantine till all danger of their falling ill and infecting other stock has passed.

That all fodder, straw, or manure, which has been used about infected cattle be burnt; or if this cannot be done, saturated with chloride of lime or some powerful disinfectant. In Russia, on one occasion, the disease was communicated by the dung of diseased oxen, though it had been subjected for some months to the frost and snow of a Russian winter. Burning is the safest plan.

That the floors of places were diseased or suspected cattle are kept be daily sprinkled with disinfectants; and that dead animals be buried in quick-lime. If the skin is saved, it ought to be at once steeped in disinfecting fluid.

When disease is abroad, diet is important. The food should be of a mild, unstimulating character. Give nothing likely to cause irritation of the intestinal canal, and avoid all sudden changes of diet. The temperature of sheds is worth notice, it being found that in cases of threatened fever, with bowel complications, a lower temperature is advisable. In order to secure the early detection of any ailment, the stock ought to be carefully inspected the last thing at night, first thing in the morning, and at least once during the day, by an *intelligent* person. This duty ought to be performed carefully, and not delegated to an illiterate clown, who knows nothing, and cares less, about the matter. It is of the greatest importance, should an outbreak occur, not only that it be ascertained at the very outset, but that each animal be put under treatment as soon as taken. Early treatment is half the battle, and will more than double the number of cures. During the cholera, the system of house-to-house visitation, by intelligent persons, produced a marked effect upon the mortality. People, instead of being allowed to remain poorly for several days, and when almost dying, put under the doctor's hands, were warned of their danger in time, the premonitory symptoms were checked, and the disease, if not entirely prevented, rendered milder and less fatal. In the treatment of typhoid fever, the tendency to collapse or sinking is so great that it is of the utmost importance that the sufferer should receive early medical advice, as remedies at the onset of the attack will have more than double the efficacy, while the constitutional powers are unimpaired, than they will have if the disease be allowed to run on unchecked, sapping the vital powers, and producing collapse.

CHAPTER V.

Symptoms of the Disease. Effects of Milk from Diseased Animals on Children and Animals. Post-mortem Appearances prove Disease to be Typhoid Fever.

The disease begins with rigors and shiverings, similar to those which usher in all violent contagious fevers, with contracted pulse. From the character of these shiverings, some opinion may be formed as to the probable severity and duration of the attack. Sometimes these premonitory symptoms are very severe and brief in their duration, being succeeded, in less than an hour, by the second stage, and such cases are rapidly fatal. These are succeeded by a frequent pulse and great increase of the temperature of the body, forming a second stage, rapidly followed by a third, the accession of which is indicated by feeble pulse and sudden prostration of the powers of life.

The first stage may be called that of incubation; the second, the febrile, or hot stage, and the third, that of collapse. These stages may be very distinctly marked, each having a duration of days, but oftener hours, or they may succeed each other rapidly, until the last is reached in a very short space of time.

When the disease is fairly set in, the coat becomes stark, ears cold and drooping, weeping of eyes, discharge of a glairly mucous, and, after a time, yellow mattery character from the nostrils; the flesh occasionally quivers involuntarily, the animal staggers, and is reluctant, if not unable to move, shewing every sign of great prostration and debility. The motions, which in the first stage may be costive, almost invariably in the third are fluid, and often blood-stained; purging sets in, the discharge from the bowels is of a dirty yellow-green character, with a peculiar sour smell, and, under the microscope, the motions are seen to contain, after a time, minute shreds of the lining membrane of the bowels. Rumination is suspended, the countenance of the animal assumes a peculiar anxious look—indicative of the most abject nervous prostration. In some, but not all, the skin exhales a singularly offensive odour, which clings to the clothes of the attendants. In very bad cases, pustules appear on the withers, breast, udder, &c.; the discharges from the bowels becomes involuntary, the raw-fretted vent prolapses, ulcers

form on the inner part of the lips and roof of mouth, eyes redden, breathing becomes quick and short, the discharge from the nostrils becomes yellower—standing in pools of blood under the animal's head, breathing is laboured, with an occasional rough moan. In the later stages the belly swells, limbs are convulsed, loins and back crackle when touched, from the evolution of putrid gas in the loose tissues under the skin The tail loses its native function, and, in summer-time, swarms of flies pursue their work of torture undisturbed.

Cases do rarely occur in which the nasal discharge is absent. Some times animals retain the power of walking briskly, and with a tolerably sure tread, till a short time before death; but this is rare. In milch cows, *generally*, the secretion of milk soon ceases, in all cases, a remarkable diminution in the quantity taking place, as one of the early indications of the attack. The animal will sometimes sink as early as twelve hours from the commencement of the attack. In many cases the disease is protracted to the fifth or sixth, and occasionally to the eighth or ninth day. One very rare form (the apoplectic) sometimes kills the animal in an hour or so. This is always fatal.

The period of incubation of the disease varies: the majority sicken on the the tenth day after exposure to infection; but some have been attacked on the seventh day.

That the disease is the same which ravaged the herds of this country in 1745, and following years, is conclusively proved by the following extract from the *Gentleman's Magazine* for January, 1747, p. 18.

"The first symptom among the distempered cattle is a cough, which usually lasts two or three days; then they generally lose their appetites and mope about under the hedges, and run very much at the nose and eyes for two or three days more; afterwards they are seized with a scouring, which if not speedily stopped, is sure to carry them off."

In 1746, Dr. Mortimer, in his paper read before the Royal Society, says that some milk, bought in the Christmas holidays at the Vineyard, in St. James's Park, where the cows were then free, though three had died in the Park, had a rank smell, and tasted like butter, and though when boiled it did not curdle, the cream, being put in tea, curdled, but none who drank it found any inconvenience. The cow died, and another in forty-eight hours.

During the present year it has been found that especially among infants the use of milk from affected cows has proved very injurious, causing a disease of an erratic typhus character, complicated with a

spurious phrenitis, pneumonic constipation or diarrhœa, with petechia, indeed all the characteristics that might be expected from the peculiar generic poison devastating our cattle. Kittens, suckled upon milk from a cow slightly affected, died. On analysis, pus (matter) was found in the milk.

The earliest account of the *post-mortem* appearances is that of Dr. Mortimer, given in his paper read before the Royal Society, January 7th, 1746. He saw a cow opened: the cawl was greatly inflamed, and the paunch, with its inner coat pealed off. The gall bladder very large, and the gall very liquid. The lungs adhered to the pleura, were greatly inflamed, limpid, and black: in this case, there was no purging.

The anotomical lesions found during the prevalence of the present epizootic disease are catarrhal inflammation of the lining membrane of the nasal passages, trachea and lungs; also of the digestive canal from mouth to vent, an increased fluidity of the blood, and a disposition to the effusion of blood in various parts of the body, under the skin and mucous membranes, about the heart and on the brain.

The lining of the nasal passages is invariably inflamed, especially in the windpipe and larger air tubes of the lungs; it is reddened, and coated with a viscid glairy mucous and yellow flakes adhered to it, but readily scraped off, the denuded surface being raw, and often bleeding. The smaller tubes and air cells of the lungs are more or less choked with mucous, frothy and tenacious in character. The pleura and lungs are but rarely inflamed.

Though there are signs of inflammation in the lining membranes of the first two stomachs, it is in the omasum, or third stomach, and abomasum, or fourth, that the inflammatory action is most marked. There is great redness, and the surface, covered with adhesive mucous, is often perforated with a great number of minute ulcerations. In parts, the discoloration is of a darker color, owing to extravasations of blood, sometimes portions of the membrane are gangrenous.

It is, however, in the small intestines the most perfect examples of the effect of the disease can be found. On the surface of the interior of the gut may be seen thin round patches, pale or brownish-yellow: some soft like cheese, others firmer and more compact, adhering more or less firmly at the centre, with loose edges. These are easily removed, when the surface will be found depressed, deeply red, with minute ulcers, studded with numerous bloody points. In

some cases, the whole interior of the gut is covered for several feet in this manner, the spots having run together, forming a complete false lining. Sometimes during life, large portions have peeled off, and ulceration sets in, which has gone so far as to perforate the gut, allowing the fluid discharge to escape into the belly. The muscular coat of the bowels has in this way been laid bare several feet, the glands and mucous lining being entirely destroyed. The coats of the bowels are always attenuated and softened, and the natural glands often contain pus, or matter. The compound glands, forming Peyers patches, are enlarged and filled with a soft cheesy matter.

Though the diseased action commits the greatest ravages in the small intestines, and especially in the neighbourhood of that portion containing the largest quantity of glands, called by anatomists Peyer's patches, traces of inflammatory action will generally be found in the large; these are reddened with patches of a dark brown color, and, occasionally, ulcerations.

The contents of the bowels are fluid fœcal matter, and inflammatory mucous, often tinged with blood. The liver and spleen generally healthy, the bile thinner than natural—light green. The kidneys gorged, and urine albuminous.

In many cases it was evident nature had set up reparative action, and that, had the animals not been killed, they would very probably have recovered.

These appearances in the bowels are exactly similar to those found in the bodies of human beings who have died of typhoid fever, with this exception, that, as a rule, in the human being the nasal air passages are not diseased, as is almost invariably the case in cattle. They give the key at once to the nature of the ailment. It is typhoid fever in the ox.

CHAPTER VI.

Virgil's description of similar disease in the Alps. Ozone absent during presence of Epidemics and Epizootics. Artificial production. Uses as Disinfectant. Remarks on Disinfectants. Treatment adopted during prevalence of the Disease in England, 1745—1757. *Inoculation. Principles on which treatment should be founded. Suggestions for Treatment.*

It may not be uninteresting to the classical student to mention that Virgil, in his 3rd Georgiac, writes a disease prevalent in his day, singularly like that with which we are now so familiar. He divides it into two stages: the first marked by little or no fever; the second by fever. He speaks of the animal's dolefulness, difficulty of breathing, head hanging down, pendulous ears, "*demissæ aures,*" the eyes fixed, "*oculos stupor urget inertes,*" the dry hollow, spasmodic cough, "*tussis anhela,*" the "dry skin" and "rough hair," "aret pellis." Such was the Venetian or Illyrian plague. Virgil also mentions cases in the human subject, where the disease has been communicated by making use of the hides of animals that had died of the plague, and of men dying from malignant pustules caused by the bite of flies or gnats which had been feeding on putrid carcases. In those days all the Noric or Venetian farmer could think of was to sit still and call upon his gods.

"Alitur vitium vivitque tegendo;
Dum medicas adhibere manus ad vulnera pastor
Abnegat, et meliora Deos sedet omina poscens."

In Dryden's translation of the third Georgiac, he says:—

"Here from the vicious air and sickly skies,
A plague did in the dumb creation rise;
During th' autumnal heat th' infection grew,
Tame cattle and the beasts of nature slew,
Pois'ning the standing lakes, and pools impure;
Nor was the goodful grass in fields secure.
Strange death! for when the thirsty fire had drunk
Their vital blood, and the dry nerves were shrunk,
When the contracted limbs were cramp'd, e'en then
A wat'rish humour swell'd and ooz'd again,
Converting into bane the kindly juice,
Ordain'd by Nature for a better use.

The victim ox, that was for altars prest,
Trimmed with white ribbons, and with garlands drest,
Sunk of himself, without the gods' command,
Preventing the slow sacrificer's hand.
Or, by the holy butcher if he fell,
Th' inspecting entrails could no fates foretell;
Nor, laid on altars, did pure flames arise,
But clouds of mould'ring smoke forbad the sacrifice.
Scarcely the knife was redden'd with his gore.
Or the black poison stain'd the sandy floor.
The thriven calves in meads their food forsake,
And render their sweet souls before the plenteous rack.

* * * * * *

The steer, who to the yoke was bred to bow
(Studious of tillage, and the crooked plough),
Falls down and dies; and, dying, shews a flood
Of foamy madness mixed with clotted blood.

* * * * * *

The pining steer, nor shades of lofty woods,
Nor flow'ry meads, can ease, nor crystal floods.
Roll'd from the rock: his flabby flanks decrease;
His eyes are settled in a stupid peace;
His bulk too weighty for his thighs is grown;
And his unweildy neck hangs drooping down.

* * * * * *

To death at once whole herds of cattle go:
Sheep, oxen, horses fall; and heaped on high,
The diff'ring species in confusion lie,
Till warn'd by frequent ills, the way they found
To lodge their loathsome carrion under ground:
For useless to the currier were their hides;
Nor could their tainted flesh with ocean tides
Be freed from filth; nor could Vulcinian flame
The stench abolish, or the savour tame.

* * * * * *

The learned leeches in despair depart,
And shake their heads, desponding of their art."

It is to be hoped, however, that veterinary and medical science may be able to devise not only means to cure a good per-centage of cases, but also prevent the extension of a disease all admit to be most malignant and contagious in its character.

Ozone is the great disinfectant of nature; in the neighbourhood of accumulations of filth all trace of its presence is lost in the atmosphere

near the ground, though it is readily found to exist at some height above the earth, over spots where cesspools, heaps of manure, &c., have robbed the lower stratum of its proper proportion. It is found to the windwards of towns, stabling, manure heaps, &c., but not on the leeward. In localities in which there is much epidemic disease, especially during the prevalence of cholera, typhus fever, and similar disorders, it is almost, if not entirely, absent from the lower atmosphere. In crowded apartments and ill-ventilated buildings, where large numbers of persons are assembled, the air soon ceases to give the slightest evidence of its presence, as also in sick chambers, though on mounting the roofs of the buildings it may be detected. A prepared paper, called after the name of its inventor, Schönbein, is used as a test, and may be obtained through any chemist, with proper instructions for its use. By its means the amount of ozone present in the atmosphere may be determined, as also its absence.

When Schönbein's paper shews ozone to be absent in the atmosphere of a yard or building in which cattle are kept, if the approach of the disease is to be feared, or if it already exists, this atmospheric want may be supplied; and there is no doubt it would be of great advantage to do so, as the effect of this great purifier must be to render the atmosphere healthier; it destroys bad odours as effectually and rapidly as chlorine. It is respirable, which chlorine is not, and it is more manageable. It has been largely used as a disinfectant in hospitals and crowded dwellings; and the diffusion of ozonised air has proved of immense service in cases of typhus and typhoid fever, both to the patients themselves, and especially in rendering the entering of such apartments less dangerous to those whom duty or affection compel to visit or remain to attend upon the sufferers.

Ozone may be used in two ways, on a large scale, by means of Siemen's apparatus, with Rennkorf's coil. Skilled hands are required for the management of the electric battery and coil, and the use is only practicable where these can be readily procured, and where the quantity required is very great. But we have handier means of generating ozone, which may be readily used by any one with little risk or trouble. Take two sticks of phosphorus, about two inches in length, remove the white or oxide part from their surface by careful and slow scraping till they are yellow all over; place them in a shallow vessel of water, floating them near the surface; you will thus avoid the escape of fumes of phosphoric acid into the room, and in a short time may readily,

by means of Schönbein's iodide of potassium paper, detect the ozone in every part of a room containing at least 3,000 feet of air. One or more of these apparatus may be used, according to the size of the apartment, and in yards several can be placed about them in safe places. By this means the air very soon looses its impurity. These vessels should be placed in remote corners of the yard or room, and those having the care of them should avoid exposing themselves directly to the ozone, as exhaled before it had an opportunity of becoming largely dispersed in the atmosphere, or they might find themselves attacked by symptoms similar to those of catarrh or cold; but these very soon pass away.

It may be here further remarked that it has been found advisable to use some other disinfectant than chloride of lime about sheds and yards where the sick cattle are confined, as the pungent odour is found to act in a too irritating manner upon the air passages. For this reason, chloride of zinc is to be preferred.

Cholybeate waters are said to be useful in preventing infection. In Poland, in 1857, it was observed that where a farm where there was a cholybeate spring, the cattle were either but slightly affected or recovered after drinking profusely of the water; while in adjoining farms the beasts died in large numbers. This led to the giving cattle water very strongly impregnated with iron; and we are assured by Consul General Mansfield that in the neighbourhood of Warsaw this remedy has been adopted with much success for the past seven years. Old iron, well rusted by exposure, placed in the cattle troughs, will soon render the water highly cholybeate.

Professor Polli, of Vienna, recommends the administration of the hyposulphites in full doses, believing that they would protect the system almost completely from prevalent infection. Fumigation by burning tar on red hot bricks in the sheds, and the free use of Sir William Burnett's disinfecting fluid, with the internal administration of half a pint of prepared charcoal mixed with grains and flour, to every three cows, and an ounce of nitre dissolved in half a pint of cold water every other morning, with the free use of limewash and painting the cows' noses with Stockholm tar every morning, is the plan recommended by Mr. Talbot, of Oakington Farm, Sudbury, N.W.

Washing well every morning the nostrils, mouth, and tongue of each animal with vinegar has been found successful in preventing contagion. Mr. J. L. Harris, writing from Constantinople, says, "On one occasion I had 400 head of horned cattle in a village in the Principalities in

which the murrain had broken out with great virulence, and these animals having been subjected to the precautionary treatment above mentioned, remained entirely unaffected, while cattle round about not so treated perished by wholesale."

The Datura Stramonium has been largely used by the Danubian farmers, steeping it in the drink of cattle till the water is freely impregnated with the taste of the herb.

The preventative measures recommended during the prevalence of this disease, in 1745, and the following years, partake very much of the nature of the treatment of human beings by the old medical practitioners. Thus we find at the first outbreak of the disease, so soon as there is the least suspicion that the cattle were going to fall ill, it was recommended that on the first day three quarts of blood be taken away, on the second day three quarts more, and then let two quarts be repeated every third day for four times more. Some allowance was to be made in determining the quantity to be taken, according to the size and strength of the animal; as in a large, full-fed cow *more* than three quarts was to be taken, but in a lean, small one, one quart less. The beast was to be drenched every day with three ounces of saltpetre in three quarts of water, to which was added two to three drams of oil of vitriol, to be given in twice, or if oil of vitriol could not be procured, half a pint of vinegar or verjuce. Hot mashes were to be given two or three times a day, and frequent drinks of water gruel, moderately soused with verjuce or vinegar; or if they refuse this warm gruel or warm water, two very large rowels or setons were to be made in the dewlaps, and kept running three months.

A drench consisting of two handsful of salt was also recommended. To stop the scouring, spirits added to two gallons of ale grounds, with two pounds of Jamaica pepper powdered, and an infusion of an ounce of gentian root in a quart of common spirits, mixed up with two quarts of flour, four ounces of Jamaica pepper, a dram of saffron, a dram of mace, and another of cinnamon, all powdered to the consistency of crams: give each beast, after one day's scouring, the size of a large hen's egg three times the first day, and twice the second day. This it is said infallibly stopped the purging.

Tar water, in doses of from one gallon to three quarts, according to the size of the animal, was also recommended. One quart of tar was mixed with four quarts of water, and after it had settled poured off and used, fresh tar being used every other time.

The Lord Bishop of Cloyne recommended one gallon of fresh tar to be mixed with six gallons of cold water, to be stirred for one hour, and then stand six or eight hours; then the scum being removed, to pour off the water and give three gallons warm the first day, two the second, and one the third, in doses varying from a pint to a quart, at equal intervals, the beast to be kept warm and well nourished with mash gruel or hay.

His lordship says this treatment was very successful, both with men in fever and animals in the disease. He also recommends anointing the ulcers with tar.

Blowiug snuff up the nose is said to have proved useful, both as a preventative and to those perceived to be disordered, causing a free discharge from the nostrils, and preventing its getting on the lungs. M. de Sauvage recommended the boils which appeared on the skins of the beasts being opened, and tents made of the inner bark of the wild currant inserted, being changed every four days, and fumigation with camphor, aud assafœtida burnt on live coals, with juniper berries and vinegar evaporated on hot tiles.

Aniseed, carraway seed, lavander seed, cummin seed, myrrh, bay berries, Spanish root, Virginia snake root, garlic, and rue enter largely into the composition of the various and nnmerous specifics recommended as infallable for this disorder. Indeed, it is remarkable, as the disorder continued its ravages, we hear less of bleeding and more of the use of cordial remedies. Alcohol and wines were also used, though it seems there was a prejudice against them. A writer in the *Gloucester Journal* says, "I say nothing of bleeding, as the success is, at the best, doubtful;" but he goes on to recommend cauteries, issues, or rowels as "beneficial," these with purging and quicksilver water and the mineral æthiops seem to have constituted his treatment.

Bleeding, and torturing the unfortunate animals by rowels, setons, &c, seems to have constituted the staple of the treatment, under which 80 per cent. of those affected died. Few advocated milder measures.

We are informed that in 1754, when the plague first broke out with violence in London, medicines and treatment of every kind seemed ineffectual, "everything yielded to its fury, and the artists themselves were often forced to fly for their own security. By degrees its violence abated, proper applications took effect, and what offered no relief at first, afterwards cured the patient." At first great numbers died, some

few recovering from the greater strength of the creature, and great care and constant alteration of the owner. But in 1747 we read—

"The case is now altered, the symptoms are become more moderate, and numbers recover, some with none, some with very little assistance, exclusive of the farmer's necessary attendance and warm housing.

"At first the progress of the disease was so quick that mortification had often seized the inward parts before it was taken notice of; bleeding in these circumstances only hastened death."

In 1757, Dr. D. P. Layard, M.D., Member of the Royal College of Physicians, published some remarks on this disease: in them he strongly recommends inocculation, stating that he had the testimony of many farmers in Huntingdonshire, Cambridgeshire, Lincolnshire, and Yorkshire, that the disease was never known to affect any animal more than once. Mr. J. Mehew, of Godmanchester, Hunts., had eight cows which had it in 1746. In 1749 and again in 1755—6 they lay in the midst of the sick cattle, but were never in the least affected, though they ate of the same hay and out of the same troughs. During these three years the distemper attacked all in the neighbourhood, except those who had previously been affected, and farmers in general being so convinced of their being secured from infection, that they were ready to give advanced prices for such. The inoculation produced the same distemper with much less malignity, and also secured against a second attack.

The Reverend the Dean of York inoculated five beasts by passing a skein of cotton, dipped in the matter, through a hole in the dewlap, like a seaton. Of these, one died, it being near the time for her calving; but the other four recovered, and, though they herded in the midst of infected cattle for a year together, were never again affected.

Mr. Bewley, a surgeon of Lincolnshire, inoculated three beasts, two years old, in the dewlap, with mucous from the nostrils, and all recovered and were herded with distempered cattle, without injury.

Dr. Layard recommends that cattle be inoculated about the middle of the shoulder or buttock, and on both sides. An incision to be made in the skin, about two inches in length, and not too deep, so as not to bleed much, just deep enough to hold a pledgit of tow, which has been dipped in the matter taken from a boil, full ripe, opened on the back of a young calf, recovering from the distemper. The wound to be sewed up, keeping the tow in it for forty-eight hours; afterwards, the wound to be dressed with yellow basilican, and, when healing, with the ceratum lapis calaminaris.

If it takes effect, the lips of the wound will appear grey and swollen on from the third to the sixth day. If the animals are costive, give a dose of Epsom salts; throw a light covering over them, and rub the coat well, night and morning, till boils rise. Warm hay water, with a little vinegar, to be given to drink plentifully, and cut hay and bran. Milk pottage causes scouring. After the crisis, purge gently, and gradually return to natural diet.

It was calculated that of those who took the disease naturally, eighty per cent. died, while of those inoculated, eighty per cent. recovered, only twenty per cent. dying.

Than typhus fever in the human subject, there is no disease that the skilful practitioner advances to meet in the human being with greater prospect of success, guided by the light of experience and science combined and one cannot help thinking that if the same principles were applied to the treatment of this disease in the animal, a similar success might be expected.

The value of our herds is an important item in the national ledger. We hear of some animals valued at scores and even hundreds of pounds. It is worth an effort to save the lives of animals like these: to kill and bury seems a very bungling and primitive mode of procedure. Surely some plan better than this can be adopted: this disease must be amenable to treatment. One is inclined to think not only a per centage, but the majority might be saved by prompt attention.

In the early stages of this disease, the objects to be sought are:—

By moderate purging, to clear the intestines of the acrid irritating matter already lodged there. This may be effected by mild purgatives, brisk, but not too severe in their action.

Secondly, this object being effected to check the diarrhœa by antacid astringents, combined with aromatic astringents.

Thirdly, to support the patient by non-irritating food.

Those called upon to treat this disease, would effect much good by carefully keeping these indications in view, and keeping an accurate account of both the cases, treatment, and result.

The Veterinary Surgeon has, in one respect, a great advantage; he is not called upon to attend cases in which the patient's health has been broken down by intemperance, or bodily excesses, or where the nervous system has been shattered by excessive mental exertion, as is too often the case with the medical man; and therefore we ought to look for an even less per centage of mortality.

In the first stage, especially if there be constipation, it is not improb-

able a moderate purgative dose of a mercurial preparation would be useful. In the cases treated at Miss Burdett Coutts, it was believed that calomel proved useful; the fault appears to have been in giving too large a dose (30 grains); five or at most ten grains would appear enough, with this might be combined jalap, aloes, or some similar aperient.

Drinks containing acetate of ammonia, carbonate of ammonia, or other alkaline carbonates, during the febribe stage, would be indicated; while, if the purging become severe, prepared chalk, with aromatic confection, catechu, either in powder or as a tincture, tannic acid, gallic acid, kino, and other astringent preparations should be given.

Directly collapse threatens, ammonia in various forms, either liquid or solid, would prove useful, with quinine and other preparations of bark and the vegetable tonics, Brandy and other spirits, as also wine, requires to be used carefully. Virgil particularly mentions that wine (of course meaning the common wines of the country, similar to the Bordeaux or vine ordinaire of the present day) proved very useful, and saved the lives of numbers. A good generous vintage wine is to be preferred in all cases of fever, and especially in those of a typhaid type amongst human beings, and it is most probable that genuine wine, containing a fair percentage of alcohol that has been no more than two years in bottle, a kind of wine worth between 20 and 30 shillings at most per dozen in this country would be better than older and costlier wines.

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