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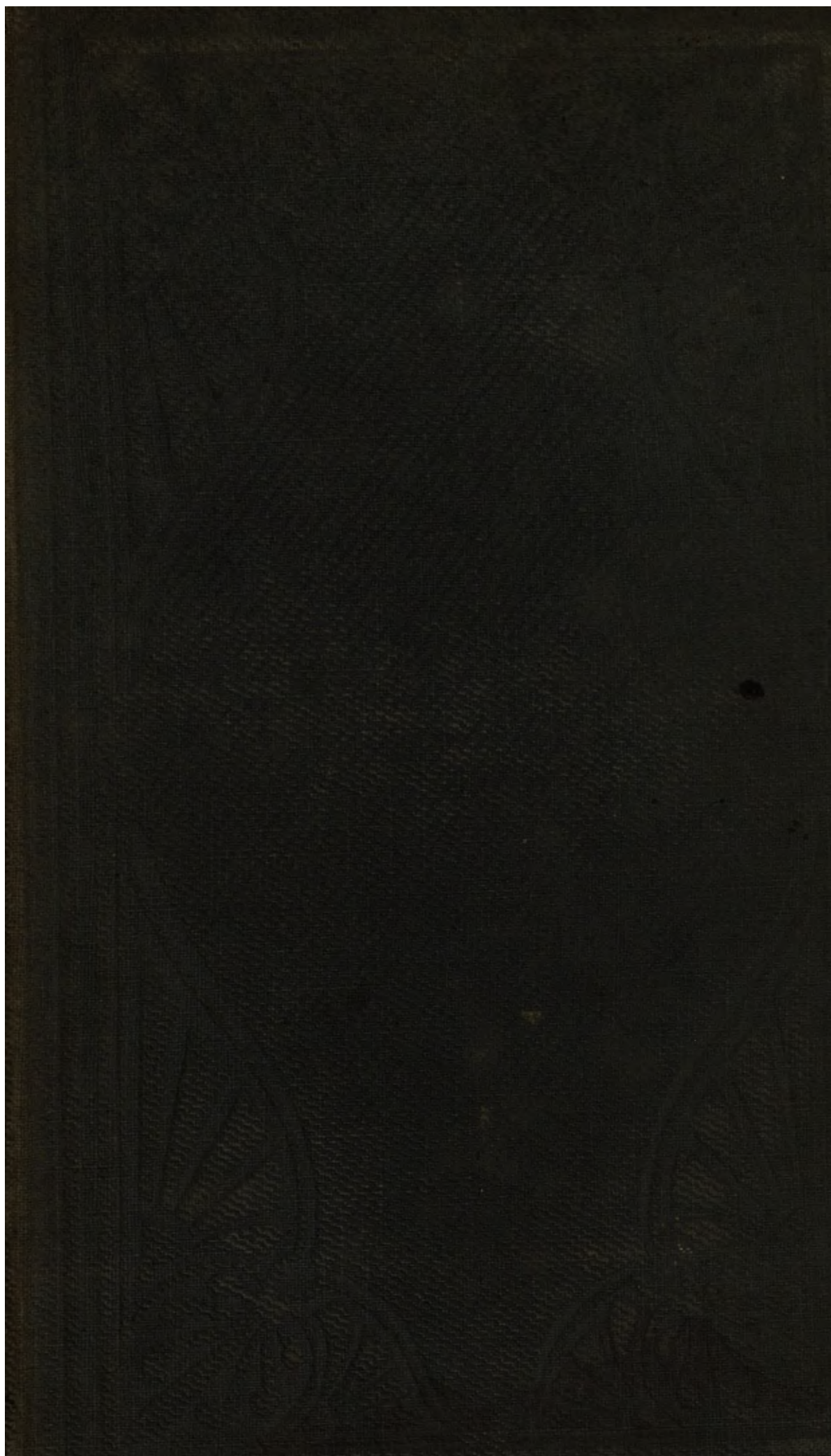
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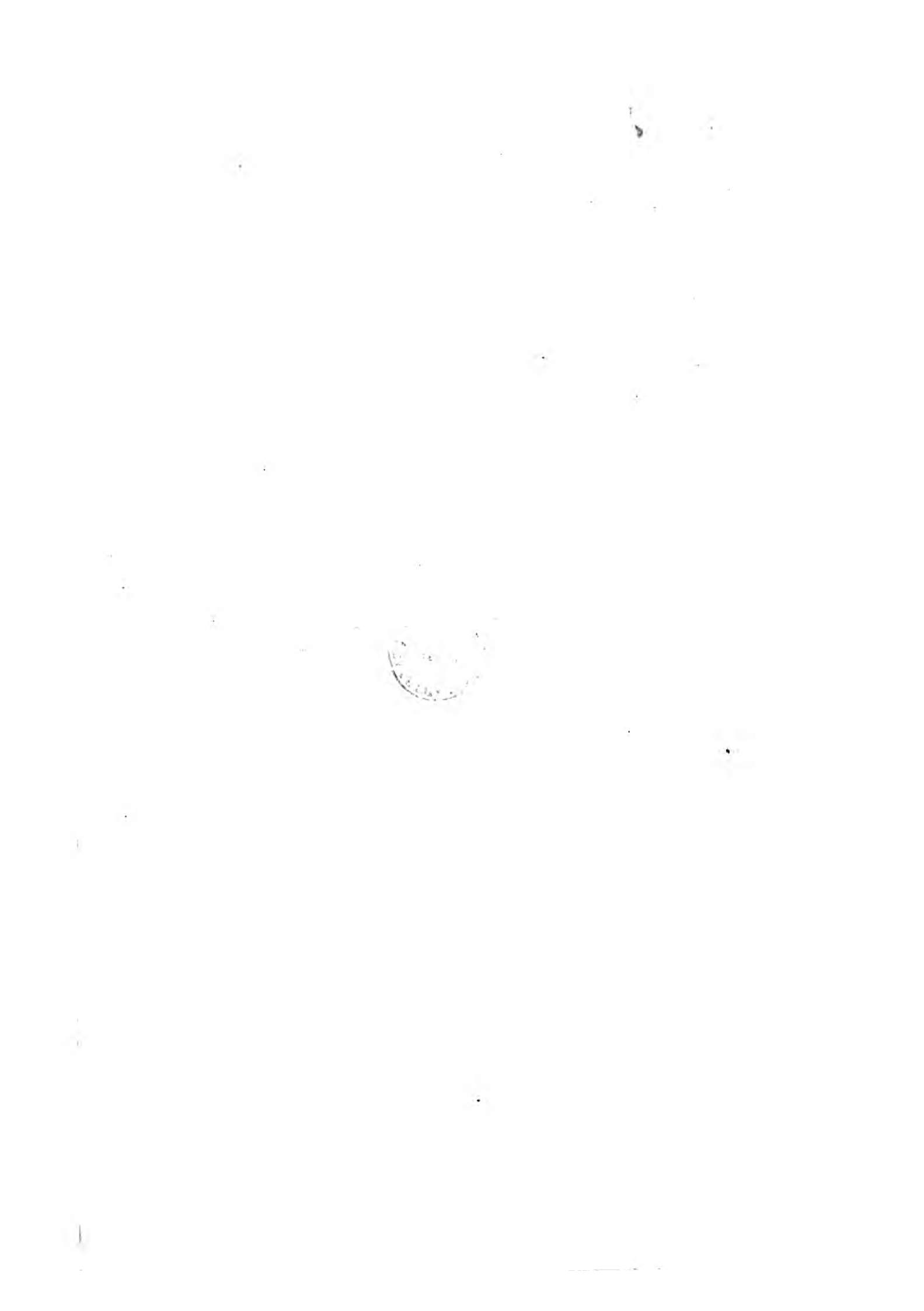
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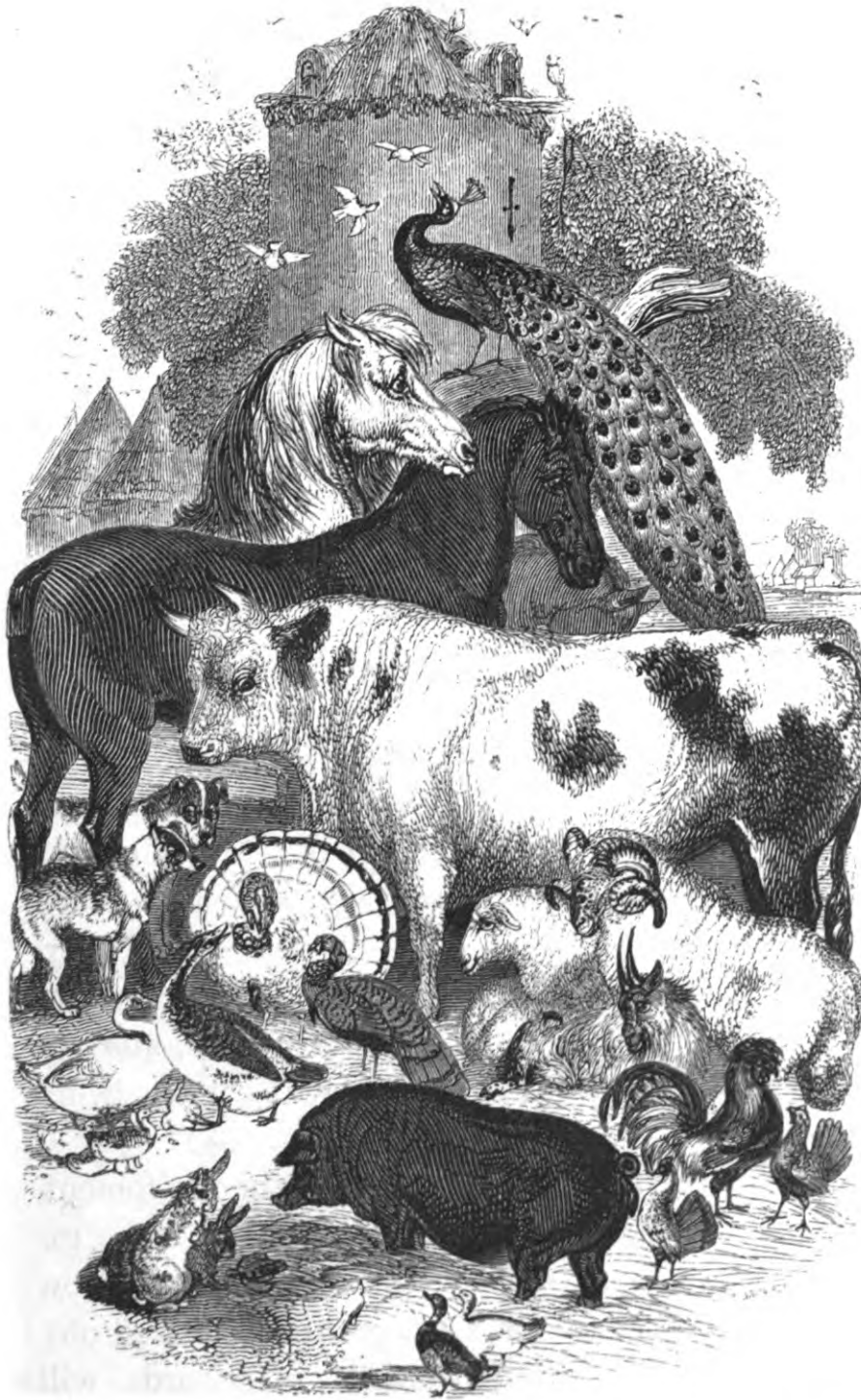
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CLATER'S EVERY MAN HIS OWN CATTLE DOCTOR.

LONDON: PUBLISHED BY CRADOCK AND Co. 1853.

EVERY MAN HIS OWN CATTLE DOCTOR;

CONTAINING THE

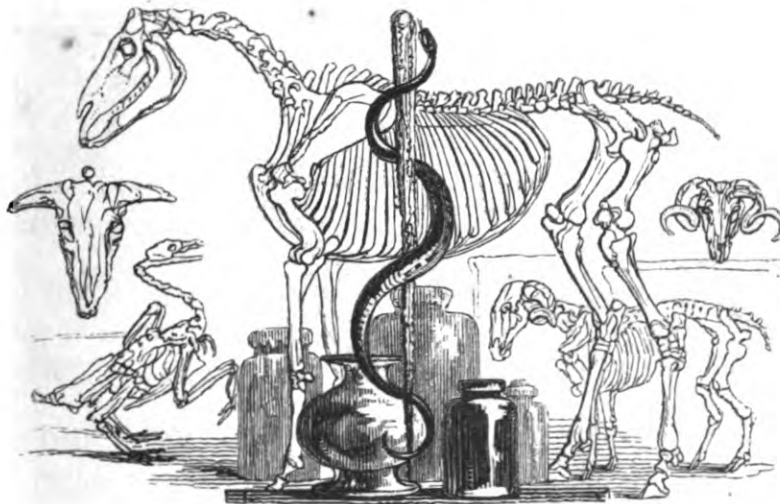
Causes, Symptoms, and Treatment of all the Diseases

INCIDENT TO

OXEN, SHEEP,
SWINE, POULTRY, AND RABBITS.

BY FRANCIS CLATER,

AUTHOR OF "EVERY MAN HIS OWN FARRIER."



Eleventh Edition, revised throughout,

AND CONTAINING MANY IMPORTANT ADDITIONS.

BY EDWARD MAYHEW,

MEMBER OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

LONDON :

PRINTED FOR CRADOCK & CO. ;

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1853.



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ADVERTISEMENT

TO THE

ELEVENTH EDITION.

THE continued patronage of the public having made it necessary to issue another Edition of this work, the publishers, to render it worthy of the high estimation in which it is universally held, have submitted it to the revision of a Member of the Royal College of Veterinary Surgeons, by whom all the most recent improvements have been introduced into the text, and descriptions of the symptoms and treatment of the disorders now raging among cattle and sheep have been added.

October, 1853.

PREFACE

TO THE

SEVENTH EDITION.

SINCE the publication of the last edition of this work, a kind of revolution has taken place in Cattle Medicine. Veterinary practitioners had been strangely forgetful of the proper extent of their professional duty, and the treatment of the diseases of cattle had, with few exceptions, (but among which we may justly rank the original author of "Every Man his own Cattle Doctor,") remained in the hands of the uneducated and the ignorant. It has now, however, begun to be understood that all domesticated animals are the legitimate objects of the veterinarian's care ; and veterinary surgeons of no mean eminence do not think it a degradation to practise on the diseases of cattle, and sheep, and dogs, and swine. Public lectures on these subjects are at length delivered, in the University of London,

and at Edinburgh, and a knowledge of this branch of veterinary medicine has wonderfully increased.

Under such circumstances the proprietors of this work have endeavoured to discharge their duty to the public. A new edition being required, they have obtained the assistance of an eminent practitioner of both horse and cattle medicine, who, while he has retained all that was useful in the former edition (and there was a great deal that was truly valuable, and particularly with regard to the symptoms of diseases), has endeavoured to keep pace with the progress of the art. The book is in a manner re-written, and the additions on the diseases of swine, poultry, and rabbits, now for the first time thrown into a regular and scientific form, in the English language, will be found peculiarly valuable. The List of Drugs used in veterinary practice will be exceedingly useful, not merely to the veterinary surgeon, but to every proprietor of cattle and sheep, and of animals still inferior.

June, 1832.

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INTRODUCTION.

ANATOMY AND PHYSIOLOGY

OF

NEAT CATTLE.

THE term Neat Cattle comprehends all the varieties of the Ox. This animal belongs to that numerous order termed *Ruminants*, from their singular property of bringing back their food into the mouth, after the first swallowing of it, in order that it may undergo a second and more perfect mastication.

Their distinguishing characteristics are the absence of front teeth in the upper jaw, whose place is supplied by a callous pad; the division of the stomach into four distinct compartments discharging essentially different functions; and the feet being cloven.

The ox, whether domestic or wild, and varying materially in appearance from difference of breed and climate and food, possesses certain characteristics, which separate him from all other ruminants: these are the strength and squareness of the skull—the horns, where there are any, invariably growing

from the crest or ridge of the forehead, projecting first laterally, and being composed of a horny case, covering a highly vascular membrane and a porous or cellular bone—the muzzle being broad, and devoid of hair, and moist—no mane on the neck—the dewlap generally deep, or hanging far towards the ground—only thirteen pairs of ribs—the tail reaching down almost to the heels, and the udder generally containing six teats, four of which alone yield milk, which last form a kind of square. It will be advantageous to take a rapid view of the different parts of the structure of the ox.

The *bones* are the most solid portions of the frame: they aid locomotion, sustain the soft parts, give shape to the animal, and protect the most important organs, as the brain, lungs, &c., from injury.

The bones, although solid, are perfectly organized, having blood-vessels, absorbents, and nerves: they are composed of a gelatinous matter, in which is deposited an earthy substance, consisting of phosphate and carbonate of lime, to which last-named substances they are indebted for their hardness.

The centre of almost all the bones is more or less hollow, and contains marrow. This substance does not seem to be necessary to the health of the bone, but it may be a reservoir of nutriment in case any particular state of the constitution should require it.

The bones are covered by a membrane called the *periosteum*, which gives attachment or hold to the muscles by which the bones are moved. The ends of the bones forming the joints, are tipped with *cartilage*, which is a polished elastic substance,

facilitating the motions of the heads of the bones upon each other, and preventing bad effects from concussion. Still more to avoid friction or concussion, these cartilages are lined by a membrane, which secretes an albuminous fluid,—the joint oil or *synovia*. The heads of the bones are held together by *ligaments*, and thus joints are formed. These ligaments are white, fibrous, and tough; possessed of sufficient flexibility to accommodate themselves to the various motions of the joints.

The Head.—The head, comprehending the skull and face of the animal, is composed of numerous bones closely united to each other. The skull contains and defends from injuries that important organ, the brain; and from it arise the five organs of sense, which minister so much to the enjoyment of the animal, viz. those of hearing, sight, taste, smell, and touch, which last in the ox resides in the tongue.

The Teeth.—Neat cattle have eight fore nipping or biting teeth in the lower jaw, and none in the upper one; twelve grinders in the lower jaw, and as many corresponding ones in the upper one. Each tooth has its crown and fang: the crown is all that part appearing without the gum; the fang is partly covered by the gum, but the larger portion of it lies deep-set within the bony jaw. The front teeth are principally composed of two substances—the internal bony part, and its covering, *the enamel*. This latter is exceedingly hard, and gives to the front teeth their cutting edge. The back teeth also possess enamel, and columns of enamel are let down into the body of these teeth. While the bone is gra-

dually worn away, the enamel always projects, and so there is formed a rough and uneven surface on the top of the grinders, admirably adapted for breaking down the food.

The teeth, although of firmer structure than the rest of the bones, are also supplied with nerves and blood-vessels.

How to ascertain the Age of Neat Cattle by their Teeth.—The calf is usually born with two fore or cutting teeth, and at a month old the whole eight are cut. The age is then guessed at by the wearing down of these teeth until the calf is eight months old, when they are narrower and smaller. At eight months the two centre teeth are smaller than the rest; and from that time until eighteen months the others gradually diminish, until the whole are very considerably lessened in size and stand apart from each other.

At two years old the two middle biting, nipping, or incisor teeth are pushed out, and succeeded by two permanent ones; at three there are four permanent teeth; six at four years; and all the eight at five, when the animal is said to be full-mouthed; but he is not actually so until six years old, when all the eight are level.

A good judge of cattle will generally determine the age with considerable accuracy for many years after that. From six to nine he will be guided by the wearing down of the teeth, and after that by the diminution in their bulk, as in the milk teeth. At nine the two middle fore teeth are evidently smaller and narrower than the rest; at ten the two next are

so; and so on until twelve, when, as in the steer of two years old, the teeth again begin to stand singularly apart from each other.

Age by the Horns.—The surface of the horn continues nearly smooth until the expiration of the second year of the animal's life, when a wrinkle or circle of thicker horn begins to be formed around the base. This is fully completed in a twelvemonth, and another ring then begins to appear, so that if the perfect rings or circles are counted, and two added to them, the age of the beast is supposed to be ascertained. These rings, however, are not always clear and distinct, and it is very easy to remove one or two of them with a rasp, at least to the unpractised eye, when the animal begins to be unmarketably old. In addition to this a well-known fact should be stated, that if a heifer takes the bull at about two years old, the first ring is formed a twelvemonth before its usual time, and, consequently, she would always appear to be, reckoning by her horns, a twelvemonth older than she really is.

After all, the age, as denoted by the horn, can only be calculated in the cow: these rings do not begin to appear in the ox or bull until the animal is five years old, and then they are frequently too confused to be accurately counted.

Young Cattle are, for the most part, best understood by the following names:—The Bull, while sucking, is called a *Bull Calf*; and from one to two years old, a *Stirk*, or a *Yearling Bull*; every year afterwards he is called a Bull of three, four, five, and six years old, beyond which period he becomes aged.

A young castrated male, after the first year, is called a *Stot-Calf*, or *Stirk-Stot*, and then a *Steer*; at four years old he receives the name of a *Bullock*. A female is at first called a *Quey-Calf*, and then a *Heifer* until the age of four years; she afterwards takes the name of a *Cow*, which is retained as long as she lives.

The *Neck* of the ox is comparatively shorter than in the horse. It consists of seven bones, each of which, although widened, is shortened and roughened, for the attachment of more flesh or muscles.

The *Chest* is the large bony cavity containing and defending from injury the heart and lungs. It is formed of the thirteen rack bones of the back, thirteen ribs on each side, and the breast-bone below and before. The ribs are so articulated with the spine as to allow of some considerable motion in respiration. It is of much importance that the chest should be wide and full, and at the same time deep in the girth; otherwise there will not be sufficient space without for the attachment of flesh, or room within for the heart and lungs to play. It is very desirable that the chest shall not be drawn up immediately behind the elbow. The accumulation of fleshy and fatty substance under the chest, and projecting before it, and which is called *the brisket*, is also an important point, as it is an earnest of a propensity to accumulate flesh and fat everywhere else.

Breadth across the loins is a valuable conformation, and more particularly length in the quarters, leaving space for plenty of muscle and fat being put

on these places, where the meat is of the finest grain and fetches the highest price.

The Fore Legs.—The *Shoulder Blade* is a broad, flat, and triangular-shaped bone, situated on the outside of the fore ribs. It is comparatively larger and more upright in the ox than in the horse. It is, however, a fault when the shoulders are too heavy; for there is then generally a deficiency about the choice parts.

The *Shoulder Bone* is a short and very strong bone extending from the cup of the shoulder blade to the fore arm.

The *Leg Bone*, or *Fore Arm*, is situated between the shoulder bone and knee, and it is the longest bone of the fore extremities. At the upper and back part of it is the process called the *elbow*. The fore arm should be large and muscular, and regularly tapering towards the knee.

The *Knee* consists of two rows of small bones, forming a compound joint of considerable strength, and allowing likewise of extensive motion.

The *Fore Leg*, or *Shank*, reaches from the knee to the upper pastern bones. It is of much consequence that it should be clean, fine, short, and small.

The leg is divided at the bottom of the shank bone, and there are two sets of pasterns and two hoofs to each leg. The pasterns should be small, and not too long; the feet, especially in working oxen, should point straight forward, and should be sound; and they should not be too close to each other, for this would indicate a narrow chest, that would be unfavourable to speedy fattening.

The Hind Legs.—The *Thigh Bone* is a large bone, extending from the cup-like cavity of the hip bone to the stifle. It is inclined obliquely forwards, or in a contrary direction to the arm bone, and its lower end articulates with the leg bone at the stifle. The flesh surrounding the thigh bone constitutes the quarters, which should be deep and large. The longer the thigh bone is, compared with those below it, the better; indeed it is of advantage that the flesh should extend down even to the hocks.

The *Leg Bone* reaches from the stifle to the hock, inclining obliquely backwards.

The *Hock* is a compound joint, somewhat like the knee of the fore extremities, but possessed of more varied motion. The hocks naturally approach each other much nearer in the ox than in the horse, and the hind legs diverge from each other below the hock, and stand considerably apart. In some cattle this is carried to such an extent as to become a great deformity—it indicates weakness and unthriftiness.

It will be unnecessary to describe the remaining bones of the hind leg and foot, as they closely resemble those of the fore leg, and have also the same names.

The Skin.—The hide or skin consists of two layers; the outermost called the *scarf skin*, and the innermost the *true skin*.

The *Scarf Skin*, or the outermost layer, is thicker on some parts than on others, as on the back and legs; and, being insensible, it defends the true skin from much injury. The scarf skin is that part which



is separated from the parts beneath by the action of a blister.

The *True Skin* is a thick, dense, and elastic substance, and is that from which leather is made. It is highly sensitive, and secretes the scarf skin, being largely supplied with nerves and blood-vessels.

The Hair.—The skin is covered with hair, which is not only an ornament to the beast, but tends to keep the body warm. The feeling of the skin, and the appearance of the hair, should be carefully observed. A softness and suppleness of the skin, and a kind of glossiness in the coat, not only indicate present health, but a disposition to thrive; while a hard, dry skin, clinging to the ribs, and a coat staring in every direction, show that there is something wrong in the constitution, and that it will be labour in vain to attempt to fatten such a beast. The eye-lashes and the hair within the ears seem principally designed to protect those parts from insects, moisture, or cold. The hairs at the end of the tail are longer and stronger than those of the rest of the body, in order the better to drive insects away from the skin.

Immediately under the skin is the *fleshy pannicle*, or *rhine*. It is a thin muscle, extending over the whole trunk, with the exception of the haunches. It is well supplied with nerves, and capable of very sudden, sharp, and extensive motion; and its chief use is to corrugate the skin for the purpose of shaking off flies, or anything that may annoy the animal.

The Fat.—On removing the hide and fleshy pannicle the fat comes into view, which is sometimes

in considerable quantity, particularly on the rump, loins, and ribs. There are also layers of it, in beasts in good condition, not only between the muscles, but mingled with the fibres of the muscles, giving a peculiar marbled appearance to the flesh.

Within the belly the kidneys are chiefly surrounded with fat; the omentum, or caul, contains a large quantity of it; and there is, also, a great deal about the intestines. It guards many parts that would be injured by pressure: it fills up a variety of interstices, and forms a reservoir of nutritive matter for the support of the animal under any accidental want of nourishment.

Connected with the fat is the *cellular membrane*, consisting of innumerable small cells, which communicate with each other through the whole of the body. There is sufficient but disgusting proof of this in the blowing up of the calf just killed. The crackling heard when the skin of cattle labouring under inflammatory fever is pressed upon, is another proof, for the gas which was produced by the commencement of putrefaction is forced through the neighbouring cells.

The cellular membrane is the connecting medium between almost all the component parts of the frame.

The Muscles.—The muscles are accumulations of fibres held together by cellular membrane, and by the contraction or tightening of them the various parts of the body are moved. They arise from some fixed point, and are inserted either by their substance, or by the intervention of tendon, into a bone or part that is moveable. To all these muscles are

sent nerves, by the influence of which they contract or shorten, and thus the bone or moveable part into which they are inserted is acted upon; or if both the parts whence they arise, and into which they are inserted are moveable, then both change their places.

There are other muscles, as those of the heart and the intestines, which are moved by nerves not under the influence of the will. It is proper that the powers of circulation and digestion should be perfectly independent of the will. The sources whence these powers are derived will be presently spoken of.

The Brain.—The brain is a pulpy substance contained in the cavity of the skull. By means of the spinal cord, which is continuous with the brain, and the nerves proceeding from it, the brain holds correspondence with the whole frame, imparting sensibility everywhere, and governing the motion of every part that is capable of voluntary action.

The five senses, viz., *seeing, hearing, touching, tasting, and smelling*, so necessary to the animal's existence and well-being, are all situated in the head, and, indeed, within the brain. The organs of these senses are the eyes, ears, the internal parts of the nose, and the tongue, which in the ox is the organ both of taste and touch. These have nerves sent to them from the brain, by which impressions made upon them are immediately communicated to that important organ, and the animal is rendered conscious of surrounding objects, and their forms and qualities.

Nine pairs of nerves arise from the base of the

brain, and proceed, through holes in the skull, to the face and head principally; but some of them wander farther, for the purposes of feeling and motion. The *first pair* are the nerves of smelling; they pursue a short course to the nose. The *second pair* go to the eyes, and are the nerves of vision: the *third* and *fourth pairs* are distributed to the muscles that move the globe of the eye. The *fifth pair* are very extensive nerves: they divide in three separate branches, which are distributed over the whole of the face, and in some degree give the various muscles the power of motion, but more particularly confer on the parts to which they go the faculty of feeling. The *sixth pair* go to the muscles of the eye. One division of the *seventh pair* is distributed over the internal parts of the ear, and on it depends the sense of hearing: the other portion is that from which the muscles of the face mainly derive their power of motion. The *eighth pair* are principally distributed over the organs contained in the chest and belly: they are the means by which the animal is made cognizant of sensation in those parts. The *ninth pair* go to the tongue for motion, the sense of taste being conferred by a branch of the fifth pair of nerves called the gustatory.

These nine pairs of nerves proceeding in regular succession from the brain, may be readily seen by gradually raising that organ from the fore part of the cavity of the skull.

The Spinal Marrow.—When the brain passes out through the large opening at the back part of the skull into the canal of the spine, it is called the

spinal cord or *marrow*. It extends nearly the length of the spine, and gives origin to numerous nerves, which pass through notches formed between the junction of each of the bones. These are distributed over the whole of the exterior, excepting that of the head, and to some of the internal organs of the body. They convey principally to the trunk and extremities the power of feeling and of moving.

The Organs of Circulation.—Every part of the body is supplied with blood by means of the heart and the vessels connected with it; and the regular course in which the current flows from the heart and back to it again is denominated the *circulation* of the *blood*.

The *Heart* is a hollow, involuntary, pulsating, muscular sac, situated about the middle of the chest, rather inclining to the left side, and is chiefly supported from the spine by means of the large arteries, and attached through its membranes to the breast-bone.

It may be considered as double; since it consists of two cavities on either side. The upper one, on the right side, the *auricle*, so called from its supposed resemblance to a dog's ear, receives the blood which has circulated through the frame, and pours it into the lower one, the *ventricle*. As soon as that is filled, it contracts upon its contents; and, as it closes, a membrane or valve rises, which prevents the return of the blood into the auricle, and forces it into vessels that carry it into the lungs, where it undergoes that purification which is necessary to sustain the life of the animal. Having been thus

purified, it is returned to the heart, and enters the left auricle; thence it is poured into the left ventricle, and, that contracting, and a similar membrane or valve rising, to prevent it flowing back into the auricle, it is sent into the main trunk of the arteries, and thus distributed over the whole of the frame.

The blood flows through the arteries by the force impressed upon it by the heart. This is felt in the pulsations of the arteries, which correspond with the contractions of the heart, and indicate not only the number but the nature of these contractions, and whether the heart is propelling a greater or smaller quantity of blood. By the number and the force of the pulsations the degree of fever is indicated with considerable certainty. The heat of the mouth, and of the base of the horns, will be important guides; but a much safer one, more clearly denoting the extent and the nature of the fever, is the action of the heart faithfully represented by the pulse. Wherever the finger can be placed on an artery that is not too thickly covered by cellular membrane or fat, and that has some firm substance beneath, the pulse may be felt; but most conveniently so where, at the back part of the lower jaw, the artery comes from the channel between the jaws, and passes over the edge of the jaw bone, to ramify on the face.

The natural pulse of the full-grown ox varies from 50 to 55 beats in a minute, but is quicker in the calf than in the cow, and also in milch cows than in oxen, particularly towards the period of parturition. A pulse much quicker, however, than that here stated denotes fever, inflammation, irritability, or

exhaustion, according to its character, strength, or weakness; whilst one much slower indicates sluggishness of the circulation, or debility.

There are many circumstances, however, to be taken into the account—as the force or the weakness of the heart's action—strong and bounding at the beginning of inflammatory fever, and weak and scarcely to be felt when that fever is assuming a putrid form. The regularity or irregularity of the pulse is also an important consideration as characterizing the kind of irritability under which the heart labours. They who have to do with cattle will find it of immense advantage to study the pulse, and especially in reference to the propriety of bleeding; for a large bleeding will, in some cases, cut the disease short at once, while at other times it would destroy the remaining strength of the animal, and ensure and hasten its death.

The blood flows through the arteries principally by the impulsive power of the heart. The arteries, however, possess a controlling influence independent of the heart, and can, under circumstances of necessity or disease, supply a deficiency of action in the heart, or neutralize its too violent efforts.

At the termination of the arteries, and branching from them at every point of their course, are other vessels as small as a hair, or a thousand times smaller, through which the blood must find its way. These are the *capillaries*, and in them, or in the glands into which they enter, all the important offices of secretion and nutrition are performed. These offices being discharged, and the various portions of

the frame being built up, the blood has materially changed. From being of a scarlet colour it has become almost black, and is no longer capable of supporting life—from arterial it is changed to venous—and these capillary vessels in which such change has taken place running into each other and gradually enlarging, at length give origin to the veins into which they pour the altered blood. The veins commence where the capillaries terminate, and by them the black blood is collected, and carried back to the heart, to be thence pumped into the lungs, for the purpose of repurification.

The blood traverses the veins also by the power of the heart, but exerted in a different way. When the ventricle, after having contracted upon its contents, opens again, it has a tendency to form a vacuum, to prevent which the blood, by a mechanical principle, viz., the pressure of the atmosphere, is propelled into the heart. The fire-engine is supplied with water from the reservoir by the same principle, although the pipe through which it flows may be a quarter of a mile in length. Besides this, the current is assisted by gravity, and by the contracting of the muscles, which, compressing the veins, urge onwards the vital stream. Where the course of the blood has to ascend against gravity, in order to assist it, there are numerous membranous valves, which open in the natural direction of the current, and close if the current inclines to flow backward. Almost all the veins connected with the muscles are abundantly supplied with such valves, so that, by every contraction of the muscle, or motion of the limb, the blood is forced on



more rapidly in its natural course, and the possibility of its retrograding is prevented. This accounts for the increased flow of blood on exercise, and the greater rapidity with which the blood escapes in venesection, when the jaw of the ox is moved by introducing the finger into the mouth.

The Organs of Respiration. — Respiration is so absolutely essential to the life of quadrupeds, that, if it is suspended for a few minutes, the animal dies suffocated. The act of respiration is the alternate reception and expulsion of air into and from the lungs; during which the blood traverses the vessels of the lungs, in the capillaries of which it is subjected to the action of this air, and changed by it, and rendered capable of supporting animal life. The air which is to effect a salutary change in the blood is received partly through the mouth, but mostly through the nostril in cattle, and enters

The *Windpipe*, a long tube situated in the forepart of the neck, and leading from the back of the mouth to the lungs. On the top of it is a cartilaginous substance, which permits the passage of the air either way, but closes the mouth of the windpipe when the animal swallows its food, and so prevents any substance from getting into this tube, and annoying, or perhaps destroying, the beast.

The principal length, however, of the windpipe consists of numerous circular rings composed of cartilage, and these are connected together by a strong ligamentous substance which is very elastic: these peculiar structures not only render the windpipe very flexible, but keep it constantly open. The

whole passage is lubricated with a viscid fluid, secreted from the membrane lining its internal surface.

Immediately before it arrives at the lungs, the windpipe divides into two distinct tubes, and these, as soon as they enter into the lungs, subdivide until they are too minute to be traced by the naked eye, and at length terminate in an innumerable series of minute cells. Upon the membrane lining these cells the capillaries of the vessels which have conveyed the venous blood to the lungs ramify, and there is nothing interposed between the air and the blood but the membrane forming the cells, and the thin covering of the minute blood-vessels.

The air is introduced into these cells in the following manner:—The chest and the belly are divided from each other by a very strong muscular and membranous expansion called the *diaphragm*, or midriff, or skirt. In its quiescent state it is of an arched form, and bulges considerably into the chest. When it is excited to action, it contracts; it becomes straighter; the bulging into the chest is diminished, and the cavity of the chest proportionally increased; and as at the same time the muscles which are between each rib, and which have the power to elevate or depress the ribs, likewise act and raise them, the cavity becomes yet more enlarged. The consequence of this necessarily is, that there would, if possible, be a vacuum between the lungs and the walls of the chest. To prevent this, by atmospheric pressure air is forced into the nose, passes down the windpipe, inflates and fills up the lungs, and is thus brought into contact with the blood. After a short time the

diaphragm and the muscles which raised the ribs cease to act, other muscles then come into operation; the diaphragm begins to bulge again into the chest, and the ribs to fall, and the cavity of the chest is contracted, and the lungs are squeezed into their former bulk, and the air which had entered is pressed out again.

A most important process, however, has been performed during this entrance and expulsion of the air. Both the air and the blood have been changed; the air has become poisonous, and the blood has become capable of supporting life. A great quantity of what used to be termed pure air, *oxygen*, has been taken from that which was inhaled; a portion of it during the circulation in the capillaries unites with the poison of the blood—the carbon—and forms carbonic acid gas—fixed air—which is expelled when the air is returned in the act of expiration; while another portion of it is devoted to secretion, or is employed in nourishing and building up the frame. The air has taken carbon from the blood, and communicated oxygen to it.

The inside of the chest, and of the diaphragm, and also the whole external surface of the lungs, are covered by a smooth membrane called the *pleura*, which secretes a serous fluid, which in its natural quantity preserves the surfaces moist, and prevents friction, which, when it exists, is speedily followed by dropsy of the chest.

The Organs of Digestion.—The food received by all animals affords, by the process of digestion, a nutritious fluid of a milky colour, called chyle;

which is absorbed into the system, and soon enters the circulating mass of blood, and becomes itself converted into blood: thereby repairing the waste that this fluid suffers in nourishing the body, and also supplying the materials for all the strangely various secretions. The organs of digestion in neat cattle are more complicated than in the horse, or in man; for the latter have only one stomach, but cattle have four stomachs. This, probably, renders them more liable, particularly in their present domesticated state, to diseases of the digestive organs.

The gullet is a thick fleshy canal that receives the food from the mouth, in its passage into the first stomach, and having afterwards returned it to the mouth for the purpose of remastication, once more receives it, and conveys it again into the rumen or paunch.

The grass is cropped, and having been slightly chewed is covered by the mucus of the mouth, and formed by the tongue into a kind of pellet that can be swallowed. It then passes down the gullet, and enters into the paunch; there it remains, and pellet after pellet descends until the paunch is nearly or quite filled. The animal then lies comfortably down. The food has all this time been macerating in the paunch, the inner membrane of which is lined with numerous little prominences or papillary glands, that secrete an alkaline fluid, which prevents or limits the process of fermentation, when fresh succulent vegetables are exposed to the united influence of warmth and moisture. While this has been going forward, the muscles which compose one of the coats of the

paunch have been constantly acting, and the food has travelled through the various compartments of the stomach, and every portion of it has been exposed to the influence of this fluid; and finally, that which was swallowed first, or which had been passed into the stomach many an hour before, and which had been considerably softened, and duly prepared, is ready to present itself first to be returned.

By a voluntary effort on the part of the animal the rumen is caused to contract or heave upwards, and with it the muscular pillars which run from the base of the gullet simultaneously shorten, drawing that tube downward towards the portion of prepared food which is likewise forced upward or presented for its acceptance. The gullet grasps the morsel, and so doing subjects it to compression, squeezing out the finer and more fluid parts, which, by the force of gravity, float or fall into the reticulum or second stomach.

By another slight effort the pellet embraced by the spiral muscles of that tube is returned to the mouth. The animal now ruminates at his leisure, and the pellet having been perfectly broken down by the grinding action of the teeth, and softened by an additional secretion from the glands of the mouth, is almost a semi-fluid mass; it is again swallowed, and a second time enters the rumen to again travel through the compartments of that stomach. When, however, it once more is presented at the base of the gullet, being semi-fluid, it cannot be firmly grasped by that tube, and therefore passes into the reticulum.

The reticulum or second stomach is a continuation

of the rumen or paunch, from which it is not positively divided, but from which it is distinguished by the thinness of its muscular coat and by the peculiarity of arrangement exhibited in its lining membrane. That membrane is formed into cells resembling those of a honeycomb. A greater surface for secretion is thereby obtained, but at the same time there is also by the inequalities of the surface created a power to retain the semi-fluid substances which it is destined to receive, and to sort it or remove any foreign substance that may be therein. Hence it is by no means unusual to find nails, pins, &c., sticking in the lining membrane of this stomach; to which they do little injury, but might cause serious irritation if they escaped into the next stomach. The reticulum, in fact, is the receptacle for the food which is fitted to pass into the more delicate third stomach or maniplies, and has little activity beyond what is needed for that office.

A very important hint here suggests itself with regard to medicines. That which is meant to have a speedy action on the constitution or the disease should be given in a fluid form: as the animal can regurgitate, the solid physic received into the stomach may be rejected by the mouth. Fluids cannot be thus returned, and though equally with solids they enter the rumen, being more readily absorbed, their effects are the more speedy. In sickness the ox will retain the solid contents of the rumen for weeks, and the mass then frequently decomposes before it is digested.

The third stomach is called the *manypus*, or

manypplies, or many-leaves. Through it fluid food would pass at once into the fourth stomach. Solids, however, do not find so speedy a passage, for from the floor of the stomach spring numerous curious leaves, formed by doublings of the lining membrane. They are of unequal sizes and float loose, almost filling up the space. Every portion of the semi-fluid food which is to pass into the fourth stomach, therefore, has to run between these leaves, which present upon their surfaces little hooks, that enable them to retain such particles as may not be sufficiently fine or sufficiently macerated for the reception of the next compartment. There they remain till they are softened, when, being no longer resistant, they pass onward.

The third stomach is the least powerful, having but one order of muscular fibres, whereas all the others are possessed of two. It is, however, largely supplied with blood, and hence we perceive nature has formed it to secrete rather than to grind, which was once supposed to be its function. By its secretion and warmth it further prepares the food, and fits it to be acted upon by the gastric juice, to which it will be immediately subjected.

The food arrives at last at the fourth or true digestive stomach—a long pouch or bag, abundantly supplied with blood-vessels, and lined with a membrane differing from that which was found in the preceding compartments. This membrane is very soft and called villous, that of the other stomachs being comparatively hard and termed cuticular. The villous membrane secretes the gastric juice, which is

a principal agent in digestion, and by means of which a portion of the food is converted into a fluid, called *chyme*.

From the presence of this gastric juice, the fourth stomach has the property of curdling milk. The prepared stomach or *maw* of calves is called rennet. It will be seen, as we go on, that this property of curdling milk is, in some states of the stomach or of the milk, an occasional source of disease.

The food, being thus prepared, passes through the lower orifice of the stomach into the intestines; and these are of enormous length, in order that every particle of nutriment may be extracted. They are twenty-two times the length of the body of the ox.

The food has not passed far into the first intestine ere it undergoes a new change. The secretions from the liver and the pancreas—the bile and the pancreatic juice—mingle with the food; and at the same time, and possibly influenced by these, the mass which has passed the stomach begins to separate into two parts, the one a white matter, constituting the nutritive portion, and called the *chyle*—the other, that which is afterwards to be expelled from the system. The separation is at first but partial: more and more nutritive matter is extracted as the mass rolls on, and at length, nothing that is useful remains.

This nutritive matter, the *chyle*, is taken up or absorbed by numerous minute vessels that arise from the inside of the bowels, and by them conducted to a larger vessel into the circulation, where

it is mixed with and converted into blood, and prepared for building up the various portions of the frame. All along the intestines this separation continues to be made, and these vessels at length convey away all the useful portion of the food.

In some herbivorous animals there is a provision made by a curious cell-like structure of the *colon* and *cæcum*, (the most considerable of the intestines,) for the retention of the residue of the food in them; but, in the ox and other ruminants, the food is so thoroughly prepared by the complicated mechanism of the four stomachs, and the course of the intestines is so lengthened, that this structure of the colon and cæcum is not needed, and they are neither of extraordinary size nor formed into cells.

All nutriment of every kind being extracted, and the residue having reached the last intestine, the *rectum*, it is hurried on to be expelled.

Several diseases to which the intestines of cattle are exposed having reference to, or being seated in, different coats or membranes of these tubes, it will be necessary to speak briefly of them. In the first place, they are all wrapped up in a very thin membrane that possesses considerable strength, called the *peritoneum*. It secretes a serous fluid, and thus prevents friction during the natural motion of the bowels over or among each other; encircling them all, it retains each pretty much in its place, and prevents too extensive or dangerous motion. The outer coat of the intestines is composed of a reflection or expansion of this membrane, which is liable to a peculiar inflammation. The second coat is muscular, and is

composed of a double layer of fibres, by the action of which the food is conveyed or pressed along the canal, and which is called the *peristaltic* motion. The inner coat is the *mucous* one, so called from the jelly-like substance which it secretes. It is thickly set with innumerable glands, and it is the seat of inflammation in over-purging.

The *Mesentery* is a duplicature of the peritoneum. By it the intestines are supported and are suspended from the spine. Within its folds the large intestines of the ox are contained, as also are the blood-vessels and nerves that supply the intestines, with the veins, and the lacteals. In different parts of the mesentery, various glandular bodies are seen: they are the mesenteric glands, the precise use of which is not known, except that they are connected with the passage of the chyle. The enlargement or obstruction of them is sometimes attended with very serious disease, and even with death. The *omentum*, or *caul*, is also a portion of the peritoneum. The use of it is to facilitate the motion of the intestines, which, during life, are in continuous action. In the ox it is very large, and, as in other animals, contains fat.

The *Liver* is a large gland, of a dark-red colour, situated in the belly on the right side, and secreting a bitter fluid named *bile*, or *GALL*. It receives the venous blood that returns from the contents of the belly, and which is probably so loaded with carbon that it could not all be discharged by the lungs. The venous blood is, therefore, sent into the liver, where it undergoes a process of purification to a certain extent. This inflammable matter, the carbon, is

separated in the form of bile, which is then conveyed into the bowels, where it is exceedingly useful, either in separating the chyle, or quickening the passage of the food, or both. The yellows in cattle is caused either by too great an increase of bile, or by obstruction of its passage into the intestines. In the first case, the surplus quantity is taken up by the absorbents, and enters into the circulation and tinges the blood yellow; and in the other case, accumulating in the liver, or the obstructed ducts, it is at length taken up by the vessels of those parts, and is carried over the frame.

The bile is received into a kind of reservoir called the gall-bladder, in which it is stored up for use: at the same time it is probably improved in activity by the absorption of some of the fluid parts of it.

The *pancreas*, or sweetbread, is a large gland, of a pinkish colour, adhering to the upper portion of the first small intestine and spine, secreting a fluid like saliva, termed the *pancreatic juice*, that is poured into the intestines, and assists in the process of digestion. Of the precise nature, however, of this fluid, or the manner in which digestion is promoted by it, we have no certain knowledge.

The *spleen*, or *milt*, is a large and oblong substance, of a dark purple hue, situated upon the paunch. Of the office discharged by the spleen we have no satisfactory information.

The Absorbents.—Every part of the body is continually changing. The worn-out portions are dissolved, and taken up by the absorbent vessels, and carried, like the chyle, into the circulation. They

mingle with and form part of the blood, and are converted again into nutritive matter. These absorbents, or, as they are sometimes called, *lymphatics*, are small transparent, elastic tubes, distributed to every surface, and every portion of the body, external and internal.

The trunks of the absorbents are arranged into two systems, one of which lies near the surface of the body, and the other is more deeply seated; and both follow the course of the neighbouring veins. They have valves like the veins, and pour their contents into the circulation.

The *lymphatic glands* form a prominent part of the absorbent system. They answer some valuable purpose, for every absorbent, in performing its course, passes through one or more of these glands. They are seen in the mesentery when the animal is opened, and they can be plainly felt in the neck and under the jaw.

The Blood.—The blood is incessantly circulating in the heart, and arteries, and veins, through every part of the body, supplying materials for its nourishment and growth, and for the various secretions. The different parts of the system are constantly receiving and appropriating to themselves those elements of the blood which are proper to supply the waste they sustain from the necessary actions of life; consequently the health and vigour of the body require a new, daily, and liberal supply of fresh blood. That supply is in some measure derived from the absorbent vessels and from the air taken into the lungs, but chiefly from the chyle, which is separated from the food in the process of digestion.

Blood, received into a vessel in the act of bleeding, soon separates into two parts; one of which is fluid, and called *serum*, the other solid, and called *red clot*, or *cake*, or *crassamentum*.

Serum is the watery part of the blood, and surrounds the red clot. When it is heated to 160 degrees of Fahrenheit's thermometer, a portion of it coagulates like the white of an egg; but it has no appearance of being organized.

Red Clot, or *Crassamentum*, coagulates spontaneously; and is found to consist of two parts, namely, a fibrous substance called coagulable lymph, and a great number of extremely small red globules, which give colour to the blood.

Secretion.—There are separated from the general mass of blood, by certain organs denominated glands, different kinds of fluids, subservient to various purposes; and the process by which they are thus separated is termed *secretion*.

The glands on the internal coat of the stomach secrete the gastric juice, the liver secretes the bile, and the saliva is derived from the glands, which pour their contents into the mouth. In some cases secretion seems to be a mere filtration or separation of certain substances from the blood: in others it is the formation of a new substance that did not previously exist there. With regard to the structure of the glands, they consist of a great number of small blood-vessels encircling the minute ends of the ducts or tubes, which receive and pour forth the secretion after it has been separated from the blood.

The secretions are exceedingly numerous, very

different in their character, and all subservient to some useful purpose. The most important secretion connected with the cow is that of milk, which is formed in that large and complicated gland, the udder, to which so many blood vessels are directed.

The functions of the glands are much affected by disease. The secretion is sometimes suspended. In dropping after calving, and in constipation, the secretions of the udder and the bowels partially or entirely cease. At other times the fluids which they afford are considerably increased. In purging, the glandular follicles of the bowels pour out a great quantity of aqueous fluid. Occasionally the character of the secretion is changed. The discharge of mucus from the nose, under some diseases, and the fluid which escapes from the bowels in dysentery, are very acrid and irritating.

Perspiration.—A fluid is continually passing off from the surface of the body in the form of an invisible vapour; and when, from exercise or other causes, the quantity is increased, it becomes visible like a thick steam, and collects upon the skin and wets the hair, or falls in drops. This is the perspiration or sweat. It is necessary to health that a considerable quantity of fluid should escape in this way. When, from sudden exposure to cold, this discharge from the skin is suppressed, either generally or in a particular part, rheumatism, or hoose, or catarrh, is often the result. Various states of the constitution, and various diseases, will also materially influence the discharge. A cessation of it is by turns the consequence and the cause of disease. The constant

evaporation which, during health, is taking place through what is termed insensible perspiration, keeps the skin cool. In disease, when the coat stares the perspiration is stopped, and the skin becoming hot and feverish, draws up or contracts, turning the hair in different ways: when the coat is smooth and glossy, it is caused by the perspiration rendering the skin cool, moist, and supple, and thus permitting the hair to take its natural direction. We judge with considerable accuracy of the health of the animal by the appearance of the coat, because in health the perspiration flows naturally, and in disease it may be unduly increased, though oftener suspended.

The Organs of Urine.—The *kidneys* are two in number, of an oblong shape, situated in the loins on each side of the spine, and embedded in fat. They are of a deep red colour, and divided externally into between twenty and thirty distinct lobes, or portions; each portion has its distinct ducts, which empty into a string of basins that communicate with one another; and so with the ducts called ureters, which convey the urine from the kidneys to the bladder.

Within the bladder the urine is retained till a sufficient quantity has accumulated to excite the receiving organ to contract, when it is forced into the urethra, and thence expelled upon the ground. A great quantity of blood is continually circulating through the kidneys, and they, being glandular bodies, separate from it a fluid called urine. The peculiar ingredient of the urine, *urea*, contains a great quantity of a substance or gas, called *nitrogen*.

It would therefore seem that the kidney is the organ by which any dangerous excess of nitrogen in the constitution is removed. Besides the urea, nearly twenty different salts and compounds have been discovered: so that the kidney is a gland of immense importance in preventing the unhealthy accumulation of these matters. It likewise is ready to act instead of any other part of the frame that may happen to be diseased or out of order. When the absorbents are unable to carry off the fluid received into the stomach, or the lungs or the skin refuse to throw off their share of perspirable matter, the kidneys supply their place, and by an increased flow of urine prevent disease and danger.

The *Peritoneum* is a strong and extensive membrane, lining the internal surface of the belly, and covering all the organs contained therein. It secretes a fluid which keeps the surface of the intestines moist, and thus allows free motion between them; yet at the same time enwrapping them on every side, each is kept in its proper situation, and strength and support are given to the whole.

The *Omentum*, or *Caul*, is a broad mass of fat contained within two layers of peritoneum. It covers a great part of the four stomachs and some of the intestines. Its use is probably somewhat similar to that of the peritoneum: it supports the intestines, and it prevents them from being injured in the various motions of the body, and in passing over one another.

The Uterus and Pregnancy.—Reaching from the external parts of generation in the cow, the body of

it projecting beyond the bladder, and the two prolongations or horns of it floating loose in the belly, is the uterus or womb, in which the unborn calf is contained and nourished. At the extremity of each of the horns of the womb is a small canal or tube, conducting to an oval body of the size of an egg, containing numerous little vesicles or bladders called ova, or eggs; and the organs which contain them are denominated the *ovaries*. At the time of conception one of these ova escapes, and slowly descends the tube and enters the womb. It is the germ of the future animal, but scarcely larger than a pea. Arrived in the womb it floats there awhile, and at length becomes attached to some portion of it. When it descended, the ova or egg was enveloped by two membranes or coats, and two others now rapidly form over it from the uterus. They are exceedingly vascular, and by means of them, and the vessels proceeding from them, the blood which has circulated through the little body is purified.

At the fourth week it has attained the size of a mouse, and every limb is to be seen nearly perfect, although in miniature. It has eyes, although at present it sees not, and a mouth, but no food enters it: the lungs perform no office, and the stomach receives no nourishment; but its union with the body of the mother is sufficient for its growth.

In the cow and other ruminants, the membranes of the newly developed young, and external surface of the uterus, are firmly joined together by several red prominences. These prominences are proper to each, and each consists of innumerable convolutions

of very fine vessels. Thus the blood of the foetus passes near to the blood of the mother, whence the first-named fluid extracts oxygen, and then returns to nourish and contribute to the growth of the unborn calf.

In the fourth month the foetal calf is large, but the skin is not covered with hair. About the sixth or seventh month the hair has spread over it, and at the expiration of nine months the animal is sufficiently well formed and strong to change its mode of existence. The womb has now attained its greatest degree of distension: it becomes irritated; its muscular fibres begin to contract; labour comes on, and, assisted by the diaphragm and abdominal muscles, the calf and its membranes are expelled, and the young animal is born.

As the pelvis, from its horizontal position, may safely be much larger in these animals than in the human female, parturition is, generally speaking, not dangerous or very painful in the quadruped. Difficult labours, however, and false presentations will sometimes occur, of which notice will be taken in the proper place.

There has been much dispute to ascertain what it is that causes the calf first to breathe. If we consider it has hitherto peacefully floated in a very warm fluid; that at the time of parturition the fluid is expelled; and at the same time the uterus contracts upon the foetus with a force sufficient to drive all sensation from the arm of a strong man. That the "little stranger" has to endure these contractions—that its soft resting-place is gone, and it is moreover

like a stranded fish—that it is further expelled from a soft abiding place of a warmth of 100 into a harsh air which may be below 50 degrees, or very, very cold—that lastly, the union between it and the mother is snapped as it falls to the earth, and that the blood then ceasing to be purified, the calf experiences all the pangs of suffocation—surely in all these causes united we can discover a reason why life should perform a spasmodic act, and thereby inflate the lungs.

The Udder.—The *udder* is a large glandular organ, destined to secrete milk for the nourishment of the young calf. As the produce of the cow is confined to one, or at most to two calves at a birth, the udder would perhaps have been only double, as in the mare, were it not that this animal is intended to yield the greater part of her milk for the nourishment of man. The fruitful bag is therefore quadruple, or there are four distinct partitions of it.

The udder is principally made up of numerous minute branches of blood-vessels, from the capillaries of which the milk is secreted. This secretion is always going on. The bag of a milch cow is always gradually filling, yet a considerable proportion of that which is given is secreted at the time of milking: for it must be evident to the most careless observer, that the udder could not possibly contain one-half of the milk which a good dairy cow will sometimes yield. The milk is also given in greater or less quantities at the will of the animal. A cow will sometimes not yield a drop of milk to a stranger calf, while to her own she will pour it out in abundance.



ON
THE DISEASES
OF
HORNED CATTLE.

CHAPTER I.

INFLAMMATION.

INFLAMMATION is the most frequent diseased condition to which neat cattle are subject. This may be owing to their peculiar organization in respect to the four stomachs, in which the food is completely prepared and digested, so as to yield all its nutriment. This complicated apparatus was necessary in the animals that were destined to afford us so much liquid nutriment while living, and flesh when dead; and who must therefore be disposed to an occasional redundancy of blood in the system, and consequently to inflammation.

External inflammation is known by the part being *swollen, tender, and hotter* than in its natural state. In garget, or downfall of the udder, which is an inflammation of one or more quarters of the bag, the affected parts are swollen, tender, and hot.

If this state of the bag is neglected, matter or pus will probably be formed. This is one of the consequences of inflammation which is usually denominated the *suppurative process*.

Should, however, the downfall be judiciously treated, the swelling subsides, and the heat and tenderness gradually vanish. The inflammation, in this case, is said to be *resolved*. This is most to be wished for, and should always be the object sought in inflammatory complaints.

In black-leg, a disease frequent in young cattle, the affected part loses its sensibility, and becomes dark-coloured and cold, and is said to be *mortified*. It is then speedily separated, or ought to be separated, from the living portions around. Mortification is usually the result of *violent* inflammation, by which the texture of the part is speedily broken down, and its vitality destroyed.

External inflammation most frequently proceeds from wounds, or bruises, or other accidents to which cattle are liable. These produce different effects, according to the peculiarities of the injury. When the inflammation runs high, or continues long, it affects the whole system, and brings on fever; or, in other words, a certain degree of inflammatory action pervades the entire frame.

External inflammation sometimes results from causes which affect the whole system, but the chief mischief of which is determined to particular parts, from previous weakness in them, or disposition to take on disease. This is the case with inflammation of the udder of cows, or the joints of young cattle.

The whole frame had been exposed to cold; but the udder of the cow that had lately calved was very much disposed to become diseased, and the joints of young cattle had not acquired their full strength, wherefore they were the more liable to be attacked. In inflammatory fever, also, the inflammation will settle in particular parts, from causes which it is impossible to explain, as in the tongue in blain, and in the limbs in quarter evil.

The *swelling* and *heat* of the inflamed part is principally to be ascribed to excited vitality or the increased quantity of blood passing through it. Every little vessel is distended by the additional fluid it is compelled to carry; and there is likewise a greater deposition of fluid and solid matter in the cellular texture of the inflamed part; for in the early stage of inflammation, when the swelling appears, every secretory vessel is doing increased duty in proportion to the blood with which it is supplied.

In the minute ramifications of the vessels, the blood is changed from arterial to venous; and it is while this change is effecting that animal *heat* is extricated or produced. In inflammation, a great deal more than the natural quantity of blood is passing through these vessels: a great deal more is changed from arterial to venous; and a great deal more heat must necessarily be evolved. This excess of heat is rendered the more conspicuous by the skin not yielding its natural perspiration, which would cool the surface of the inflamed part.

The *tenderness* is caused by the unnatural distention of the vessels, and by their pressure on the

neighbouring nerves, as well as by the pressure of the natural deposit produced by inflammation upon the same structures. The nerves are likewise made the more sensitive by the excess of blood flowing through the inflamed part; for between the nervous and vascular system there exists such sympathy, that one cannot be excited and the other remain unaffected.

Internal Inflammation.

Internal inflammation is characterised by other and often more indistinct symptoms. We can here seldom ascertain the heat, or tenderness, or swelling of the part, and can usually only judge of the complaint by the effect which it produces on the system. Every internal inflammation does, however, soon affect the entire body. There is no inflammation of any important internal part that is not quickly accompanied by fever; and that fever, and the degree of it, are easily ascertained by the heat of the breath, and the mouth, and the base of the horn, by the redness of the eye, and the frequency and hardness of the pulse, the loss of appetite, and, very often, by costiveness and the cessation of rumination.

The symptoms of internal inflammation will be related as the inflammation of each part comes before us.

Whether inflammation is internal or external, resolution is to be attempted, or, in other words, the inflammation is to be subdued before it induces any unnatural deposit or change of structure.

When in an acute or violent form it seizes any important organ, as the *brain, lungs, bowels, kidneys, eyes, udder, or womb*, depletive measures, adapted to

the age, condition, and constitution of the animal, are to be recommended, especially in the earlier stage of the affection. Those measures consist in spare food, abstraction of blood, administration of cathartics, application of blisters and insertion of setons, &c., according to the symptoms of the case.

In external inflammation from severe bruises, wounds, and other accidents, fomentation with warm water, poultices made of linseed meal—when they can be applied—and the purging drink (No. 2), give much relief. If the external inflammation be considerable, it may be necessary to bleed the beast, but the blood is best abstracted from some vessel near to, or proceeding from, the diseased part.

CHAPTER II.

BLEEDING, ITS UTILITY — AND IN WHAT CASES NECESSARY.

BLEEDING is a useful and powerful remedy in the cure of inflammatory complaints. It lessens the quantity of blood in the vessels, and diminishes nervous irritability. The following are the chief diseases in which bleeding may be required:—

1. Where animals in a thriving state rub themselves until the hair comes off, and the spot is covered with a dry scab; while at the same time the eyes appear dull, languid, red, or inflamed, the

breath hot, and the veins puffed up, the pulse being strong, and the beast showing an irritable disposition.

2. In the first commencement of inflammatory diseases, as of the *brain, lungs, kidneys, bowels, eyes, womb, bladder, shape, and udder.*

3. In bruises, hurts, wounds upon the head, strains in different parts, and all other accidents that may occur to the animal, when such injuries are productive of considerable inflammation, bleeding will be proper; but it should not be on every occasion hastily adopted, since the fluid may be required to repair the damage which the body has sustained.

This operation, however, should always be undertaken with caution. Of late years the diseases of cattle have evinced a tendency to assume a low or typhoid character, and the beast being of a dull and loose habit does not readily recover from those shocks to the system which the horse bears with impunity.

The manner of performing this operation is too well known to require any description.

The *Fleam* is an instrument in general use for oxen, and the jugular or neck vein is that which is mostly opened. Local bleeding is, however, in many cases, particularly serviceable. In inflammation of the eye, the eye-vein is frequently cut; in foot-halt, we sometimes bleed at the toe; and in inflammation of the bowels, or the udder, or even of the chest, blood is advantageously taken from the milk vein.

The quantity of blood that it may be proper to

take away at one time cannot here be determined; but must be regulated by the size, strength, and condition of the animal, and the state of disease under which he labours. In some few inflammatory complaints, as of the brain, too much can hardly be taken, provided the bleeding is stopped as soon as the patient appears likely to faint or to fall down. A strong healthy beast may bear the loss of five or six quarts of blood; seven or eight quarts may sometimes be taken away with decided advantage: but when it is necessary to repeat the bleeding, the degree of fever and the strength of the beast will regulate the quantity. Small beasts, however, will often bear a greater loss of blood than those of larger frame. Size is no guide in that respect, and cattle, in proportion as they are fat, endure the abstraction of the less blood. Lean beasts, if not at the same time low in condition, or weak in body, and also working oxen, can part with a greater quantity of the vital fluid than those animals which are ready for the market. Cows pent up in towns, and stall-fed beasts must be less freely blooded than such as are at grass, or in the country. The quickness of the pulse, moreover, is no guide, for its number increases with debility; but the strength and character of the pulse ought alone to be consulted. Who does not understand to interpret the indications of the arteries ought to be very cautious how he employs the fleam. The blood, when taken, should flow in a full stream from a large orifice, for sudden depletion is far more speedy and powerful in its operation than when the blood is suffered slowly to trickle down from a small opening. The

blood, under ordinary circumstances, should *never be suffered to fall upon the ground, but should be received into a measure*, in order that the quantity taken may be known. No absolute quantity of blood should ever be prescribed, but when extensive bleeding is demanded, the stream should flow until the pulse falters, or intermits, or the animal begins to heave violently, or threatens to fall, or other circumstances show that the system is sufficiently affected. When, after a vein is opened, the blood does not gush forth, but feebly trickles in thick black drops from the orifice, the ox should be immediately released, as there is then no power to sustain the operation. The beast should not be permitted to drink cold water immediately after bleeding, nor to graze in the field: the former has sometimes induced troublesome catarrh, and the latter may cause the orifice to open again. If this operation is performed in the summer season, it will be most prudent to fetch the cattle out of the pasture towards evening, in order that they may be bled; and, after that, to let them stand in the fold-yard all night, and drive them back to the field on the following morning.

CHAPTER III.

ON PHYSIC.

PURGING medicines operate by increasing the evacuation of fæces from the bowels, and thus often removing a very considerable source of irritation. They augment the secretion of the exhalent vessels situated on the internal coat of the intestines, and thus, by producing watery stools, lessen the quantity of fluid circulating through the system. They divert the increased flow of the blood from the affected organ, and determine it to the bowels; and when judiciously administered they have a peculiar influence on the nervous system, augmenting the energy of the nerves distributed to the intestines, but diminishing it in other parts of the system.

The chief purgatives in use for neat cattle are Epsom salts, Barbadoes aloes, Linseed oil, and Sulphur. One pound of Epsom salts will purge a full-sized beast. Aloes are very properly getting into disuse: they are uncertain in their effect, they require very considerable doses of them to be given in order to act alone, and if they should be received into the rumen they are apt to disgust and nauseate the animal. Where there is considerable fever, or the attack of fever is apprehended, there is, as a general rule, no purgative so beneficial as the Epsom salts. In bad cases, twenty-four ounces may be given at a dose, and eight ounces of sulphur every six hours

afterwards, until the full purgative effect is produced. Linseed oil is rapidly superseding the more expensive and the more uncertain castor oil: the dose is from a pint to a pint and a half. As a mild aperient, and in cases where there is no great degree of fever, and a violent purge is not required, there are few better things than Sulphur. Where nothing else is at hand, and the case is urgent, Common Salt is no contemptible medicine: a pound of it dissolved in water will produce a very fair purgative effect, but it should not be given if the animal labours under fever. The following are the cases in which purgative medicines are found useful:—

1. I have known some graziers who, when feeding old cows (during summer), have given them a mild purging drink of common salt about every six weeks, which generally has had a good effect, and has even caused them to fatten more rapidly; but sometimes has produced consequences the reverse of those desired.

2. A purging drink is very properly given to cows soon after calving, especially if the system be feverish, and the bowels in any degree constipated.

3. Neat cattle are naturally of a greedy and ravenous disposition, and their appetites are hardly ever satisfied. Milch cows in particular, if feeding on herbage, or other food agreeable to their palate, will often continue to graze until they are in danger of suffocation. Thus the powers of digestion become over-burdened, and the animal appears dull and heavy, and feverish symptoms are induced. Purgatives will give the most effectual relief in these

cases, and, if the appetite does not return soon after the physic has freely operated, a cordial ball dissolved in a pint of warm ale will be useful in restoring it.

4. Cows that are turned into fresh pastures sometimes become bound in their body, in which case a purging drink must be immediately administered, and repeated every twelve hours, until the desired effect is obtained: a clyster should be given, if the first drink does not operate. If the costiveness is accompanied with pain and feverish symptoms, inflammation of the bowels is to be suspected, and must be treated accordingly.

5. When red-water is recent, a purging drink or two will often completely remove it.

6. In the yellows it is generally necessary to give a purging drink, and, after that, cordial tonic drinks, in order to invigorate the digestive organs.

7. When medicines are given to prevent cows from slipping their calves, a purging drink is generally mingled with them, the digestive organs being in such cases generally disordered.

8. In most inflammatory complaints, a purging drink should be administered after the bleeding.

9. If external inflammation, occasioned by wounds, bruises, and other causes, runs too high, and affects the whole system, purgative medicines to remove the constipation which is mostly present during this state of body are of the greatest service.

CHAPTER IV.

ON SETONING.

THE utility of setoning for the cure of several diseases incident to neat cattle cannot be doubted.

In some districts the hoose in calves is very prevalent and fatal: where this is the case, they should all be setoned when they are getting into condition, and before they are attacked by the disease. This may either lessen the violence of the complaint, or prevent it altogether.

In joint evil, I have frequently inserted a seton in the dewlap with decided good effect.

Setoning will be often prescribed, in the course of this treatise, in inflammatory complaints; and it acts by exciting a new and artificial inflammation, and thus lessening the intensity of the disease. This plainly proceeds on the principle of diverting to another part a portion of the blood which was determined to the original one, while also a new direction is given to a portion of the nervous influence or power which was concentrated on the seat of the original disease. This is in accordance with the generally received medical maxim, that no two violent inflammations can exist in the same body at the same time; and that in proportion to the intensity of the one the other will be diminished.

By the discharge which a seton produces, it will likewise relieve the overloaded vessels of a neighbour-

ing inflamed part, and by establishing a species of drain for morbid matter, likewise tends to clear the system.

Mode of inserting a Seton.—The seton is commonly made of tow and horse-hair plaited together, or cord or coarse tape alone. When this latter alone is used, it is well to prepare the tape with the Terebinthinate of Cantharides, after the plan proposed by Mr. Morton. The seton, of whatever it may consist, should be tolerably thick, and of sufficient length. The seton being ready, an assistant is to hold the animal, while the seton-needle, with the tape or other material affixed to it, is plunged into the upper edge of the brisket or dewlap, and brought out again towards its lower edge: the space between the two openings should be from four to eight inches in length. The seton is to be secured by fastening a small piece of wood, or tying a large knot at either end of the cord. Matter will generally begin to run the second day, and, after that, the cord should be drawn backwards and forwards two or three times every day, in order to irritate the parts, and by this means increase the discharge.

When this measure is had recourse to in inflammatory complaints, the seton may be dipped in the following blistering ointment:—

Blistering Ointment.

TAKE—Yellow basilicon, one ounce ;
Cantharides, in powder, three drachms ;
Spirit of turpentine, two fluid drachms.

This ointment will be found to act efficaciously and quickly in stimulating the parts to action, and hastening on the suppurative process.

The root of the common dock forms a very good adjunct to a seton, and one that will act speedily and powerfully ; but the best of all, where a considerable effect is intended to be produced, is the root of the black hellebore. This will very quickly cause considerable swelling as well as discharge. Black hellebore, however, being very energetic in its action, should not be used too freely. A few small pieces of the root fixed or sewed into the seton will produce all the desired effect, and even then it should be watched.

CHAPTER V.

COLD AND COUGH—HOOSE.

A SIMPLE cold, attended by slight cough and discharge from the nostrils, is easily removed. Warm housing, a few mashes, and the following drink, will usually succeed :—

RECIPE (No. 1).

Cough and Fever Drink.

TAKE—Emetic tartar, half a drachm ;
Powdered digitalis, half a drachm ; and
Nitre, three drachms.

Mix, and give in a quart of tolerably thick gruel.

There are few things, however, more dangerous, if neglected, than cough or hoose ; and there are few maladies that are so often disregarded.

The farmer will go into the cow-house, or into the pasture, again and again, and hear some of his cows coughing, and that perhaps with a hard, or hollow, or painful effort ; but, while they continue to chew

the cud, and do not waste in flesh, he thinks little about it, and suffers them to take their chance.

The inflammation is slight; the animal is scarcely ill at all; the cough remits and returns, with or without his observation. He adds to it, perhaps, by improper treatment. He exposes the beast unnecessarily to cold or wet; or he crowds his cattle into stables shamefully small compared with the number of the animals, and the air is hot and nauseous, and loaded with watery fluid thrown off from the lungs and from the skin, as well as with ammonia from the natural discharges. The cough increases, it becomes hoarse, and harsh, and at last painful or suppressed; and that affection is established which oftener lays the foundation for consumption and death than any other malady to which these animals are exposed.

That farmer is inattentive to his own interests who suffers a cough, and especially a hoarse, feeble, and painful cough, to hang about his cattle longer than he can help. He should be warned in time, before his cows are getting off their feed, and becoming thin, and have lost half their milk; for then it will generally be too late to seek for advice, or to have recourse to medical care: the disease has fastened upon a vital part, and the constitution is undermined.

Cough occasionally assumes an epidemic character—from sudden changes of the weather, chiefly and particularly in the spring and the fall of the year: it then spreads over a great part of the country, and is often particularly severe.

The symptoms of epidemic cold or catarrh, or

influenza, as it is sometimes called, are frequently serious. The beast is dull and heavy, with weeping at the eyes, and dry muzzle; the hair looks pen-feathered, or staring; the appetite fails; the secretion of milk is diminished; there is considerable heaving of the flanks; the pulse is from 60 to 70, and the bowels are generally costive or *sapped*.

Cattle that have been tenderly managed during the winter, and cows after calving, are very subject to it, especially if they have been poorly fed, or driven long distances, and exposed to a cold piercing wind.

Bleeding may here be necessary, but it should be employed with caution. As little blood as possible should be taken, for the disease is generally attended with debility, and always rapidly followed by it; or perhaps the proprietor will not repent if he takes none at all. Purgatives ought not to be heedlessly administered. If the bowels, however, are torpid, and mashes have no effect, the following drink may be given every morning, until the desired change is produced:—

RECIPE (No. 2).

Epsom salts, five ounces;

Sulphur, two ounces;

Powdered caraway seeds, one ounce.

Dissolve in a quart of warm gruel, and give.

After that the drink No. 1 should be given morning and night; but, if there be marked debility or any great discharge, tonics or medicines calculated to brace and invigorate the body should be resorted to. A quart of sound ale, into which has been stirred an ounce of powdered ginger, is by no means a bad remedy in cases of this kind, and may be given night

and morning for some days, after the active symptoms have abated.

It will be proper to house the beast, and especially at night; and a mash of scalded malt, with a few bruised oats, or a little linseed, or better still, a portion of malt in it, if there is no fever, should be allowed. It is necessary carefully to watch the animals that are labouring under this complaint; the food should be light and nourishing, and the shed cool and well littered down. The farmer must be careful not to mistake the signs of debility for the symptoms of continued fever. Good nursing, in these cases, is of more importance than medicine towards the cure. A dry muzzle, staggering gait, and quick but feeble pulse, are indicative of exhaustion, and restoratives alone should then be administered. The following may be given with advantage:—

RECIPE (No. 3).

Oak bark in powder, one ounce;
Gentian root in powder, one ounce;
Opium in powder, one drachm;
Powdered capsicums, one drachm.

Mix in a quart of ale, and give night and morning.

When the beast begins to recover, he should not be exposed in any bleak situation, or to much rough weather.

In some years this epidemic disease destroys a great many cattle. In the winter of 1830, and in the spring of 1831, thousands of young cattle perished in every part of the country. Some of them were carefully examined after death, and the membrane lining the windpipe was found to be inflamed, and the inflammation extending down to and involving

all the small passages leading to the air-cells of the lungs.

In a great many instances the windpipe was nearly filled, and the small passages of the lungs were absolutely choked by myriads of little worms. These cattle had had their flanks particularly tucked up, and had stood and coughed with a violence that threatened every moment to burst some blood-vessel; and well they might cough thus violently, when the delicate and sensitive lining of the air tubes was incessantly irritated by the motion, if not by the bites, of these worms. The origin of the worms no one has satisfactorily ascertained. It is supposed that there are innumerable little eggs of various *animalculæ*, too small to be seen by the unassisted eye, always floating in the air, and only waiting for some proper situation or nest in order to be nursed into life. The proper nidus or nest of these animals is probably the mucus of the air-passages, and they are plentifully lodged upon it in the act of respiration.

There are some substances which are immediately destructive to worms when brought into contact with them. Some of these medicaments may be taken into the circulation of the animal with perfect safety to him, and probable death to the worms. Among those which most readily enter into the circulation after being swallowed is the oil or spirit of turpentine. The breath is very soon afterwards tainted with its smell, which shows that a portion of it has passed into the lungs. Therefore, when other means have failed, and the continuance of the violent cough ren-

ders it extremely probable that worms are in the air-passages, the following prescription may be resorted to:—

RECIPE (No. 4).

Turpentine Drink for Worms.

• TAKE—Oil of turpentine, two ounces ;
Sweet spirit of nitre, one ounce ;
Laudanum, half an ounce ;
Linseed oil, six ounces.
Mix, and give in a pint of gruel.

This may be repeated every morning without the slightest danger, care only being taken to observe that the urinary organs are not violently affected, it being in its nature a potent diuretic. A pint of lime water every morning, and two table-spoonfuls of salt every afternoon, have also been administered with advantage when worms are present in the windpipe ; and there is no objection to this plan being adopted even while the drink recommended above is being administered.

When the worms are removed, the cough may probably remain, though it no longer threatens to choke the beast, which breathes with little difficulty. The lining membrane of the lungs has not yet recovered from the irritation to which it had been subjected, and the following will act better if a seton be inserted in the dewlap :—

RECIPE (No. 5).

Powdered squills, one ounce ;
Powdered guaiacum, two drachms ;
Extract of belladonna, one drachm ;

Rub down the belladonna in a quart of good gruel, and then add the rest.

Let it be given daily.

The termination of hoose that is most to be feared is consumption. That will be indicated when the discharge from the nose becomes purulent, or bloody, and the breath stinking, and the cough, though short and painful, is occasionally violent, while the beast feeds badly, and the eyes begin to appear sunk in the head, and the animal rapidly loses flesh. The best remedy here, so far as both the owner and the animal are concerned, is the pole-axe of the butcher; for in the early part of the disease the meat is not at all injured, and may be honestly sold. If, however, it is wished that an attempt should be made to save the animal, the cough and fever drink (No. 1, p. 50) may be given daily; more attention should be paid to the warmth and comfort of the beast; the food should all be given prepared or half digested by boiling; and, if the weather is favourable, after a while the animal should be turned into a salt marsh during the day.

CHAPTER VI.

INFLAMMATION OF THE LUNGS.

WHEN common catarrh has been neglected, it will sometimes run on to inflammation of the lungs, or the beast may be attacked with this disease without any of the previous symptoms of catarrh. This is a very serious complaint, and requires the most prompt and decisive treatment.

The symptoms are dulness, shivering, and cough that is particularly sore; the ears, roots of the horns, and legs, are sometimes cold, but not invariably so,

as the quantity of cellular membrane about the legs is often sufficient to keep them warm in spite of the nature of the complaint; the breath and mouth are hot; the mouth is generally open, and there is a ropy discharge from it; the beast will often lie down, and can scarcely be induced to move; the flanks heave very laboriously, and the head is protruded, showing the great difficulty of breathing. The pulse is not always much increased in number, but is oppressed, and can sometimes scarcely be felt.

Inflammation of the lungs is caused by the perspiration being obstructed from sudden and great changes of the weather, especially when accompanied with wet. Cattle that are driven long distances, and then exposed to the cold and damp air of the night, are particularly liable to it. In most cases it can be traced to the cattle being imprudently exposed to the cold; but when the cause is not so apparent, it more frequently attacks those that are in good condition.

Young cattle, and particularly calves, are more subject to this disease than older ones; and in them it must be principally attributed to their being in a state of plethora, that is, having a redundancy of blood in their systems.

Sometimes the membrane covering the lungs and lining the chest is the part principally attacked; the disease is then termed *pleurisy*, and is in this form often complicated with rheumatism, but it is more usual for pleurisy to be associated with inflammation of the substance of the lungs.

Bleeding is the remedy most to be depended on

for subduing the inflammation, but it should only be had recourse to as soon as the disease is discovered. The beast should be put into a cool cow-house well littered, and immediately bled. A second, a third, and even a fourth bleeding has been recommended by some persons; but experience teaches, that cattle by such severe measures are so greatly depressed, that though the disease may be cured the animal rarely recovers. In this disease, more than in any other, the person who attends the cattle should be present when the beast is bled. It is impossible, by looking at the patient, and considering the symptoms, to say what quantity of blood ought to be taken away; but as a general rule, and especially in inflammation of the lungs, the blood should flow until the pulse begins to falter. Little bleedings of two or three quarts, at the commencement of inflammation of the lungs, can never be of service; from six to eight quarts must be taken, or even more, regulated by the circumstances that have been mentioned, and the blood should flow from a large orifice in a full stream.

A seton should be set in the dewlap immediately after the first bleeding, and the following drink may be given:—

RECIPE (No. 6).

Drink for Inflamed Lungs.

Epsom salts, half a pound;
Flower of sulphur, two ounces;
Powdered caraway-seeds, an ounce.

Four drachms of nitre, two of extract of belladonna, and one of tartarized antimony may afterwards be administered twice a day in a drink.

In very severe cases, after the activity of the first symptoms has subsided, the chest has been fired and blistered with advantage.

Warm water and mashes must be regularly given two or three times a day, the food on no account being either stimulative or abundant.

When the beast has recovered, it will be proper, as much as possible, to avoid all those causes which induced the complaint. The animal should for a short time be housed during the night, and, if the weather is very unsettled, kept up altogether, or turned out for a few hours only in the middle of the day.

CHAPTER VII.

RHEUMATISM, OR JOINT-FELLON.

THE early symptoms of this complaint often are those of common catarrh, with this exception, that there is no great cough, but more than usual fever: by degrees, however, the animal shows some stiffness in moving, and if the hand is pressed upon the chine or any part of the back, the beast will shrink, as if this pressure gave him pain. When the complaint goes no farther than this, it is called *chine-fellon* in many parts of the country; but generally, in two or three days, the animal appears stiffer in the joints; these afterwards begin to swell, and are evidently painful, particularly when he attempts to move. Sometimes the stiffness extends all over the body, and to such a degree that the beast is unable to rise without assistance.

This is generally termed *joint-fellon*. Old cows are very subject to it, and especially a short time before calving; but milch cows and young cattle are oftener attacked by it at the spring of the year. It is mostly occasioned by the animal being kept in a state of poverty during the winter, and suddenly exposed to rank herbage and to the vicissitudes of the weather in the spring, or to the inclemency of the north or north-easterly winds, especially in low situations.

This disease sometimes comes on suddenly, and is present in a very acute form, being in fact a severe chill: these acute symptoms may subside, and be succeeded by others, milder but more obstinate. Sometimes abscesses will form amongst the muscles, or the sheaths or bodies of the tendons; and the capsular ligaments of the joints are often distended with synovia. These symptoms are particularly unfavourable, because they show the membranes lining the joints to be inflamed.

In this disease we find the same class of membranes, viz., the serous, diseased throughout the body, and an examination after death sometimes exhibits, in addition to the diseased appearances before noticed, the membrane lining the heart, the chest, and the abdomen, considerably affected, either wholly or in part; and sometimes a considerable effusion of water takes place in these last-named cavities.

As soon as the disease makes its appearance, the beast must be taken to a warm cow-house or stable, or some situation sheltered from the severity of the weather. The following purging drink should then be given:—

RECIPE (No. 7.)

Sulphur Purging Drink.

TAKE—Sulphur, eight ounces ;
Ginger, half an ounce.

Mix with a quart of warm gruel. This drink may be repeated every third day, but only if the bowels appear to require it.

The bowels having been gently opened, a drink which may cause some determination to the skin, and increase the insensible perspiration, should be administered.

RECIPE (No. 8.)

Rheumatic Drink.

TAKE—Nitre, two drachms ;
Tartarized antimony, half a drachm ;
Spirit of nitrous ether, two ounces ;
Aniseed powder, an ounce.

Mix with a pint of very thick gruel, and repeat the dose morning and night, except when it is necessary to give the sulphur purging drink (No. 7).

If there should be much fever at any period of the complaint, three or four quarts of blood taken away, and the following drink may be substituted for the rheumatic drink previously recommended :—

RECIPE (No. 9.)

Sedative Drink.

TAKE—Tincture of aconite, half a drachm ;
Infusion of tobacco, one ounce ;
Powdered colchicum, one ounce ;
Calomel, a scruple.

Mix in a quart of gruel, and give thrice a day till the symptoms abate.

If any of the joints should continue swelled and painful, they should be rubbed twice a day, and for a quarter of an hour each time, with a gently stimulating embrocation.

RECIPE (No. 10).

Rheumatic Embrocation.

TAKE—Neat's foot oil, four ounces ; and
Camphorated oil, spirit of turpentine, and laudanum, each
one ounce ;
Oil of origanum, one drachm. Mix.

Should a scaly eruption break out on the joints, or any part of the legs, after the beast has apparently recovered, an ointment composed as follows will generally clear off the scurf, heal the cracks or sores, and cause the hair to grow again :—

RECIPE (No. 11).

Healing Cleansing Ointment.

TAKE—Common oil, one quart ;
Lard, two pounds ;
Resin, half a pound.

Melt them together, and, when nearly cold, stir in calamine, very finely powdered, half a pound.

If stiffness or swelling of the joints should remain after the inflammation and tenderness are removed, the joints should be well rubbed morning and night with a mild anodyne embrocation. The following will be as good as any :—

RECIPE (No. 12).

Camphorated Oil.

TAKE—Camphor, two ounces, and break it into small pieces ; put it into a pint of spermaceti or common olive oil, and let the bottle, being closely stopped, and shaken every day, stand in a warm place until the camphor is dissolved.

When a beast has had one attack of rheumatism, he will be always subject to its return, and therefore should be taken more than usual care of in cold, variable weather ; and should he appear to have a

slight catarrh, or to walk a little stiffer than usual, he should be housed for a night or two, and should have a warm mash, and the following cordial rheumatic drink, which, however, would be very improper in hoose or cold, or rheumatism connected with any degree of fever.

RECIPE (No. 13).

Cordial Rheumatic Drink.

TAKE—Snake root, powdered, one ounce ;
Gum guiacum, finely powdered, two drachms ;
Powdered caraway seeds, two drachms ; and
Powdered aniseed, two drachms, mixed with a pint of warm ale.

CHAPTER VIII.

INFLAMMATION OF THE LIVER.

THIS is a disease to which cattle are oftener subject than is imagined, and particularly those that are in high condition and stall-fed: the symptoms, however, are usually sufficiently distinct to guide the attentive observer, though occasionally a beast is killed when the fat is discovered to be strongly tinted yellow, showing that its liver was affected, though the disease was unsuspected.

When the milch cow is attacked, there is a diminution of the milk, and it has a ropy appearance and saltish taste after being separated from the cream. The animal has a heavy appearance, the eyes being dull, the countenance depressed, with a stiffened, staggering gait; the appetite is impaired, and the membrane of the nostrils and the skin is of a yellow

colour. Sometimes the respiration is much disturbed; at others it appears tranquil; but the pulse, though usually quickened, is rarely hard or full. The bowels are irregular, generally constipation is present, though sometimes purging exists. Rumination is usually disturbed, and occasionally altogether suspended. To these will occasionally be added the characteristic symptoms of pain on pressure on the edge of the short ribs upon the right side. In acute inflammation of the liver the most frantic pain has been exhibited; but this rarely the case.

A high degree of fever will indicate the propriety of bleeding, but it should not be carried to too great an extent. After bleeding, one or two drachms of calomel, with twice the amount of opium, and two drachms of ginger, may be given in gruel, and a few hours afterwards twelve ounces of Epsom salts and half a pint of linseed oil. The calomel and opium may be repeated twice a day, and continued until the gums appear inflamed, or are slightly tender, when the medicine must be stopped, and a purgative administered. If, however, purging be present from the first, a few ounces only of Epsom salts should be given; but a drachm of calomel and two of opium, repeated twice a day; and, if the purging continue, the case may be treated as one of diarrhœa. The sides, in this disease, should be blistered, and a seton may also be inserted in the dewlap.

Inflammation of the liver frequently leaves after it a great deal of weakness, and tonics are clearly indicated as soon as the first acute stage of the disorder

has been conquered. The best medicine that can be given is the following:—

RECIPE (No. 14).

Tonic Drink.

TAKE—Sulphuric ether, one ounce;
Tincture of gentian, one ounce;
Tincture of ginger, one ounce;
Tincture of oak bark, half an ounce.

Mix the whole with a quart of sound ale, and give it morning and night.

No hay, and little corn, should be given in inflammation of the liver; but the diet should consist of mashes and green meat.

When a beast dies of this disease, all the contents of the chest and the belly will often be found to be considerably affected. The lungs in almost every case exhibit inflammation, and there are patches of inflammation in the bowels.

It has been stated that fat beasts, or such as are in good condition, are very liable to this disease, and particularly those that have been fed much on oil-cake. It is more frequent in hot than in cold weather, and in store cattle that have been over-driven, or worried in woodland pastures by the flies. Sudden change of weather; the exposure to considerable cold, of a well-fed beast that had been well housed, or indeed anything that has a tendency to excite fever, will produced inflammation in an organ that has been over-worked, or is disposed to disease from the undue secretion of bile in the rapid accumulation of flesh and fat. Chronic inflammation of the liver is characterised by symptoms similar, but more moderate than those detailed. The debility

gradually increases, and death often succeeds. The same treatment should be pursued, with the exception of bleeding.

CHAPTER IX.

THE YELLOWS, OR JAUNDICE.

THIS is a far more common disease than the last, and almost as dangerous; because, although it is not marked by any acute symptoms, or accompanied by much fever, it may creep on insidiously and fasten itself on the constitution, beyond the power of medicine to eradicate it; or it often is the consequence and the proof of some disease of the liver, which is equally difficult to cure. It may be produced by inflammation of the liver, or too great secretion of the bile, or stoppage of the vessels through which the bile should flow into the bowels. If its passage is obstructed, it is thrown back again upon the liver, and there taken up by the absorbents, and carried into the circulation, and communicates a yellow colour to the blood; and as the blood, by means of the capillary vessels, is carried to every point and part of the body, so the yellow hue of the disease spreads over the whole of the frame.

This obstruction is sometimes effected by the undue thickness of the bile; sometimes by hardened bile or gall-stones; and in not a few cases it is caused by a greater secretion of bile than can find its way into the intestines, and which, consequently, accumulates in the liver until it is taken up by the

absorbents, and carried into the frame in the manner that has just been described.

At the beginning of the disease there is considerable dulness and languor, and loss of appetite. The cow wanders about by herself, or is seen standing by the side of the hedge or the fence in a most dejected manner. The quantity of milk is generally lessened, and sometimes it is discoloured; the bowels are costive; and the fore teeth are sometimes loose. Milch cows are more subject to it than oxen, and particularly in the latter end of the year. Sudden change of weather frequently gives rise to it, and especially if the animal has previously exhibited symptoms of ill health.

The treatment and the hope of cure depend upon the causes and degree of the disease, and which should be most carefully ascertained. If it has followed symptoms of fever, probably indicative of inflammation of the liver; it may be difficult to remove, because it is an indication of the ravages which disease has made in the organ. Should the pulse be strong as well as quick, the sedative drink before recommended (p. 61) may be given; but bleeding in no case should be resorted to, since it increases the absorption of the bile. The bowels should be freely opened by means of one pound of Epsom salts and four ounces of sulphur, and kept open by half doses, administered as occasion may require. These half doses may even yet be further reduced if their effect be found too powerful, and discontinued so soon as their purpose is attained, or the other symptoms have abated.

In this disease, oftener than in any other to which cattle are subject, stomachics are useful to rouse the digestive organs to their proper tone and power. Alkalies, also, should be employed in combination with the bitters; and the following administered twice or even thrice a day is often productive of the best results:—

RECIPE (No. 15).

TAKE—Extract of quassia, half an ounce;

Solution of aloes, one ounce;

Carbonate of soda, one ounce.

Mix in a quart of gruel, and give.

Mingled with this drink, or at other periods of the day, medicines may be given which are supposed to have a direct effect on the liver, and a tendency to restore its healthy action; therefore, while the above is given in the morning, the following may be given at night:—

RECIPE (No. 16).

Drink for the Yellows.

TAKE—Of calomel and of opium, two scruples.

Mix and suspend in a little thick gruel.

If, on pressing the sides, the animal evinces pain, we may suspect some inflammation of the liver; and a blister on the sides, but particularly the right side, will be useful.

After the yellowness is removed, and the beast restored to health, the *tonic drink* (No. 13, p. 65) should be given twice in the week for a month. This will contribute to restore the weakened appetite, and particularly will bring back to the cow the proper flush of milk.

After yellows are subdued, or even before a direct

attack of the disorder begins, the liver may be perceptibly enlarged, when neither purgatives, sedatives, or tonics, will reduce its size. This, however, may in most cases be accomplished by Iodide of Potassium, one drachm, given every night for some time, dissolved in gruel.

CHAPTER X.

INFLAMMATION OF THE BRAIN.

THIS is not a very frequent, but a most frightful disease. It is commonly known by the names *frenzy* or *sough*. It is most prevalent among well-fed cattle, and particularly in the summer months. In the early period of it the beast is dull and stupid. He stands with his head protruded, or pressed against something for support. He refuses to eat, ceases to ruminate, and is, in a manner, unconscious of surrounding objects. Now and then he will stand motionless for a long time, and then suddenly drop; he will start up immediately, gaze around him with an expression of wildness and fear, and then sink again into his former lethargy. All at once, however, his eyes will become red, and seemingly starting from their sockets; the countenance will be both anxious and wild; the animal will stagger about, falling and rising again, and running unconsciously against everything in his way: at other times he will be conscious enough of things around him, and possessed with an irrepressible desire to do mischief. He will stamp with his feet, tear up the ground with his horns, run at every one within his

reach, and with tenfold fury at any red object, bellowing all the while most tremendously; and this he will continue until nature is quite exhausted; a sudden and violent trembling will then come over him, he will grind his teeth, and the saliva will pour from his mouth; he will fall, every limb will be convulsed, and he will presently die.

Causes.—It proceeds most commonly from a redundancy of blood in the system, called by farmers an overflow of blood; and this is induced by cattle thriving too fast when turned on rich pasture-grounds, or their being fed too quickly in order to get them into condition for show or sale. It is sometimes occasioned by the intense heat of the sun, when cattle have been turned into the fields where there has been nothing to shade them from its influence. It may be brought on by severe contusions on the head, or by the cattle being harassed and frightened, when driven along the road or through large towns.

Very few weeks pass in the metropolis in which cattle are not driven into a state of absolute madness, either by the brutality of the drovers, or by a set of miscreants, whose sport it is to abuse and infuriate the animal, and endanger the lives of the passengers.

The chief or the only cure is bleeding. The jugular vein, however, in this case should not be opened, since the necessary cord around the neck would prevent the return of blood from the head, and increase the disorder. When the violence of the beast gives the practitioner no choice, of course then he must do what he can; but, if the animal is not very fu-

rious, the milk vein on both sides is to be preferred. More blood will be lost from this vessel than from the neck vein, and it requires no cording. The orifice having been made, the ox may be set free, and his motions will increase the bleeding. When he falls, or becomes in some degree quiet, the vessel must be pinned up, which is sometimes difficult to accomplish. In these cases the blood may be suffered to flow until the animal drops. It is absurd to talk of quantities or measurement in these cases; as much should be taken as can be got, or, at least, the blood should flow until the violence of the symptoms has quite abated.

To this a dose of physic should follow. The following may be administered:—

RECIPE (No. 17).

A Strong Physic Drink.

TAKE—Epsom or Glauber's salts, one pound;

The kernel of the croton nut, ten grains.

Take off the shell of the croton nut, and weigh the proper quantity of the kernel. Rub it down to a fine powder; gradually mix it with half a pint of thick gruel, and give it, and immediately afterwards give the salts, dissolved in a pint and a half of thinner gruel.

If the violence, or even the wandering should remain, another bleeding should take place six hours afterwards, and this also until the pulse falters; and the purging should be kept up by the drink (p. 58).

By that time the physic operates, the beast probably is quiet, and then those measures may be thought of, which, however desirable it might have been to employ them at an earlier period, it would during the rage of the animal have been folly to attempt to use. Two setons of twelve inches length

may be inserted into the dewlap, and to increase their efficacy the black hellebore ought to be added to them. A sheep-skin warm from the slaughter-house may be placed upon the loins, and the back and legs may be stimulated with the following oil, which in the present state of the ox probably will not blister him:—

RECIPE (No. 18).

Blistering Oil.

TAKE—Oil of turpentine, two pints;

Cantharides in coarse powder, a quarter of a pound.

Digest for fourteen days, or by means of boiling water subject to heat for eight hours. Then strain and bottle for use.

As quickly as possible the ox should be got in a cool and large shed, which, if dark, will be so much the better. The utmost quiet should be preserved, and on no account should strangers be permitted to look at the animal. There is no occasion to think about food for a day or two, but water should be plentifully supplied.

Although it is very difficult to produce a blister on the thick skin of the ox, it should be attempted if the disease does not speedily subside. The hair should be closely cut or shaved from the upper part of the forehead and the pole, and for six inches on each side down the neck, and some of the following ointment well rubbed in:—

RECIPE (No. 19).

Blister Ointment.

TAKE—Lard, twelve ounces;

Resin four ounces.

Melt them together, and when they are getting cold, add

Oil of turpentine, four ounces, and

Powdered cantharides, five ounces;

Stirring the whole well together.

When the blister is beginning to peel off, green elder or marsh-mallow ointment will be the best application to supple and heal the part. A little of it should be gently smeared over the blistered surface morning and night.

A seton smeared with the above ointment may be inserted on each side of the poll, in preference to the application of a blister.

Although the violence of the disease, and of its remedies, will necessarily leave the beast exceedingly reduced, no stimulating medicine or food must on any account be administered. Mash and green meat, and these in no great quantities, must suffice for nourishment, or, if the animal, as is sometimes the case, is unable to eat, a few quarts of tolerably thick gruel, in which is mixed an ounce of powdered quassia, and a quarter of an ounce of carbonate of soda, may be horned down every day; but ale, and gin, and spices, and the generality of tonic or cordial medicines, must be avoided as downright poisons. There is not a more common or a more fatal error in cattle management, than the eagerness to pour in comfortable, I would rather say, poisonous drinks. Even the treacle and the sugar in the gruel must be prohibited, from their tendency to become acid in the debilitated stomach of the animal recovering from such a complaint.

Every symptom of the disease having vanished, the beast may *very slowly* return to his usual food; but, when he is turned out to pasture, it will be prudent to give him a very short bite of grass, and little or no dry meat. Nature is the best restorer of

health and strength in these cases; and it is often surprising, not only how rapidly the ox will regain all he has lost, if left to nature, and not foolishly forced on, but how soon and to what a considerable degree his condition will improve beyond the state in which he was before the complaint.

The ox that has once had inflammation of the brain should ever afterwards be watched, and should be bled and physicked whenever there is the least appearance of staggers or fever. The safest way, however, will be to send him to the butcher as soon as he is in sufficient condition.

Sometimes the disease does not run its full course; there is but a slight degree of inflammation, or there may be sudden determination or flow of blood to the head from some occasional cause, and without inflammation. This is known by the name of

STAGGERS, OR SWIMMING IN THE HEAD.

The symptoms are heaviness and dulness; a constant disposition to sleep, which is manifested by the beast resting its head upon any convenient place; and he reels or staggers when he attempts to walk. If this disease is not checked by proper management, it will probably terminate in inflammation of the brain or inflammatory fever.

It mostly attacks those cattle that have been kept in a state of poverty and starvation during the winter season, and in the spring of the year have been admitted into too fertile a pasture: hence is produced a redundancy of blood in the system, which, on the slightest disturbance, gives rise to the disease.

It is not, however, confined to those which are low in condition, but occasionally attacks such as have been exposed to no known exciting cause. The treatment, therefore, must be varied. If the beast is in a high and feverish state, a purge frequently is productive of the best effect. Should the symptoms not lessen after the medicine has freely operated, a small quantity of blood may be abstracted, and the fever drink (No. 1, p. 50) given morning and evening.

In other instances the affection will spring from weakness, and restorative measures should be adopted. Good food, not in too great a quantity, and a cordial drink or two every day, will now be of all service.

RECIPE (No. 20.)

Invigorating Drink.

Sulphate of iron, two drachms ;
Powdered gentian root, half an ounce ;
Powdered capsicums, half a drachm.

Mix in a quart of good gruel, and give night and morning.

The symptoms of staggers, however, may be caused by change of structure, either in the brain itself, or in some of its coverings. In this case no medicine will be of much benefit ; and in every instance when the ox exhibits swimming of the head, it is no more than prudent to apply to the butcher—that is, supposing the animal to be in flesh.

CHAPTER XI.

INFLAMMATION OF THE BOWELS, WITH COSTIVENESS.

INFLAMMATION of the bowels of the above description, is by no means an uncommon disease among neat cattle, and frequently proves fatal to them from injudicious treatment. It is a complaint easily recognisable on account of the peculiar symptoms by which it is attended.

The animal is continually lying down and getting up again immediately, and, when up, he strikes at his belly with the hind feet. The bowels are obstinately constipated: the dung, if any is voided, is in small quantities—hard, covered with mucus, and that sometimes streaked with blood—and the urine is generally voided with difficulty. The pulse is quicker than natural, and there is much heaving at the flanks.

It is distinguished from colic by the great degree of fever that evidently attends it; the muzzle being dry, the mouth hot, and the pulse rather quickened, but rendered actually cutting under the fingers. The animal becomes speedily weak, he falls or throws himself down suddenly: when he rises he does so with difficulty, and he staggers as he walks. The lowness and weakness appear more speedily and decidedly than in almost any other disease.

The attack is sudden, like that of colic. The animal quits his companions, and hides himself under the hedge. If he is in the plough, he all at once becomes deaf to the driver, and insensible to the

goad. He trembles all over—his skin becomes hot—his back and loins are tender—his ears and horns hot. Everything indicates the highest degree of local inflammation and general fever.

The disease mostly arises from sudden exposure to cold; and especially when cattle go into rivers or ponds after being heated and fatigued. It is sometimes produced by change of pasture, and absence of water while feeding too much on dry and stimulating diet.

The first thing to be done, and that which admits of no delay, is to bleed; from six to eight quarts of blood at least should be taken away. Immediately afterwards the following purging drink should be administered, and its effect promoted by doses of No. 2, taking precaution, however, to leave out the caraway-seeds, given every six hours:—

RECIPE (No. 21.)

Purging Drink.

Epsom salts, one pound.

Dissolve in a quart of warm water, and give, without the addition of any carminative.

This is a very dangerous disease, and the measures pursued must be of the most decisive kind. The symptoms succeed each other rapidly, and if one day is suffered to pass without proper means being taken, the beast is irrecoverably lost.

The third stomach, or manyplus, will generally be found, after death, choked up with dry food, hardened between the leaves of that stomach. It will be necessary to wash this well out before the proper path to the fourth stomach can be opened. In order to

effect this, plenty of tepid water should be given; or, if the beast will not drink it, several quarts of it should be horned down every hour. Clysters of warm water, or thin well salted gruel, should likewise be administered.

If the beast seems in much pain, sedatives should be given, and continued until the symptoms are relieved. For this purpose, nothing is better than calomel and opium in combination. A scruple of the first may be mixed with two scruples, or even a drachm of the last, and the powder shaken into the mouth of the animal every hour, until some change is apparent. Turpentine may be rubbed over the belly, and tobacco smoke enemas have appeared to shorten the disease.

The patience of the attendants will sometimes be almost worn out—they must, however, persist. Clysters, numerous and great in quantity, must be administered. During the whole of this time the cordial drink of the cow-leech must be avoided as a dose of poison.

The farmer or the attendant must not be deceived by the passage of a little liquid dung in a small stream, for that shows that there is yet much hardened faeces clinging round the intestines, and which must be removed, and therefore he must pursue the measures recommended, until the dung is expelled in considerable quantities, and in a large full stream, and without much straining. There has generally been something more than usually wrong in the food or management when this sad constipation is observed. Either the animal has been kept too much and too

long on dry food, or he has been turned into fresh pasture (and particularly in the autumn) in which there are oak-trees, or some astringent vegetables. The cause must be removed, or the disease will return. Probably the beast had better be kept at home, and housed for a week or two afterwards.

The state of the bowels of a beast that has once been sapped should be observed for some time afterwards, and gentle aperients occasionally administered; cold water should not, for a little while, be permitted, and strict attention should be paid to the diet.

Inflammation of the bowels, however, will in a few cases occur without all this costiveness, and yet it may have been produced by nearly the same causes. The other symptoms are the same, but the danger is not so great. The beast should, if the pulse demands it, be moderately bled and physicked, kept warm, and have tepid water, with soft but not too stimulating food, in no excessive quantity.

CHAPTER XII.

DIARRHŒA, OR PURGING.

PURGING is produced by various causes; by change of food, from dry to green meat, or from short to luxuriant pasture; by poisonous plants, bad water, or unknown atmospheric agency.

It is not always to be regarded as a disease, nor should the farmer be always anxious to stop it. It

may be an effort of nature to discharge something that is injurious ; it may exist while the beast enjoys almost perfect health, and is even thriving.

The farmer will not regard an occasional fit of purging ; he will only attack it if it is violent, or if it continues too long. In the first case it indicates some disordered state of the bowels, or the presence of some offending matter in them, and he will endeavour to remedy this ; not, as is too often done, by attempting to arrest the discharge as speedily as he can—not by the exhibition of astringent medicine—but by giving a mild dose of physic, in order to assist Nature in her effort to get rid of some evil. Nothing so much distinguishes the man of good sense from the mere blunderer as the treatment of purging.

From half to three-quarters of a pound of Epsom salts should be given with the usual quantity of ginger. The next day he may probably administer a little astringent medicine. The following will be effectual, and not too powerful :—

RECIPE (No. 22).

Astringent Drink.

TAKE—Prepared chalk, two ounces ;
Oak bark, powdered, one ounce ;
Catechu, powdered, half an ounce ,
Opium, powdered, half an ounce ;
Ginger, powdered, two drachms.
Mix, and give in a quart of warm gruel.

In the second case, also, when purging has long continued, and the animal is becoming thin and weak, the practitioner must begin with physicking, but with extreme caution. There is probably some

lurking cause of intestinal irritation. He should give the quantity of Epsom salts, blended with sulphur, recommended at p. 52—or perhaps he will more prudently give from half a pint of linseed oil; and, after that, he may safely have recourse to the astringents: the animal should be brought into a cow-house or inclosed yard, where it can be sheltered from the weather, and kept partly or altogether on dry meat or boiled food of the most easily digested and soothing kind.

It is of great consequence that diarrhœa or simple purging should be distinguished from another disease with which it is too often confounded. They are both characterized by purging. That which is now under consideration is the discharge of dung in too great quantity, and in too fluid a form; but that which will form the subject of the next chapter, dysentery, is the evacuation of the dung, mingled with mucus, or mucus and blood. In diarrhœa the dung is voided in a full stream; it has sometimes an offensive smell, and is occasionally bloody: but dysentery is often accompanied by a peculiar straining; the dung is not so great in quantity, and it is more offensive, and more highly charged with blood and mucus.

The one is an accidental thing—not always to be considered as a disease—and often ceasing of itself when the purpose for which nature set it up—the expulsion of some acrid or injurious matter from the alimentary canal—has been accomplished; the other is an indication of an inflammatory affection of the larger intestines, difficult to be controlled, often

bidding defiance to all means, and speedily destroying the animal. Diarrhœa occurs at all times of the year, and particularly after a sudden and great change of pasture; dysentery is a disease almost peculiar to the spring and autumn alone. It must be confessed, however, that diarrhœa is sometimes the precursor of dysentery in its worst form.

CHAPTER XIII.

DYSENTERY, SLIMY FLUX, OR SCOURING ROT.

It has been just observed that this disease is most prevalent in the spring and autumn, particularly in low, wet, and swampy situations. It is one of the most fatal diseases to which oxen, and dairy cows in particular, are subject, and destroys more than any other malady.

It begins with frequent and painful efforts to expel the dung, which is thin, slimy, stinking, and olive-coloured. The animal, as appears from his restless state, suffers much pain, frequently laying down and soon rising again. There is also a frequent rumbling noise in the intestines. If the disease is neglected, or improperly treated, the beast gradually gets thin, although for awhile he retains his appetite, and continues to ruminate; at length he evidently begins to get weak, rumination is imperfectly performed, and the food passes from him half digested. As this disease is often the consequence of a previous affection of the liver, considerable tenderness will be

discovered on the spine, a little below the shoulders. This is one of the methods, and a very good one, by which the farmer endeavours to ascertain whether a beast which he is thinking of purchasing has the scouring rot. As the disease proceeds the dewlap hangs down and has a flabby appearance; the dung runs off with a putrid and offensive smell, and, as it falls upon the ground, rises up in bubbles, and a membranous or skinny-like substance is often seen upon it: this is occasioned by the natural mucus, which was given to defend the bowels, being discharged. In proportion to the quantity of mucus that mingles with the fæces, the whole is rendered more adhesive, and the bubbles are larger, and remain longer on the dung. When this is the case the disease is always obstinate, and generally fatal. The hair all over the body soon appears pen-feathered or staring. Feverish symptoms also accompany the complaint: the eyes become dull and inflamed, there is much working of the flanks, and the pulse is quick.

The causes of this dreadful malady are—taking cold at the time of calving; long journeys; exposure to sudden vicissitudes of the weather; and, after being over-heated in travelling, being turned into damp pastures, &c. Poor keep is a very frequent cause, and especially when connected with exhaustion from constant milking; and it is more especially the consequence of the cows being badly fed in the winter. Some cold wet lands are particularly liable to give the rot; yet, where the land and treatment are similar, it prevails more in some dairies than in others, depending much on the breed of the cattle.

Old cows that are fed on sandy pastures are very subject to this complaint, because age requires more support than such herbage can afford.

In all cases the animals should be taken from grass and put into a large cow-house, or an open yard, where they can be sheltered from the weather, and kept on dry food, such as good hay, ground oats, barley, and beans, with clean, thoroughly-boiled potatoes, thick gruel, or well mashed parsnips. An equal proportion of any of the last articles and of linseed cake will make an excellent food for cattle labouring under dysentery. A quantity proportionate to the size and appetite of the patients should be given two or three times a day, or, if they are much reduced and their appetite is quite gone, a thick gruel should be made of these ingredients, and administered three or four times a day.

This disease consists in inflammation of the lining membrane of the large intestines. In the very first stage the withdrawal of a little blood would be of some benefit; but as the disease is hardly ever discovered until it is confirmed, and debility has commenced, that measure ought not to be thought of.

As this disease usually begins with derangement of the liver, those medicines which act directly upon that organ are clearly indicated. Most of these agents, however, are purgative in their action, and therefore require to be guarded, and at the same time their operation should be watched, as pushing too far they would generate a weakness under which the animal will sink. Mercury is the most active and the best of all the medicines for the present purpose;

combined with opium and chalk, it forms a safe and beneficial mixture, and may be thus given for some time before it will cause symptoms of salivation, which ought not to be induced. If the gums look red and the saliva is secreted in unusual quantity, while the breath has a strange and disagreeable smell, the mercury should be discontinued, and a dose of Epsom salts (No. 2, p. 52) administered.

RECIPE (No. 23).

Mild Mercurial Drink.

TAKE—Calomel, a scruple ;
Chalk, one ounce ;
Opium, two drachms.

Rub well together for ten minutes, and give in thick gruel twice a day.

When the above can with prudence be no longer exhibited, the following may be tried, which also will act upon the liver, while it has at the same time a tendency to soothe the intestines.

RECIPE (No. 24).

TAKE—Powdered colchicum, two drachms ;
Powdered ipecacuanha, half an ounce ;
Opium, a drachm ;
Chalk, an ounce.

This may be given in the same manner, and at the same periods as the previous recipe. If, however, the dung becomes very offensive, and the animal grows rapidly feeble, other medicines must be employed. The food should be of the lightest and most nourishing description. To support the system, those things which we before would have avoided may now be administered ; for the time has come when the

tendency to die is more to be considered than the presence of disease. A quart of good home-brewed ale may be given twice a day, with as much of the gruel, before recommended, as the beast will conveniently swallow. Nothing solid, no hay, or oats, or beans, should be given in substance, for the stomach is too weak to digest them, and they would irritate the intestines. Cleanliness is to be strictly attended to, and the house in which the animal stands should be often swept, and daily washed out. The following is the drink which in this severe stage should be tried:—

RECIPE (No. 25).

Disinfectant Drink.

TAKE—Chloride of lime, two drachms ;
Sulphuric ether, one ounce ;
Tincture of arnica, half a drachm.

To be given in a quart of good cold gruel, thrice a day.

The above may also be thrown up as an injection, or, if expense be a consideration, the sulphuric ether may be omitted.

The measures recommended must be steadily pursued. Patience is required, and the person who undertakes to treat dysentery in cattle must be prepared to exercise it, and then not expect always to succeed. Should the disease yield, the medicines must not be too quickly changed for astringents, but when it has obviously decreased these may be resorted to.

The safest and most effectual astringent mixture for the scouring rot, is that which was recommended

at page 80. It may be given once or twice a day, according to the judgment of the proprietor.

Should its effect not be speedily seen, it will not be prudent to continue the use of such large quantities of astringent medicine for any considerable time. The following drinks may then be given morning and night for five or six days.

RECIPE (No. 26).

Drink for Dysentery.

TAKE—Liquor potassæ, one ounce ;
Vini ipecacuanha, one ounce ;
Opium, one drachm ;
Tincture of cantharides, half an ounce ;

Give in a quart of warm gruel.

If, notwithstanding, the bowels still appear to want tone, though the virulence of the disease is past, a change of medicine will often accomplish all we desire, and a milder remedy will sometimes effect that which potent drugs have failed to bring about. In such cases the alum whey has sometimes succeeded.

When the dysentery is stopped, the beast should very slowly and cautiously be permitted to return to his former green food. Either during the night or the day, according to the season of the year, he should be confined in the cow-house, and turned out twelve hours only out of the twenty-four. Water should be placed within reach of the animal, in the cow-house, and, if possible, in the field ; for there are few things more likely to bring on this disease, or more certain to aggravate it, than drinking an

inordinate quantity of water after long-continued thirst.

RECIPE (No. 27).

Alum Whey.

TAKE—Alum, half an ounce ;

Milk, two quarts.

Boil them together for ten minutes, and strain.

This may be administered twice every day.

CHAPTER XIV.

RED-WATER.

THERE are evidently two distinct species of disease classed under the name of red-water. One of these is marked by discoloured urine, and the other, which occurs less frequently, exhibits blood mixed with the urine. The treatment for each differs, since they spring from opposite causes, and take their origin from different parts: the one, distinguished by its dark colour, being an affection of the liver ; and the other, known by the presence of blood, being a disease of the kidney. Of this last we shall treat first ; it is known by the name of

BLOODY URINE, OR HÆMATURIA,

and is a very terrible disease, causing great prostration, and too frequently terminating in death. Bulls and oxen are most subject to it, and it is not like red-water, peculiar to certain localities. It is distinguished by clots of blood being found in the urine, which last may not be in the least discoloured. The

urine, however, is sometimes tinged, but the tint is not that characteristic of red-water, for, instead of approaching to a brown, the urine during hæmaturia is more or less scarlet.

If the animal be observed, there will be remarked some previous symptoms, or, should the attack be sudden, the cause will be apparent. When it appears all at once, it arises from some injury sustained by the kidneys, and consequent rupture of the vessels of those glands: the symptoms are alarming, but the prospect of ultimate recovery is greater than when hæmaturia originates more gradually. The beast should be kept perfectly quiet, and astringent draughts should be given in rapid succession. One drachm of the sugar of lead may be given in a pint of cold linseed tea every hour for the first half-day. A drachm of sulphuric acid in two quarts of the same liquid may also be tried, if no immediate result be seen after four or five doses of the sugar of lead have been administered. When twelve doses have been given, sufficient will have been accomplished in the way of medicine for the present. But cold water over the loins, and even injected up the rectum, will sometimes bring about that which drugs fail to induce. The acid, with an astringent drink, may on the following day be continued.

In other instances, hæmaturia may be preceded by an excessive discharge of urine, consequent either upon injudicious medicine, impure water, or improper food. A slight increase of urine is not always to be viewed as an evil, but if it continue long, and shows no disposition to abate, active treatment ought to be

employed without delay. The food should in every case be changed, and the animal ought to be housed. A little iodine—a drachm twice a day given in thick gruel—will often be attended with the best effects; but the iodide of potassium being more soluble, less unpleasant to the taste, and almost as active in its operation, is to be preferred. Should, however, the disease not yield, but though the urine decrease in quantity, signs of fever and of constitutional disturbance start up, another course must, without loss of time, be pursued. An arched back, staring coat, straddling gait, bright eye, dry muzzle, quick pulse, hurried breathing, loss of appetite and of rumination, will denote that the kidneys are inflamed, and pressure on the loins will be answered by signs of pain, showing whereabouts the disease is located. The food now should be of the mildest kind, and, for the first day or two, the animal should be allowed only as much linseed tea as it will drink, but no water should be placed before it. A full quantity of blood, six or eight quarts, should be taken. The smaller quantity is to be taken from a fatted beast, the larger from an animal in working condition. A sheep-skin should be applied over the loins, and the body should be sheltered with a cloth or rug, in order to determine the blood to the skin. The bowels being generally constipated, warm injections should be repeatedly thrown up, and fifteen or twenty drops of the oil of croton may be given by the mouth in some thick gruel, or mixed with half a pint of linseed oil. No salts or any ginger should be administered in this disease, or anything of a diuretic or inflam-

matory nature resorted to. When the first febrile stage abates, a pound of mustard, made into a paste with warm, not hot, vinegar, may be rubbed over the loins, and, with a daily dose of calomel and opium, will expedite the recovery. It may be, however, that all shall be of no effect, but the animal becomes emaciated; the fever subsides, but debility ensues, and then blood is passed with the urine. The kidneys now have become disorganized, and some of their vessels have given way. This is a bad case, and little hope can be held out of a cure. Still we must not despair. The sulphate of copper, iron, or zinc, may each be tried in drachm doses twice a day. A seton may be passed on either side of the spine, immediately over the loins. The sulphuric acid may also be given in double the fore-mentioned doses, and the food should be bland, and at the same time nutritive.

Hæmaturia will sometimes, though rarely, occur from urinary calculus, or stone in the kidney. In that case great pain precedes the discharge of blood, or is seen before the water is discoloured. The symptoms of colic in its severest form, and accompanied with signs of fever, lead us to know that a stone is the cause of the bloody urine. The butcher in these cases ought to be applied to; though if the animal be of a valuable breed, or in too low a condition for the market, the continued use of hydrochloric acid may be tried, two drachms being mixed with every pail of water.

Like too many of the diseases of cattle, inflammation of the kidneys, and its consequence, bloody

urine, is often induced by neglect. Cold, low, wet and coarse pastures are very apt to cause it, especially in the spring of the year. On the other hand, over-feeding, producing a fulness of the system, or plethora, may also set it up. No animal is exempt from it, and young stock, injudiciously managed, are often seized by it, particularly after exposure to wet and cold.

TRUE RED-WATER,

is a disease of the digestive organs. The food is not properly assimilated, the chyle is not duly prepared, and the blood which the chyle feeds or supplies is imperfectly formed. The globules, instead of being round, are of various shapes, looking almost as if they had been broken up in a mortar. These nature seeking to discharge from the body, endeavours to remove by means of the kidneys. They are thrown off with the urine, and they communicate to the fluid the colour which gives the name to this disease.

The more frequent causes are connected with the nature of the pasture. There are some farms, or particular parts of the farm, where red-water is almost sure to follow when cattle are turned upon them. Low marshy grounds are apt to produce it, and also pastures with much woodland, and especially in the latter part of autumn, when the leaves are falling. Some have said that elm-leaves are apt to cause red-water; others attribute the disease to the oak; and many more to some of the numerous species of ranunculuses that abound in our marshy and wood-

land pastures. The truth of the matter, however, is, that no one knows what plant is most concerned in the affair; and all that the farmer can do is to observe what pastures most frequently produce red-water, and at what season of the year, and to use them as much as he can for other stock in the dangerous seasons.

A removal from a poor to a luxuriant pasture, or from a low marshy situation to a dry and lofty locality, are frequent causes of red-water; and it often occurs after a long succession of dry weather.

Cows that are dried of their milk are often attacked by it when put into luxurious pasture, while, perhaps, it does not affect those that are still milked. The reason of this is plain enough—the superfluous nutriment not being carried off by the udder in the form of milk, the digestive organs are deranged by it being thrown back upon the system.

Some breeds of cows are more disposed to red-water than others, and especially if they are brought from a distance, and the quality of their pasture materially changed, whether from good to bad, or from bad to good. A cow that has once had an attack of red-water is very liable to a repetition of the complaint. The farmer is obliged to take a great deal of care properly to manage the change of pasture with her, and, notwithstanding all his care, she will probably have two or three attacks of the disease every year. It will behove him to consider how far it is prudent to keep such an animal. No beast that is subject to periodical complaints of any kind should be kept, for the animal may easily be pre-

pared for the butcher, and disposed of with little or no loss to the farmer.

The *symptoms* of red-water are at first purging, and, while this lasts, the urine is rarely discoloured. The purgation, however, is followed by constipation, and then the characteristic symptom of the disease is seen; the appetite is impaired, the pulse quickened, and, though bounding, or even loud at the heart, is often weak, or not to be detected at the jaw. The membranes of the nostrils and eyelids are pale, and the legs cold; the milk is diminished, and rumination ceases. The urine, from being brown, often becomes black, and the disease is, in this state, denominated black-water.

The red and the black water are diseases that require prompt and careful treatment: for, although in some slight cases the beast does not seem to be much affected by either, and works or yields her milk as well as ever, yet ere long it preys upon the constitution, and the animal gradually wastes away.

It is folly to wait in order to see whether nature will effect a cure. It must be preying upon the system, and wasting the strength, and the sooner it is got rid of the better. It attacks milch cows oftener than others, and it is more injurious to them than to others. While it lasts, it often materially lessens the quantity of milk, and even after it is removed the animal is slow in returning to her former strength.

Red-water is curiously related to dropping, and, like the last disease, is a frequent sequence to parturition. In those parts of the country where

dropping is common, red-water is generally a mild disorder, and in some places it is almost unknown. Where red-water prevails, dropping also is of rare occurrence.

The first thing to be done is to remove the cause of the disease. The pasture should be changed. A more open and a drier situation should be found, and where the grass, although succulent and nutritious, is not very plentiful. If there is considerable fever, or the animal should appear to be really ill from the discharge, she should be taken under shelter and fed on mashes, with a very little hay ; or a few turnips or carrots may be allowed her if they are in season.

It is proper here to state that bleeding in this disease is not unaccompanied with danger, and is by no means imperative towards the cure. Therefore, save under the direction of a scientific practitioner, it had better not be employed. Purgatives, however, are of importance. There is an old saying, that in red-water "purge and cure," and in a great measure this is true. No matter whether the animal be purging or not, the following drink should be administered.

RECIPE (No. 28).

TAKE—Epsom or Glauber salts, one pound ;
Ginger, half an ounce ;
Carbonate of ammonia, half an ounce.

Pour one quart of boiling water upon the salts and ginger in powder ; stir them well, and, when cold, add the ammonia.

Should this dose not act, a quarter part of the

above may be given every six hours, until the bowels are freely opened, and the medicine may be assisted by clysters. The successful treatment of the disease very much or altogether depends on early and thoroughly opening the bowels. If this is early accomplished, the animal will almost certainly recover. If it is neglected, or the constipation cannot be overcome within the first two or three days, the termination will probably be fatal.

As the secretions are in this disorder affected, mild doses of mercury, a scruple of calomel twice a day, will be of much service. It must not, however, be continued too long; indeed, it is a medicine which, perhaps more than any other, requires to be administered with judgment.

When the bowels are properly acted on, mild stimulants may be exhibited, such as—

RECIPE (No. 29).

TAKE—Ginger, one drachm ;
Gentian, one ounce ; and
Spirit of nitrous ether, one ounce.
Mix, and give in a pint of cold gruel.

If with the amendment of the other symptoms, the urine should appear black, a diuretic—such as one ounce of nitre—may be given with the above drink, or even the more powerful stimulant, spirit of turpentine, in doses of one or two ounces.

The recovery of the animal is denoted by the restoration of the pulse and breathing to the natural standard, and the return of the appetite, together with the healthy appearance of the urine. It is essential, however, to exercise the greatest caution

with regard to the food for some little time, bearing in mind that the digestive organs have been greatly impaired.

CHAPTER XV.

GARGET, OR THE DOWNFALL IN THE UDDER OF COWS.

THIS is a disease of the utmost consequence to the owners of neat cattle. Young cows in high condition are most liable to it, especially at the time of calving. Such as are aged are chiefly subject to it during hot and sultry weather, particularly those which are fattened for the shambles; when this is the case, the loss is considerable, for a summer's keep is generally thrown away.

This disorder makes its appearance in one or more quarters of the udder, which become swollen, hard, hotter than usual, and painful when pressed. If the patient is a milch cow, the secretion of milk is lessened, and mingled with blood, pus, and corruption. At other times the flow of milk is totally stopped, and the tumefied quarter proceeds to a state of suppuration. It not unfrequently happens that the hind extremities, at the same time, become swollen and inflamed, especially about the hip joint, hock, and fetlock, which disables the animal from getting up, almost from moving.

It is inflammation of one or more quarters of the udder, and when not connected with parturition, is most commonly induced by the animal catching

cold. It particularly attacks those cows that have a redundancy of blood in the system, or are of a gross habit of body. Young heifers are not always exempt from it.

It will be necessary, as soon as the downfall is discovered, to bring the animal out of the pasture, and take away from three to five quarts of blood, according to her size or strength. If she is bled at night, it will be proper on the next morning to give her the purging drink, No. 17, (p. 71.)

The cow should be sparingly fed upon mashes, with a little hay, and afterwards turned on to a rather short pasture. As this is a disease most violent and dangerous in cows that are in high condition, it will be quite necessary to keep the patient for awhile on spare diet. The ground oats, and barley, and clover hay, and oil-cake, that are sometimes given, cannot fail to aggravate the complaint.

The following ointment should be well rubbed into the affected quarter, immediately after milking, but it must be carefully washed off again with warm water before the milk is drawn.

RECIPE (No. 30).

Mercurial Garget Ointment.

TAKE—Soft soap, one pound ;
Mercurial ointment, two ounces ;
Camphor, rubbed down with a little spirit of
wine, two ounces ;
Rub them well together.

The udder, being generally unnaturally heavy, should be supported by means of a piece of canvas passed between the legs and fastened over the back.

The milk must be gently, but repeatedly, drawn during the day, the utmost pains being taken to empty the bag.

In obstinate cases, the iodine has been applied to the indurated udder with very good effect.

RECIPE (No. 31).

Iodine Ointment.

TAKE—Hydriodate of potash, one drachm ; and
Lard, seven drachms.
Rub them well together.

A portion, varying from the size of a walnut to that of an egg, according to the extent and degree of the swelling and hardness, should be well rubbed into the affected part, morning and evening.

It may sometimes be advisable to give the hydriodate internally, and from a drachm to two drachms may be administered morning and night in a little gruel, with very good effect.

During the continuance of the disease, the bowels, whenever they show a disposition to become constipated, must be kept open with doses of No. 2, (p. 52.) The fever drink, No. 1, (p. 50,) will also be useful, or one or more decidedly diuretic, as

RECIPE (No. 32).

Diuretic Drink.

TAKE—Powdered nitre, one ounce ;
Powdered resin, two ounces.
Mix them together in a little treacle, and give them in warm gruel.

After the purulent and bloody discharge has ceased, and the teat seems to be free from inflammation, and nearly of its natural size, colour, and

softness, it will be prudent to continue the ointment daily, and this last drink occasionally, for two or three weeks at the least.

Cases, however, will occur, either neglected at the beginning, or the beast being too fat, and very much disposed to inflammation, in which the teat and the whole quarter will long continue hard and swelled, and tender, and will get worse and worse. The whole of the affected part must then be carefully examined, to ascertain whether there is matter within, and whether it is pointing, *i. e.* whether there is a part a little more prominent and softer than the rest. If this is detected, it should be allowed to come fully forward, and then be freely opened with a lancet or pen-knife; the matter suffered to flow out, and the wound, after the use of fomentation or the application of a poultice, dressed with the solution of chloride of zinc. The teats are sometimes cut off in obstinate cases of this kind; but that should on no account be done, for the quarter will be lost. A little tube sold for the purpose may be inserted up the teats, and their contents allowed to drain through it; but the tube should not be left constantly in, or the air, getting into the interior of the bag, will increase the irritation of the udder.

If the udder appears gangrenous, it should be scarified with a lancet, and a solution of chloride of lime applied, whilst the strength of the animal should be supported by tonic medicine. Should the quarter become mortified, which will be told by the coldness and insensibility of the part, a long incision, the



whole length of the part, should be made, and nature then will frequently cast off the substance which has lost its vitality.

Under particular circumstances, it may be necessary to remove the diseased portion of the gland with the knife. A skilful man, more competent than a common cow-leech, should be employed for this purpose.

A frequent but unsuspected cause of this disease is the hasty and careless mode of milking which is often adopted. A considerable quantity of milk is left in the bag, particularly when a cow gives her milk slowly. This is not only a loss to the farmer, from so much less milk finding its way into the dairy-room, and from the quantity of milk regularly secreted in the udder of the cow gradually diminishing, but the milk curdles in the teats, and produces swellings, and lays the foundation for *garget*.

Garget also commonly succeeds to parturition, from the udder not being previously drawn. It is true that in a state of nature the udder is never drawn until the calf is born. But the domesticated cow is not in a state of nature. The wild animal produces no more milk than is sufficient to nurture its young. Man, however, has converted the beast into a mere milking machine, and the cow thus changed requires those attentions which in a state of nature would be vexatious. As soon as the milk appears in the udder, withdraw the whole of it, no matter if it be a month prior to the time of calving. The secretion retained within the bag can only corrupt, and perhaps give rise to a violent attack of garget.

Sore Teats.—The *Sore Teats* to which some cows are subject is a very different disease from garget, and often a very troublesome one to cure. It usually occurs a little while after they have calved. If it happens in the summer, the animals are so sadly tormented by the flies, that it is difficult to milk them; and the discharge from the cracks and wounds passing through the hand in the act of milking, and mingling with the milk, renders it disgusting.

The following ointment will generally be found effectual:—

RECIPE (No. 33).

Ointment for Sore Teats.

TAKE—Elder Ointment, six ounces;

Bees' wax, two ounces.

Mix them together, and add an ounce each of sugar of lead in fine powder—stir them well together until cold.

A little of this should be rubbed on the teats morning and night after milking; and if the flies tease the animal much, a small quantity of aloes or assafoetida may be mixed with the ointment. The latter is the more effectual, but its smell is very unpleasant.

The teats are sometimes so sore that it is necessary to hobble the cow, in order to make her stand; but this is seldom effectual; for the legs of the cow get sore, and she kicks worse than ever. Kindness and patience are the best remedies. It is never of any use to beat or ill-use a cow for this fidgetiness at milking. She will either at the time do mischief in return, or she will at some other opportunity take her revenge.

CHAPTER XVI.

TREATMENT OF THE COW BEFORE AND DURING
CALVING.

It is an old and true saying, and the truth of it is nowhere more evident than in the treatment of the milch cow, that the prevention of an evil is better than the cure. The difficulty of calving, and the mortality afterwards, are in a great measure to be traced to the improper management of the cow. So far as the udder is concerned, there is a plan usually adopted,—the cow is dried six or eight weeks before calving. Two reasons are given for this: the first is, that after a long period of milking, the strength and constitution of the cow require a little respite; a more important reason, however, is, that from some cause that has never been fully explained, the mixture of the old milk, and the new secretion that nature prepares for the expected calf, produces frequently great irritation and inflammation in the udder, and obstinate garget is apt to ensue.

During the early period of gestation the animal may, and should be, tolerably well fed, for she has to provide milk for the dairy and nourishment for the foetus; yet even here there should be moderation and care: but when she is dried, her food should be considerably diminished. She should not be too fat at the time of calving, for that is the frequent cause of difficult labour, garget, milk fever, and death. There

are few things in which the farmer errs more than in this. There may be an error in starving her before she calves, but it is a much more dangerous one to bring her into too high condition.

Some cows are apt to *slink* their calves, or to produce them dead before their time. This generally happens about the middle of their pregnancy. If about that time a cow is uneasy, feverish, off her food, or wandering about in search of something for which she seems to have a *longing*, or most greedily and ravenously devouring some particular kind of food, she should be physicked (No. 17, p. 71). If she is not quieted, a fever or sedative drink should be given once or twice a day, according to the symptoms. She should be immediately removed from the other cows; for should she slink her calf among them, it is not improbable that some, or even all, of the others will do the same. This is not easily accounted for, but it is perfectly true. The cow that slinks her calf will often require much attention. She should always be physicked, and, after that, the best thing to be done with her is to fatten her for the butcher; for she will probably do the same again, and teach others the habit.

The above directions, however, must be applied with judgment. Slinking may proceed from weakness, and then tonic treatment is required. It may also spring from over exertion, fright, and other causes, and in such cases the removal of the cause will be imperative. Other measures must be regulated by the symptoms. Indeed, quiet is the only thing which can, in every instance, do no harm.



When the ninth calendar month is nearly expired,* the cow should be diligently looked after. She should be brought as near to the house as can be conveniently done. Where dropping prevails, it is the custom to take a little blood, and give a gentle dose of physic, and this generally does no harm; but it ought not to be universally adopted, and never if the cow is at all poor. It will be better if she can be separated from the other cows; and although it may not be prudent to house her entirely, there should be some shed or shelter into which she may go.

When it appears that labour is close at hand, she should be driven gently to the cow-house, and for awhile left quite alone. If, however, the udder is much distended, which in old cows and good milkers will often be the case, the milk should be drawn. This relieves the animal, and will frequently prevent an attack of garget or dropping. Nothing more should be done, neither should she be disturbed by constant watching. She will do better by herself than if she is often annoyed by one and another looking in upon her. If, however, she is discovered in the act of calving in the homestead, she should not be moved, no matter how exposed may be her situation. It would sometimes be dangerous to drive her even a hundred yards.

* The average period of gestation in the cow has been ascertained by Earl Spencer to be 284 or 285 days. The longest period under his observation was 313, and the shortest 220 days. He also found that when gestation was longer than the average, the greater proportion were bull calves.—*White on Cattle Medicine*, by W. C. Spooner.

The usual symptoms of the approach of calving are uneasiness, slight lifting of the tail, lying down and getting up, the evident labour throe, gentle at first, and increasing in force, and the commencement of the protrusion of the membranes from her shape. The still earlier symptoms, and preceding the labour by a few days, are enlargement of the udder, and redness of the space between her shape and the udder.

The labour having actually commenced, the membranes will more and more protrude, until they break, and the fluid by which the calf was surrounded will escape. If her pains are strong, the cow should for awhile be scarcely meddled with; but if an hour or more elapses, and no portion of the calf present itself, the hand, well greased, should be introduced, in order to ascertain the situation and position of the foetus. The natural position is with the fore feet presenting, and muzzle lying upon the forelegs. If the foetus is found in this position, and advanced into the passage, some time longer should be allowed to see what nature will do; and the strength of the animal may, if necessary, be supported by some gruel, with which a pint of warm ale has been mixed. If the cow will drink this, so much the better; if not, it may be horned down. As soon, however, as the throes begin to weaken, and before that, if no progress has been made, manual assistance must be rendered.

Here it will be recollected that there are two objects to be accomplished,—the saving of the lives of both the mother and the young one, and that, consequently, the means at first employed should be

gentle. The hand should be introduced, and the forelegs of the calf laid hold of, and cords passed around each, above the fetlocks. When the throes return, and only during their continuance, gentle traction may be made upon the cords so fastened. If the legs are brought forward a little way, care should be taken that the head is accompanying them. The hand will sometimes be sufficient for this purpose. If the head cannot be moved by the hand, a cord must be procured with a slip knot at the end, which is to be passed carefully into the passage, and, the mouth of the young animal being opened, fastened round its lower jaw. The end of this must be given to an assistant, who should be instructed to pull gently, but firmly, at the moment of the throes, while the principal operator is endeavouring with his arm up the passage to turn the head.

Should not this succeed, it will appear that, either from the narrowness of the pelvis, or the size of the foetus, there will be difficulty and danger in accomplishing its extraction. The operator must then begin to think less of the safety of the calf, and endeavour to secure that of the mother. The service of two assistants will now be required. One should pull at the head, and the other the feet, while the operator ascertains the progress that is made: too much force, however, should not immediately be used, for the chance of saving the young one must not yet be given up. This not succeeding, greater power must be applied, until the assistants begin to use their full strength, pulling steadily, and with the pains of the cow, if they still continue.

In the natural position of the calf, the young one is almost uniformly extracted by these means, and its life is preserved; for both the mother and her progeny will, without serious injury, bear the employment of more force than would by some be thought credible. When the womb is unable to discharge its contents, and the throes are diminishing, or perhaps ceasing, much benefit may be derived from the administration of the ergot of rye, which appears to act as a stimulus specifically on the uterus: two drachms of this medicine, finely powdered, may be made into a decoction, and given in a pint of ale, and repeated several times, if required, with intervals of twenty minutes to half an hour.

The foetus is not, however, always presented naturally, and it is the duty of the operator to ascertain its exact position in the womb. This he may not find much difficulty in accomplishing.

The most usual false position is the presentation of the head, while the feet of the calf are bent and doubled down under his belly, and remain in the womb. A cord must be passed as before around the lower jaw, the head is then to be pushed back into the womb. The operator now introduces his hand, and endeavours to feel the situation of the feet. He is generally able to find them out, and to fix a cord above each pastern, and then he can usually bring them into the passage. The head is next to be brought forward again by means of the cord; and, the three cords being afterwards pulled together, the foetus is extracted. Should the calf have been long fixed in the passage, and be evidently much swelled,

it is certainly dead. In some cases of this kind, it may be prudent to push back the legs, and, fixing hooks with cord attached to them into the orbits or holes of the eye, draw the head out, when it may be skinned and removed. A cord is fastened to the skin, and the body pushed back—the legs must be then brought forward, and the delivery is generally afterwards accomplished with ease.

When the feet present, and the head is doubled under the rim of the passage, the case is more difficult, and the calf is very rarely saved: indeed, it may be reckoned to be dead if it is found in this position. Cords are first to be placed round the feet; the hand must be afterwards passed into the womb, and the situation of the head exactly ascertained, and the cord passed round the lower jaw. The rope around the jaw, however, frequently gives way, or the head may be so twisted that the hand cannot reach the mouth of the calf. Hooks, as before directed, must then be inserted into the eyes, and the cords attached to them given to the assistants. The calf being then pushed farther back into the womb, the head must be brought into the passage, and the ropes being pulled together, the delivery effected as quickly as may be, without the exertion of more force than is necessary.

The last false presentation I shall mention is that of the breech, the tail appearing at the mouth of the shape. The hand is to be passed into the uterus, and the cords fastened above each hock. The calf is then to be pushed as far back as possible into the womb, and the hocks, one after the other, brought into the

passage. The cords are then to be shifted so as to encircle the pasterns. With the exertion of considerable force, the calf may now be extracted, and sometimes without serious injury.

By studying these cases, the operator will be enabled to adapt his measures to every case of false presentation; and they are numerous. Great force must sometimes be used to effect the extraction of the calf. The united efforts of five or six men have been employed, and (although such practice can never be defended in any case) a horse has sometimes been attached to the cords. The foetus has been necessarily destroyed, but where the operator has depended upon his strength, and not relied on his skill, the mother rarely has survived: too often she has fallen a victim to this unnecessary violence. If, by the united force of two or three men, the foetus cannot be brought away, any ruder or more violent attempt must always be fraught with danger, and will often prove fatal. The safer way for the mother—and one which, when properly undertaken, is attended with very little risk—is to cut off some of the limbs of the foetus. One or possibly both shoulders may be skinned, and separated from the body, and then the head and trunk may, by means of cords fastened to the loose skin, without much difficulty, be brought away. The knife must be one which is made for the purpose, and can be concealed or guarded in the hand; but, notwithstanding this, if the operator be ignorant or desirous of making too much haste, there is danger of wounding the womb, which is forcibly pressing on the hand of the operator.

Labour is not unfrequently prevented by the diseased state of the entrance or neck of the womb, which becomes hard and scirrhus, and thus prevents the calf escaping. When this is found by examination to be the case, an operation should be performed, which consists in dividing the contracted entrance by the means of a small knife passed up, protected by the hands and fingers. Considerable care must be exercised so as not to cut too deeply; and it is better therefore to divide the stricture slightly in several places.

From the efforts of the cow, or from unnecessary artificial violence, the uterus, or *calf-bed*, may protrude, and be absolutely inverted. The case is not desperate. The part must be cleaned from blood and dirt, and supported by a sheet; then it may be gradually returned by the union of some little ingenuity and a great deal of patience. After the womb has been got back, there may be a desire to reject it, and it has been forced out again several times, and not at last retained. To prevent this, the hand of the operator should be moved about inside the uterus, to gently irritate it and cause it to contract, which, however, will be better accomplished if a stream of cold water be ejected into the womb. No stitches should be passed through the lips of the shape. This is a brutal and an injurious practice. A compress, however, may be used, and Mr. T. W. Gowing, of Camden Town, has invented a harness, which answers admirably in cases of this kind. The cow will now require attention, and usually she will need a stimulant. A quart of ale with an ounce

of ginger may be administered, or better still, the following:—

RECIPE (No. 34).

Stimulating Drink.

TAKE—Tincture of gentian, two ounces;
Sulphuric ether, one ounce;
Carbonate of ammonia, one drachm;
Tincture of capsicums, half a drachm.
Give in a quart of cold water.

Should depression, however, not be very marked, but some signs of irritability be present, then the subjoined anodyne draught may be administered:—

RECIPE (No. 35).

Anodyne Drink.

TAKE—Powdered opium, a drachm;
Sweet spirit of nitre, two ounces.

Rub them together, adding the fluid by small quantities at a time, and give the mixture in a pint of cold gruel.

If the cow has calved unseen and unattended, she will, like every other quadruped, set diligently to work to devour the cleansing, and lick the newborn animal clean. This, however, is often carefully prevented when there is the opportunity of so doing. The calf is taken immediately away, and the cleansing thrown on the dung-heap. We act contrary to Nature in this. She would not have given to herbivorous animals this propensity to eat the placenta, had not some useful purpose been effected by it. Cleanliness was one object, the next was either to support the strength of the animal, or to have an aperient or salutary influence on her. The mother and the young will be happier if they are left to pursue the dictates of nature. Many a cow has

fretted herself into fatal fever from the sudden loss of her little one, and many a calf has died from the neglect of that cleanliness which the mother could best effect.

A great deal has been said of the necessity of cleansing the cow after calving, or the removal or expulsion of the placenta. There is much error in this. The placenta generally comes away with the calf; and it is that natural discharge from the womb, continued during several days, and which is observed to a greater or less extent in all quadrupeds, that gives the notion of any thing being retained. Medicine, nevertheless, may be necessary in order to prevent that excess of fever to which the cow in high condition is liable; but that medicine should consist of a mild purgative, in order to prevent an attack of fever, to which the animal is so naturally exposed after parturition, and which is so often hastened and aggravated by absurd management.

The mother requires little care after calving, except that of protection from too great severity of weather, and this more especially if she has been much nursed before parturition. A warm mash may be given daily for a little while; but otherwise she may return to her previous and not too luxuriant feed. The state of her udder, however, should be examined: if it is at all hard, she should be milked twice every day, and the calf should be put with her several times in the day at least, if not altogether. Perhaps she will not let it suck, especially if it is the first calf, on account of the soreness of her teats, and her being unaccustomed to the duties of nursing.

She must then be carefully watched at sucking time, and the bag, if it is very hard, and kernelly, and sore, must be fomented with warm water, or, if necessary, the garget ointment (No. 30, p. 98, or No. 33, p. 102) must be rubbed into the part principally affected. These ointments, however, ought not to be heedlessly used on every slight occasion, as they will disgust the calf and prevent it aiding the cure. The other measures should be patiently tried before unguents of any kind are resorted to.

CHAPTER XVII.

THE MILK FEVER, OR THE DROP.

THIS is a disease almost peculiar to cows in high condition at the time of calving: they are, however, rarely attacked until after they have had several calves; and it is stated that the short-horned breed, Alderneys, and good milkers, are more liable to it than others. Whenever it takes place, either at home or in the field, it is distressing to the animal, as well as troublesome to the owner; for the beast is seldom able to rise during several days. The milk fever, or drop, is most frequent during the hot weather of summer. The cows most liable to be attacked by this fever have large udders, that have been full of milk for several days before calving. It is a very dangerous disease when severe, and often proves fatal even under the most judicious treatment.

The milk fever most commonly appears about the second or third day after calving; but the cow is occasionally down within a few hours after parturition.

There are evidently two varieties of this disease, one being considerably more dangerous than the other. In the severer kind, the brain, as well as the spinal marrow, is affected, whilst the milder disease is principally confined to the loins.

In the former kind, which is very appropriately called dropping after calving, we first notice the animal to cease feeding, the breathing then becomes irregular and disturbed, the eyes full and glassy, and the pupil dilated. This passes off, but may return several times. At length the appearance is wild and strange, and staggering ensues. The animal, after reeling about for some time, falls, and frequently never rises again. She then becomes unconscious; the head is turned on one side, thrust straight out, or sometimes knocked about with violence; sensation appears lost, so that, if liquids are given with the horn, they often enter the windpipe without occasioning coughing. The pulse is generally very quick, but weak; the bowels are obstinately constipated, and hoven frequently takes place. If the animal dies, it is generally within forty-eight hours from the commencement of the symptoms, and indeed sometimes only a few hours afterwards.

On examining the bodies of cows that have died from this disease, the principal mischief has been found in the brain and spinal cord. The womb, in the greater number of instances, has been found in the same state as it usually is after parturition; but,

in some cases, it presents the appearance of the most intense inflammation. In such cases, it appears that the inflammation of the womb is superadded to the other disease. In other instances, various parts have been found either congested or inflamed. In fact, no part seems to be exempt, and any part may become diseased.

In the milder form of this complaint, which is palsy of the hind extremities, it is, to a greater extent, a local malady; the spinal cord at the region of the loins is affected, but the brain is comparatively exempt; and thus, though the hind extremities are paralysed, yet consciousness is retained. In both the severe and mild form, the digestive organs are altogether deranged, and in fatal cases, the third stomach is found loaded with hard indigestible food.

The cause of the disease has not been ascertained, but it appears connected with a high state of condition, and is best prevented by regulating the food, previous to her calving.

The treatment of this disease must be modified according to the severity of the symptoms, and the fact of its being the milder or the severer affection, whether it is dropping after calving, or palsy, we have to conquer. It is important also to ascertain whether the secretion of milk has ceased; when this is the case, the disease is most frequently fatal, and when not so, the cow generally recovers.

In dropping after calving blood should always be abstracted. It is better taken before the animal falls, but even should she be down the milk vein should be opened, and, if the stream will flow, a full

quantity, six or eight quarts, should be withdrawn. The principal expectation of relief, however, must be placed on the exhibition of powerful purgatives:—

RECIPE (No. 36).

TAKE—Epsom salts, one pound ;
Flour of sulphur, four ounces ;
Powdered ginger, four drachms ;
Spirit of nitrous ether, three ounces.
To be dissolved in a quart of cold water.

One-half of this draught may be repeated twice a day until the bowels are opened. It will even be proper to add from ten to twenty drops of the croton oil to the first draught, and two drachms of carbonate of ammonia and ten grains of cantharides have been conjoined with advantage. It is of importance, when the cow is unconscious, to give the draught by means of Read's syringe, putting the tube half-way down the neck, so as to prevent any of the medicine getting into the windpipe, where it has been known to produce fatal inflammation. The action of the physic should be assisted by frequent clysters, and the bladder should be emptied from time to time by a catheter. A blistering liniment should be rubbed on the course of the spine: in the milder disease it may be limited chiefly to the loins, but in the severer affection it should extend from the head to the tail, and be often repeated. It is astonishing what a vast quantity of purgative medicine may often be administered in this disease without producing any effect, the nervous system being so much depressed. On that account, stimulants ought to be

largely combined with every dose. The cow should be supported upon her chest by means of trusses of straw, and on any sign of hoven the gas should be released as hereafter directed. If the breath is at all offensive, or the gas which escapes has any foul odour, chloride of lime in two-drachm doses may be administered, and if not, when the rumen swells, the same quantity of carbonate of ammonia should be given.

In the milder disease, or palsy, the treatment must be similar in its nature, though not so powerful as that previously recommended; the croton oil may be dispensed with, and the blistering application confined to the loins.

The cow should be made as comfortable as possible. A good bed of straw should be got under her, and her fore-quarters should be raised, so that the dung and urine may flow away. It not unfrequently happens, that as soon as the cow begins thoroughly to purge she gets up and walks about, although still continuing for awhile in a weak state.

In order to make her as comfortable as possible, the cow should be shifted from side to side twice in the day; all filth of every kind should be carefully removed, a warm cloth thrown over, and warm gruel or linseed-tea frequently offered to her, with mashes, if she will eat them; and sometimes the appetite is not at all affected.

It will be a very bad symptom if she begins to swell, and there are frequent belchings of very foetid gas. If the digestive powers are thus weakened, there is but little hope. The following drink should

then be given, still continuing the purgative medicine if necessary :—

RECIPE (No. 37).

Cordial Drink.

TAKE—Chloride of lime, two drachms ;
Caraway powder, one ounce ;
Gentian powdered, half an ounce ;
Ginger powdered, half an ounce ;
Essence of peppermint, 20 drops.
Give in a quart of thin cold gruel.

Half the quantity of the above ingredients should also be given morning and night as a drink, in a pint of ale, with the same quantity of thin gruel ; and during the day, as often as the fœtor is perceptible, the animal may take a quart of cold water, in which a scruple of the chloride of zinc has been dissolved.

If the cow should continue to swell, relief must be obtained by means of the flexible pipe for that purpose ; and, if the proprietor has the pump which should accompany the pipe, some gallons of warm water in which a little ginger has been boiled may be thrown into the paunch, in order to wash out a portion of its contents.

There is one thing that should not be omitted, and that is the attempt, two or three times every day, to bring back the milk, by diligently stroking the teats. As the drying up of the milk is among the earliest symptoms of the attack of the disease, so the return of it is the happiest promise of recovery.

If the cow with palsy does not get up on the third or fourth day, the case, however, should not be abandoned, for she has done well even after the fourteenth day.

If the udder is hard and knotty, the camphorated oil (No. 12, p. 62) should be well rubbed over it twice every day; and, if it is very hot and tender, fomentations of warm water should be used, but no cold lotion is admissible in such a case.

As the cow is frequently unwilling, and sometimes unable, to take sufficient nutriment herself, some nutritious food should be horned in; and there is nothing better than good thick gruel. Two or three quarts given four times every day will be enough. All sweet things, which farmers are so apt to give, should be omitted; the food in the paunch is sufficiently ready to ferment, without giving any sugar.

A cow labouring under palsy should scarcely ever be left. She naturally gets very tired of couching so long, and sometimes attempts to shift herself, and would be sadly bruised if assistance were not afforded; besides which, often in the early stage of the disease, and occasionally afterwards, there is some affection of the brain, and the animal is half unconscious of what she does, and would beat herself dangerously about if care were not taken of her.

I must again repeat, that prevention is better than cure; and that the best preventive of milk fever is not to let her be in too high condition; and, when the time of calving arrives, to observe the udder, and, if it should be distended, to relieve it.

CHAPTER XVIII.

THE BLAIN, ETC.

THIS is by no means an unfrequent disease, and is commonly known by the name of *blain*, *hawkes*, or *gargyse*.

The animal appears dull and languid, the eyes red and inflamed, with tears trickling from them. A swelling begins about the eyes, and occasionally appears on other parts of the body; but the characteristic symptom is, that there are generally blisters under the tongue, or at the back part of the mouth; the pulse is quicker than natural; there is more or less heaving of the flanks; and the bowels are sometimes constipated. When the complaint is not checked at the onset, there is often a copious flow of saliva from the mouth, mixed with a purulent, bloody, stinking discharge; the beast becomes reduced, and is in danger of being suffocated by the great and rapid enlargement of the tongue.

Causes.—Those cattle are the most subject to this complaint that are in high condition. It is most prevalent in the summer months, especially when the weather is hot and sultry, but it occurs at all times of the year, and in pastures of every kind, yet oftenest in low, marshy situations.

Treatment.—This is a disease which must not be trifled with for a moment. I have known it prove fatal in the course of one day; and when neglected

at the beginning it has speedily assumed a malignant character, which baffled every attempt to arrest its progress.

The remedy, and often a very expeditious one, for this disease, is to cut deeply, and from end to end, the bladders which will be found along the side of and under the tongue. They will appear to be filled with a glutinous matter, and, although there may not be much bleeding from them at first, considerable bloody fluid will gradually ooze out, the swelling of the mouth and head will subside, and the beast will be very much relieved. All the curious operations of thrusting sticks and tar down the throat have for their object to break these bladders, but this is most easily and completely effected by the knife.

If, however, much fever accompanies the enlargement of the tongue, it will be prudent to take away five or six quarts of blood, and to give a physic drink. The mouth may likewise be washed with a solution of the chloride of zinc in water, in the proportions of half a drachm of the powdered chloride to a quart of cold water, while the breath is offensive, and with equal parts of tincture of myrrh and water afterwards, in order to promote the healing of the wound.

Caution, however, must be exercised with regard to purgatives; and, as a general rule, they should, perhaps, not be administered after the first occasion. Though some symptom of fever should be present, if the pulse be quick and weak, and the beast sleepy, both bleeding and purgatives are better withheld; stimulants ought immediately to be employed. Two drachms of the chlorate of potassa or of the chloride

of lime, with half an ounce of liquor ammonia, and three ounces of sulphuric ether, may be administered in a quart of cold gruel, to which has been added a pint of ale; and this drink may be repeated four or five times in the course of the day.

Should considerable weakness and loss of appetite remain when the more marked symptoms seem to be subdued, the following tonic drink may be given:—

RECIPE (No. 38.)

Tonic Drink.

TAKE—Gentian, four drachms;
Sulphate of iron, two drachms;
Ginger, half an ounce.
Mix, and give in a pint of gruel.

This may be repeated daily, or twice a day, as circumstances may require.

It will sometimes happen that the animal will for some days refuse to eat, on account of the soreness of the mouth. Thin gruel should be always placed within his reach, and plenty of thick gruel administered with the horn.

The person who has to attend on cattle that have the blain should take care that none of the discharge from the mouth comes in contact with any sore place, for very troublesome ulcers have been produced by this means. If there is any fear that a sore place has been thus inoculated, the lunar caustic should be applied to it.

CHAPTER XIX.

THE BLOOD, BLOOD-STRIKING, BLACK-LEG, QUARTER-
EVIL, OR BLACK-QUARTER.

THE disease which I am now to describe is indicated by these curious names, and a great many more, in various parts of the country. Very few of these names, however, are misplaced, for they indicate some variety, or symptoms, or stage of this dreadful malady. It would be much better recognised by the title of *Inflammatory Fever*.

Its attack is confined almost entirely to animals that are in high condition, or rapidly improving; I should say, too high condition, and too rapidly improving. In some instances the disease will give some warning of its approach, but generally the beast appears to be to-day perfectly well, and to-morrow he will be found with his head extended, his flanks heaving, his breath hot, his eyes protruding, his muzzle dry, his pulse quick and hard—every symptom, in short, of the highest state of fever. He utters a low and distressing moaning; he is already half unconscious; he will stand for hours together motionless, or if he moves, or is compelled to move, there is a peculiar staggering, referrible to the hind limbs, and generally one of them more than the other: by and by he gets uneasy, he shifts his weight from foot to foot, he paws faintly, and then lies down. He rises, but almost immediately

drops again. He now begins to be, or has already been, unconscious of surrounding objects.

There are many other symptoms from which the different names of the disease arose. On the back, or loins, or over one of the quarters, there is more or less swelling; if felt when it first appears it is hot, and tender, and firm, but it soon begins to yield to the touch, and gives a singular crackling noise when pressed upon. One of the limbs likewise enlarges, sometimes through its whole extent, and that enormously. It, too, is at first firm, and hot and tender, but it soon afterwards becomes soft and flabby, or pits when pressed upon, *i. e.* the indentation of the finger remains. When examined after death, that limb is full of dark putrid fluid: it is mortified, and seems to have been putrefying almost during the life of the beast. Large ulcers break out in this limb, and sometimes in other parts of the body, and almost immediately become gangrenous; pieces of several pounds in weight have sloughed away; three-fourths of the udder have dropt off, or have been so gangrenous that it was necessary to remove them, and the animal has been one mass of ulceration. The breath stinks horribly; a very offensive, and sometimes purulent and bloody fluid runs from the mouth; the urine is high-coloured or bloody, and the fæces are also streaked with blood, and the smell from them is scarcely supportable.

In this state the beast will sometimes continue two or three days, at other times he will die in less than twelve hours from the first attack. In a few instances, however, and when the disease has been

early and properly treated, all these dreadful symptoms gradually disappear, and the animal recovers.

Although much evil has resulted from the putrefied carcasses of the beasts that have died of inflammatory fever being suffered to lie about, yet it does not appear that there is anything infectious in the disease. It is true that if one bullock on a farm dies of "*the blood*," many will usually follow; but it is only because they have been exposed to the same exciting cause. Fortunately, also, for the farmer, it is almost confined to young cattle. Those that are between one and two years old are most subject to it; but some of three and four years are occasionally attacked by it, and I have seen others of double that age die under it. Milch cows, or lean cattle, are in a manner exempt from it.

It is to a redundancy, or overflowing of the blood, the consequence of the sudden change from bad to good living, that this disease most commonly owes its origin. It is most prevalent in the latter part of the spring and in the autumn; and very often, at those seasons of the year, proves destructive to great numbers of young cattle in different parts of the kingdom. It is sometimes, however, seen in the winter and the early part of the spring, when the cattle are feeding on turnips. Some situations are more subject to this complaint than others. It is most frequent in low, marshy grounds, and pastures situated by the side of woods.

It is a disorder of high condition and over-feeding. The times of the year and the character of the cattle prove this. It mostly occurs in the latter part of

the spring, when the grass is most luxuriant and nutritive, and the autumn, when we have the second flush of grass; and the animals attacked are those principally that are undergoing the process of fattening, and that have somewhat too suddenly been removed from scanty pasturage and low feeding to a profusion of herbage, and that of a nutritious and stimulating kind. The disease sometimes occurs when the cattle have been moved from one pasturage to another on the same farm; but more so when they have been brought from poor land, at a distance, to a richer soil. There are in the latter case two preparatory causes,—the previous poverty, and the exhaustion of the journey.

Farmers may endeavour to account for it, if they please, from their beasts having fed on certain acrimonious or poisonous plants, as the different species of the crowfoot, or some others; but there cannot be a moment's doubt that the evil is to be traced to their own bad management, and to that almost alone. I will not say that there may not be some atmospheric agency. "*The blood*" is much more prevalent in some years than in others, and more fatal when it does occur; but if the fact is carefully examined, rapid vegetation has then succeeded to a cold and thriftless season, and thus the causes of which I have spoken have been more powerfully called into action, while the influence of the atmosphere may have materially modified the character of the disease.

In examining cattle that die of this complaint the affected part or parts are found mortified, and emit a peculiar cadaverous smell; and there is a glutinous

or bloody ichorous fluid of a very offensive odour between the skin and flesh. In two instances I found the membranes of the brain mortified, being here and there of a livid colour, and easily torn.

This disease rarely admits of cure, but fortunately it may in general be prevented. If the malady is discovered as soon as it makes its appearance, the beast should be immediately housed, and then from four to six quarts of blood taken away, according to the age and size. Then give the purging drink (No. 2, p. 52), which will be found of a proper strength for young cattle from the age of one to two years.

As soon as the bowels are opened, the fever drink (No. 1, p. 50) should be administered, and repeated morning, noon, and night, all food except a little mash being removed.

At the first appearance of the disease, the part principally affected should be fomented several times in the course of the day with hot water, and for at least an hour each time, the part being well covered when the operation is ended. For this purpose, there should be two or three large pieces of flannel in the water, that after one of them has been applied thoroughly hot and dripping to the part affected, another equally hot may be ready when this gets cold.

As soon as the fever begins evidently to subside, and the beast is more himself, and eats a little, the fever medicine must be withheld. It should be remembered that this is a highly inflammatory disease, which soon passes into debility almost as dangerous as the fever. The ox, therefore, must not be too

much lowered; but, the fever abating, the following mingled tonic and fever medicine should be given:—

RECIPE (No. 39).

Mildest Tonic Drink.

TAKE—Gentian, an ounce;
Liquor ammonia acetatis, three ounces;
Spirit of nitrous ether, four ounces.
Give in a quart of cold gruel.

This may be administered three or four times a day, and, if the beast can be moved, it should be driven to a scanty pasture.

Should not the disease be discovered until there is considerable swelling, and a crackling noise in some tumefied part, a cure is seldom effected. Bleeding, at this stage of the complaint, should never be resorted to. If a cure is in these cases attempted, the drink (No. 14, p. 65) should be given and repeated every hour, which may invigorate the system by its cordial and tonic powers, and prevent the mortification extending.

The swelled parts should be frequently bathed with equal portions of vinegar and spirits of wine, made as hot as the hand will bear; or if ulceration seems to be approaching, incisions should be effected along the whole extent of the swelling, and the part bathed with spirit of turpentine made hot.

If ulceration has commenced, accompanied by the peculiar foetor that attends the disease, the wounds should be first bathed with a disinfectant lotion.

RECIPE (No. 40).

Disinfectant Lotion.

TAKE—Chloride of zinc, a drachm ;
Water, a pint.—Mix.

The hot spirit of turpentine, which will be improved if an ounce of camphor be dissolved in every pint, should be applied immediately after this, and continued in use until either the mortified parts have sloughed off, or the sore begins to have a healthy appearance. The tincture of aloes or Friar's balsam may then follow.

Since so little can be done in the way of cure, we next anxiously inquire whether there is any mode of prevention. The account which I have given of the disease immediately suggests the prevention, viz., to beware of these sudden changes of pasture ; now and then to give a mild dose of physic to those beasts that are thriving unusually rapidly, and, whenever the disease breaks out on the farm, to remove to shorter and scantier feed every animal that has been exposed to the same exciting causes with those that have been attacked. The farmer should be particularly watchful during the latter part of the spring and the beginning of the autumn : he may thus save many a beast, and the physic will not arrest, but rather assist their improvement. He who will not attend to simple rules like these will deserve the loss that he may experience.

CHAPTER XX.

MURRAIN, OR PESTILENTIAL FEVER.

THIS is not the fever which I have just described, but although there is a considerable similarity between the diseases, it is distinguished by some peculiar and fatal characters. It has from time to time destroyed immense numbers of cattle on every part of the continent of Europe. Its ravages have sometimes been dreadful in our country. In the spring of the year 1714, more than 70,000 cattle died of this pest in England.

Fortunately of late years this destructive malady has been comparatively unknown among us, except that in some unfavourable districts a few cases have occurred every year. Its latest visitation, clothed with all its most dreadful attributes, was in 1768. It is thus described by Dr. Layard, an intelligent physician of that period: "The animal was found with its head extended, that its laborious breathing might be accomplished with less dread of suffocation; there was considerable difficulty in swallowing; enlargement of the glands under the ear, and frequently swelling of the whole of the head; uneasiness about the head; seemingly itchiness about the ears; dulness; frequent, but not violent heaving. To these succeeded staggering and great debility, until the animal fell, and was afterwards either unable to stand long at a time, or to stand at all. A constant

discharge of green bilious stinking fæces now appeared; the breath was likewise offensive; the very perspiration was sour and putrid; the head swelled rapidly; the tongue protruded from the mouth; and the saliva, at first stinking, but afterwards purulent, bloody, and more and more offensive, flowed from the mouth. A crackling was heard under the skin when the back or loins were pressed upon; tumours appeared, and abscesses were formed in various parts; they multiplied and they spread, and discharged a dreadfully stinking fluid.

“By and by a fresh access of fever seemed to supervene; the breath got hot, and the extremities were cold; the purging increased, and was even more offensive; the urine and the dung excoriated the neighbouring parts as they passed away; and on the seventh or ninth day the animal usually died.”

If a milch cow was attacked her milk dried up gradually, her purging was more violent, and her debility more rapid than that of other cattle. Bulls and oxen were not so violently seized as cows and calves; and cows with calf, and weakly cow-calves, were most in danger. If cows slipped their calves they usually recovered. Calves received the infection from the cow, and the calf, on the other hand, often infected the cow.

The disease was epidemic. It depended on some atmospheric influence, which we are unable to understand; but at the same time it was contagious, and that to a very great degree. If it once appeared on a farm, almost all the cattle were sure to be affected: yet it was ascertained that the power of infection

did not extend more than a few yards; and that a hedge alone often separated the dead from the living. The murrain seemed mostly confined to cattle, for horses and sheep, and swine and dogs, lived in the midst of the infection and escaped, and even some neat cattle seemed to possess a security from infection.

The favourable symptoms were eruptions on various parts of the body, not indeed too numerous, and their breaking and discharging a considerable quantity of purulent matter. If from exposure to cold, or other improper treatment, the boils were repelled, or if they gradually lessened and disappeared, death was an almost inevitable consequence. If the dung became more consistent, and the urine not so highly coloured, and the mouth cooler, and the beast began to brighten up, and look a little cheerfully around him, there was hope; but if the boils receded, and the scouring became constant, and the breath was hot, and the horns were cold, and the difficulty of breathing increased, and the animal groaned at every motion; if the eye sunk, and the pulse intermitted, and the beast was almost unconscious, and a cadaverous smell proceeded from him, it was seldom that he escaped.

On examination after death, the whole of the cellular texture under the skin was found to be distended either by gas or a sanious fluid, and, in most cases, partly by both. The gas rushed out when the skin was punctured, and stunk most abominably; and the cellular texture and the muscles were rendered livid and black by the dark fluid

which they contained. The brain and its membranes were inflamed, and the ventricles filled and distended. The mouth and the nose, and fauces and throat, and the frontal sinuses to the very tip of the horn, were filled with ulcerations and with pus. The lungs were inflamed in patches, and filled with tubercles. The liver was large, and so rotten that it was torn by the slightest touch. All the vessels of the liver and the gall bladder were gorged with greenish fetid bile. The paunch was distended with wind, and undigested and generally hardened food. The third stomach contained between its leaves a quantity of dry and hardened food, so hard and brittle that it might be almost powdered; and the fourth stomach, or rennet bag, was empty, but highly inflamed and gangrenous in various places. The intestines were also beset with livid and black spots.

The uterus of those that were in calf was gangrenous, and the smell from the fluid which it contained was almost insufferable.

It seemed to be a high degree of fever, which had speedily run on to a typhoid and malignant form, and by which every part of the frame was poisoned.

We have not for a long while been visited to any great extent by this malady, and, should it again occur, the veterinary art is far more advanced than it was many years ago, and there is reason to hope that it would not be so destructive as in times past.

The treatment would be, first, and the most important thing of all, to separate the diseased from the sound: to remove every animal that seemed to



be in the slightest degree affected to some isolated portion of the farm, where contact with others would be impossible. It would be imprudent to remove those that appeared to be unaffected, because it would be impossible to know that the virus did not lurk in their veins, and thus the poison might be conveyed to other parts of the farm. The sick only should be taken away, and that as speedily as possible.

In the early stage of the disease there would be every reason to doubt of the propriety of bleeding. The fever, which, according to every account, characterizes the first attack, should, if possible, be subdued; but the certainty of speedy debility warns us to do nothing which, by impoverishing the system, might detract from the power of struggling with the disease.

A mild oleaginous laxative, half a pint of linseed oil, with which was mingled a drachm of chloroform, might be given if the bowels were constipated; but, even should it not speedily operate, it ought not to be repeated. We should rather seek to relieve the bowels by diluents, aided with clysters and febrifuges, than administer any thing likely to increase the irritability of the digestive track. Neither grass, hay, grain, or roots should be allowed, nor should the animal be coaxed to eat. Plenty of water and thin gruel should compose the diet; and, during the height of the fever, draughts composed of six ounces of liquor ammonia acetatis and one ounce of sulphuric ether ought to be given four or five times daily.

The shed should be cool and airy, and the place kept clean. So soon as the first active stage of the disorder has subsided, without waiting for debility to set in, the treatment should be changed, and every measure adopted likely to husband the strength and enable nature to rally. A pint of thick gruel should be horned down every third hour; and as the disease progresses, a like quantity of ale may be added to every second dose. The following drink should also be exhibited:—

RECIPE (No. 41).

Drink for Murrain.

TAKE—Sweet spirit of nitre, two ounces;
Camphor, two drachms;
Chloride of lime, in powder, one drachm;
Prepared chalk, an ounce.

Rub them well together, and give them with a pint of cold gruel.

This may be repeated every six hours, until the purging is considerably abated; but should not be continued until it has quite stopped.

The purging being abated, we must look about for something to recall the appetite and recruit the strength, and I do not know anything better than the following:—

RECIPE (No. 42).

Tonic Drink for Murrain.

TAKE—Columba root, half an ounce;
Canella bark, half an ounce;
Ginger, one drachm;
Sweet spirit of nitre, an ounce.

Rub them together, and give in a pint of thick gruel.

The mouth should be frequently washed with a dilute solution of the chloride of zinc. The ulcerated

parts, if they are fetid, should have the same disinfectant applied to them, and injections of linseed tea, to which a pint of the solution of the chloride of zinc had been added, should be repeatedly thrown up, and the walls and ceiling, and every part of the cow-house, should be washed with the solution.

One caution should be used with respect to the food; the beast should not be coaxed to eat, in order to support him under the debilitating influence of the disease, before he shows a disposition to ruminate his food. Until he begins again to chew the cud, we are only injuriously overloading the paunch by enticing the animal to eat. Until the rumination is re-established, the food should consist of gruel, or any other nutritive fluid. When the animal appears to be recovering, he should be gradually exposed to cool and open air, and very slowly permitted to return to his usual food.

When the disease is quite subdued, the cleansing of the cow-house should be seriously undertaken and thoroughly accomplished. Let every portion of filth and dung be carefully removed, the walls and the wood-work and the floor carefully washed with soap and water, and then every part washed again with a lotion, in the proportion of one ounce of the chloride of zinc to a bucket of water. This will be better than any fumigation that can possibly be applied. Should, however, the chloride of zinc not be at hand, then a simple and cheap fumigation, on which very considerable dependence can be placed, may be resorted to. To render it effective, however, the place to be fumigated should

be well moistened in every part, otherwise but little good will be done.

RECIPE (No. 43).

Fumigation.

TAKE—Common salt, two pounds
Oil of vitriol, one pound.

The salt should be put in an earthen vessel, and placed in the middle of the cow-house, and the oil of vitriol gradually poured upon it. They should be stirred well together with a stick; and placing a lamp underneath the earthen vessel, the person preparing the thing should then retreat as quickly as he can, to prevent himself from suffering by the fumes of chlorine; closing the door carefully after him, every window and aperture having been previously stopped. In a few hours he may enter the cow-house again, and remove the vessel without any serious inconvenience.

There is every reason to hope that the murrain will never again thin our herds of cattle to any great extent, not only because veterinary science is so much advanced, and the farmer can have immediate recourse to the assistance of a skilful practitioner, but because agriculture has been so much improved within the last century, and particularly that important and most beneficial system of under-draining has been introduced. When the murrain so sadly prevailed in foreign countries, and in England, it uniformly commenced in, and was chiefly confined to, some low marshy district. This was particularly the case in the murrain which prevailed in France

in 1779. It was principally confined to the low meadows and marshes, and it appeared soon after an unusual inundation had subsided. In Italy, where the murrain has been more prevalent and fatal than in any other country, it always commences in some of the extensive and pestilential marshes with which the Italian coast abounds. In the account of a pestilence that carried off thousands of cattle in Hungary, it is said that the spring had been rainy, with great changes in the temperature of the atmosphere. This will afford a useful hint to the farmer as to the system of agriculture he should pursue, and the situation to which he should, if possible, remove his cattle when any pestilential disease breaks out. The infected cattle, and the herd generally, should not only be removed to some rather elevated and dry situation, but sheltered as much as possible from the sudden variations of the external air, at least by night.

It is to be hoped, too, that some legislative provision will be made to prevent as much as possible the spread of the disease; that every animal seriously affected shall be immediately consigned to the slaughterer, and that no portion of the hide or carcass shall by any means be permitted to be used, but the whole deeply and speedily buried.

When the murrain was so prevalent in Holland, and it seemed as if every beast was destined to fall a victim to it, some speculative men had recourse to inoculation. The matter discharged from the nostrils, or from an ulcer of a beast not apparently affected with any very virulent form of the disease,

was inserted under the skin of a sound animal. The disease was produced, sure enough, but with very doubtful and often lamentable effect. In some cases a worse malady was induced. In a few it was materially mitigated; a considerable proportion still died, and doubtless some who would have escaped the disease had it not been for the inoculation.

CHAPTER XXI.

THE EPIZOOTIC OF 1840 AND 1841.

SINCE the eighth edition of this work was published, a new disease has appeared amongst cattle and sheep, and for the last twelve years has spread through the kingdom as an epizootic, scarcely sparing a single parish from its visitation. Though not by any means usually fatal in its effects, it has yet altogether destroyed a great number, and the pecuniary loss has been still greater than the value of the cattle sacrificed, from the debilitating effects which it has produced or left behind. It has been proved to be extremely infectious, and it is difficult to say whether the greater number of cases have been thus produced, or spontaneously occasioned. It has sometimes appeared amongst the cattle of a farm, scarcely sparing a single beast; and again, after some months' absence, it has reappeared on the same farm amongst the sheep, or perhaps the swine.

In some cases, and on some occasions, the symptoms of the disease have been very slight, and the animals have soon got well without any medical treatment; but in other cases the symptoms have been extremely severe, and attended with danger. It has usually happened that the earlier and the later cases have been somewhat mild, and the middle ones much more dangerous. In this respect it has resembled other epizootics. The cause of this disease is altogether unknown; it is probably owing to some atmospheric agency, the nature of which it is impossible to ascertain.

The disease is decidedly constitutional, though manifesting itself locally in a peculiar manner: its nature is that of a low fever, great debility quickly supervening, and sometimes exhibiting a tendency to putridity. If the very earliest symptoms are observed, it will generally be found that cold extremities, a staring coat, and indeed a cold fit, is exhibited; but a reaction soon follows, in which the limbs become hot, and then saliva issues from the mouth, and the tongue is somewhat swollen. At the same time is manifested some degree of tenderness in the feet, which the animal frequently raises from the ground and shakes; the pulse is quickened, and the beast is altogether feverish. The animal makes a smacking noise with its lips, the soreness of the mouth increases, small bladders are found on the tongue, the sides of the mouth, and about the muzzle; vesicles likewise appear between the hoofs, and sometimes also on the teats. The animal gradually ceases to feed, from the pain experienced in

the act, and sometimes the appetite itself fails. The bladders become opaque, and at length burst and discharge a watery fluid; and this increases the soreness, exposing a surface of high vascularity. The flow of saliva increases, and in a few days the cuticle sloughs off. If the disease, not being attended to or wrongly treated, degenerates into typhus, sometimes there are swellings along the back and loins, which appear to contain air. The disease thus continues, becoming gradually more severe until four or five days from the commencement, when amendment generally takes place, and the beast gradually recovers. Occasionally, however, the complaint becomes complicated with inflammation of some organ—such as the lungs, and the danger is then much greater, or it may take on a low typhoid form, under which the animal may sink. In milch cows, the udder is often affected, occasionally much inflamed, and attended with danger; if cattle suffering from this disease are obliged to travel, or even move about for their food, the hoofs frequently are cast off.

The *treatment* of this disease must be moderate in its character, and should consist in checking the fever, relaxing the bowels, healing the sores on the mouth and feet, and afterwards assisting the strength with tonics.

Bleeding should be abstained from; but the following laxative should be administered without loss of time:—

RECIPE (No. 44).

TAKE—Epsom salts, half a pound ;
Sulphur, two or four ounces ;
Nitre, half an ounce ;
Ginger, two drachms ;
Spirit of nitrous ether, one ounce.
Dissolved in cold water or gruel.

The following liniment may be applied to the mouth several times a day :—

RECIPE (No. 45).

TAKE—Borax, half an ounce ;
Treacle, a quarter of a pint.
Dissolved in a pint of warm water.

The feet should be carefully pared, removing so much of the horn as may be detached, thereby giving exit to the fluid, and preventing the inflamed surfaces being pressed upon. No more horn, however, need be cut away than is necessary to accomplish these objects, and it is even better to remove too little than too much of the hoof; but if much inflamed, a poultice may be applied; and if not very irritable, a solution of chloride of zinc, a scruple of the zinc to a pint of water, should be constantly used.

When all discharge has ceased, and the feet are healing, a dressing of simple tar will stimulate, and at the same time protect the parts. Should, however, much fungoid or proud flesh sprout up, which is by no means a rare occurrence, the excrescences must be removed, and for this purpose sulphate of copper is to be used, and the places to which it is applied are to be tightly bandaged.

Linseed and oatmeal gruel should be offered to drink, with the best food that can be procured. If the feet are affected, the animals should not be pastured; but if housed, they should be kept clean and dry. When the bowels are relaxed, and there appears much weakness, the following tonic should be given daily:—

RECIPE (No. 46).

TAKE—Powdered ginger, two drachms;
Powdered carraway seeds, one drachm;
Gentian, powdered, four drachms;
Spirit of nitrous ether, two ounces.
To be mixed slowly with cold gruel.

If there should be any appearance of colic or spasm of the bowels, an ounce of laudanum may be given with the other medicine; and if the liver is affected, half a drachm of calomel may be added, and a blistering application rubbed on the right side.

Should the lungs be inflamed, it will be proper to give the following drink four or five times daily, withdrawing such portions of the food as are of a stimulating nature:—

RECIPE (No. 47).

TAKE—Extract of belladonna, half a drachm;
Nitre, four drachms;
Tartar emetic, one scruple.

Rub down the extract in a little water, and give in a quart.

If the udder is affected, it should be well and frequently fomented with hot water, and the milk should be frequently drawn with great care. Should the teats remain sore, they may be dressed with the ointment recommended before for this purpose.

The epidemic has sometimes appeared amongst sheep in so slight a form, that they get well without assistance, or simply by the paring away the perfectly detached horn, and the application of tar to the feet, no other part being affected. At other times, however, its appearance has been far more severe; the hoofs in many cases have come off, from the formation of matter underneath, and the poor animals have been altogether unable to stand. The mouth in these animals is rarely affected, and the appetite, therefore, is not greatly impaired. In wet weather the disease is more severe than in dry, and the feet are sometimes so bad as to resemble the worst form of foot rot.

The feet will therefore, in sheep, require the principal attention. The animals ought always to be taken into the yard, and plentifully supplied with good food. The detached horn should be sufficiently cut away to afford exit to any matter that may be under; but the knife must be used with caution, and sparingly, as fungous flesh is so apt to grow when the horn is removed.

The same medicine recommended for cattle should here be employed. It will be desirable, unless the symptoms are slight, to administer the internal medicine, one-sixth or one-eighth part being sufficient for the sheep; and it will not be necessary to continue its use so long.

Pigs may be treated in a similar manner.

CHAPTER XXII.

PLEURO-PNEUMONIA, OR THE EPIZOOTIC OF 1842
AND 1843.

THE disease recognised by this term first made its appearance in this country in the winter of 1842 and 1843. On the continent, however, it had been long known, and in Switzerland it is said to have existed so far back as the middle of the last century. In England it first appeared upon the south-eastern coast, and this circumstance naturally tends to support the opinion that the disease, which can be clearly traced from foreign parts, is of a contagious nature. - All over the island it is now unfortunately too well known; and it is somewhat strange that, notwithstanding the losses it has produced, no regular investigation has been undertaken to ascertain the true character and proper treatment of the disease. Had a regular inquiry been, in the first instance, instituted, the knowledge which we now possess would have been earlier gained, and a large amount of valuable property would not have been sacrificed. Such a matter should never have been left to the chance communications of individuals for its elucidation; and should another misfortune of a similar description ever visit this country, it is to be hoped that the proper measures will be immediately adopted.

It is, however, of no use to complain of that which is past and over. Our space will be more profitably filled by treating of the disease itself; and, in the first place, let us ask that all-important question—Is pleuro-pneumonia contagious or infectious? Foreign writers generally insist that it is both one and the other. Several persons in this country maintain the same opinion. There are facts which, if not positive proofs in favour of such a conclusion, are certainly capable of being strongly advanced. On the other hand, however, can be brought forward instances which support an opposite conclusion. The cowkeeper does not find that, by removing a diseased animal, the others standing in the shed are in any degree secured from being attacked. He also has ascertained that the beast immediately next to the one which suffered is not the most likely to be affected. Often the animal thus close to the disease escapes; indeed, such is generally the case, and a cow inhabiting a stall in a comparatively distant part of the building exhibits the disorder. So thoroughly is this established, that the dairyman does not usually remove the cow which has pleuro-pneumonia from the shed, but allows her to remain there. This circumstance would seem to say that the epizootic is not contagious. It may, nevertheless, be infectious; but that fact is so difficult of proof, and admits of such wide argument, that the subject cannot here be discussed.

The farmer will act wisely by adopting every precaution, but, at the same time, he must not fall into the error of believing that the cause is entirely be-

yond his control. Filth and neglect incline animals to take a disease, and disable them to master a disorder when attacked by it. Wherever pleuro-pneumonia is rife, the cattle should receive more than ordinary attention. If at grass, they should not be allowed to remain in a wet or poor pasture. They ought not to be exposed to cold or rain. Those things which, under ordinary circumstances, might be of little consequence, will now become of every import. Nursing is not in any case beneficial, but attention to the comfort and well-doing of the animals will amply repay the proprietor. The food should not be entirely changed all of a sudden, but none that is not of a sound and wholesome nature ought to be given. The herd should be daily inspected. Any alteration ought to be immediately attended to. All existing diseases should be as speedily as possible cured, and every little circumstance regarded with suspicion. As far as possible the herd should be kept from communication with neighbouring animals, and the beast driven to a market had better be sold even at some slight sacrifice than brought home to join once more its former companions. Those animals which are being fattened ought not to be pushed on too quickly. The food should be of a less stimulating character than might have been given at other seasons with safety and profit. Any change in the diet should be gradually introduced, and in mild weather a little exercise ought to be allowed. The shed should be kept scrupulously clean, and the ventilation ought to be above all things considered. The drains should

be kept clear, and every kind of filth ought to be carted to some distance from the shed. Much of the above will apply to the cowkeeper, but especially to him is applicable the remark concerning keeping the shed perfectly clean and freely aired. In large towns, the best endeavours will not enable the most industrious proprietor to do all which could be required, but too many, therefore, do less than they might. The metropolitan sheds are generally places which are fitted to generate disease. The roofs are low, and the ventilation deficient. The air is foul, and yet the drafts are cutting in every direction. The animals are crowded, and if the hand be laid upon their coats it is always soiled by the contact. Much of this could be amended, and the expense would amply be remunerated by the cessation of those evils which a bad system now keeps alive. Beyond these, however, the food should be looked to. The best food would here be the cheapest. The hay which a horse will not eat should not be offered to the cow when pleuro-pneumonia is threatening. The grains should not be allowed to ferment before they are placed in the manger. When roots are introduced, they should be at first given with caution, and when grass comes in, it ought to be gradually mixed with the food, and not all at once placed before the beast, simply because it chances to be plentiful and cheap.

These injunctions may embody no more than sanatory measures, but where pleuro-pneumonia exists, they are of especial consequence. He who disregards them will soon have reason to repent.

Let it be, therefore, supposed the advice which has been recommended is adopted ; and also that, at the same time, those many things have been done which the little said upon the subject naturally suggests. In fact, let it be imagined that all which an active and prudent mind can accomplish to preserve health has been stringently carried out. After all, probably the disease will appear, but it will then come less frequently, and either in a milder form, or the animals will be better prepared to resist its violence. In either case, the result will be alike, and it now becomes my duty to explain the appearances which the disorder assumes, together with the course which it generally runs.

Everybody is anxious to know what is the first symptom, in order that he may grapple with the affection on the onset. It is very desirable to do so, but it is not quite so easy to answer a question of this kind as some persons may imagine. Pleuro-pneumonia does not commence in any regular manner. Observation has shown that it may begin in various ways. It may succeed to other diseases, and the animal, which is recovering from another disorder, may be attacked by and die of this. In some instances, hoven is the first symptom observed; in others, the animal begins to purge. Often it is dull, or even stupid ; will not feed, ceases to ruminate, and stands apart from its fellows. Sometimes it is not thus, but is only uneasy, and occasionally keeps licking its fore leg below the knee, or lifts its foot from the ground, and shakes it, showing that the circulation, being unequal, causes a tingling sensation to be

felt in the extremities. Frequently cough precedes the attack. The cough, if attentively listened to, may be observed to be short and sore, but in many instances it presents nothing unusual. Very commonly the milk suddenly fails; not, perhaps, to any extent, but the cow is a little short of her customary quantity. At other times, however, the diminution may be such as to force attention, though even this is not invariably the case. The contrary is not a rare occurrence. A cow about to have the disease shall yield more milk on the morning before the disorder shows itself than she has been in the habit of affording. Excitement is by no means an unusual warning. If more milk is not obtained, the cow may be inclined for the bull, or she may be, to all appearances, more lively than ordinary. Some have been restless, and almost vicious, resisting the milker and craving for their food. Others have eaten their litter, even when it has been foul; or shown a dislike or fondness for things which they did not before notice. Young stock have been known to fight, or to display a premature desire for intercourse immediately before they have exhibited symptoms of decided pleuro-pneumonia. In short, without attempting to note down every particular, it will, after what has been stated, be enough to tell him who knows pleuro-pneumonia is in his neighbourhood, that he must be on the watch for any and every incident. Things which at other times were passed over as trifles must then be made much of. Without constantly annoying the cattle, they must be

continually observed. If any peculiarity is seen to be twice or thrice repeated, the animal which displays it must, without loss of time, be carefully examined, and the proper measures immediately taken to counteract the slightest symptom of disease. Over-officiousness must be avoided, but prudence must be exercised. Judgment is here of every value. The changes of the season and the alterations of the weather are periods which call for more than ordinary watching. A north-easterly wind will start up pleuro-pneumonia in the animal which has any predisposition for that disorder. Spring and the latter part of Autumn are the times when it most prevails, but it is not confined to those periods. Beasts which are newly taken up, before they have time to get used to the stall, are particularly liable to be attacked. Those which are fat or poor are equally subject; but the animal which is in low condition suffers most severely. Good milkers and well-bred cattle sustain an attack worse than those of an opposite description.

The foregoing allusions to the primary indications of an attack may not be quite so satisfactory as many readers could desire. A positive statement confined to one or two particulars would probably be more acceptable to the generality of minds; but this would only mislead the party whom it pretended to instruct. The farmer must be content to learn that disease does not begin all at once, and start off into action like the leading couple of a country dance. It steals upon us; and knowing this we

should look out for the signs, which, though they do not denote the presence of the disorder, indicate the probability of its appearance.

The next stage, which in a day or two will be seen, is not so ambiguous. Cough now commences, and cough of that kind which is characteristic of the disease. It is short, and at first "hacking." The sounds are not single, but five or six may succeed each other, and after these the animal may appear distressed. The eyes are watery, and if the lids are turned up, the membrane inside is red. The inside of the nose is deeper in colour than it was when the beast was in health. Shivering is often exhibited, and in proportion to its frequency or violence is the danger of the result. The temperature of the skin is unequal, and the coat stares. About the tail it is often cold, and the legs are not so warm as they should be. The teats, however, are the parts which best show this condition of the body. All the teats are not generally cold; but one, two, or three may be. The bag is hot, and often tender. The horns are of unequal temperatures, and the ears also. The animal is excitable. It will not stand still, even when alone, and the approach of a stranger causes it to exhibit symptoms of alarm. Here we have the general signs of fever, but to connect these with pleuro-pneumonia there are other indications which are sufficiently marked not to be easily mistaken. The milk suddenly drops to one-half of the amount which was obtained the day before. On the following day it diminishes, in the same degree, and after three or four days not half a pint may be given

at a meal. The breathing also becomes quick and laboured. The head is thrust out, and the nostrils are extended. If the ear be placed to the side of the chest, a strange noise is heard, which is unlike the sound produced by the healthy lung. Generally, this is perceptible only on one side, and most often the left is the side affected. No attempt will be made to describe the various sounds which may be audible. It will be sufficient to state, that any unusual noise heard, when the ear is closely applied to the wall of the chest, may be accepted as proof positive that pleuro-pneumonia has commenced.

In two days, and often in less time—for the duration of disease is not limited—this stage passes entirely away. The pulse, which was strong and not very quick, being seldom more than sixty or sixty-five, increases in number and grows small and weak. The animal lies down, and always upon the side which gave forth the unnatural sounds. The urine, which in the former stage might have been increased in quantity, and certainly was high coloured, is now almost suppressed. The milk, without being entirely lost, is nearly gone. The cow is often stupid, and will bore his head against the manger, or hang back in the chain. The eye is dull and the muzzle moist, a fluid as clear as crystal dripping from it. A thick ropy mucus hangs from the mouth, and the cough is heard less frequently. It is not so loud, but it occasions more distress whenever it occurs. The animal grunts as it breathes, and the flanks heave violently. Pressure over the loins draws forth a groan. The appetite is gone. There

is no thirst. Water is rejected with abhorrence. The ear, now placed against the chest, detects a change in the noises which before were heard. Where the noise before was loudest, no sound is now to be detected. All is quiet there. On another place, however, which before was healthy, a sharp grating sound may be discovered.

Bad as may be the above symptoms, worse remain to be told. The eye gets brighter, the cough ceases altogether, or is rarely heard. When it occurs, portions of substance almost like skin are ejected, with some phlegm. A yellow discharge runs from the nostril. The membrane that lines the nose may ulcerate. The tongue enlarges, is discoloured, and hangs out of the mouth. The breath stinks, and the beast almost constantly stands. The appetite grows strange. Horse-dung has been gobbled up. The dirtiest puddles have been drained. Straw may be eaten. Hay, offered by the hand, is generally accepted, but the first mouthful satisfies, and even that has caused choking. Roots or grass are not relished. Hoven now appears, and requires to be frequently relieved. Diarrhœa sets in, and the fæces are offensive. The pulse is lost at the jaw, and quick, but feeble, at the heart. Nevertheless, the animal may seem more lively, and look about her. Let not that circumstance excite the hope which there is no chance of being gratified. When this lighting up is exhibited, the beast usually drops suddenly and dies, as if it had been shot. At other times, however, nature struggles long, and only slowly yields, death taking place almost insensibly. In

this stage, listening to the chest should also be practised. On one side, every appearance of sound from the lung may be gone. Neither natural nor unnatural noise can be heard, and even the beating of the heart is indistinctly audible. Perhaps there can be nothing heard near to the brisket, but up towards the back a slight murmur may be detected. A splashing sound, or a short metallic ring, is sometimes heard, but it is not very frequently caught; yet, whenever it is heard hope may be abandoned. There is dropsy of the chest, and the animal will die.

On opening the carcass of an animal that has died of pleuro-pneumonia, the lungs are found in a curious condition. When divided, they present a variegated appearance. Every hue of red, from the highest and brightest scarlet to the darkest and deepest purple, is exhibited in patches, which are intersected by lines of a glistening white, whence they have been generally termed marbled, and certainly this phrase does not badly characterize them. The pleura is opaque, and covered with flocks of a thick yellow looking substance. Gallons of water, sometimes of a pale tint, but often of a dirty reddish hue, may fill the cavities, or be confined to one side only. The air passages are inflamed, and the ramifications of the bronchia in many parts obliterated. Abscesses may be formed in the centre of the lung, portions of which are frequently bordering upon mortification. The heart also is often involved. The pericardium or "*heart-bag*" is full of water, and loaded with flocks similar to those seen upon the pleura. Other parts,

however, do not escape. The brain is always highly congested, never actively inflamed. The intestines are more or less disorganized. The true stomach is inflamed, the maniplies full of hardened food. The rumen is loaded, and its contents are decomposing. In patches it is inflamed, and the lining membrane often comes away with the mass which is emptied out from it. The liver is not much diseased, but the contents of the gall bladder are usually thin and black. The kidneys mostly escape, but the bladder is commonly gorged with urine.

The above, though it might be considerably enlarged, will give the reader an idea of this very formidable disease. It must not, however, cause him to despair. In it he should only see the greater reason for activity. All attacked by pleuro-pneumonia do not die, and more would have been saved if greater attention had been generally paid, or the disease had been earlier understood. Happily, it is not now so fatal as it was when it first appeared. This, in a great measure, is to be attributed to the teaching of experience; but it is much to be regretted that information was only sought through so dear and so slow a means. In the early periods, some beasts died three days after they were first attacked. Now they seldom perish before a week expires, and rarely in so brief a period. The common duration of the disorder is three weeks, but some have lingered through twice that space, and then recovered.

The farmer, when contemplating pleuro-pneumonia, must make up his mind as to the measures he

will pursue. Either he must treat every case, or he must resolve to turn every case over to the butcher. When the disease first appears, that is, before the disorder is established, the flesh is not unfit for human food; but after a day or two have passed, the carcass is not suited for the market. Much meat, however, of an unhealthy kind is sent for sale, but even then the loss is great, supposing the culprit to escape detection. The butcher buys it only at a lower price, and that makes an important difference in the return; but, in addition, the beast when suffering under pleuro-pneumonia loses flesh very fast. Twenty stone have disappeared from the body of an animal in a single week. Decision therefore is alike honest and profitable, and ought to be maintained. At the same time, it must be remembered that the chances of cure are not so bad as ignorance has cried out. A fair prospect is offered by judicious treatment; only to be successful, the practice must be judicious. It is madness to depend upon the nostrums which unscrupulous country chemists prepare to delude the public. To deny the efficacy of medicine, because the mixture of the cow-leech is injurious, amounts to a positive sin. There is no specific for the disease, and there can be none. The drugs and compounds hawked about and advertised in the papers as certain cures, are worse than worthless. I have seen several—two or three I have tested—and of them all I was able to form but one opinion. The disorder is not of that kind which any one agent, or any simple mixture, can possibly apply to. It not only varies in degree, but the degree is itself

varied by the age, condition, and situation of the animal labouring under it. Pleuro-pneumonia, moreover, changes, as it runs its course, and that which might save the life at the commencement of the attack, would be virulent poison if given when the disease had fairly set in. The disorder, in fact, may be regarded as four diseases, which run into or follow one another. I do not positively mean that it actually is so, but I know that it assumes four appearances, or consists of four stages, each of which is essentially different, and for its relief demands very opposite treatment. The reader will, by referring to the description given of the symptoms, find these contained in four separate paragraphs, and each paragraph is descriptive of a separate stage. The first is either irritative or congestive; the second is febrile; the third is debilitative; and the fourth or last is typhoid.

In the first instance, when irritation is indicated, either by increased secretion or unusual activity, the disease cannot be so plainly recognised that we may positively assert pleuro-pneumonia to exist. The symptoms are ambiguous, but, if the disease be in the neighbourhood, precautionary measures should be immediately adopted. The animal may now be treated with a better chance of success than the lapse of even a few hours will afford; and as the measures to be pursued are simply those calculated to allay the symptoms, should the excitement not be premonitory of the affection, good only will have been done. The animal, if at grass, should be taken up, and water only ought to be placed before it. No

food of any kind should be given, however ravenous may be the appetite, for the loaded condition of the rumen, and the decomposition of the mass contained in this stomach, aggravates the disease in the latter stages. When pleuro-pneumonia has once set in, digestion entirely ceases, and advantage must be taken of the primary state to enable the stomachs to pass onward their contents; not only that the system may be thereby relieved, but also that the medicines administered may act with greater certainty. Food, therefore, must be kept away, but water, which is a natural febrifuge, and a promoter of digestion, ought to be constantly presented. Gruel must not be given, for, if it be more easily digested, it is also far more stimulative than the grass to which the beast has been accustomed. Should the excitement run high, a little blood may be withdrawn; but, even while extracting it, the operator must bear in mind that debility will, in all probability, speedily ensue. The pulse here must *not* be the guide; the rule which applies to inflammation is of no value when typhus is to be anticipated. Let the vein be opened, but while the stream flows let the animal be observed. If the head, which was previously tossed about, or the restlessness which was before displayed is quieted before a pint has been taken, so much the better—enough has been gained, and the orifice may be closed. More than two quarts ought on no account to be extracted, except there be a regular practitioner present; and this amount will seldom be required, in order to allay the irritability of the beast. Take so much blood only as causes the

animal to grow more calm, and the less the better. After the bleeding back rake the beast, and observe the dung which is removed ; also, at the same time, noting whether the interior of the rectum feels to the hand of increased temperature. Should the dung be lumpy, and the intestine hot, give the following drink :—

RECIPE (No. 48).

TAKE—Epsom salts, half a pound ;
Nitre, one ounce ;
Sulphuric ether, two ounces.
Dissolve in a quart of cold water.

Four hours after this drink has been administered, half a drachm of calomel, mixed with a drachm of opium in powder, may be shaken upon the tongue, and the animal will lick the substance down without requiring the medicine to be made into a ball, or suspended in a mixture. At the same time, a copious enema of cold water should be thrown up, and the animal then left till another four hours have expired, when the injection and the powder may be repeated. If, at the end of twelve hours, the bowels have not been moved, repeat the drink, only this time giving but a quarter of a pound instead of half a pound of Epsom salts ; after which the other treatment may be continued. However, should the cow by its stupidity or dulness indicate congestion, the stomachs then are generally loaded ; and as the abstraction of such an amount of blood as we dare take, when fearing an attack of pleuro-pneumonia, will be of little or no service, and the strength of the beast is of every importance towards the recovery,

the fleam had better remain unopened. Therefore we do without bleeding, but we give the drink, only increasing the sulphuric ether to three ounces, and at the same time exchanging the cold for a warm injection, composed of half a pint of turpentine, mingled with half a gallon of strong soap and water. The calomel and opium may be given as before directed, and a rug may be thrown over the loins. Other matters will suggest themselves to every practical mind. The shed should be airy, but at the same time sheltered; and if a milch cow, the udder should be drawn frequently. The animal ought to be kept perfectly quiet, and the person who is accustomed to attend it should undertake its charge, orders being strictly given to employ as little violence as is compatible with firmness.

The second stage, however, will generally have made its appearance before treatment is resorted to. The pulse is now quick and strong, or at all events full; nevertheless too much attention must not be paid to it. A large blood-letting will tell during the after stages, and may even induce a fatal termination. As a general rule, it is perhaps best not to bleed at all when there is any unnatural sound heard in the chest, for, in that case, effusion has taken place, and the inflammation if not over has partially reached its termination. If, however, the owner will bleed, let him not do so without attending to that which has been already said upon the subject, for debility speedily ensues. Half a pint of oil, in which a drachm of camphor and half a drachm of chloroform have been dissolved, may be administered as a purga-

tive, if costiveness is present; but, should the dose not operate, it must not be repeated. If diarrhœa exists, no means must be adopted in order to check it, though in that case the oil should be withheld. The following drink should be given every fourth hour:—

RECIPE (No. 49).

TAKE—Liquor ammonia acetatis, four ounces;
Emetic tartar, a scruple;
Sulphuric ether, two ounces;
Nitre, two drachms.

Dissolve the nitre and emetic tartar in a quart of cold water, and add the rest.

This should be persevered with so long as the pulse maintains its present character; but when it becomes quicker, and the artery feels smaller under the finger, and the beat is perhaps less readily felt, the treatment must be immediately changed, for the next stage is then commencing. Before, however, that stage is spoken of, a few words must be added concerning the general treatment, which is of equal importance with that of a medicinal nature. If costiveness exists, no food ought to be given, especially should the treatment have commenced with the second stage. In every instance, little nourishment will be required, for nature during disease is not disposed to appropriate that which enters the stomach; and by forcing the animal or tempting it to eat we are only overloading the system, and introducing into the body substances which have a tendency there to remain and to decay. Should, however, diarrhœa exist, a little flour and water may be allowed, or even a little linseed gruel may be given.

Either, however, should be quite cold before they are administered, for hot drinks have a tendency to enervate the muscular fibre of the digestive canal, and to increase the fever. Should the skin be cold the body must be clothed, and whether there be much milk or not in the udder, it ought to be frequently drawn. This must not be neglected, however small may be the quantity obtained, for the secretions during disease, if not removed, have a tendency to decompose. Good, moreover, is in some measure done, inasmuch as the frequently milking is perhaps the best means of inducing the return of the milk, which often is the first symptom of recovery.

The third stage, which generally begins before the second has lasted forty-eight hours, calls for an entire change in treatment. He who has been reared to think bleeding and purging the scientific agents for every disorder, and been educated to regard all disease as the evidence of inflammation, must not here carry out his antiquated principles. Medicine is now of less importance than good nursing. Physic, however, may do something towards the restoration, but it must be of a supporting kind. The lungs are now clogged with the lymph which has been thrown out. That lymph is not yet a portion of the body. It exists in the frame as a foreign substance, which, if it do not decompose, must irritate. Nature always has a desire to organize or to absorb the lymph thus cast into any organ; and if we can maintain the strength sufficiently to enable nature to fulfil her intentions, we shall save the life.

It is true the lung will never be again perfectly restored, but the bovine race can thrive with less lung than many persons would conceive to be possible. The obliteration or induration of one entire lung will not prevent a cow from being a good milker, or an ox from fattening. So now we have only to assist nature. Solid food we dare not give, and any medicine calculated to lower the system is poison. The emetic tartar and nitre, therefore, must be immediately discontinued. The sulphuric ether and liquor ammonia acetatis may be kept on with; and to these may be conjoined half an ounce of the extract of gentian, which should be rubbed down in the water to which the others are added. A pail of good gruel may be placed before the beast, and renewed before it becomes tainted. The probability is it will not be touched, still it must be offered. No effort, however, must be made to induce the animal to feed. The appetite must be left to itself; and however rapid may be the loss of flesh, nothing must be forced into the stomach.

The greater quickness and weakness of the pulse, the altered appearance of the eye, and the general aspect of the animal, will denote the starting up of the last stage, which must be anticipated before the stench begins. The more rapid breathing, the suppression of the cough, the colour and swelling of the tongue, the discharge from the nostrils, and the general debility, will not fail to indicate the approach of that period when every thing depends upon the practitioner's activity. Now must we do all in our power to support the life and counteract the tendency

to death. Ale may be freely given, and in extreme cases spirits are even better. The quantity cannot be absolutely stated, but three pints of ale in the course of the day will not be too much. Three quarters of a pint of distiller's gin, divided into three doses, may be administered with safety. The following drink may also be given every second hour, especially if there is any tendency to hoven:—

RECIPE (No. 50).

TAKE—Carbonate of ammonia, one drachm;
Sulphuric ether, one ounce;
Extract of gentian, two drachms.

Whenever fœtor is detected, the chloride of zinc must be employed in one scruple doses every second hour, and a quart of cold gruel may be used instead of water to mix the medicines in. The chloride of zinc may also be administered in the form of enema, the substance of which ought to be composed of gruel. Cleanliness must be scrupulously attended to and quiet strictly enforced, as at this stage the brain is sympathetically affected, and any disturbance is apt to produce an excitement which the strength can ill endure.

The indications of improvement, such as the return of the cough, the restoration of the milk, or the revival of the appetite, must not be thought to announce that all danger is at an end. A relapse is not impossible, and it is nearly always fatal. The measures under which the amendment takes place must be pursued for a day or two, then the mineral tonics should be introduced, in order to brace the system. The sulphate of iron, combined

with the extract of gentian, one drachm of the former to two drachms of the latter, should be given at first once, then twice, and ultimately thrice a day. These may be continued until the animal seems perfectly recovered, when they may be gradually dropped.

The reader will have seen that the above course of treatment differs from that which persons in authority have publicly recommended. Setons, blisters, purging, bleeding, and sedatives have had a fair trial, and the result has shown them to be injurious. No more will be said of them than to caution the owner of cattle against their employment. Nevertheless, the reader must not think that however plain the writer may have endeavoured to make his directions, these are so stated that he who follows them is released from every necessity of exercising his judgment. The measures must be adapted to the circumstances. A stall-fed beast will not bear so much as one at grass, nor this last so much as a working ox. The constitution of the animal must always be regarded, and in a disease like pleuro-pneumonia it is safer to do too little than too much.

Among the indications which lead us to anticipate a favourable termination, there are some which deserve to be noted. Rapid loss of flesh is always a bad sign. Abortion is also ominous. If the cow retains the foetus she generally survives, though the calf, when born, dies, and shows by the lungs that in the womb it had imbibed the disease of which the parent recovered. Purging at the commencement is rather favourable; towards the end it is commonly fatal.

The beast which has had one attack is not therefore exempt from a second, but it may survive even a third time, and ultimately do well. It is true the milk which during the disorder is never quite lost does not return to the full quantity after the disease has passed away, but it is restored to a much larger amount than would be expected. Pleuro-pneumonia does not consequently leave the animal worthless to its owner; and the knowledge of this fact holds forth additional inducements for undertaking the treatment, which, when properly conducted, is not generally so unsuccessful as it has been the fashion to assert. Cattle die far oftener because they are abandoned or abused, than because their diseases are beyond the control of science.

CHAPTER XXIII.

INFLAMMATION OF THE BLADDER.

DISEASE of this organ does not often occur in cattle, except from eating acrid and poisonous herbs, or when cows are near their time of calving. Two distinct kinds of disorders are known in general by the name of inflammation of the bladder. They should be distinguished. One is simply spasm of the neck of the bladder, the other is inflammation of the bladder itself. In the first case, there are frequent and violent, but ineffectual, efforts to stale, with straddling gait, roached back, disinclination to lie down, and often fits of pain which border upon madness. This may be occasioned by cold, but is

more frequently said to be produced by the animal having fed on heathy pastures, and on the hot and stimulating plants that abound there. The *broom* is asserted to be a frequent cause of this disease.

It is of much consequence to be enabled to distinguish this from inflammation of the bladder itself. In spasm of the neck of the bladder no urine will be voided, while it will be continually discharged in small quantities during true inflammation of the bladder; or if, at length, in spasm of the neck of the bladder, urine is voided, it is after much straining, forcibly squeezed out from the over-distended but all save absolutely closed vessel. The most certain way, however, of distinguishing the one from the other is to introduce the hand into the rectum; the distended bladder denoting spasm; or the contracted, small, hard, tender, and perfectly empty organ indicative of inflammation, will then be plainly felt below.

Should spasm of the neck be detected, the bladder must be emptied, or more fluid will pour into it until it actually bursts. For some time before the fatal termination of the complaint in the rupture of the bladder, not only the constant straining, but the heaving of the flanks, the quickness of the pulse, the loss of appetite, the cessation of rumination, the shivering fits, groaning, and violence, will sufficiently indicate the extent of the danger. The best way of emptying the bladder is, if possible, to relax the spasm of its neck. A very large bleeding will sometimes accomplish this; but it must be a large one, and continued until the animal is exhausted almost

to fainting. This practice, however, ought not to be adopted until other means have failed, since it may be weeks or even months before the animal will recover from the effects of so severe a measure.

Physic should be given, in order to lower the system and anticipate inflammation; but no medicine must be administered that would in the slightest degree increase the flow of urine. Sulphur, or the solution of aloes, or both combined, would be indicated here. Oil in pint doses, with each of which a drachm of chloroform is mingled, is to be preferred.

Injections containing sulphuric ether and laudanum should also be administered; and an ounce of ether, with the same quantity of the tincture of opium, may be given in cold water every hour. If these fail after four doses, administer two drachms of white hellebore, and give an injection of tobacco smoke.

Should ~~not~~ the flow of urine be re-established, surgical means may be resorted to. Here a skilful practitioner should be consulted. The water may be readily drawn from the cow by a catheter; but in the ox, from the curvature of the penis, this would be a very difficult affair. Some have recommended to cut down upon the urethra beneath the tail, and thus lay open the part, and so pass a catheter into the bladder; but this will produce a wound difficult to heal, from the passage and excoriation of the urine. Others would puncture the bladder through the rectum, and others through the belly; but both operations may be accompanied and followed by various unpleasant circumstances.

The catheter lately invented by Mr. Read, and

which, by accommodating itself to the curvature of the urethra in the horse, will in that animal readily enter the bladder, and evacuate it without any painful or dangerous operation, is not applicable to the ox, at least in common hands; for there is a double curvature in his penis and urethra, through which no catheter, however flexible, will pass. A good veterinary anatomist, however, may overcome this difficulty; and to him, and to one well skilled in his profession, the proprietor of cattle should have recourse in such a case.

The farmer, nevertheless, having fully ascertained the nature of the case, may often evacuate a great portion of the urine in a very simple way. The bladder of the ox lies more in the pelvis than does that of the horse—it is more easily felt than in the horse—it is more readily pressed upon by the hand—and the muscle at the neck of the bladder is much weaker: so that the hand being introduced into the rectum, and gentle pressure made upon the bladder, a great quantity, or almost the whole, of the urine may be forced out, without danger.

The pressure, however, should be gradual, not sudden or violent. Copious injections of warm water, and fomentations as hot as possible, to the loins and belly, ought to be employed. Opium in full doses by the mouth, and sulphuric ether administered, two ounces every hour, until the symptom is relieved, as an injection, will generally be followed with the best effects. After ether has been employed, however, the flesh will be tainted, or it will smell strongly of the medicine; therefore the owner must make his

choice between the employment of a most powerful agent and a chance of disposing of the carcass, before this treatment is adopted.

A catheter may be introduced into the bladder of a cow without difficulty.

Inflammation of the bladder itself is a disease more frequent, and from the same causes, namely, cold and acrid herbs. Here the animal should be bled and physicked, and fomented across the loins. The following drink may be administered with good effect, after the bleeding and purging :—

RECIPE (No. 51).

Drink for Inflammation of the Bladder.

TAKE—Antimonial powder, two drachms ;

Powdered opium, two drachms :

Rub them well together with a portion of very thick gruel, and repeat the dose morning and night.

It should not, however, be forgotten, that in cows that are near parturition excessive discharge of urine is not unfrequent, and arises from irritation of the bladder, caused by the pressure of the foetus, or from sympathy with the uterus, now much excited—and not from actual inflammation. When she has calved, this will gradually cease ; or a dose of salts, followed by one or two of the drinks just recommended, will afford immediate and considerable relief. In some cows this incontinence of urine has been produced by the retention of a dead calf in the womb beyond the natural period, and by the calf being at the same time in a state of putrefaction. The mingled influence of long-continued pressure, and of proximity to a large body in a state of decomposition,

will occasionally produce a state of extreme irritability. The animal should have warm malt mash once or twice daily; and stimulants with tonics ought not to be forgotten.

Connected with this is a not unfrequent disease, and especially in the summer, and in cows in high condition, namely—

INFLAMMATION OF THE SHAPE.

The external parts are very much swollen, and pustules or boils appear about them, that break and discharge much matter; and there is also a considerable discharge of glairy fluid from the vagina.

This sometimes occurs after difficult calving, or from taking cold when the calving has been easy and natural: it has occasionally followed bulling, and it has been seen at other times, and has arisen from causes that could not be ascertained. Every action of the animal shows that she labours under extreme irritation, and suffers a great deal.

She should be physicked. It will often be advisable to give a second dose of the physic, after an interval of three days. The shape should be well fomented several times in the day with warm water, until the swelling begins to diminish. A common goulard-wash, consisting of one ounce of the extract of lead to a quart of distilled water, with the addition of an ounce of spirit of wine, will then be serviceable.

Should the ulcers not be removed, try a drachm of chloride of zinc, mixed with a quart of water, as a wash. If they are not healed, apply a saturated

solution of sulphate of copper ; and this also failing, use the solid lunar caustic which, in extreme cases, has always effected a cure.

An unpleasant gleet will often remain for a considerable time, after the swelling has subsided and the ulcers have healed. An astringent injection will then be useful. The one that should be first tried is composed of six ounces of bruised oak bark, boiled in two quarts of water until it is reduced to three pints. If this should not succeed, a solution of alum, in the proportion of a quarter of an ounce to a quart of water, may be tried. One of Read's patent syringes will be the best instrument for throwing up the injection.

CHAPTER XXIV.

STONE IN THE URINARY PASSAGES, OR BLADDER.

THERE seems to be a greater disposition to the formation and retention of calculi, or stones, in the urinary passages of the ox, than of the horse.

Stone in the bladder may be suspected when there is much fever, accompanied by a frequent turning of the head, and earnest gaze at the flanks ; when the hind limbs tremble, and are carried wide apart, and when, after the urine has been voided, the animal continues straining, sometimes discharging a few drops of blood.

The suspicion may very easily be reduced to certainty, by examining the bladder with the hand

introduced into the rectum, or last gut. The bladder of the ox, as has already been described, lying so much more in the pelvis than the bladder of the horse does, the stone cannot fail of being felt if there is one.

The presence of stone in the bladder having been thus proved, that farmer will pursue the most judicious course who sends the beast immediately to the butcher. A long course of hydrochloric acid, that agent being mixed in all the water which the animal drinks, will, however, sometimes dissolve the calculus, and, if the animal is kept to fatten, will not be injurious to its appetite; one drachm of the acid is the quantity which should be added to every gallon of water.

A skilful veterinarian is able, indeed, to remove the stone by the operation of lithotomy: but he must well understand the anatomy of cattle; and, after all, the operation could not otherwise than be attended with some danger.

The retention of a small calculus in some part of the urethra occurs much oftener than is generally suspected. The symptoms are very acute. The animal is in great pain. It kicks at the belly, moans, groans, and strains to void its urine, but nothing is passed. The urethra below the anus is distended and feels hard, and, tracing the course of the swelling, the situation of the impactment can be detected by the enlargement suddenly ceasing at the spot where it is situated. Upon examination, the stone will be easily felt, and generally in the double curvature of the penis. An incision may be made upon

it, and it may thus be easily extracted. Two or three sutures, according to the size of the calculus, having been passed through the edges of the wound, it will usually heal in a few days.

CHAPTER XXV.

DISEASES OF THE EYE.

OXEN are very apt to receive injuries about the eye, as wounds penetrating into the orbit of the eye, or even fractures of the orbit. The principal thing is to prevent or abate inflammation, by fomentations or poultices, and a little physic, and to leave nature pretty nearly to herself. Either from injury, or from a disposition in the bullock to throw out tumours of every kind, there are frequently bony enlargements about the eyes of oxen. It will be easily seen how far they are a nuisance to the animal, and must impede the sight; and if it be necessary to remove them, the aid of a professed practitioner should be obtained, as an important vessel may be divided, or a sad blemish left.

Soft fungoid tumours sometimes grow out of the orbit, or from the bone around. These can only be got rid of by the use of the knife, and that should be placed in a skilful hand: but, even in the most skilful hands, the knife often fails; or rather, there is a disposition to reproduction in these tumours, which it is impossible to repress.

The eyelids of the ox are very subject to disease. Sometimes there is a scaliness around the edges; sometimes a row of pustules resembling the sty of the human being; both of these diseases are frequently a great source of annoyance. They appear early in the spring of the year, and continue during the summer and the greater part of the autumn, and disappear as winter comes on. A solution of white vitriol, in the proportion of a drachm to a pint of water, will often be a useful application. If this fails, the nitrated ointment of quicksilver may be smeared over the lid, taking care, by oiling the eyeball, that none of it injures the eye. It will, however, be necessary at times to prepare for the use of these by washing the part with a Goulard lotion for a few days.

Young oxen are subject to warts, which are frequently sadly teasing. They would probably disappear after awhile, but, in the mean time, they are unsightly, and much annoy the animal by getting between or within the lids. They may either be clipped off with a pair of scissors, touching the root afterwards with the lunar caustic, or—the best way when practicable—they may be removed by tying a ligature of strong silk tightly round the pedicle or root.

The eye itself is not unfrequently inflamed, and sometimes very acutely. The horse has a little shovel, concealed in the inner corner of the eye, which he is enabled to protrude whenever he pleases over the greater part of the eye, and by aid of this and the tears to wipe and wash away the dust and

gravel, which would otherwise lodge in the eye and give him much pain. When the haw, as this little shovel is called, is swelled in disease, the ignorant farrier too often cuts it away, not knowing that it is the mere effect of inflammation, which a little cooling lotion would probably abate, and restore the part to its natural size and utility. The ox has something of the same contrivance, but it is not so moveable or so effectual; and when he travels over a dusty road in the heat of summer, he sadly suffers from the small particles of dirt and the insects that are continually flying into his eyes. This is unobserved by the careless driver, and inflammation is established, and the eye weeps, and becomes dim, and sometimes blindness follows.

This portion of the eye, or this third eyelid, seems to be peculiarly subject to disease. Swellings, and ulcers, and fungoid growths, which often attain to such magnitude as to cover the eye, appear upon it. This is sometimes in a manner epidemic on various farms.

But from other causes, and of the nature of which we know little, *inflammation of the eye* is produced, and goes and comes as in the horse, time after time, the attack being gradually more severe, and the intervals between the attacks shorter, until, as in the horse, the lens becomes opaque, and *cataract* ensues, and the ox is incurably blind.

All these must be dealt with as other inflammations are. In order to combat local inflammation of the eye, bleeding, physicking, sedatives, febrifuges, and fomentations, are the principal weapons employed.

The blood may be taken by turning down the lid, when the lining membrane may be lightly scarified. A few drops of blood obtained in the last manner will often do a great deal of good. The eye vein also may be opened, and a fair quantity of blood extracted. The fomentation having been continued till the active symptoms have abated, one of the two following lotions should be used, a few drops being introduced into the eye two or three times every day:—

RECIPE (No. 52).

Sedative Eye Lotion (1).

TAKE—Dried leaves of foxglove, powdered, $1\frac{1}{2}$ ounce :

Infuse them in a pint of Cape or dry raisin wine for a fortnight, and keep the infusion for use.

In many cases, this alone will effect the temporary or perfect cure; but should not the eye improve, or should it appear to become insensible to the influence of the tincture, try the next prescription:—

RECIPE (No. 53).

Sedative Eye Lotion (2).

TAKE—Extract of Goulard, two drachms ;

Spirituous tincture of digitalis (made in the same manner as the vinous in the last recipe), two drachms ;

Tincture of opium, two drachms ;

Water, a pint :

This should also be introduced into the eye. Two or three drops at a time will suffice.

If the symptoms should not be subdued by the one or the other of these applications, but should assume a chronic form, a lotion of a different character must be had recourse to.

RECIPE (No. 54).

Strengthening Lotion for the Eye.

TAKE—White vitriol, one scruple ;
Spirit of wine, a drachm ;
Water, a pint :

Mix them together, and use the lotion in the same manner as the others.

When the inflammation runs high, the transparent part of the eye is apt to ulcerate, and a fungoid substance sprouts, and sometimes protrudes through the lids. This should be very lightly touched with a solution of nitrate of silver, or, if it is very prominent, it should be cut off, and the base of it touched with the caustic.

A seton in the dewlap will always be beneficial in inflammation of the eye, and, if worn for some time after the disorder has passed away, will generally prevent its return.

Of one circumstance the breeder of cattle should be aware—that blindness is an hereditary disease, and that the progeny of a bull that has any defect of sight are very apt to become blind.

If the case is neglected, inflammation of the eye will sometimes run on to *cancer*, and not only the eye, but the soft parts around it, and even the bones, will be affected.

When this termination threatens, the globe of the eye will usually turn to a bottle-green colour, then ulceration will appear about the centre of it, and either the fungus of which I have spoken will sprout, and the eye will become of three or four times its natural size, or it will gradually diminish and sink

into the orbit. The fluid discharged from it will be so acrid that it will excoriate the parts over which it runs, and the lids will become swollen and ulcerated.

The radical cure, and the most humane method to be adopted with regard to the animal, is to remove the eye. Here the assistance of a veterinary practitioner will be indispensable.

If the owner does not think proper to adopt this method, let him at least try to make the poor beast as comfortable as he can. The part should be kept clean, and when there appears to be any additional inflammation, or swelling, or pain, the eye should be well fomented with a decoction of poppy-heads. Let none of the stimulating ointments or washes of the farrier be used. This would be cruelly punishing the animal, when no good purpose could possibly be effected.

Sometimes the centre of the eye is not so much affected as the haw at the inner corner of it. When that part merely *enlarges* from the inflammation of the eye, the digitalis or the Goulard wash will usually abate the swelling; and he would be both ignorant and cruel who would remove it on account of simple enlargement accompanying inflammation; but when it becomes hard and schirrous, and especially if fungoid granulations begin to spring from it, the case assumes a different character. No sedative or other lotion will lessen the schirrous or the fungoid tumour. It must be removed by an operation:—it must be cut away. The method of accomplishing this by a skilful practitioner is not difficult. The beast must be thrown, and the head held firmly

down by an assistant. The operator then passes a curved needle, armed with a double strong silk, through the body of the tumour, and, drawing a portion of the silk through it, gives the needle and the end of the silk to be held by another assistant. He pulls the silk gently but firmly, until he draws the tumour as far as possible from the corner of the eye, so that the attachment of its base may be seen. The operator then with a knife dissects it out, or with a pair of scissors snips it off. No bleeding of any dangerous consequence will follow, and the blood that is lost will abate the inflammation, and ease the pain. The removal by ligature is a slow and not always effectual method of proceeding; for it may not be possible to apply it accurately around the very base of the tumour, and then the enlargement will probably be reproduced. It is also necessary to tighten the ligature every day, or every second day, and at each time the contest with the beast must be renewed if this mode of removing the tumour is adopted.

CHAPTER XXVI.

THE HOOVE, HOVEN, OR BLOWN.

THIS disease is a distention of the rumen, or first stomach, by the gas which is evolved from certain substances during the process of fermentation within it. The herbage is hastily gathered at first, and received into the rumen, in order to undergo there a kind of maceration, by means of which it may be

more perfectly ground down, and all its nutritive matter extracted when it is subjected to a second mastication.

The rumen has been described as divided into various compartments, and its coats containing a strong muscular structure. By the action of these muscles, the food is made slowly to traverse those compartments in the order in which it was received; and the journey, in the ordinary state of health, occupies sufficient time for the herbage to be to a certain degree macerated or softened, but not for that process of fermentation to be set up to which all vegetables are liable.

Supposing an ox to be suddenly turned into new and luxuriant pasture, he sets to work, and gathers the herbage rapidly and greedily; so much so that the stomach is unable to propel forward the different portions of food as they are received, but becomes overloaded and clogged, and at length ceases altogether to act upon its contents. The food subjected to heat and moisture, but not operated upon by the vital activity of the stomach, begins to ferment; and while fermenting disengages a quantity of gas, which distends the stomach almost to bursting. Thence arises the danger of sudden change of pasture from an inferior to one of a better quality, and the numerous cases of distention of the stomach and death which occur when the fog-grass is plentiful and succulent, or the beast has without preparation or care been turned upon clover or turnips.

Some animals, however, are subject to hoove, but in a slighter degree, without this change of pasture.

Many a weakly cow has occasional swellings of the paunch where there has been little or no change of food. The stomach, also, is subject to disease—it sympathises with every other part; and one of the first and most frequent results of an unhealthy state is the production of an acid, which wonderfully accelerates and increases the process of fermentation. Hence it is that distention of the stomach is an accompaniment of almost every malady to which cattle are liable. No case of dropping after calving occurs without some degree of distention of the paunch.

The symptoms of hoove are sufficiently known. The beast swells, and that to an enormous extent; the breathing is very laborious, and the animal is evidently in great distress, and threatened with immediate suffocation from the pressure of the distended stomach against the diaphragm, diminishing the cavity of the chest, and rendering it impossible for the lungs to expand. The difficulty of breathing increases, and the eye becomes of a green hue. The body grows cold, and the animal is inevitably lost if relief is not soon obtained.

This relief consists, and can alone consist, in relieving the stomach from the distention. But how is this to be accomplished?

Something might have been done by way of prevention. If, when the cattle had been turned into the fresh pasture, they had been carefully watched, and removed again to the straw yard before the paunch had been gorged, and this had been repeated two or three times, the appetite would have been

blunted, and the stomach would thus by degrees have been prepared to act upon the food, a full and sudden supply of which surprises and disables it.

Some farmers, an hour or two before they turn such cows as are of a greedy disposition into a fresh pasture, give them a cordial drink. The stomach is stimulated by this, its activity is roused, and its sensibility restored; the appetite is by the immediate effect increased, but the morbid voracity which weakness engenders is, at the same time, destroyed. The paunch, before it is overloaded, reminds the animal of the necessary process of rumination, or the stimulant recovering the dormant function, and strengthening the digestion, prevents the food from fermenting.

If the farmer adopts such a plan, the following drink is as good as any that can be given:—

RECIPE (No. 55).

Cordial Drink.

TAKE—Caraway and aniseeds, in powder, of each an ounce;
Ginger, half an ounce;
Treacle, a quarter of a pound:
Mix with a pint of good ale, made hot.

I must confess, however, that, although I do not absolutely condemn such a practice, I would much rather trust to simpler and more effectual precautions. I would take care that the change of food should not be too sudden nor too great. If there was an evident difference in the nutritive quality of the two pastures, I would prepare the animal by acting on the digestive organs, and invigorating its system at the same time, also being on the watch to remove the

beast to shorter grass, before material mischief could be effected.

Suppose, however, that the mischief is done ; the stomach is distended, and the beast is evidently threatened with immediate suffocation.

Some drive the animal about. This is sadly cruel work ; for he seems to be scarcely able to move, and appears as if he would be suffocated every moment. This has, however, been sometimes successful, especially if the beast is *made* to trot ; for the violence has occasionally provoked the energies of the body into action, and this effect has enabled the stomach to act upon the mass. It is, however, dangerous work ; for in the act of moving with the stomach so distended, either it, or the diaphragm upon which it is pressing, is in danger of being ruptured.

Some have resorted to an operation. Midway between the last rib and the haunch-bone, the distended paunch will be felt pressing against the flank. A lancet or a pocket-knife has been plunged into the animal at that spot, which has passed through the skin and the wall of the belly, and entered the paunch. The vapour has then rushed out with a hissing noise, and steamed up four or five feet high, and some of the contents of the bowels have been forced up with the gas, and the flanks have fallen, and the beast has evidently become less, and has been so much relieved that he has begun to ruminate and has done well. The wound is left open for a while, that any newly-formed gas may escape ; it then soon heals of itself.

It, however, too frequently happens, that, although

present relief has been obtained, and the beast has ruminated and eaten, it has in a few days begun to show symptoms of indisposition, and has become feverish, and drooped and died. We account for this by some of the gas, and perhaps a portion of the food, getting into the belly, between the paunch and the flank, and falling down among the intestines, and causing irritation and inflammation there.

Some have adopted even rougher and more effectual methods of remedying the evil. They have not contented themselves with simply puncturing the paunch, but they have cut a hole into it through the flank large enough to introduce the hand; and so they have not only liberated the air, but have taken out the fermenting food by pailfuls. They have even gone so far as to pour in water, and fairly wash the paunch out. They have then brought the edges of the wound together by passing a few stitches through it, and including the substance of the flank and the wall of the paunch in each stitch, and afterwards covered the wound with adhesive plaster, and it has readily healed, and no bad consequence has ensued. In desperate cases, as when the paunch seems to be filled with a mass of food that will continue to ferment, and cannot be got rid of either by rumination or by physic, this bold mode of treatment may be adopted. The paunch has little sensibility, and will bear great injury without any fatal consequence. But this expedient has not always succeeded. Inflammation has ensued, and carried the animal off. Besides this, the paunch, being suspended by these stitches, and afterwards hanging thus from the flank,

is kept permanently out of its place, and is unable freely and fully to contract afterwards upon its contents: thus inflammation has ensued; and the subsequent want of condition in some of these animals, and the difficulty of fattening them thoroughly, is easily accounted for.

Some farmers thrust a flexible stick, or a cart-whip, down the throat, into the paunch, and thus enable some of the gas to escape. Only in extreme cases, however, should this plan be adopted, since the rudeness of the instrument too frequently ruptures or lacerates the gullet, and does more injury even than it was intended to remove.

An instrument, first devised by Dr. Monro, and brought to perfection by the late Mr. Read, of the Regent's Circus, is superior to every other for relieving blown or hoven cattle. A kind of gag is placed across the mouth, with a hole in the centre of it, and a leather at each end to buckle round the horns. Through this is passed a hollow tube of stout leather, with a perforated knob at the end of it, and containing (to render it firm enough to be thrust down the throat, and flexible enough to accommodate itself to the bending of the passage) a stylet, or slender piece of cane or whalebone, extending through the whole of its length. The tube, thus strengthened by the stylet, is forced into the paunch. The stylet is then withdrawn, and the air rushes violently out, and sometimes a considerable quantity of fluid with it. The tube, if it be passed down with a little caution, and not too rapidly and violently, will do no injury.

Thus the gas and some of the fluid are liberated, but the solid contents of the stomach, the undigested food, may remain, continuing to ferment, and so nauseating the animal that he is disgusted in the act of rumination.

Therefore, after the stomach has been well relieved by this means, it will always be proper to give an invigorating drink like that recommended in Recipe 20, p. 75.

A knowledge of chemistry has been turned to excellent account in the treatment of hoove. The air or gas with which the rumen is distended in these diseases has been analysed, and found to consist, in the first stage, when fermentation is going on, of carbonic acid, and during the latter stage, when decomposition has taken place, to be composed principally of hydrogen, or inflammable air, and in combination either with sulphur or carbon gases. Are there any means by which these can be neutralized or made to occupy less space, and the distention of the stomach thereby relieved? In the first instance, ammonia will answer every purpose, and put a stop to the fermentation. Two ounces of the liquor ammonia may be mixed with two quarts of distilled water, and given every twenty minutes or even oftener, and its effect will not be lessened if it is combined with some cordial, as tincture of ginger, essence of anise-seed, or caraways. In the second stage, though we may not be very sanguine, nevertheless we can do something. There is another gas for which hydrogen has a strong affinity, namely, chlorine; and when they are brought into contact with each other they rapidly

combine—they both lose their gaseous form, and a fluid, not occupying a thousandth part of either, is formed in their stead—muriatic acid.

Chlorine, however, is a highly poisonous gas; it cannot be breathed in a very diluted state without a distressing feeling of suffocation, and undiluted it would be immediately fatal to life. How shall it be safely introduced into the stomach, in order to combine with and change the properties of this hydrogen?

To a chemist the method of accomplishing this presents no difficulties. There is a combination of chlorine, fortunately for medicine, now well known and in extensive use—chloride of lime, or, what is still better, the chloride of zinc. The practitioner, then, after having, by means of Read's probang, got rid of the hydrogen already extricated, provides for the absorption or disappearance of any that may afterwards be formed, in the following manner:—he dissolves two drachms of either of the chlorides in two quarts of water, and injects this into the stomach by means of Read's pump. The chlorine having a much stronger affinity for hydrogen than either lime or zinc, it rapidly quits them and unites with the hydrogen, and forms muriatic acid; and by the wonderful diminution of bulk that follows this new combination, the distention of the stomach is at once, and, as it were, magically removed.

The practitioner on cattle will highly prize this remedy for hoove, and will see other ways in which it may be usefully employed.

It is proper to observe that there are several other

medicaments which have been found of great service in this disease, such as lime-water, potash, and particularly sulphuric ether. If the symptoms should denote any inflammation, ether will be preferable as a medicine; three ounces may be given in three pints of cold water. If the symptoms are produced by green food, there is less probability of inflammation than if the food has been previously dry.

It is very important to distinguish between distention of the paunch produced by gas, and that occasioned wholly or in part by the *large mass of food* itself. The nature of the diet will, in some measure, assist our judgment. If it has consisted of roots, such as potatoes, the obstruction will probably be mechanical; and then, though the symptoms may not be so painful or sudden, the danger is yet greater. There is generally some inflammation of the digestive organs, and the pulse is usually small and feeble. On pressing the abdomen at the flank, we find that the stomach feels hard and firm, and on tapping or striking it with the hand, a dull heavy sound is produced, although even in this case it contains some gas.

It will be proper to administer ether or chloride of lime, to condense the gases, and revive the powers, as before advised; then, if no relief be obtained by this or the administration of purgatives, and the contents of the rumen are found to be solid and in considerable quantity, it will be proper to make an opening in the flank five inches long, so as to insert the hand, and empty the stomach mechanically, taking especial care not to let any of the food escape

from the wound in the rumen into the abdomen. The wound must afterwards be stitched up, and an oily laxative administered, and the food for some days given very sparingly. The operation is, of course, attended with much danger, and should therefore be employed in desperate cases only; but it has been performed with perfect success.

Cattle that have been once blown are subject to a repetition of the accident. The chloride of lime should be administered whenever they are turned into a fresh and tempting pasture: they should be more carefully watched than others, and a cordial drink, mingled with a portion of physic, given them as soon as they appear to be in the slightest degree blown.

CHAPTER XXVII.

CHOKING.

CATTLE are extremely liable to become choked when feeding on turnips or other roots, and many are in consequence destroyed. A round object, such as a potatoe, is more likely to occasion suffocation than a more irregular body, as it produces greater pressure on the windpipe, and is embraced more closely by the œsophagus. The appearances attending choking can scarcely be mistaken. The animal evinces great distress, tries to bring up the obstructing body, slavers at the mouth, protrudes its nose, draws up the neck, arches its back, and grunts or groans.



After awhile the abdomen swells, from the inflation of the paunch with gas. Sometimes the beast will die in a very short time, but the urgency of the case depends much on the situation and the size of the obstructing body.

If the rumen is so distended as to threaten immediate suffocation, it will be proper to puncture it with the trocar, and, having let off the gas, either ammonia, ether, or chloride of lime, in the doses recommended for hoven, may be poured through the cannula into the paunch, and the fermentation thus prevented, while other measures are adopted to remove the cause of mischief. While the impactment remains, the cannula should not be withdrawn, but allowed to continue in. The puncture of the rumen, however, if possible, should be avoided. It will next be essential to ascertain the situation of the obstruction. Sometimes it will be found that the body is impacted at the back of the mouth or beginning of the œsophagus: in these cases, by using a balling iron, the object can frequently be removed by passing up the hand.

If, however, the substance is situated low down the tube, it will be desirable to force it onwards. For this purpose half a pint of oil should be given, to lubricate the passage as much as possible; and then the beast, being properly secured, and a gag placed in the mouth, Reid's flexible tube should be carefully passed down the œsophagus until it reaches the body; a steady pressure should now be employed to force it onwards; but this should be done patiently, so as not to injure the parts. By alternately resting,

and trying again, the obstacle will generally be overcome.

After forcing the object into the stomach, supposing the rumen not to have been punctured, it will be desirable to let the probang remain a short time, to afford an exit for the gas ; and this may be assisted by pressing the flanks.

No solid food should be allowed for several days afterwards, as there is great danger of a repetition of the choking until the muscles entirely recover their tone. Sometimes, after all attempts to remove the body by the methods before described have failed, it will be proper to do so by means of an operation which has been performed with success ; and this consists in making an incision through the skin into the œsophagus, sufficiently large to extract the body. The beast should be cast for the operation, and the wound carefully sewed up afterwards, and for several days the food should consist principally of gruel, the wound being washed after every feeding.

There are several dangers attending the unchoking of cattle, and it should consequently be performed only with the proper instrument, and even then with caution. The gullet may be torn, and it has been ruptured. The first accident generally induces stricture, and the animal becomes worthless, The second speedily causes death. Any blood seen upon the end of the tube will indicate that something wrong has taken place. The farmer need not be violent, or impatient, if the impactment is not high up ; but if situated near the larynx, he has no time to lose. Even then, however, before operation is

resorted to, other measures should be tried. The beast may be bled until it faints or falls, and then perhaps, the body being relaxed, the obstruction can be overcome. Sulphuric ether also may be administered, or chloroform may be used, so as to render the animal insensible, and nature passive. Every means should be tried before an operation is permitted, which, although it has been successful, is certainly not so safe as to be recommended while another chance remains.

CHAPTER XXVIII.

LOCKED JAW.

FORTUNATELY this is not a very frequent disease among cattle; but it is a very fatal one when it does occur. If the attendant is careful, he will observe the symptoms of this malady one or two days before it is thoroughly and incurably established. There will be a stiffness of gait in the beast—he will walk unusually wide behind—there will be difficulty of turning—permanent cocking of the tail, except when that is interrupted or accompanied by a singular tremulous motion of it. The animal can scarcely, and, after a while, not at all, bend his neck to graze; but he will stand with his head protruding, and his ears stiffened, and unnaturally fixed in a somewhat backward direction. Rumination gradually ceases, or is performed slowly and painfully. At length the

jaws become firmly closed, and the neck perfectly stiff. The eyes are strangely fixed, and with some degree of squinting, and the expression of the countenance is peculiarly anxious. The breathing is considerably affected, and there is much labour of the flanks.

The animal will linger on in this dreadful way for eight, or nine, or ten days, almost every muscle of the body being painfully cramped, and the poor creature unable to take a morsel of food, until at length it dies exhausted.

The usual cause of locked jaw is some neglected or unobserved wound, particularly in the feet. Working oxen, therefore, are most subject to it. Several weeks sometimes pass between the infliction of the wound and the appearance of this disease. Working oxen that have been exposed to cold and wet, after being heated in drawing, frequently have locked jaw. It has been said that locked jaw is occasionally produced by eating some poisonous plant, particularly the colchicum, the water-hemlock, or the yew. I much doubt the accuracy of this; and in many, and probably the majority of instances, the cause is altogether unknown.

The treatment is indicated by the nature of the disease. It is a most violent spasm of the muscles of voluntary motion, either of a part or the whole of the frame. To overcome this, some persons have resorted to large bleedings, the blood having been taken till the animal fell. The practice has been successful sometimes, but it has more often failed. In locked jaw there is no sign of inflammation, and,

as the disease is often lingering, it would be prudent to nurse rather than deplete. Physic will generally be demanded. Repeated doses of Epsom salts, with double the quantity of ginger, may be employed, until the desired effect is gained, or the subjoined drink may be administered:—

RECIPE (No. 56).

Strong Physic Drink for Locked Jaw.

TAKE—Barbadoes aloes, one ounce and a half;

The kernel of the croton nut, powdered, ten grains.

Dissolve them in as small a quantity as possible of boiling water and give them when the liquid is sufficiently cool.

Generally the jaw will be now sufficiently relaxed to permit the introduction of the thin neck of a claret bottle into the mouth. The best method, however, of giving medicine in this case is by the assistance of Read's patent pump, the pipe of which can generally be introduced close to and immediately before the grinders. If, however, the last-named invention cannot be used—the jaws being firmly and tightly closed—a horse catheter may be introduced up the nose, and so passed into the gullet, and by means of the syringe attached to one end of the tube, either fluid medicine or thin gruel in any quantity may be thrown into the stomach.

The bowels having been opened, those medicines must be resorted to which have the readiest and most powerful effect in quieting the nervous system. These are, as it regards cattle, opium and camphor.

RECIPE (No. 57).

Anodyne Drink for Locked Jaw.

TAKE—Camphor, two drachms, rub it down in an ounce of spirits of wine; to this add—

Powdered opium, two drachms, and give the mixture in a small quantity of thick gruel.

This medicine should be administered three or four times every day; care being taken that the bowels are kept open, either by means of aloes or Epsom salts.

The stable or cow-house should be warm, and the animal covered with two or three thick rugs. If considerable perspiration can be excited, the beast is almost sure to experience some relief.

While all this is done to lower the action of the nervous system, the strength of the beast must be supported. He will not, or rather he cannot, eat; but he often looks very wistfully at his food. Let a pail of good gruel be placed before him in the manger, a portion of which he will try hard to suck up. If he manages this tolerably well, he needs not to be forced with any other nutriment; but if his jaws are too firmly fixed for this, the horse catheter ought to be employed in the manner before mentioned, and as much gruel pumped down as the attendant pleases. When the poor animal has been hungry for two or three days, through the utter impossibility of eating, he will gladly enough submit to this operation, and almost offer himself for it.

It will be almost labour in vain to endeavour to stimulate the skin, or to raise a blister. Two, three,

or four setons in the dewlap have been useful ; and benefit has been derived from shaving the back along the whole course of the spine, and cauterizing it severely with the common firing-iron. If it should be found impracticable to administer either food or medicine in the ways recommended, as will sometimes be the case, on account of the violence of the spasm which the attempt induces, they may be given in the form of clysters. Double the usual quantity of the medicine must be given, on account of the probable loss of a portion of it, and the small quantity that the absorbents of the intestines may take up ; but too much gruel must not be injected, otherwise it will probably be returned. A quart will generally be as much as will be retained, and the clyster may be repeated five or six times in the course of the day.

Should the progress of the disease have been rapid, and the symptoms violent, or should it be found to be impossible to give* medicine, or cause them to act by injection, the most prudent thing will be to have recourse to the butcher. The meat will not be in the slightest degree injured, for it is a disease that is rarely accompanied by any great degree of fever.

In locked jaw, however, various plans of treatment have been pursued, nor is it yet determined which method is attended with the most certain results. Sedatives and narcotics are generally used ; but stimulants also have destroyed the disease. Perfect quiet seems to be essential. It has done more good than physic. The animal should be removed from

the possibility of noise or disturbance, and whatever is done should be accomplished as gently and with as little bustle as possible.



CHAPTER XXIX.

POISONS.

IN the early part of the spring, and before the different vegetables have attained their proper growth and smell, cattle are liable to be injured, and even destroyed, especially, when they are turned into fresh pasture. In some countries and in some seasons, when particular plants have prevailed, a great many cattle have been lost, and it has appeared as if some epidemic disease was raging, until a botanist accidentally coming into that part of the country, has discovered the true cause of the malady. It is a great pity that farmers and graziers are not sufficiently acquainted with botany to know the different plants, wholesome and poisonous, that are growing in their fields. It is a pleasing study, and would be an exceedingly useful one to them.

The plants that are the most dangerous are the different species of hemlock, and particularly the water-hemlock, the foxglove, the dropwort, and some of the species of crowfoot. These plants are not useful for any purpose, and it is to be lamented that the farmer is not able to recognise them, and root them all up. Young calves and

lambs, until they have added some experience to the guidance of instinct, are occasionally lost in very great numbers.

The yew is a deadly poison, and much cattle have been destroyed by it; but they seldom browse upon it when green. The mischief, in the great majority of cases, is done by the half-dried clippings of some formal hedge-row or fantastic tree. In this state cattle are very apt to eat great quantities of the leaves or shoots.

Some have thought that cattle are poisoned by drinking from stagnant pools, full of venomous insects, and of every kind of decomposition from animal and vegetable substances. I doubt the truth of this; for the cow seems to be naturally one of the foulest drinkers among our domesticated quadrupeds. She will often choose the most filthy puddle in the straw-yard, in preference to the clearest running stream.

The symptoms of empoisonment vary with the plant that has been devoured. In general the animal moans sadly, as if in dreadful pain; or a sudden stupidity comes upon it—or violent convulsions. After eating the yew-clippings, cattle are often perfectly delirious; and in almost every case the belly more rapidly swells than it usually does in hoove.

It is plain that there can be no case in which more speedy and decisive measures are needed; and yet very little can be done, except that useful instrument, far too little known, Read's patent pump, is at hand. The pipe should be introduced

into the paunch, so that the extricated gas which causes the swelling may escape. After this a quantity of warm water should be thrown into the stomach, sufficient to cause sickness, and thus get rid of a part, at least, of the offending matter. Then a physic-drink may be introduced, which will thus pass on to the fourth stomach, and cause speedy purging. The aloes and 'croton (No. 56, p. 197) will be the most effectual purgative. Drinks of vinegar and water, not exceeding half a pint of vinegar at a time, or powerful stimulants—gin and ale, if nothing better be at hand—should be administered, if it is suspected that the poison is of a narcotic kind, and the purging should be kept up by repeated small doses of the aperient medicine. When the poison seems to be nearly or quite evacuated, a cordial drink will be beneficial in giving tone to the stomach, and the Recipe (37, p. 119,) will be as good as can be given. If, however, the symptoms of pain be acute, and the poison is of an acrid nature, sedatives and narcotics are indicated. The anodyne drink (Recipe 57, p. 198) will be proper, and ought to be repeated till relief is obtained.

Cattle are exposed too much to the influence of poisons of another kind, used under the form of medicines. Corrosive sublimate and tobacco water have destroyed many a valuable ox. An antidote is in these cases usually quite out of the question, for the constitution is fatally affected before the owner knows anything of the matter.

Cattle in the neighbourhood of lead mines have been dangerously diseased from the effects of this

ore in the grass. Difficult respiration with loud wheezing is one of the most prominent symptoms, the beast losing its appetite, pining away, and at length dying of suffocation, or attacked by epileptic symptoms. Large doses of Epsom salts; and sulphuric acid in the animal's water—a drachm to the gallon—are the best remedies. The smoke from coppermines has also produced sad disease amongst animals in the neighbourhood: it causes swellings of the joints of a painful description. An early removal to another soil forms the best treatment.

Ranking under the general term of poisons, we may mention the bites of venomous reptiles. Our country, fortunately, knows but one, and that is the viper, or adder; and it is very rarely that cattle suffer from its sting. The beast is generally stung about the head or feet, for it is most likely to disturb these reptiles either in the act of browsing, or as it wanders over the pasture. Cattle bitten in the tongue almost invariably die. They are suffocated by the rapid swelling which takes place. The udder has occasionally been stung; but the supposed bites on the teats are, far oftener than otherwise, the effect of garget.

In cases of an actual sting, the following application will be found useful:—

RECIPE (No. 58).

Embrocation for Bite of Viper.

TAKE—Hartshorn, and

Olive oil, equal quantities:

Shake them well together, and rub the wound and the neighbouring parts well with the liniment several times in the course of the day.

A quart of olive oil should also be given to the animal, mixed with an ounce of hartshorn, or better still, a drachm of chloroform. Oil of turpentine may be used when hartshorn cannot be procured; but it is not so much to be depended upon.

The stings of hornets, wasps, and bees, in some cases, produce much swelling and pain. If the part is well rubbed with the preceding embrocation, the inconvenience will soon subside.

Leech-bites may be mentioned here. While the animal is drinking from some stagnant pool, a leech will occasionally fasten itself on the muzzle, and afterwards creep up the nostril, and produce a very considerable, and, in some cases, dangerous bleeding by its bites. If the leech can be seen, or it is in a manner certain that it has insinuated itself in the nostril, a little strong salt and water should be injected up the nose; or, still better, the creature may be touched with a little vinegar by means of a piece of sponge fixed to the end of a stick, which will immediately dislodge the intruder.

CHAPTER XXX.

WOUNDS.

FROM the horns of their companions, and from the brutal violence of those who look after them, cattle are often exposed to wounds. The treatment of them is generally simple enough, except in a joint, or the neighbourhood of one.

The first thing is to clean the wound from all dirt and gravel, which would cause irritation, and prevent the healing of the part. A good fomentation with warm water will effect this, and at the same time will help to abate any inflammation which may probably have arisen. If every particle of dirt is not evidently removed, a poultice should subsequently be employed.

Next is to be considered the state of the wound. Is it an incised, a lacerated, or punctured one? If it is an incised wound, we must, some time after the bleeding has ceased, and when the divided surfaces have become what painters call "tacky," try how neatly we can bring the divided parts together. If it should be a lacerated wound, we must use our endeavours to promote suppuration. Then, when in the former case the edges are brought well together, they should be retained by passing a needle and strong waxed twine deeply through them, making two, or three, or more stitches, at the distance of half an inch from each other. A surgeon's crooked needle, or a glover's large triangularly pointed needle, will be necessary for this purpose. A little moistened soft clean tow should then be placed over the wound, and the whole covered by a bandage closely, but not too tightly applied. Let none of the farrier's abominable tents, or pledgets of tow, be introduced: the intervals between the stitches will be quite sufficient to permit the escape of any matter that may be formed. The wound should not, if possible, be opened for four days after the first dressing.

When it is at length examined, let none of the hot torturing applications of the farrier be used. If it looks tolerably healthy, and is going on well, it may be gently sprinkled or carefully moistened with a solution of chloride of zinc—a scruple to a pint of water.

If the above application be used, no proud flesh will start up; but if, from the adoption of other measures, proud flesh should have begun to spring, the wound should be first washed with a strong solution of blue vitriol, and then dressed with the tincture of myrrh, or the solution before named; or, if the discharge is very offensive, the wound should be well bathed with the solution of the chloride of zinc. It is high time for all the disgraceful torturing applications of the farrier and cow-leech to be discarded, especially as Nature is much kinder to these animals than she is to us; and wounds that would in the human being puzzle the surgeon heal readily in cattle.

If it is a punctured wound, its direction and depth must be carefully ascertained. Fomentations of warm water, with every quart of which one ounce of the tincture of arnica is mixed, should be applied for a day, in order to abate inflammation, and the solution of chloride of zinc should be injected into the wound morning and night; the injured parts being covered if the flies are troublesome, but otherwise left open. If the wound runs downwards, and the matter cannot escape, but collects at the bottom, and seems to be spreading, a seton should be passed into the original orifice, and directed as far as the very lowest part of the sinus, or pipe, and there brought out. There is never occasion for the introduction of

lint into these wounds: if they are well syringed with the application which has been named to the very bottom, and a seton passed through the sinus, should one happen to be formed, they will do very well.

From the yoke being too heavy, or not fitting the neck, the shoulders of oxen will sometimes get sadly wrung, and deep ulcers will be produced, resembling fistulous withers in the horse. These ulcers are very troublesome to deal with. The secret, however, of properly treating them, is to pass a seton through the very bottom of the ulcer, in order that the matter may flow freely out: then, in the majority of cases, the wound will readily heal, or if it should not, the diabolical scalding mixtures of the farrier are never wanted. He who pours in his boiling fluids, or his caustic mixtures, deserves never more to possess, or to be permitted medically to treat a beast. In obstinate cases, diluted nitric acid (one part of nitric acid and seven of water) may be applied over the surface of the ulcer, with a pencil or sponge.

When a tumour is forming on the shoulder from the pressure of the yoke, every attempt should be made to disperse it. A saturated solution of common salt will often be useful, or sal-ammoniac dissolved in eight times its weight of water; but a good discutient application is the following:—

RECIPE (No. 59).

Discutient Lotion.

TAKE—Bay salt, four ounces;

Vinegar, one pint;

Water, one quart;

Oil of origanum, one drachm;

Add the oil to the salt first, rub them well down with a little water, then gradually add the rest of the water and the vinegar.

The part should not only be wetted with this embrocation, but gently yet well rubbed with it, as often in the course of the day as may be convenient.

Should the swelling still increase, and, on feeling it, should matter evidently be formed, the sooner the tumour is opened the better, and the best way to open it is to thrust a pointed knife right through, and then to cut outwards: but should this proceeding shock the owner, he may pass a seton from the top through the lowest part of it.

Oxen are very apt to be wounded in the feet. If this is soon discovered, all that will be necessary is to cut away the horn so as to form a wide opening, and to apply a pledget of tow moistened with a little tar, confining it between the claws with a bandage. When the application of caustic is necessary, butyr of antimony may be used, there being no need to apply it with severity, so as to corrode the parts to the very bone.

If much contusion or bruise attends the wounds, and which is very likely to happen when cattle are gadding about and breaking out of their pastures in summer, and especially when strange beasts are intermixed, the previous fomentation will be more than usually necessary, in order to prevent inflammation, and to disperse or favour the escape of the effused blood. The fomentation should be applied every half-hour, and when it is over, the wetted part should be well covered with dry flannel. The wetted flannels should be applied dripping, and as hot as the hand can bear them.

If the wound penetrates the cavity of the chest,

as it sometimes will when one beast gores another, it will be necessary to bring the parts accurately together, and to confine them by closer stitches; a piece of adhesive plaster should then be placed over the wound, and secured by the application of proper rollers or bandages. If the air is suffered to pass in and out of the wound for any considerable time, the edges of it will be indisposed to unite together and to heal, and the pleura, or lining of the chest, will probably become inflamed by the unnatural presence of air in the cavity of the chest.

Should the belly be wounded, and a portion of the bowels protrude, it will be necessary to calculate the probability of being able to return them into their proper situation, and healing the wound: for, in many of these cases, the best thing the farmer can do is to immediately request the services of the butcher. If a cure is attempted, all dirt and clotted blood should be carefully removed from the protruded intestine with a sponge and warm water. It must then be cautiously returned into the belly, and the edges of the wound brought together and secured by very close stitches. After that, rollers or bandages must be passed round the belly, and which, being removed only while the wound is dressed, must remain until a cure is completed, and for a few days afterwards.

In all these cases a veterinary surgeon should be consulted. He alone is able to give an accurate opinion as to the probability of a cure, and to guard against a thousand accidents and annoyances that are likely to occur in the treatment of such a case.

Many persons are frightened when they see the

profuse bleeding which sometimes takes place from deep or lacerated wounds. Except some large arterial trunk is divided, there is little or no danger of the animal bleeding to death. When a certain quantity of blood is lost the stream will flow slowly, and a coagulum, or clot of blood, will be formed in the vessel, and plug it up, and afford a mechanical obstruction to the hæmorrhage. Sufficient blood, however, may be lost, to interfere very materially with the condition of the beast, and to leave considerable and lasting weakness behind. We are, therefore, anxious to stop the bleeding as soon as we can.

Where the situation will admit of it, a dossil of lint, saturated with oil of turpentine, placed upon or in the wound, and secured by a firm bandage, will often be effectual. If the vessel is but partly closed by the pressure, yet that may be sufficient to produce a coagulation of the blood, and the consequent stoppage of the stream. Cold water directed in a stream upon the wound may also stay the hæmorrhage.

The next preferable way of proceeding is to endeavour to pass a ligature round the bleeding vessel. This is often practicable by means of a tenaculum, or any hooked instrument, by which it may be drawn a little from its situation, and some waxed silk or twine passed round it. Sometimes it may be laid hold of with a pair of forceps or small pincers, and so secured; or, should neither of these methods be practicable, a crooked or glover's needle, armed with waxed silk, may be plunged into the flesh or cellular membrane round the vessel, and when the silk is tightened, the vein or artery will probably be com-

pressed and closed. The hot iron is likewise used by some persons; but we trust none of our readers would sanction such a practice. As for styptic powders or lotions, they appear to have little or no effect in stopping profuse bleeding in cattle.

The bleeding is generally arrested with most difficulty when the horn is broken off in some of the fights among the cattle. The bone of the horn is full of blood-vessels, and it is only by plaster after plaster of tar that a compress is made all round the horn, through which the blood cannot penetrate. These plasters should not be removed for many days, otherwise the bleeding from such a vascular part will return.

Of all the wounds, however, to which cattle are occasionally exposed, the most dangerous are those about the joints, and especially when the joint itself is penetrated. The ox is not so subject to this as the horse; but the fetlock and the knee are occasionally deeply wounded, and the joint laid open, either by falling, or by being brutally wounded with a fork.

Here, as in all other wounds, the first thing to be done is carefully to wash away all dirt and gravel. The probe must then be introduced; and the depth to which it penetrates will generally determine whether the joint has been injured. If any doubt remains about this, try no further, but foment the part with a solution of the tincture of arnica, four ounces of the tincture to every gallon of water. Fasten up the animal's head, so as to prevent it lying down, and continue the fomentations till the slough takes place, when it will easily be known whether

there be any synovia or not. Then there is no doubt as to the course to be pursued. The flow of this must be stopped, and that immediately. It was placed there to be interposed between the ends of the bones, and thus to prevent them rubbing against each other, and becoming irritated or inflamed. The membrane with which the heads of the bones are covered is, during inflammation, in the highest degree sensitive, and with the slightest injury produces the extremest torture. There is no agony equal to that caused by an opened joint. Place the animal on slings, which in his tired condition, produced by long standing, he will gratefully take to. Then apply no bandage nor anything irritating to the wound; but procure some of the solution of the chloride of zinc—a scruple to the pint of water. Have a good-sized sponge, dipped in this liquor, and then let it be squeezed above the wound upon the leg, so that the fluid may trickle down upon the sore part. A large lump will form over the orifice. Do not remove that lump, for it is coagulated synovia. This is all that need be done. No bleeding, no physicking is required; and in a month or six weeks the slings may be taken away, and the beast let go perfectly healed. The keep, however, should be liberal during the cure, because nature having an injury to repair requires support.

These are the only means that should be used. When the farrier or the cow-leech wants to inject his corrosive sublimate, or his oil of vitriol, or to use the heated iron, or to plaster up the wound, let no consideration tempt the farmer to comply. It is

cruel work, and it does not succeed in one case out of ten.

These cautions are repeated again and again, for it begins now to be generally felt and acknowledged, that we have no right to torture and abuse our quadruped servants.

CHAPTER XXXI.

STRAINS AND BRUISES.

THE ox is not so subject as the horse to strains, for his work is slower, and usually less laborious. The horse is seldom strained at slow and steady work, and that only is generally exacted from the ox. The principal cause of strain in these animals arises from their contests with, or their riding or ramping upon each other.

In recent strains, attended with lameness and heat, the following is an embrocation that can be used, though all such are little better than cold water:—

RECIPE (No. 60).

Embrocation for Strains.

TAKE—Bay salt, four ounces ;
Oil of origanum, one drachm ; rub them well together,
until the salt is reduced to a powder, then add—
Vinegar, half a pint ;
Spirits of wine, two ounces ;
Water, a quart.

Bathe the part frequently with this embrocation, or with cold water, whichever you like best. When the heat and tenderness have somewhat subsided, and only weakness of the part remains, the Rheumatic Embrocation (Recipe No. 9, p. 62) will be serviceable.

For very deeply seated strains a more powerful application may be necessary. Then use the following:—

RECIPE (No. 61).

Strongest Embrocation for Strains.

TAKE—Spirit of turpentine, half a pint ;
Oil of origanum, half an ounce ;
Olive oil, a pint and a half ;
Oil of cantharides, eight ounces.

Mix them together, shake them often, and keep them in a bottle for use.

This should be well rubbed in, morning and night. It is not intended absolutely to blister the animal ; and should the embrocation cause much redness or tenderness, it may be lowered with an equal quantity of olive oil.

After all a considerable degree of weakness and lameness will occasionally remain, and especially about the hips and loins. A strengthening plaster will be very useful here. It is best applied in the form of a charge.

RECIPE (No. 62).

Charge for old Strains or Lameness.

TAKE—Burgundy pitch, four ounces ;
Common pitch, four ounces ;
Yellow wax, two ounces ;
Barbadoes tar, six ounces ;

Melt them together in a ladle, and apply the mixture to the parts while yet warm and liquid.

A little short tow is then placed over this, before it gets cool, and which, adhering to it, forms a thick coat over it. The charge acts as a support to the part. It can never do harm; and many an old strain, or lameness, or rheumatic affection, has been effectually removed by it. It should remain on the part two or three months, in order to ensure its full success.

Although not exposed so much as the horse to strains generally, yet there is one joint—the fetlock—in the ox which often suffers. The division of the lower part of the leg into two bones materially weakens this joint: therefore it is not unusual to see enlarged fetlocks, and a considerable accumulation of bone about them. The mild and the strong embrocation must in turns be diligently applied, and these failing of success, recourse must be speedily had to the blister; but if these should not be successful, and the lameness is so considerable as to injure the condition of the animal, relief can be obtained by dividing the nerve which supplies the foot above the fetlock, thereby removing pain and lameness by destroying sensation.

Fractures of the leg sometimes occur; they have been successfully treated by bandaging the parts, and keeping the animal quiet.

The leg too has even been *amputated* with success, a wooden leg being afterwards substituted.

CHAPTER XXXII.

CANCEROUS ULCERS.

THERE seems to be a natural disposition in cattle to the formation of tumours on various parts of the body. They are mostly found in the neighbourhood of joints, and generally either hanging loose, or slightly adhering to the parts beneath. They sometimes grow to an excessive size. In some cases they are evidently constitutional, for many of them appear on different parts. They do not seem to give much pain to the animal, and occasionally they continue month after month without being of any serious inconvenience: they then suddenly break, and a malignant ulcer ensues, which speedily degenerates into a cancerous one.

The tumours are sometimes smaller, and fixed to the parts beneath by a broad base, and which are chiefly found about the face, on the cheeks, or under the eyelids, or in the channel between the jaws. These are more likely to break than the others, and when they break are far less manageable. The fluid that is discharged from them is thin and excoriating, and the wounds are covered with proud flesh, springing again as quickly as it is removed. If they are attacked before they break, they will generally be got rid of.

As an external application, nothing is superior to the Iodine Ointment, (No. 31, p. 99.)



At the same time, half an ounce of the tincture of iodine may be given in a little gruel morning and night, at or soon after the time of feeding; or the hydriodate of potash, beginning with half a drachm morning and night, and gradually increasing the dose. This preparation of iodine is preferable to the tincture; but the internal and the external use of the iodine must be continued at least three or four weeks, before any decisive benefit will be obtained. The tumours will frequently disappear altogether; but the ointment and tincture must be used for at least a month before any decisive good can be expected.

If the tumours at the end of that time should not be evidently diminishing, the veterinary surgeon should begin to think about removing them with the knife. They may usually be taken away without the slightest danger. It will, however, be prudent to give the tincture of iodine for three weeks or a month after the operation, in order to remove the constitutional tendency to a return of the tumours.

It will in the majority of cases be useless to attempt to heal these tumours when they have once broken. Strong ointments, and caustics of all kinds, have been tried, but the ulcer has daily spread and gone deeper and deeper, until it became necessary to destroy the animal. If anything is attempted in the way of healing the ulcers, the wound should be washed before every dressing with the tincture of iodine, and the solution of chloride of zinc, a drachm to the quart of water, be daily applied.

These tumours are often very troublesome to

treat, and the preferable way will generally be to remove them as soon as possible with the knife, except more should be found on any other part of the beast, in which case the removal of the principal tumour would only hasten the growth of the rest. Mercurial ointment will have no effect on these tumours, except to irritate them and cause them to grow faster, and sometimes it will salivate and seriously injure the beast.

CHAPTER XXXIII.

ANGLE BERRIES.

THESE are little warty tumours growing on various parts of the skin. They are unpleasant to the eye, and they sometimes become very sore.

They are a sad nuisance about the teats, and often render the cow very difficult to milk; and, on the eyelids, they are a source of perpetual torment to the animal. The easiest and surest way to remove them is to tie a piece of waxed silk firmly round the base of each, and to tighten it every day: by means of this the tumour will drop off, and rarely grow again.

If they are so numerous and large that it is necessary to have recourse to the knife, and the subsequent hemorrhage should be great, apply one of the well-known styptics, as dilute nitric acid, or powdered alum, or cold water, &c., and the bleeding will thus be readily stopped.

If they are early attended to, before they have reached any considerable size, they will gradually disappear when they are daily touched with the nitrate of silver, either in substance or in the form of a strong solution, or with that which is equally effective, and neither so expensive, nor so likely to decompose—strong acetic acid. Nitrous acid will answer the same purpose. When there is an inveterate disposition to the growth of these berries, the iodine may be given, as already directed, with some prospect of success.

CHAPTER XXXIV.

THE FOUL IN THE FOOT.

THIS is also a troublesome and obstinate disease. It consists of ulcers of the foot, usually about the coronet, or under the horn, and causing more or less separation of it, with intense pain and lameness. It is produced by cattle being pastured too long on wet and poachy land, or their being driven too far over a hard and flinty road. It generally first appears between the claws in the form of a crack, extending from the coronet down the foot, with considerable inflammation, and the discharge of a stinking matter or pus. At other times a little swelling appears on the coronet between the hair and hoof, which breaks, and likewise discharges much stinking matter; and, on being examined with a probe, a sinus or pipe will be discovered

descending from the coronet down the foot and under the horn. The pain is often so great that the animal altogether refuses his food, and becomes as thin as a skeleton. The ox being pricked in shoeing is not an unfrequent cause of foul in the foot, especially if the animal be hardly worked afterwards. It very much resembles those diseases of the foot to which the horse is subject—as cracked heels, thrush, sand-crack, quittor, canker, &c.—only, instead of remaining separate or local, they blend with or run into one another in the ox.

The first thing to be done is to examine the wound carefully, and see how far it extends under the horn. If there is little or no underrunning, the case may be easily and successfully treated. The country practice is to clean the part carefully, and then take a small cart-rope, or a pair of cow-hopples, and chafe them backward and forward between the claws for four or five minutes, and afterwards to dress the sore with a little butyr of antimony, and turn the beast into a dry pasture.

This is a very cruel and ineffective manner of proceeding. With less pain to the beast, and far more effectually, the fungus is removed with the knife, and all loose horn at the same time is taken away, which the rope would either tear and leave jagged, or not touch. The surface should then be dressed with the sulphate of copper, or the butyr of antimony may be lightly applied. There will not be much difficulty in effecting a cure if the case is taken in time, and the sore kept dry while under treatment.

Should, however, the pasterns swell, and be hot and tender, as they will do if the case has been neglected, or any gravel has insinuated itself under the horn, the wound must be more carefully examined, the foot put into a poultice to soothe and cleanse it, after which every sinus must be laid open to the very bottom, and touched with the caustic. The foot must then be bandaged, and when the swelling and inflammation have subsided, the caustic, if required, may be again employed, but not more severely than the case demands. It is the light application of the butyr, and not the cruel burning to the very bone, that will soonest and most perfectly effect a cure.

In a few cases the foul in the foot cannot be traced to any external injury, but seems to be the result of natural foulness of the habit. It then resembles grease in the horse, and must be similarly treated. The sores, if foul and hot, should be cleansed and cooled by poulticing for a few days, and then the feet should be washed morning and night with a tolerably strong solution of alum in water, afterward applying the solution of chloride of zinc, a drachm to the quart of water, being careful at each dressing to remove the scurf which will have accumulated. It should not be forgotten, that some persons believe foul in the foot to be a highly infectious disease, and therefore, though the fact is not established, no harm will be done if the lame beast be removed from his companions.

Foul in the foot is a most serious disease when it breaks out in a dairy. It preys upon the health

of the animal, and thus, to a degree almost incredible, lessens the quantity of milk which it yields. The grazier likewise severely suffers when it retards the fattening of his store-cattle. Much suffering speedily and most injuriously preys upon these animals. Lameness in cattle should, therefore, never be for a moment neglected.

CHAPTER XXXV.

TO DRY A COW OF HER MILK.

IT is often necessary to dry up the milk when cows are wanted speedily to fatten, and this is now and then found to be a difficult matter, especially with large and gross beasts. If the flow of milk is suffered to continue, it may overload the udder, and produce inflammation of it, or garget, or general fever, or inflammation of the lungs, or foul in the foot.

The best time to dry the cows is very early in the spring, when they are eating dry meat. A good dose of physic, followed by mild astringent drinks, will usually settle the business. Alum in the form of whey, (No. 27, p. 88,) or dissolved in water, will be the most effectual, as well as the safest astringent. An ounce will be the medium dose. Some persons, however, give it in larger quantities—even as much as a pound at a time. This is not a good or safe practice; but if the alum in moderate doses is in-



operative, the hydriodate of potassa may be given by the mouth, and rubbed into the udder in the form of ointment, for at least a week before any effect is produced. The cow should be milked clean when the astringent is given, and then turned on some bare upland pasture.

The cow subsequently should be milked at the usual times, and if, after a proper period has been allowed to elapse, the milk does not sensibly diminish, give the third drink, which should be an aperient one, and after that the Diuretic Drink (No. 32, p. 99) every second day.

The condition of the udder should never be overlooked. While the animal is being dried, it should be milked. This method which we recommend may probably make the process a little longer, but it will in the end be more profitable, because it is exposed to so much less danger. Moreover, if there is any virtue in medicine, wherefore should the owner of cattle be asked to run the risk of a chance operation, when the physic ought to perform the work effectually without any peril?

CHAPTER XXXVI.

THE MANGE.

THIS is a troublesome and a disgraceful disease. It argues bad management in some way or other. An occasional cause is over-feeding, especially with

hot, stimulating food. A more frequent one is starvation in the winter, by which the animal is so much debilitated that he cannot support the change of diet when the flush of grass comes on. A third cause, and the most general one, is filth; and, in the cow-houses of many little farmers, it is not an unfrequent one. The last cause that I shall mention is contagion: mange is highly contagious, and if it gets into a dairy will often run through all the cows.

When there is not much eruption, the disease is recognised by the hide-bound appearance of the animal; the dryness and harshness of the hair; its readily coming off; the beast continually rubbing himself; and a white scurfiness, but not often much scabbiness, being seen on various parts.

Medicine, if only given by the mouth, will be of no avail here. The beast must be dressed. There is no occasion to use any thing poisonous for this purpose, as cow-leeches are too much in the habit of doing. The corrosive sublimate, and hellebore and tobacco, should rarely be suffered in the dairy. They have destroyed hundreds of cattle.

The most effectual application is an ointment of which sulphur is the principal ingredient. Some mercurial ointment, however, may be added, but in no great quantity, for cattle will lick themselves, and salivation may ensue. There is nothing so injurious to the milk, or to the fattening of the beast, as salivation, even in a slight degree.

RECIPE (No. 63).

Mange Ointment.

TAKE—Flower of sulphur, a pound;
Strong mercurial ointment, two ounces;
Common turpentine, half a pound;
Lard, a pound and a quarter;
Oil of juniper, four ounces:

Melt the turpentine and the lard together, well stir in the sulphur when these begin to cool; and afterwards rub down the mercurial ointment on a marble slab with the other ingredients; when quite cold, add the oil of juniper.

This should be well rubbed in with the hand all over the animal's body, being careful that no part of the skin escapes. The dressing should be repeated three times, allowing one day to elapse between each dressing. After this, if any place seems not to be cured, the ointment may be rubbed wherever there is mange, the hair being carefully separated. Little danger can happen from the prolonged use of this ointment, if the animal is not exposed to severe cold.

Alterative medicine will materially assist the cure. The following may be given without injury to the milk, and without any precaution being needed:—

RECIPE (No. 64).

Alterative Drink.

TAKE—Flower of sulphur, two ounces;
Black sulphuret of antimony, one ounce;
Nitre, two ounces:

Mix, and divide into four powders; give one every second morning in a little thick gruel.

Turning into a salt marsh will be an excellent auxiliary.

Connected with mange, generally accompanying it, and often producing it, are *lice*. The presence of these vermin argues extreme negligence, and is an absolute disgrace to the farmer. They rapidly spread

from cow to cow; the slightest touch transfers some of them from one beast to another; they are crawling continually in the stable or on the pasture. They are both the consequence and the cause of mange, and other affections of the skin. Myriads of them are sometimes found on the poor beast, teasing it almost to death.

The mange ointment above recommended will often be effectual in destroying them; or, should it not be sufficiently powerful, rub the animal all over with an ointment made of

RECIPE (No. 65).

Bees wax,	} of each equal parts.
English tallow,	
Lard,	

Lay this mixture thick upon the hide, and let a man with a moderately soft scrubbing brush devote at least two hours to the dressing. When he has finished with the brush, order him then to take more of the ointment, and smear it thickly over the cow. The grease may be washed off on the following morning, and all the lice will be destroyed. Two pounds and a half at least will be required for a small cow: three pounds will be necessary to dress a large one.

While the lice are attacked, the condition of the animal should, if possible, be improved. Poverty and bad condition are sad encouragers of these pests. The alterative drink just recommended may be advantageously combined with tonics.

RECIPE (No. 66).

Alterative Tonic Powders.

TAKE—Flower of sulphur, four ounces;
 Black sulphuret of antimony, half an ounce;
 Nitre, one ounce;
 Powdered gentian, two ounces;
 Powdered ginger, one ounce:

Mix and divide into six powders, and give one daily.

Warbles may here be not improperly considered. The gad-fly, or ox-fly, appears about the end of summer, and is a sad annoyance to the beast. At the very hum of the insect, the cattle will gallop distractedly over the field, and sometimes do themselves serious injury. When the fly has the opportunity of alighting on the beast, he chooses the back or the loins, and, piercing the skin, deposits an egg under it. A tumour is shortly afterwards formed, varying from the size of a hazel-nut to that of an egg. It is an abscess, for it speedily bursts, and leaves a little hole on the top of it for the grub, which is now hatched, to breathe, and where he lives on the matter that he finds in this curious abode.

These warbles are often a sad nuisance to the animal. He licks them when he can get at them, and rubs himself violently on any thing within his reach.

Country people sometimes get rid of them by compressing them between the finger and the thumb, and forcing the maggot out. Others, with more certain effect, either pull off the scab around the mouth of the tumour, or open it with a lancet or penknife, and then the insect is easily ejected.

The farmer is scarcely aware how much injury this fly does to the hide; for, although the holes may apparently close up, that part will always be weak.

CHAPTER XXXVII.

TO PRODUCE BULLING IN THE COW, AND TREATMENT
OF BULL-BURNT.

It sometimes happens that the cow will not stand to the bull at the time that the farmer wishes, so that either the calf is dropped a month or two after the most convenient and profitable time, or the most valuable season for making butter and cheese is lost. Some cows are thus backward because they have been previously starved; a week or fortnight's better keep will usually effect the desired purpose. Indeed, if the animal has been well kept, and is in good health, there will be little trouble from her unwillingness to associate with the bull, but occasionally some of a contrary nature.

Many receipts have been given by various authors to hasten the period of the cow being in season. A very common thing with the farmer is to give the cow that is wanted to take the bull a quart of milk immediately after it has been drawn from a cow that is in season. Two or three good cordial drinks will add to its effect. A few malt mashes, oats, carrots, &c., may likewise be given. I would earnestly advise the farmer never to have recourse to cantharides. It is a dangerously stimulating medicine: some cows have had suppression of urine quickly following the exhibition of it, and others have died from inflammation of the sexual parts.

On the other hand, cows should not be too fat at this time, because they will frequently then not stand the bulling. A fat cow should have a dose or two of physic; a lean cow requires better keep.

The sheath and penis of the bull occasionally become swollen and tender, and full of little ulcers, with fetid ichorous discharge. The animal can seldom be managed unless he is thrown, when the penis should be drawn out, and all the sore places bathed with the following lotion:—

RECIPE (No. 67).

Lotion for Bull-burnt.

TAKE—Chloride of zinc, one drachm ;
Spirits wine, a quarter of a pint ;
Water, one pint and three quarters.

A few applications of this will give speedy relief, and heal the sores.

The shape of the cow will sometimes inflame and swell, accompanied with considerable pain at the time of staling, and also a thin ichorous discharge. The part should be washed with the foregoing lotion, or a little of it injected up the shape with a syringe.

CHAPTER XXXVIII.

THE COW-POX.

THIS disease used to be generally confounded with sore teats, until Jenner discovered its preservative power against small-pox. Other scientific men have

since proved that it is identical with small-pox,—that it is, in fact, the small-pox of the cow.

It appears under the form of pustules or vesicles on the teats, which are easily broken in milking, and which, left alone, break of themselves, and discharge a thin, unhealthy fluid. The pustules are surrounded by a broad circle of inflammation, and, if neglected, or roughly handled, occasionally run into ulcers, very foul, and difficult to heal.

At the time of, or a little before, the appearance of the pustules, the animal droops, refuses to feed, ceases to ruminate, and labours under considerable fever. The eyes are heavy and dull; the cow moans and wanders about by herself, and her milk materially lessens, and at length is almost suspended.

The bowels should be gently opened, and the fever drink, (No. 1, p. 50,) given once or twice in the day, with the best food, or any food the animal will eat. The teats should be frequently washed with warm water, and the lotion recommended for bull-burnt.

It is well known that these eruptions give a similar disease to the milker. Pustules appear about the joints of the hand, and the ends of the fingers; and there is sometimes considerable fever, pain in the head and limbs and loins, shivering, vomiting, and a quickened pulse. The pustules burst in three or four days, and sometimes become troublesome sores difficult to heal; and if unfortunately the patient should have rubbed his cheek or his lips with the diseased hand, the ulcers will appear there also.

It was the observation that persons who had had this disease of the cow were usually exempt from

small-pox, which led to the most important discovery in medicine that has been made in modern times.

There is another eruption on the teat of the cow that bears no inconsiderable resemblance to the true cow-pox, and that has been confounded with it. The pustules are smaller: they are not so round, nor so deep; nor have they the blue colour of the others, and they contain pus or matter from the very first. They will readily yield to the ointment for sore teats recommended in Recipe 33 (p. 102).

Even without any application to them, the scabs usually peel off in a few days, and the skin underneath is quite sound. If, however, these are carelessly rubbed off in the act of milking, troublesome ulcers are apt to ensue.

It is of much importance to the farmer to be able to distinguish between these two eruptions. The first is contagious, and may be communicated to the milk-maid, and by her to other cows. It is the true cow-pox. The second is not contagious, and is readily got rid of.

CHAPTER XXXIX.

CLUE-BOUND—FARDEL-BOUND.

THESE are different terms for costiveness, to which cattle are often subject, and especially in the beginning of almost all inflammatory complaints. The dung gets more tenacious and harder, and is forced away in very small quantities. There is considerable

dryness of the muzzle, heat of the mouth, quickness of the pulse, anxiety of the countenance, and every indication of fever. Sometimes the disease is evidently in the bowels principally or entirely; at other times it is only the symptom or accompaniment of other diseases. It always requires immediate attention, and may be considered as highly dangerous. The physic drinks already recommended ought to be given,—at first, the mild one, should the case not be very urgent (No. 2, p. 52). If that, repeated after an interval of six hours, is not successful, the stronger dose (No. 17, p. 171) should be tried, or the treatment may commence with the last, if the symptoms are well marked; and if that also fails, a pint of linseed oil, with which one drachm of chloroform is mingled, may be administered four hours afterwards.

Should all prove unavailing, next give a pound of common salt in a sufficiency of water. This will seldom deceive, in extreme cases, although, from its irritating the bowels a little too much, it is not a purgative to be recommended on ordinary occasions.

The action of the purgatives will be hastened, and generally secured, by the use of injections; and here also Read's patent pump will be advantageously employed. Half a pailful of warm water, in which half a pound of Epsom salt or common salt has been dissolved, may be thrown up every two or three hours.

After the obstruction has been once overcome, the continued exhibition of mild purgatives will be prudent, for the costiveness is too apt to return. The Purging Drink (No. 6, p. 58) will be the best

medicine for this purpose. The food should be mashes principally, or young succulent grass.

CHAPTER XL.

RABIES—HYDROPHOBIA.

THIS dreadful disease is produced by the bite of a rabid or mad dog. The time that may elapse between the bite and the appearance of the malady varies from three weeks to three or four months.

The symptoms of its approach are dulness; loss of appetite; the eyes are anxious, protruding, and red; the animal frequently and pitifully lows, and is continually voiding its dung or its urine. Saliva drivels plentifully from the mouth, but after a day or two the discharge dries up, and is succeeded by thirst almost insatiable: *there is no hydrophobia, or dread of water, at any time.* Presently weakness of the loins and staggering appear: these are succeeded by palsy of the hind limbs, and the animal lingers six or seven days, and dies.

In some cases the beast is dreadfully ferocious: he runs furiously at every object, stands across the path bellowing and tearing up the ground, and violently attacks and gores his companions.

There is no cure; the most prudent thing is to destroy the animal as soon as the disease is sufficiently plain. Care should be taken that the saliva of the rabid ox is not received on a wound or abraded part, for it has produced the disease in other animals.

Any wound on which it has fallen should immediately have the lunar caustic applied to it.

When a mad dog has been known to bite an ox or a cow, there is a possibility of their escape, for the hide is thick, and the hair is thick too, and the skin may not be penetrated, or the tooth may have been cleaned in passing through the hair. They should be most carefully examined, and especially about the part on which they were seized by the dog, and if the minutest scratch can be found, the hair must be cut off round it, and the lunar caustic applied. That being done effectually, and every bite being discovered and operated on, the animal is safe; but it is possible, or rather it is too probable, that every bite will not be discovered, considering how thickly the skin is covered by hair. It is, therefore, the safest course, if the beast is in tolerable condition, to sell it at once to the butcher, for it will not be fit for the shambles after rabies has once appeared. Medicine would be perfectly thrown away in these cases. The stories which are prevalent in every village, of the wonderful power of certain drinks, are all founded either on ignorance or fraud. There is no cure; and no prevention but the destruction of the part.

CHAPTER XLI.

THE DISEASES INCIDENT TO YOUNG CALVES.

WHEN the calf is dropped, proper care should be taken of the cow, by providing her with a comfortable place to lie down: she should also be suffered freely to lick her calf, for this will not only make her fond of it, but the young animal will be thoroughly cleansed, and raised much sooner than it otherwise would; and the mother, in eating the cleansing, will obtain that medicine which nature designed for her.

It is usual to take away a quart of the first milk, called *the beastings*, before the calf is allowed to suck. The young animal, however, may be allowed, with perfect safety and even benefit to itself from the first, access to the cow, the after sucking being regulated by the plan of bringing up on which the grazier may determine. The calf should remain with the mother during a few days at least, or until the milk is proper for the purposes of the dairy.

The mother's first milk is of an aperient quality, and sufficiently so to cleanse the bowels of the calf from the black sticky substance which they contain when first dropped. If this should not be effected, a little opening medicine will be necessary.

RECIPE (No. 68).

Aperient Drink for Calves.

TAKE—Epsom salts, from one to two ounces, according to the size and age of the calf, and dissolve in half a pint of gruel; then add—
Ginger, a scruple;
Essence of peppermint, three drops.

The Epsom salts are as efficacious as any kind of oil for purging young cattle, as well as far less expensive than most oils. Custom, however, has sanctioned the almost general use of castor oil in these cases, and there is no objection to it.

After the first or second day it will be prudent to tie the calf in a corner of the hovel, that it may not be always sucking the mother, for it might overgorge itself with milk, which would coagulate in the fourth stomach, and choke it up, and produce disease, and even death. It is evident the cow would yield more milk than the calf should have, therefore it is the custom, and very properly, to take away a portion of it from her two or three times in the day, before the young one is unfastened.

The time that the calf after this remains with the mother, is chiefly regulated by the system which the breeder usually pursues, but reference should always be had to the state of the cow's udder. If it is perfectly free from knobs, or kernels, or hardness, the calf may be removed at a comparatively early period; but if any induration of the teats appears, the young animal should be permitted to suck a while

longer. The frequent sucking will prevent the milk from curdling in the udder, and will contribute not a little to the dispersion of the tumours.

Few things are more injurious than the exposure of the young calf to wet and cold. It lays a foundation for rheumatism and hoose, which no medical treatment can afterwards remove.

For every information with regard to the rearing of calves from the pail, the reader is referred to the newest edition of "The Complete Grazier;"* which should find a place in the library of every agriculturist.

Bleeding from the navel string is not an uncommon complaint among calves, and it is a very troublesome one. The first thing to be done is to pass another ligature round the string nearer to the body; for if the bleeding is not stopped, the life of the young animal will sometimes be endangered. It may happen, however, that the first ligature may have been nearer to the belly than it ought to have been, so near, indeed, that another cannot be passed within it. A pledget of lint that has been dipped in a decoction of galls (half a dozen galls bruised, and boiled in half a pint of water) should be placed over the part, and confined with a proper bandage. This will be far preferable to the blue vitriol, and oil of vitriol, which some cow-leeches are so fond of applying. It will stop the blood, but not eat into and destroy the part.

* "Youalt's Complete Grazier; or Farmer's and Cattle Breeder's and Dealer's Assistant. A Complete Body of Husbandry." 10th Edition, 8vo.

From the application of the styptic, or even of the second ligature, a great deal of swelling will sometimes take place. This should be well fomented until inflammation is pretty nearly subdued. The after-treatment will depend on circumstances. If there is a solid tumour, the fomentation, or a poultice, must be continued until the swelling breaks, or points so decidedly, that it may be opened with a lancet. Poultices must then be applied until the matter has fairly run out, after which a little Friar's Balsam will usually complete the cure.

In consequence of the bleeding and discharge of matter, the calf will sometimes be exceedingly reduced; some tonic medicine will then be necessary. The Recipe, No. 14 (p. 65), a sixth or eighth part being administered as a dose, will be serviceable, and at the same time the calf should be allowed plenty of milk, and no other food whatever.

DIARRHŒA.

One of the most frequent and fatal diseases to which young calves are subject is diarrhœa, or violent purging. It occurs most frequently when the young animal is from a fortnight to six weeks old, and is in the majority of cases the consequence of neglect. The calf has been too early exposed to cold and wet, or has been half starved, and then one full and hearty meal often disarranges the whole alimentary canal. It is bad policy to stint the calf too much in its quantity of milk. The loss of two or three calves in the course of a year will more than swallow up

the supposed saving resulting from a system of starvation.

At the time of weaning, or when the food is changed from milk to gruel or porridge, diarrhœa and dysentery are very apt to occur, and are subdued with great difficulty. The weaning and change of food should be effected slowly, and with a great deal of caution. The new milk should be mixed with gruel which is afterwards to be substituted, and the quantity of the one gradually diminished, while the other is as cautiously increased.

The symptoms of diarrhœa in calves are, continual purging; the matter discharged is covered with more than its natural quantity of mucus; sometimes it is bloody, and often fetid; the animal loathes its food, staggers as it walks, and becomes rapidly thin. Towards the last stage of the disease, the dung is more and more fetid and bloody, a greater portion of mucus mixes with it, and at length the discharge seems to be composed of mucus and blood, with scarcely any mixture of natural fecal matter. When this occurs there is little or no hope of cure.

The principal thing is to treat these diseases in time, before the mucous coat of the intestines becomes so inflamed that a bloody discharge ensues, which soon wears the animal down.

Much acidity in the stomach and bowels attends all these complaints; therefore it is necessary to get rid of it, first of all, by the administration of a mild purgative, and afterwards by the exhibition of chalk, or some other medicine with which the acid will readily combine, as soda, potash, or magnesia, the

two last being to be preferred. Magnesia, because being slightly purgative it does not clog the stomach, may be given in ounce doses; potash, because as the liquor potassæ it is an excellent medicine for the subsequent diarrhœa, and may be given in plenty of milk in quarter of an ounce doses. Two ounces of castor oil, or four of Epsom salts, may also be given.

Opium in some form or other must always be united with the chalk or other medicine. Other astringents may be added, and a carminative mingled with the whole to recall the appetite, and rouse the bowels to healthy action. The following medicine will present the combination of all these things:—

RECIPE (No. 69).

TAKE—Prepared chalk, two drachms; or magnesia, one ounce;

 Powdered opium, ten grains;

 Powdered catechu, half a drachm;

 Tincture of capsicums, one scruple;

 Essence of peppermint, five drops:

Mix, and give twice every day in a half pint of gruel.

This will be the proper dose for a calf from a fortnight to two months old. If the animal is older, the dose may be increased one half. The common Dalby's Carminative is not a bad medicine, although a dear one, and may be given in doses of half a bottle at a time, when it happens to be at hand, and the case is urgent, and the drugs which compose Recipe No. 69 cannot be immediately procured.

When these preparations have been given some time, and have failed to stop the purging, I have known the following given with very good effect:—

RECIPE (No. 70).

TAKE—Dover's powder, two scruples ;
Starch or arrow-root, in powder, one ounce ;
Cinnamon powder, one drachm ;
Powdered kino, half a drachm :

Boil the starch or arrow-root in a sufficiency of water until it becomes well thickened, and when cold gradually stir in the other ingredients.

This may be given morning and night.

When constant and violent straining accompanies the expulsion of the dung, an injection of a pint of thick gruel, with which half a drachm of powdered opium has been mixed, will be very useful.

Diarrhœa will often in the early stage be accompanied not only by inflammation of the bowels, but much general fever. This will be known by great panting, heat of the mouth, and uneasiness, the animal lying down and getting up again, rolling or kicking at its belly. It will then be prudent to bleed. A pint will be the proper quantity to be taken from a calf under a month; after that an additional ounce may be taken for every month. When, however, the diarrhœa has been long established, and the calf is getting weak, and rapidly losing flesh, it would be madness to bleed; the strength of the animal would be more speedily exhausted, and its death hastened. Antacids, astringents, and carminatives will then afford the only rational hope of success. After the cure has been completed, much care should be taken respecting the diet of the animal; and it will sometimes be useful

to give him a lump of chalk and another of salt in his feeding place, to lick them when he likes.

COSTIVENESS.

This occasionally attacks young calves a few days after they are born. It is then caused by coagulation of milk in the fourth stomach, which is completely distended by the solid curd, and the passage through it obstructed. There is not often any remedy for this. The most likely method to succeed is to pour in plenty of warm water in which Epsom salts have been dissolved, by means of the stomach-pump with the horse catheter attached. The first dose may consist of two ounces of the salts dissolved in two or three quarts of water; after which ounce-doses may be given every six hours, in half the quantity of water, until the bowels are opened.

The costiveness of calves is generally produced by bad management. Either the calf is suffered to suck too plentifully, or it is put to a cow whose milk is too old, or it is fed with new milk from the dairy promiscuously. All these things are injurious, and thousands of young animals have been destroyed by them.

When costiveness occurs in calves of two or three months old, it is usually when they have been too suddenly changed from fluid food, as gruel or porridge, to that of a dryer and less nutritive kind, and consisting principally of hay. This is a dangerous complaint; for there is not only obstruction usually in the *maniples*, or third stomach, but the paunch

itself is generally filled with undigested food, and rumination has ceased.

Here again everything depends on diluting the hardened mass, and opening the bowels. The first dose of medicine should consist of a quarter of a pound of Epsom salts, dissolved in a gallon of warm water.

If, after the bowels have been well opened, rumination should not return, it will be prudent to have recourse again to the stomach-pump. Plenty of warm water being now pumped in, and with some force, it will stir the contents of the paunch, and cause them to pass into the intestines; or vomiting will be excited, and the greater part of it thus brought away. The stomach will probably act upon the little that remains, rumination will again be established, and the animal will speedily recover.

There are few things so dangerous to young cattle as being thus sapped or costive. It is the foundation of fever, and of many a serious complaint. As soon as the dung is observed to be hard, a mild dose of physic should be given to every calf, or the laxative portion of the food should be increased. A little attention to this would keep the breeding stock in good order; and their preservation, and health, and rapid thriving would abundantly repay the little additional trouble and expense. Farmers in general, however, are shamefully careless here; and no notice is taken of half the diseases under which their stock of every kind plainly and evidently labour, until they are past all cure. It is also matter of general observation, that a calf that has a considerable ten-

dency to costiveness is slow in getting fat and preparing for the market.

All cattle are subject to occasional costiveness, and which should be removed, it being the frequent root of much evil. It is either one of the symptoms of the beast labouring under inflammatory fever, or it lays the foundation for inflammatory fever. A purge of Epsom salts, or even of common salt, if the other should not be at hand, would save the life of many a beast.

THE HOOSE IN CALVES.

This disease in the adult animal has already been considered: in the calf it assumes different and more aggravated symptoms, and is more speedily connected with consumption and death. The moment a calf is observed to cough violently, he should be removed from the pasture, and put under tolerably warm shelter and taken care of. A dose of physic, and a fever powder, will then usually restore the animal to perfect health.

At times the hoose is epidemic among cattle, and hundreds of them die. Proper treatment at first will, in the majority of cases, remedy the evil; but should the animal get rapidly worse, and his cough be peculiarly violent and distressing, care should be taken to examine the first that happens to die, on the farmer's own estate, or that of his neighbour, and if the windpipe and the air-tubes below should be found filled with the worms which have already been described, recourse should be had to the spirit of tur-

pentine, which will often succeed in destroying them. The following will be found a good formula for its administration to calves from six to twelve months old:—

RECIPE (No. 71).

TAKE—Oil of turpentine, one ounce ;
Linseed oil, three or four ounces ;
Ginger powdered, one drachm.—Mix.

To be repeated at the interval of a week, as often as may be required.

A cure has also been obtained by the exhibition of half a pint of lime-water every morning, and a table-spoonful of salt the same afternoon. The origin of these worms has not yet been satisfactorily developed ; but it has been supposed that the eggs are taken with the water, absorbed by the blood-vessels, and thus enter the windpipe, where they are hatched ; but one thing is certain, that in nine cases out of ten the farmer may attribute all the losses he sustains to neglect of the calf, or premature exposure of him to cold and wet.

CANKER IN THE MOUTH.

The teeth of the young calf follow each other in rapid succession ; and, as is the case with the human infant, the cutting of the teeth is attended with soreness of the mouth and disinclination to eat. Numerous pimples also appear about the gums and membrane of the mouth ; and these often run together, considerable ulceration follows, and the animal pines away through lack of nutriment. The gums and tongue are sometimes considerably swollen, and

no small degree of fever is excited. The first business is to evacuate the bowels. Epsom salts will here also constitute the preferable medicine, given in doses of one or two ounces, and repeated daily until the proper effect is produced. As a local application, a solution of common alum in water, in the proportion of half an ounce of alum to a pint of water, may be advantageously used to the mouth. Should any considerable degree of fever accompany the soreness of the mouth, the fever drink already recommended may be given in half doses, with a scruple of magnesia added to each.

ON THE

DISEASES OF SHEEP.

THIS has been a sadly neglected branch of veterinary inquiry and practice. The nature and treatment of the diseases of sheep form little or no part of the instruction given in some of our veterinary schools, and seldom come under the cognizance of the surgeon afterwards. The shepherd undertakes the treatment of foot-rot, and scab, and hoove; and with regard to the other maladies to which this animal is subject, they are either suffered to take their course, or, if a veterinary practitioner is ever employed, it is when the disease is firmly established, or the whole flock infected, and medical aid is fruitless. This is much to be lamented, and very absurd; for although an individual sheep may not be worth much, yet a numerous flock forms no inconsiderable portion of the farmer's wealth, and the frequent mortality among these animals is a very serious loss to him.

The internal structure of the sheep so nearly resembles that of the ox, that I will content myself with referring to the anatomy of the ox as described in the early part of this work. The diseases of both

have a very great resemblance in their nature, and cause, and progress, and medical treatment. The same drugs are administered to both. The principal difference is in the quantity to be administered: a sixth or eighth part of the usual dose for cattle will be sufficient for the sheep. The quantity of blood taken will depend on the size of the animal and the nature of the disease. From one ounce to two ounces would be a fair average bleeding from a lamb, and a pint the same from a full-grown sheep. Shepherds are apt to bleed from the eye-vein; but the blood generally flows slowly, and, after all, the proper quantity will not always be obtained. The best place for bleeding is from the jugular, as in cattle. A ligature should be tied round the neck, and then the vein will rise so evidently that it cannot possibly be mistaken. The vein should be opened with a lancet commonly used for the human being; the orifice should be large, and the blood obtained as quickly as possible.

SECTION I.

THE LAMBING SEASON.

THE ewe goes with lamb five months. The general time of yeanning is about the end of March, but in some of the western counties, and particularly in Dorsetshire, by which the metropolis and many of the towns in the west are principally supplied with house-lamb, it is so contrived that the lambs shall be

dropped in the middle or even the beginning of February. With the best care a great deal of danger attends this early lambing, and even at a later period a few cold nights are fatal to many of the lambs. There is nothing that requires more reformation than the treatment both of the ewe and the lamb at the time of yeanning.

During the time of gestation more attention is required than is generally paid. To enable the ewe to produce her lamb with comparative safety, she should not be too well fed. There are few things that the farmer should be more careful about than that the fair, but not unusual or forced, condition of the animal is preserved. The food should never be increased a week or two before the time of lambing, as at that period sheep are very subject to inflammatory disorders. It is a kind of middle course which the farmer has to pursue, and the path is not very difficult to trace. Too high condition will dispose to fever; on the other hand, with too poor keep the ewe will not have sufficient strength to go through the process safely, nor will she have milk enough for the lamb. If the dam has not sufficient support previously, the lamb will be weakly when it is dropped, and will not thrive well afterwards.

When the time of yeanning approaches, a little care may prevent a very great loss to the farmer. The ewes should be brought as nearly home as possible. They should be sheltered from the wind, if it be only by a high and thick hedge; but a kind of shed, however rudely constructed, would abundantly pay the expense of building it. At night, parti-

cularly, they should be folded in some sheltered place.

At the period of lambing the shepherd should be far more attentive than he is frequently found to be, and especially than he is if the pelt of the dead lamb is absurdly made his perquisite. When the master's loss is the servant's gain, it will not be surprising if casualties occur. A reward, increasing in proportion to the number of ewes and lambs saved, would do more than any other thing to save both the dam and her offspring. The care of the farmer or lamber will vary a great deal according to the period of the year and the state of the weather. In the early lambing the greatest losses are at the beginning; they arise principally from cold. In March or April the latter part of the lambing season is most dangerous, for there is more abundant keep and more tendency to inflammation.

The *clatting* of the ewes is a very useful practice. They are thrown, and a portion of the wool is removed from their tails and udders. The sticking together of the wool, from the purging to which the ewe is often subject in the early part of the spring, when the grass is fresh, has lost many a lamb. When the udders are thus cleaned, the lamber will more easily perceive the stain on the part, which, and which alone, will sometimes tell him whether the ewe has yeaned; for it is no uncommon thing for a young ewe to desert her lamb, and be found grazing with the rest of the flock as unconcernedly as if nothing had happened.

An experienced lamber will almost always tell

when the ewe is about to yean. If he finds her soon after taken with labour pains, and they continue to succeed each other regularly, and she remains lying down, he will take great care not to disturb her; but if a couple of hours pass, and the lamb is not produced, he carefully examines her. If the nose and the tips of the toes have presented themselves, and the lamb seems to be in a proper position, but the head is large, or the passage is narrow, he leaves her again for another hour; but if there is evidently a false presentation, he introduces one or two fingers, or his hand, well guarded with oil, puts the young one in the proper position, and nature speedily effects the rest.

The principal art of the lamber is to know when he should interfere. In every case of false presentation his help should be ready and immediate; but otherwise he should very rarely meddle with the ewe, except the mother is nearly exhausted, or the life of the young one appears to be in danger. One moment's observation will discover the state of the mother; and the degree of protrusion of the tongue of the young one, and its colour, will not often deceive with regard to the lamb. When the tongue hangs far from the mouth, and is getting livid or black, it is high time for the lamber to interfere.

The lamber should use as little violence as possible; but then he should recollect that the ewe will often bear a great deal of force being applied without the slightest injury to her, and sometimes with no great danger to the little one. The exhausted state of the one or the other will regulate the degree of

force. When there is much exhaustion no time is to be lost, and some strength should be applied in the extrication of the lamb.

The state of the weather, too, will somewhat regulate this. In cold weather more time may be allowed. The process of parturition is then slower. In warm weather there is more tendency to fever, and the ewe should not be suffered to exhaust herself too much.

Unnatural presentations are often very awkward things to have to do with. The ewe should be driven into the pound, and, after having rested a few minutes, some of the fingers, or the hand if it is small, should be introduced. If only one leg presents, and the shoulder thus forms an obstruction, the other leg will generally be easily laid hold of and brought down. If the neck is bent, and the crown of the head presents itself, it may be pushed back, and the two fore feet brought into the passage, and then the muzzle will naturally follow. If the foetus lies sideways, the cord and the position of the legs will enable the shepherd to distinguish between the spine and the belly. The turning is sometimes a difficult thing; but practice will often give the lamber a great deal of cleverness in this operation.

In extreme cases, and when the lamb is evidently dead, it may be necessary to introduce a blunt-pointed knife into the uterus, and cut the body to pieces. This, however, in small animals, cannot be accomplished; and in the largest the greatest care must be taken that the mother is not wounded, for that would produce inevitable death. When the lamb has been thus taken away piecemeal, the after

treatment should be regulated by the symptoms. If the ewe is feeble and exhausted, as in the majority of cases she will be, a cordial should be administered. If she is strong and excited, an ounce of Epsom salts, with half a drachm of opium and a tea-spoonful of ginger, should be given to the mother, who should then be left undisturbed for several hours.

The ewe, and especially if she was in high condition, is occasionally subject to *after-pains*. Some of the country people call it heaving. It continues many hours, and sometimes exhausts and destroys the animal. It is particularly dangerous if she has been too well kept, and much force has been used in extracting the lamb. Two drachms of laudanum should be given in a little gruel, and repeated every hour until the pains abate. It will always be prudent to bleed the ewe if she is not better soon after the second dose of the laudanum.

The womb is sometimes forced out of the orifice. It must, if necessary, be cleaned with warm water, and carefully returned by a person with a small hand. Gentle and continued pressure will effect this much sooner and safer than the application of the greatest force. It may, however, again protrude; and, to prevent this, a bandage can be readily made by taking a portion of wool on either side, and tying them together over the lips of the orifice, up which cold water, to every gallon of which one ounce of powdered alum is added, may be freely injected. The animal at the same time may require a cordial, which, by supporting the strength, will facilitate the contraction of the womb, and thus cause it to be

retained. If the womb is thus returned before it has been much bruised or inflamed by hanging out, there will be little danger to the mother, and she may suckle her lamb as usual. When she has accomplished that, she should be fattened, for the same accident would perhaps happen at her next parturition.

Attention should now be paid to the lamb, which requires it even more than the mother. It is want of care that causes the loss of more than four-fifths of the dead lambs. The principal evil is exposure to cold. If the weather is severe, great numbers of lambs are often lost in a single night. A few hurdles with straw, or a warm quickset-hedge, or a shed for them to go into, would save the greater part of them. The farmer needs but to use a little observation in order to be convinced how eagerly the ewes and the lambs seek that shelter, and how safe they are compared with others that are exposed. Some breeds are more hardy than others, but the hardiest of them will not endure absurd and cruel neglect and exposure. Let the farmer think of the sudden change from the warmth of the mother's womb to the driving sleet, and the cold wet ground; he will not wonder that so many of his lambs are palsied and starved to death.

The lambs are not quite out of danger when a day or two has passed after they have dropped. They live for the first week or fortnight on the mother's milk, and then they begin to imitate their parent and graze a little: indeed they have not their teeth up to enable them to graze at first. They should not be

put on too good pasture at this early period, for the change of food is often dangerous. A lamb of a fortnight old will often sicken suddenly, refuse the teat, swell, heave, and die, in less than twenty-four hours. On being examined, the stomach will sometimes be found enormously distended, at other times there will be little food in it, but there always is a great deal of bile in the upper intestines, with inflammation there, the evident cause of death. Those who die at this early period are often called *gall-lambs*, from the great quantity of bile found in their intestines. When, at three or four months old, the lamb is perfectly weaned, it is subject to a similar complaint, and from a similar cause. The lamb should certainly have better pasture when it is deprived of the mother's milk, but the change should not be sudden and violent.

Physic will evidently be required here, such as Epsom salts in doses of half an ounce every second or third day: and if there is much swelling the stomach-pump may be used with advantage, both in extricating the gas, and in injecting warm water into the stomach, with an intention either to cause vomiting or to wash out the contents of the stomach.

The operation of castration is a very simple one in the sheep, and yet is often attended with danger, sometimes resulting from an unfriendly state of the atmosphere. I have known, on the same farm, and the same gelder being employed, that in one year not a lamb has been lost, and in the following year several scores. Generally speaking, however, the fatal result is to be attributed to bad management.

The younger the lambs are the better, provided they are not very weak. From ten days to a fortnight seems to be the most proper time, or, I may say, as soon as the testicles can be laid hold of. I would advise the farmer never to set apart a day when the whole, or the greater part, of his male lambs are to undergo the operation, for many of them will then be too old, and he will assuredly lose some of them. He should take them as soon as they are ready, although there may be only a few at a time.

The lamb being well secured, the scrotum or bag is to be grasped in one hand high up, and the testicles pushed down as low as possible: two incisions are then to be made across the bag at the bottom of it, and the testicles forced out. The gelder now often takes the stones between his teeth, and bites the cord asunder. This is a nasty and a cruel way of proceeding. The better way is to draw the testicles down an inch or more from the scrotum, and then to scrape through the cord close to the scrotum with a knife that is not very sharp. Scarcely a drop of blood follows when the cord is thus separated; the end of the cord retracts into the bag, and there is not half the danger of inflammation which there is when the cord is gnawed and torn by the teeth.

Except the lambs are very weakly, and the ewes much exhausted and emaciated, it will not be requisite to give any medicine after yeanning. In the great majority of cases the animals will do a great deal better without it. Should, however, tonic medicine be necessary, I know nothing better than the following:—

RECIPE (No. 1).

TAKE—Gentian root, powdered, two drachms;

Caraway powder, a drachm;

Oil of caraway, ten drops:

Give in a quarter of a pint of thick gruel.

If the ewes will not feed well, they should be forced with good gruel, and the best is made of equal parts of oat and linseed meal.

SECTION II.

THE DISEASES OF YOUNG LAMBS.

THESE are numerous, and many of them dangerous; some belonging exclusively to the period which I have been describing, and others often occurring when the animals get a little older.

COAGULATION OF THE MILK.

I have spoken of this when treating of the diseases of calves. The lamb is, if possible, more subject to this curdling of the milk than the calf is, and it carries off the finest and best of the flock. The farmer likes to see his lambs growing fast; but it is possible to make more haste than good speed. The lamb may have excess of nutriment, and particularly of its mother's milk. When a lamb thrives at an extraordinary rate, the bag of the mother should be examined, and if it is too large and full, it will be prudent to milk away daily a little of its contents; otherwise the yet weak stomach of the young animal

may have more coagulated milk in it than it can digest. All the milk that is swallowed by the young lamb coagulates in the stomach, and if it accumulates too fast, the stomach will become perfectly choked with it, and the lamb will be destroyed. Two pounds of curdled milk have been found in the stomach of a lamb. When a thriving lamb, with a healthy mother having a full bag, begins all at once to be dull, and stands panting and distressed, and can scarcely be induced to move, and is considerably swelled, it is probably from this cause.

In this disease there is often apparent purging of a light colour, which is in fact the whey passing off whilst the curd accumulates and produces obstinate constipation.

The first thing to be done is to administer an alkali, such as magnesia, in doses of half an ounce twice a day; after which two to four drachms of Epsom salts, with a little ginger, dissolved in warm water, and the warm water often repeated, if necessary, by means of the stomach pump. The farmer with a valuable flock of sheep will find the stomach pump as useful for them as for cattle, only one used for the human subject will answer for lambs, and the horse syringe with the catheter attached for sheep. When the bowels have thus been opened, and the curdled milk has in some measure passed off, the stomach may be strengthened by occasional doses of the tenth part of the Tonic Drink for Cattle (No. 38, p. 123). The ewe and lamb should then be turned into a scantier pasture, and to her the same medicine in treble quantity may be given with advantage.

DIARRHŒA.

There is not a more destructive disease among young lambs than this. It frequently attacks them when they are not more than a day old, and carries them off in the course of another day. Oftener it does not appear until they are nearly a week old, and the lambs have not then a much better chance: but if they are two or three months old, and have gained a little strength, they may, perhaps, weather the disease. The causes are various, but not always difficult to discover; they are generally referrible to the neglect and mismanagement of the farmer. It may be the consequence of absurd and cruel exposure to cold. For sheep generally, and more particularly for lambs, I once more repeat it, and I would impress it on the mind of the farmer and the practitioner, shelter and comfort are the first and grand things to be considered. I do not mean confinement in a close and ill-ventilated place, but that defence from the wind and snow which it would cost the farmer little to raise, and for which he would be amply paid in one season. If it probably arises from cold, the remedy is plain—better shelter, and housing for a few days.

It is sometimes attributable to want of proper support: the ewe, if it is her first lamb, may have deserted it, or she may have little milk to give it; and the combined influence of starvation and cold produces diarrhœa sooner than any thing else. Warmth and new cow's milk are the best remedies.

Not unfrequently the mother's milk seems to dis-

agree with the lamb. It is naturally aperient. It may occasionally be too much so. If her teats are full, and she evidently has plenty of milk, this will probably be the case. She should be fed on dry meat for a day or two, or should be turned out only during the day, and housed at night, when she should be allowed a little hay. While the food is altered the bowels should be well cleansed. There may be something amiss about the ewe, which causes the milk to be thus purgative and unwholesome. The best purgative for sheep is the following:—

RECIPE (No. 2).

Purgative Drink for Sheep.

TAKE—Epsom salts, two ounces;
Powdered caraways, a quarter of an ounce:
Warm thin gruel sufficient to dissolve the salts.

This being given to the mother will likewise through the parent be of service to the offspring, by helping to carry off any acidities or crudities from the stomach or bowels.

In a disease so fatal, and which runs its course so rapidly, no time is to be lost, and therefore astringent medicine should be administered to the lamb as speedily as possible.

RECIPE (No. 3).

Astringent Drink for Lambs.

TAKE—Compound chalk powder with opium, a drachm;
Gentian, a scruple;
Essence of peppermint, three drops:
Mix with a little thin starch, and give morning and night.

If the animal should still linger on, and the purg-

ing should not be much abated, it is probable that the milk of the mother is most in fault. The lamb should then be taken from her, and fed with cow's milk boiled, to every pint of which a scruple of prepared chalk has been added, the astringent drink being continued as before.

If the purging abates, the medicine should be immediately suspended, or not given so frequently, lest costiveness should follow, a disease which I shall presently describe, and which is also very fatal.

The lamb with diarrhœa should be docked on the first appearance of the disease, if the operation had not been previously performed, and the wool should be carefully cut away under the tail, otherwise it is liable to become clotted. It will adhere together, and form an obstruction about the anus, so that the fæces cannot be discharged. The least ill consequence of this will be very great soreness about the part; but in many cases the animal will die in consequence of the obstruction, before the existence of it is suspected.

The colour of the discharge will considerably influence the mode of treatment. If it is of an olive-green colour, the drink should be persevered in; and on every third day half a table-spoonful of castor oil should be administered. If it is of a white colour, it may probably proceed from coagulation of the milk, and should be treated as advised in a previous page.

If the lamb is two or three months old, the medicine should be correspondingly increased, and it has a better chance. The same means must be pursued; but another thing must be added, and that of the

greatest importance—a change of pasture from a succulent to a bare or dry one. The removal to a stubble-field is a frequent and very successful practice.

COSTIVENESS.

When no evacuation appears to be effected, but the animal is continually straining, two circumstances must be carefully examined into—first, whether there is the obstruction of which I have just spoken, utterly preventing the discharge of the dung, for which a speedy remedy is at hand, namely, the removal of the clotted wool; or whether, after the straining, some drops of liquid fæces may not be perceived: this, although often mistaken for costiveness, clearly indicates a very different state of the bowels; they are actually relaxed—too much so, and the straining results from irritation about the anus.

Actual costiveness, however, is not an unfrequent complaint, and must be speedily attacked; for it is either the accompaniment of fever, or it will very speedily lead on to fever. The existence of fever should be carefully inquired into: heaving of the flanks, restlessness, and heat of the mouth, will be sufficient indications of it. Bleeding, in proportion to the degree of fever, and the age and strength of the lamb, should then be had recourse to. Next, the bowels must be opened; one-fourth of the Purging Drink (No. 2, p. 260) will be the best thing that can be given, and it should be repeated every sixth hour until the desired effect is produced. The lamb should be turned into greener and more succulent pasture,

and especially where there is any fresh flush of grass; and if, after awhile, he should altogether refuse to eat, he may be drenched with gruel, in which a drachm of Epsom salts should always be dissolved. While this affords nutriment, it will cool the animal, and ease the bowels.

STAGGERS.

Many lambs are lost from this disease, and the farmer most certainly has here no one to blame but himself. It attacks the most thriving lambs, and especially when they are about three or four months old; and it arises from the farmer making a great deal more haste than usual in fattening them for the market. It resembles *the blood* in cattle, and is usually produced by the same causes.

The lamb will appear to be in perfect health. All at once he will stand still, heaving violently at the flanks, and with the head protruded; or he will wander about with great uncertainty in his walk and manner: he will then all at once fall down and lie struggling upon his back until he is helped up, or dies. Sometimes he is very much convulsed.

The animal must be immediately taken to the yard, and afterwards the bowels well opened by means of the Purging Drink. To this some cooling febrifuge medicine should succeed.

RECIPE (No. 4).

Cooling Fever Drink for Lambs.

TAKE—Powdered digitalis, half a scruple;

Emetic tartar, ten grains;

Nitre, two drachms:

Mix with thick cold gruel, and let it be blended with a drachm of sulphuric ether, then given twice every day.

On examination after death, the head will be found to be the principal part diseased. The vessels of the brain will be distended with blood, and there will sometimes be water in the ventricles.

I have seen half a dozen lambs in staggers in the same field at the same time. They had all been exposed to the same cause; and when the disease had begun in one or two, it spread among the rest as if by the strange, and often too powerful, influence of sympathy.

SECTION III.

RED WATER.

THE disease recognised under this name is very different from that described in the cow, for here it consists in an accumulation of reddish-coloured fluid (whence its name is derived) in the cavity of the abdomen, and frequently in the chest and heart-bag likewise. This water accumulates in consequence of inflammation of the serous membrane which lines these cavities. In many places the disease is termed *water-braxy*. It is most prevalent at the latter end of autumn or the beginning of winter, and is generally observed among sheep that are in the most thriving condition, and especially if they have been turned without thought or preparation into new and rich pasture, and by the side of a copse or wood. Sometimes it is very sudden in its attack, and



speedily fatal. In some fine flocks I have seen it destroy the animal in twenty-four hours. In other cases it is less violent, and also slow in its progress. The sheep is first observed to be off its feed, dull, disinclined to move: it loiters behind, pants, and is restless. The flanks are tucked up, and there is often costiveness, though sometimes purging. This disease is still more common in lambs than in sheep, and in them often appears in the spring of the year, when they are first put on turnips with the ewes. In farms where pasturage is scarce, this disease is a very frequent visitor, and may be considered to be produced by the application of cold, either externally or internally, or probably both.

In the treatment of this disease, it is very important to remove the animal to a dry and comfortable situation. Bleeding should then be cautiously employed, and a laxative administered.

RECIPE (No. 5).

TAKE—Epsom salts, one ounce ;
Ginger, one scruple ;
Gentian, one drachm ;
Warm water, two ounces ;
Sulphuric ether, one ounce :

The above may be given, either alone or with cold gruel, to a full-grown sheep, and from one-fourth to one-third to a lamb, according to its age.

In addition to this the abdomen should be well fomented with hot water—a lamb, indeed, may be placed altogether in a warm bath.

Every shepherd should have a little horn, made of that of a sheep, and which will hold about the usual quantity of medicine given as a drink ; or at least

the quantity which the horn will hold should be carefully ascertained, and then a large bottle of the mixture may be taken into the field, and the proper dose given to as many of the sheep as may seem to require it, without the trouble of measuring it every time.

If the animal recover, a change of food must be afforded, and a short sweet pasture should be preferred.

SECTION IV.

THE BLOOD.

THIS is a disease too well known by farmers, and occasionally prevalent in every part of the kingdom where the pasture is luxuriant, and the system of close feeding is practised. I have known more than a hundred sheep die on one farm in the course of a fortnight, and entirely because the farmer would not take warning by the loss of the first, and put them on poorer ground, but obstinately pursued his plan of fattening them as fast as he could. In spring particularly, when the young grasses shoot and are full of juice, and especially after a few warm days, the blood appears in the flock, and the sheep die away by scores. The rich pasture of Romney Marsh in Kent, and the Sedgemoors in Somersetshire, are particularly productive of this malady.

It is not always that warning is given of the attack; but generally the affected sheep will separate

himself from the rest of his flock, appear dull, hang his head, his eyes will be heavy, and, if examined, bloodshot. He will heave considerably at the flanks, stretch out his fore-legs to ease himself, with great difficulty be induced to move, or will stagger about, threatening to fall every moment. If neglected, six hours will occasionally close the affair; and the animal will very rarely live two days. On being examined after death, air and an effusion of yellow or reddish fluid will be found in the whole of the cellular membrane; the veins will everywhere be turgid with blood, the muscles livid or black, and the whole contents of the belly and chest dark-coloured, hastening to decay, and offensive almost as soon as the animal is dead. If it is a ewe near her lambing that is attacked, the lamb will always be found dead and putrid.

As this disease has a great tendency to pass into typhus, bleeding should be employed with caution, and never adopted unless the disorder be taken in its very first stage, and the animal, without any previous driving, appears to be both strong, and in a state of excitement. In every instance the bleeding should be as small as possible, sufficient only being taken to produce a quieting effect. If the bowels are very costive, a mild purgative, one ounce of Epsom salts, with two drachms of gentian, and two drachms of sulphuric ether, may be given. Depletive measures here are attended with danger, and are rather to be condemned than recommended. Only during the earliest stage of the disease should they be employed, and then with the extremest caution.

It generally happens, as we stated when a similar disease in cattle was treated of, that the stage of inflammatory fever rapidly passes, and one of a typhoid character, and with a tendency to decomposition and putridity, rapidly succeeds. There is little chance of saving the ox in this state; there is scarcely any of saving the sheep; for when he is once down, and foams at the mouth, and looks anxiously at his sides, it is generally all over with him. If, however, anything is attempted, the following tonic mixture may be administered:—

RECIPE (No. 6).

Tonic Drink for Sheep.

TAKE—Chloride of zinc, one scruple;
Gentian root, powdered, two drachms;
Ginger, one scruple;
Sulphuric ether, two drachms;
Tincture of cardamoms, two scruples:
Mix, and give four times a day in a little cold gruel.

The food for some time should be spare and fluid; gruel for two or three days, and afterwards the animal should be turned upon a shorter pasture. If the dung becomes offensive, the above tonic drink, omitting the ginger and cardamoms, may be repeatedly used as an injection.

It is a good practice, when the disease once appears in a flock, to give each sheep a dose of physic, and change the pasture.

SECTION V.

STURDY, GIDDINESS, OR WATER IN THE HEAD.

THIS is a very singular, and also a very fatal disease. It commonly attacks yearlings; a two or three-shear sheep is generally exempt from it. The animal becomes dull; separates himself from the rest of the flock; is frightened at the most trifling circumstance, and at the least noise; he runs round and round, but always in one direction; holds his head on one side: if there is a brook in the field, he stands upon its banks, poring over the running stream, and nodding and staggering, until he frequently tumbles in; or he breaks from his fit of musing, and gallops wildly over the field, but with no certain course, and with no determinate object. Soon his appetite fails, or he evidently feels so much inconvenience when he stoops to graze, that he gives up eating altogether; and then he wastes rapidly away; he seems to be half stupid, and at length dies a mere skeleton.

The disease generally attacks the weakest of the flock. It is in some measure connected with a peculiar state of the atmosphere. It is most prevalent after a moist winter, and cold and ungenial spring. It usually begins in the spring, continues through the summer, and disappears as the winter approaches. It is dependent partly on the season, but more on

the health and strength of the animal. It may be prevented by good and upland pasture, and is most common in low and marshy ground. It is not contagious, nor does it seem to be hereditary. Having once attacked the animal, and gradual loss of flesh having commenced, the case is hopeless.

All medicine will be thrown away in such a case. It is the consequence of pressure on the brain by a strange, bladder-like-formed animal; and it would be more for the advantage of the owner to destroy the sheep, however out of condition it may be, than to commence any desperate and fruitless course of medicine.

Various methods have been tried in order to break this bladder, such as hunting the sheep with dogs, and frightening him half to death, throwing him into a gravel-pit, and various other absurd as well as brutal methods. They who pursued this course, much oftener succeeded in breaking the animal's neck than rupturing the bladder. At length some persons bethought them of getting at, and puncturing or removing, this bladder by some operation. They thrust iron wires or skewers up the nostril and into the brain, and sometimes succeeded in effecting their purpose. If they hit upon the nuisance, and pierced its envelope or skin, they were made aware of it by a greater or smaller quantity of water flowing from the nostril, and they could always tell on which side the hydatid lay by the sheep inclining his head that way. They could also sometimes tell the precise situation of the bladder, for after being a long time inclosed between the



skull and the brain, and pressed upon by both, and pressing upon both of them in turn, not only in consequence of that pressure was a portion of the brain below destroyed and absorbed, but even the bone above was sometimes softened, nothing but a yielding membrane occasionally remaining over a particular spot. Some surgeons suggested that this membrane should be punctured, and it was done so with the lancet, or, oftener, by a heated sharp-pointed wire, and thus the creature beneath was wounded and destroyed. Others improved upon this method of operating. A surgeon's trephine was used, and a circular piece of the skull taken out at the place where it was softened, and thus the hydatid was bodily removed; and when this was carefully done, and the bladder was not broken, the hydatid, by slight but sufficiently distinct motion, when put into warm water, showed that it was alive.

Both these operations occasionally succeeded; but the instances of failure were so numerous that the farmer's interest still required that he should kill every sheep, unless a favourite, or very valuable one, as soon as he was evidently sturdied, and before he had wasted and become unfit for the market.

There may, however, be some prevention, although no cure, and that prevention consists in good and sufficient upland pasture; yet, in some untoward seasons, even this will not avail with unhealthy and weakly animals. Habitual shelter from the sleet and snow of winter, is another and very important means of prevention. The unfeeling abandonment of the sheep to all the inclemency of the coldest

weather is the fruitful source of the majority of the diseases, and of the most fatal ones, to which these animals are subject.

This malady is sometimes accompanied by palsy. Every continued pressure on the brain is apt to produce loss of power over some of the limbs; but in this case the palsy is variable: it shifts from limb to limb, and from side to side, and, unlike simple palsy, is generally attended by partial blindness, and by the greatest degree of stupidity.

I repeat it again, that no medicine can be of the least avail in destroying the *blob*, as it is called in some parts of the country; but if either of the operations is tried, then medicine will be required to strengthen the constitution, regulate the digestion, or abate inflammation, as the symptoms appear. No rule can, in these cases, be laid down; the only thing which may be recommended, whether the skull is punctured or trephined, is a pitch plaster over the wound, which will preserve the sheep from being tortured by the flies.

SECTION VI.

INFLAMMATION OF THE BRAIN.

THIS, although a frequent disease of the sheep, and almost as fatal as that which has been just described, is accompanied by such different symptoms that it is scarcely possible to confound them.



Inflammation of the brain generally attacks the healthiest sheep, and of all ages, and more in hot weather than in the early part of spring. There is no character of stupidity about this affection, no disinclination to move, no moving round and round without any determinate object; but the eyes are protruding, bloodshot, and bright; and there is an eager and ferocious, not a depressed and anxious countenance. The animal is in constant motion: he gallops about attacking his fellows, attacking the shepherd, and sometimes quarrelling with a post or tree; he is labouring under wild delirium, and this continues until he is absolutely exhausted. He then stands still, or lies down for awhile panting dreadfully, when he starts afresh, as delirious and as ungovernable as before.

The first and the grand remedy is bleeding, and that from the jugular, copiously, and to be obtained as quickly as possible. The guide as to the quantity will be the dropping of the animal. To bleeding, physicking will of course succeed, and the sheep should be removed into a less luxuriant pasture. This, also, is one of the diseases that should be attacked at its very commencement. Violent inflammation of the brain and its membranes will very soon be followed by serious disorganization. If the disease should not immediately destroy the life, but become chronic, and water once begin to be formed under the membranes, or effused into the ventricles, the case is hopeless. Here, also, the attention of the farmer should be directed to *preventives*. One case of goggles may be accidental; but if two or three

are seized with inflammation of the brain, the farmer may be assured that there is something wrong in his system of management, and that which, in the majority of cases, is the root of the evil, is a too rich pasture, probably succeeding to spare feed. A dose of salts should, therefore, be given to each sheep, and the pasture of the whole should be changed. For some days a combined alterative and fever drink should be given daily. With Recipe No. 4, (p. 263), a table spoonful of sulphur and a tea spoonful of black antimony may be blended. To the more violent, after the purgative has acted, opium in half drachm doses, combined with a scruple of calomel, may be administered every fourth hour, for five or six times, longer than which it will not be prudent to continue it; but if the symptoms do not abate, the fever drink may be tried.

SECTION VII.

COLD, AND DISCHARGE FROM THE NOSE, ETC.

HERE again, from the cruel and impolitic abandonment of the sheep, hundreds of them are lost during the winter. When they are drenched to the skin by continual rains, or half smothered with snow, and have not even a hedge a yard high to break the biting blast, can it be wondered that cold and cough should be frequent in the flock; and that it should be severe and unmanageable, and even occasionally

run on to inflammation of the lungs and death? I am not an advocate for close housing, or too much nursing. I am aware that we may thus render the sheep unnaturally tender, and more exposed to catarrh and all its consequences; but I would tell the farmer, that the fleece of the sheep, however thick, is an insufficient protection in cold and wet weather, and an open and bleak situation.

The symptoms of catarrh are heaviness, watery eyes, running from the nose. The discharge is thick, and clings about the nostril and obstructs it, and the sheep is compelled to suspend its grazing almost every minute, and with violent efforts blow away the obstruction. Cough frequently accompanies this discharge; and if there is much fever, it will be shown by loss of appetite and rapid weakness.

There is a discharge from the nostrils which sometimes attacks the whole flock, and if it is not attended by wasting in flesh or loss of appetite, the farmer does not regard it; for he knows from experience, that in spite of all he can do, it will probably last through the winter, and disappear as the spring advances. When, however, he perceives this nasal gleet, he should keep a sharp look-out over his flock, and if there is one that stays behind, or will not eat, he should catch him, and remove him to a warmer situation, and give him fever drinks, and nurse him with gruel, oats, mashes, or hay. If a second or a third sheep should fail in the same manner, he must indeed look about him; there is danger to all, for the inflammation has spread itself from the throat

down the windpipe to the air-passages of the lungs, and a very dangerous disease, called bronchitis, is produced. He must move the whole flock to a more sheltered situation. He must move them to a pasture of somewhat different character. He must take them from their turnips or their hay, and give them what other food his farm will afford. He should, if he will take the trouble to do so (and he would be amply repaid for that trouble), give the Fever Drink to them all. This is strange doctrine to the farmer who is accustomed to look on, and let things take their course. It is, however, good advice which is here given, and he will find it so, if he will but follow it. Yet let him not, in his determination to rouse himself and do something, listen too much to the suggestions of the shepherd or the farrier. Warmth, housing at night, littering with clean straw, and warm gruel if the animal will not eat or drink, are not only allowable, but useful: nay, I would allow ginger or ale with the gruel; but not those compounds of all manner of hot and injurious spices, which would kindle a fire in the veins of the animal, if it were not blazing there before.

INFLAMMATION OF THE LUNGS

Is not unfrequently the result of a common cold, not attended to, the disease extending itself to the lungs. It more commonly appears in the spring of the year; its symptoms are dulness, hanging of the ears, quick breathing, cough, and discharge from the nostrils. The animal should be bled freely from the neck—three quarters of a pint in general will not be too

much for a full-grown animal to lose. After this half a dose of salts should be given, and should be followed by the Fever Drink (No. 4, p. 263,) once a day.

INFLUENZA.

Sometimes a catarrh assumes an epidemic form, and appears as the *influenza*. This disease may be distinguished from a cold, or from bronchitis, by the discharge from the nostrils being more profuse, and the eyes nearly closed, great uneasiness of the head, and a sudden prostration of strength. Sometimes the animal will run round in a circle, and a rattling will be heard in the windpipe: these symptoms will be soon followed by death.

Bleeding should be abstained from in this disease, but if the bowels be much constipated, half an ounce of Epsom salts, with two drachms of gentian, should be given dissolved in gruel; but if the sheep is purged before, instead of the above the following should be given, and be assisted by good nursing and care:—

RECIPE (No. 7).

TAKE—Prepared chalk, one ounce;
Catechu, half a drachm;
Opium, twenty grains;
Spirit of nitrous ether, two drachms;
Gentian, one drachm:

To be dissolved in gruel, and given twice a day in cold gruel till the purging ceases; after which the two last ingredients, with a drachm of nitre, should be given once a day.

When the discharge is thick, and cast forth in large quantities, the animal ought to be supported. The food should be nutritious, and tonics only ought to be administered.

SECTION VIII.

BLOWN, OR BLAST.

THIS is of as frequent occurrence among sheep as oxen, and it is as fatal. The cause is the same, the removal of the animals from poor keep to rich and succulent food. When sheep are first turned on clover, or even on any pasture more nutritious than that to which they have been accustomed, if they are not watched and kept moving during the day, and folded elsewhere at night, they are too apt to overload the paunch, so that it can no longer contract upon and expel its contents: fermentation then ensues, and the extrication of gas; the paunch is distended to the utmost, and the animal is often suffocated. The remedy of the farmer is the same here as with the ox—*paunching*, or thrusting a sharp penknife into the paunch, between the hip-bone and the last rib on the left side, when the gas with which the stomach is distended will escape. The objection to this practice is likewise the same as in oxen—that when a portion of the gas has escaped, the stomach will no longer be firmly pressed against the side, and the wounds in the side and the paunch will no longer exactly correspond; a portion of the gas, and of the contents of the stomach too, will then pass into the cavity of the abdomen, and (although the animal may seem for awhile to recover) will be an unsuspected source of inflammation, and even of death.

The common elastic tube, so strongly recommended by Dr. Duncan, is preferable to the knife: the gas will escape as completely, and without any danger. It is passed down the gullet into the paunch. The stomach-pump, however, is here likewise a far preferable instrument, for, as was remarked when treating of the hoove in oxen, sufficient warm water may be pumped in to excite vomiting, and thus free the stomach of its oppressive load. If neither the pump nor the tube is at hand, a thin cane, with a knob at the end of it, should be passed by the shepherd into the paunch, which is far preferable to the knife.

When a sheep is first seized with the blown or blast, he will often be relieved by being driven gently about for an hour or two, and put into a bare pasture; but the animal must not be galloped or driven by dogs, lest the stomach or the diaphragm should be ruptured.

The animal having been relieved, or the stomach evacuated, a purgative should always be administered, and that combined with some aromatic. The following will be useful:—

RECIPE (No. 8).

Physic for Blown.

TAKE—Epsom salts, one ounce, and dissolve in
Peppermint water, four ounces; to this add,
Tincture of ginger, one drachm;
Tincture of gentian, one ounce;
Water, one ounce:

This should be given every six hours, until the bowels are opened, and half the quantity on each of the four next mornings.

The same treatment recommended for cattle in

this disease is likewise equally desirable for sheep, the dose being about one-sixth or one-eighth the quantity.

SECTION IX.

THE YELLOWS, OR JAUNDICE.

SHEEP are subject to several sad affections of the liver, among which ranks that destructive disease the rot. Jaundice is a less formidable malady, but often sufficiently destructive. It consists of a superabundant discharge of bile, or an obstruction of the biliary tubes; and in either case a considerable quantity of bile enters into the circulation, penetrates into the capillary vessels, and thus tinges the skin. An excessive discharge of the bile is the most frequent cause.

The liver seems to be a very tender organ in fattened and pampered sheep, and easily inflamed or put out of order. In the half-starved, half-wild varieties of the sheep, inflammation of the liver and jaundice seldom occur; but too high living exhibits its injurious consequences in this organ first of all. It is often seen, after sheep have been moved into a fair but not too luxurious pasture, that if they have escaped the *blown*, a yellowness has soon begun to steal over the eyes and the mouth, and the skin generally; and the animal has been dull, and has disliked to move, and has sometimes been purged, but more frequently costive, and the urine has been

of a dark yellow-brown colour. The liver could not maintain its healthy state under this injudicious increase of nutriment. When the farmer and the shepherd have either neglected to observe this, or to adopt the proper treatment, many of the sheep have died in a few days. On examination after death, marks of intense inflammation have appeared everywhere, but more particularly in the liver, which has been of a red-brown colour, and double its natural size, and is broken to pieces with the slightest force.

If it is taken in time, this is not a disease very difficult to treat. On the first decided yellowness being observed, the animal should be removed to a bare field, and should have the Purging Drink (No. 2, p. 260): half doses of it should also be repeated for several successive mornings, so that the bowels may be kept in a relaxed state. Mercury will not be wanted. Calomel is rarely a safe medicine, and it is a very uncertain one for sheep. A little starvation, and a sufficiency of purgative medicine, will be all that is required. Should the animal appear to be considerably weakened, this drink will be useful:—

RECIPE (No. 9).

General Tonic Drink.

TAKE—Gentian, two drachms ;
Colombo, one drachm ;
Ginger, half a drachm :
Give in warm gruel.

SECTION X.

THE ROT.

THIS disease is the very pest of the sheep, and destroys more of them than all the other *maladies* put together. There are few winters in which it may not be safely said that many hundred thousands perish by it. The cause seems to be better understood than it used to be, and on many a pasture that had formerly obtained a fatal celebrity for rotting sheep, they may now feed securely: yet almost as many sheep die of the rot as there ever did. I shall, perhaps, be able to show the principal reason of this, and arouse my readers, and agriculturists generally, to the adoption of more effectual preventive measures.

The symptoms of the rot in the early stage are exceedingly obscure. There is little to indicate the existence of the disease even to the most accurate observer. This is one cause of the mischief that is done; for it prevents the malady from being attacked when only it could be conquered. The earliest symptom is one that is common to a great many other diseases, and from which no certain conclusion can be drawn, except that the animal is ill, and labours under fever. The sheep is dull, he lags behind in his journey to and from the fold, and he does not feed quite so well; but these are as much early symptoms of the staggers as of the rot.

This, however, goes on some time, and then a palish yellow hue steals over the skin, easy enough to be seen when the wool is parted, and most evident in the eyelids, and that which is generally called the white of the eyes. The lips and mouth are soon tinged, but not to so great a degree. The sheep does not otherwise appear to be ill. If he does not eat much, he does not lose flesh; on the contrary, he seems to gain condition, and that for several weeks. Graziers were taught this by Mr. Bakewell. He found that he could save a fortnight or more in the fattening of his sheep for the market by giving them the rot; and he used to keep a piece of wet ground expressly for this purpose, and on which he regularly turned the sheep that he destined for the butcher. This may be a useful hint for those farmers who have too much of this disease every winter. It may be hard to be compelled to part with some of the best of their flock, but if they are watchful they may sell the greater part of them without any very serious loss. The farmer, however, is not always sufficiently watchful about this, and too frequently will not believe that his sheep have the rot, until the conviction is forced upon him by the loss of some of his flock, and the wasting condition of many more.

This thriving period soon passes over, and the sheep begin to waste much more rapidly than they had acquired condition. First, there is a perceptible alteration in the countenance—a depressed, unhealthy appearance, accompanied by increased yellowness. The tongue, especially, becomes pale

and livid. The animal is feverish; the heat of the mouth, and the panting, and heaving of the flanks, and general dulness, sufficiently indicate this. Some degree of cough comes on; some discharge from the nose; or the breath begins to be exceedingly offensive. The sheep is sometimes costive; at other times it purges with a violence which nothing can arrest, and the matter discharged is unusually offensive, and often streaked with blood. And now the soft mellow feel of the sheep in condition is no longer found, but there is an unhealthy flabbiness; even where there is but little left between the skin and the bone, there is a flabby—a kind of *pitty* feeling; the parts give way, but they have lost their elasticity, and they do not plump up again: there is also a crackling sound when the loins or back are pressed upon. The farmer knows what this is, and what he is to expect, both in the sheep and the ox; very few of them recover after this crackling has once been heard.

At an uncertain period of the disease, however, after it has been thoroughly confirmed, the sheep usually become what the graziers call *chockered*, that is, a considerable swelling appears under the chin. If this is punctured, generally a watery fluid escapes, and sometimes matter; and occasionally the swelling bursts, and an ulcer, which it is impossible to heal, follows.

The bowels, which are variable at first, become at length very relaxed. A fetid purging comes on of all colours, and which pursues its course in defiance of every astringent.



The wool begins to fall off in patches: it is loose all over the animal, and easily pulled off, and there is a white scurfiness adhering to its roots. The disease now still more rapidly proceeds; and while the sheep loses flesh every day, and every rib and every bone of the back can be plainly felt, his belly increases—he gets dropsical. The end is not then far off.

The progress of the disease is more or less rapid, according to the violence of the attack, or the strength or weakness of the sheep, or the care that is bestowed on him, or the utter neglect to which he is abandoned. The animal occasionally dies in two months after the first evident symptom of rot, but usually four or five or six months elapse before the animal is perfectly exhausted.

The farmer is not much accustomed to examine his sheep after death. It would be better for him if he paid more attention to this, for he would discover the nature, and probably the cause, of many a complaint that is committing sad ravages in his flock. The appearances exhibited in the sheep that has died of the rot are very singular. There appears to be dropsy, not only in the belly, but all over the animal. Wherever the knife is used, a yellow watery fluid runs out; and the consequence of the existence of this fluid everywhere is, that the muscles, and that which should be firm fat, are yielding, pallid, flabby, and unwholesome. When the belly and chest are opened, the heart is pale, and soft, and flabby, and often to such a degree that we wonder how it could have continued to discharge its duty. The lungs are more or less gorged with

blood; and there may be a great many hard knotty points, of various sizes (tubercles), in them and on them, some of which have probably gone on to suppuration or have festered; or when this is not the case, the lungs are studded with innumerable little knotty points of a dark colour.

The principal disease, however, is in the liver, which occasionally is smaller than it should be, though generally much enlarged, often of double its natural size, broken down by the slightest touch, sometimes black from inflammation and congested blood, and at other times of an unhealthy lividness: but that which is most remarkable, which is characteristic of the disease, is, that its vessels are filled with *flukes*, curiously-shaped things like *little soles*, which are crawling about in the bile in every duct, and burrowing into every part of the liver. Several thousands of them are sometimes contained in one liver. A few of them may occasionally be found in the upper part of the intestines, and sometimes, but not generally, in those most posteriorly seated.

The upper part of the liver is frequently speckled like the body of a toad; indeed this has been so often remarked, that the examiner, if he does not find flukes, and sometimes when he does, looks out for the toad's liver. The liver is so diseased and corrupted, that if an attempt is made to boil it, instead of becoming hardened, it falls all to pieces, or is in a manner dissolved. Abscesses are oftener found in the liver than in the lungs, and to an extent sufficient to destroy the sheep without any other cause. Sometimes there are knots in the liver

as well as in the lungs—small, round, hardened lumps; and in a few cases they are so numerous, that it is almost impossible to find a sound part.

If the farmer would accustom himself to observe these things, and carefully examine every sheep that dies in the autumn, he would sometimes detect the existence of this disease in his flock before he would otherwise have been aware of it. Nay, he should not confine his examination to this, but should observe the appearance of the inside of every sheep which he may kill for the use of his family about that time. It should be a practice never omitted, and however seemingly healthy the animal may die, whatever quantity of suet may cover the kidneys, if the liver is dappled with white spots, and if there are flukes floating about in the bile, that sheep was certainly rotted; and if one sheep is rotted, the greater part of the remainder will probably follow. Aware of this, and at this early period of the disease, the grazier may, either by hastening the fattening process, or shifting the pasture, or adopting medical treatment, put many scores of pounds into his pocket, which would otherwise be irrecoverably lost.

This examination of the sheep will lead us to the principal and primary seat of the disease, namely, the liver. What is the cause of this affection of the liver is another question, and a very important one. There is a dispute which no one has yet settled, whether this fluke-worm is the cause or the consequence of the disease. I am very much inclined to think that it is the consequence, although it may

and does much aggravate the disease. These parasitical animals, both in the animal and vegetable kingdoms, fasten upon a part that is diseased, or the vitality of which is weakened.

Another disputed point is the source of these flukes. Are the eggs taken up in the herbage? Does some insect or fly, that is a fluke in one part of its existence, lay its eggs on plants growing in wet pastures, or by the side of stagnant water? We have no proof of this, and we never saw the fluke in any other form. Therefore it is useless to dispute about that which cannot be resolved.

Well, then, what is the cause of this affection of the liver? It is evidently connected with moisture, although it may be difficult to trace the connexion between this moisture and a diseased liver.

It is, however, proper to observe, that the eggs of flukes have been found in countless numbers in the biliary ducts, on examining the liver of a cothed or rotten sheep in the months of April, May, or June; and it is considered by respectable authority, that these eggs are passed into the bowels, evacuated with the dung, and, their vitality being preserved by the sun and moisture, they are swallowed with the grass by sound animals, who thus become infected. Whereas, if the eggs had fallen on dry land, their vitality would be destroyed. Although it appears reasonable enough that the infection is produced through the medium of the stomach, yet it would be expected, if the above theory were entirely correct, that by keeping sheep from rotten land for several years, such land would cease to produce the disease

from the absence of the eggs; which, however, is not found to be the case. It is therefore probable that there are other sources from which the eggs of flukes are derived, besides the dung of sheep.

The history of the rot is plain enough here. It prevails, or rather it is found only, in boggy, poachy ground. On upland pasture, with a light sandy soil, it is never seen; and in good sound pasture, in a lower situation, it is only seen when, from an unusually wet season, that pasture has become boggy and poachy. It is also proved to demonstration, that land that has been notoriously rotting ground, has been rendered perfectly sound and healthy by being well under-drained, that is, by being made dry. There are hundreds of thousands of acres, on which a sheep, forty years ago, could not pasture for a day without becoming rotten, that are now as healthy as any in the kingdom.

We can also tell the kind of wet ground which will give the rot. Wherever the water will soon run off, there is no danger; but where it lies upon the surface of the ground, and slowly evaporates, the rot is certain. One part of a common shall be enclosed; or if it has not been drained, at least the hollows in which the water used to stand are filled up, and the surface is levelled: no rot is caught there. On the other side of the hedge there are these marshy places, these little stagnant ponds, where evaporation is always going forward, and the ground is never dry—a sheep cannot put his foot there without being rotted. These are plain facts, and they are sufficient for the farmer's purpose, without his

puzzling his brains about the manner in which wet ground produces diseased liver.

He may be assured that it has nothing to do with the animal's feeding on stimulating or poisonous herbs. It has nothing whatever to do with the food, when considered separately, or without reference to the land which produced it. It depends on the wetness or dryness of the pasture.

How is it, then, that when so great a part of the country is underdrained, the rot should continue to be almost as prevalent as ever? Why is it not so prevalent where the ground has been properly underdrained? There are fields in every well-managed farm in which the rot is never known; there are others in which it still continues to thin the flock.

The draining may not be equally effectual in both. It might have been carelessly, superficially performed in the one case; or the soil of the two pastures may be very different. The one may be light and porous, and a little draining may effect the purpose: the soil of the other may be heavy and tenacious, and drains not more than a yard asunder would scarcely keep it dry. What is more to the purpose, but less thought of, there may be little nooks and corners in the field that have not been underdrained. A few minutes trampling upon them will be fatal to the sheep, and one or two of them upon the whole farm will render all the labour bestowed on every other part absolutely nugatory.

It is surprising how soon the animal is infected.

The merely going once to drink from a notedly dangerous pond has been sufficient. The passing over one suspicious common in the way to or from the fair, and the lingering only for a few minutes in a deep and poachy lane, has diseased a flock. Then it can easily be conceived what mischief one or two of these neglected corners, in which there may be little swamps, perhaps only a yard or two across, may do in a farm in other respects well managed, and perfectly free from infection.

The disease of the liver terminating in or constituting the rot, is, then, dependent on moisture, and that retained for a certain time on the surface of the ground, so that the process of evaporation may have commenced: it is also more than probable that the decomposition of vegetable matter growing on the surface has much to do in producing the complaint.

If sheep-breeders would get more into the habit of having oxen to turn upon the aftermath of their low and dangerous pastures, instead of venturing so frequently to send their sheep there, because they cannot afford to lose that portion of the crop, they would not suffer the grievous losses which sometimes almost break them down.

The preventive, then, seems plain enough. On good sound ground the sheep need not fear the rot; and other stock should be kept on the farm to pasture on the suspicious or dangerous places, the character of which it would be worth a little money to effectually change. The draining should be effective where it is attempted, and no nook or corner should escape.

Can anything be done by way of cure? Probably there may, and a great deal more than the farmer imagines. All, however, depends upon the *stage* of the disease. The liver may be diseased, but it must not be disorganized; it must not be tuberculated or ulcerated; and the flukes must not have become too numerous within it. The farmer, from habitual observation of his flock, must have discovered it at the very commencement of its attack, or he must have been made aware of it by the examination of some sheep that died, or that had been slaughtered for the use of his family. Then he may do good. Good is often done without his help. A succession of dry weather will often stop, or at least retard, the ravages of the rot. If moisture be the cause of it, he must remove that cause. He must change the pasture, and drive his flock to the driest ground his farm contains; and besides this, he must give a little dry meat—a little hay. Some have advised to feed the suspected sheep altogether on hay. This is carrying the matter a little too far: for in the prime of the season the sheep will pine for the grass, and rapidly lose condition for want of it. There is no occasion to withhold water, as some persons imagine. Let the sheep have all they can drink of clean and wholesome water, and they will do the better. It is the foul and stinking pool which alone is dangerous. A change to a thoroughly dry pasture will sometimes do wonders. At all events it is worth trying. The animals must, however, be carefully watched, and if it is not evident, from their more cheerful countenance and manner, and the diminution or

disappearance of the yellowness, that the disease is giving way, advantage must be taken of their present condition, and they must be turned over to the butcher. Let the farmer at least do something: let him either sell them at once, reckoning, and generally rightly, that the first loss is the least; or let him set to work and endeavour to combat the disease: but do not let him stand with folded arms, and suffer the best of his flock to dwindle away one after another.

As for the medical treatment of the rot in sheep, there are a great many nostrums, but few, if any, have stood the test of extensive experience. This has partly arisen from a cause which has already been hinted at—the disease not being recognised and attacked before it has made much inroad on the constitution, and when, or perhaps when only, it will yield to medicine. But I believe that with regard to the fairest cases every medicine has occasionally failed, or failed almost as often as it has succeeded. We must, however, not despair: the disease has sometimes been suspended, and the sheep has recovered. Let not, however, the practitioner be deluded into the use of calomel, or blue pill, or any preparation of mercury, because the rot is an affection of the liver. Mercury rarely seems to agree with the herbivorous animals in any form. I have seen it do much harm in some affections of the liver, and I have known many animals destroyed by the use of it.

There is, however, a drug, or, rather, a very common and useful condiment, which I believe has

entered into the composition of every medicine by which this complaint has been successfully treated; I mean *common salt*. The virtues of this substance are not sufficiently estimated, either as mingled with the usual food, or as an occasional medicine. All herbivorous animals are fond of it. It increases both the appetite and the digestion. Cattle will greedily eat bad forage that has been sprinkled with it, in preference to the best fodder without salt; and it seems now to be a well ascertained fact, that domesticated animals of all kinds thrive under its use, and are better able to discharge the duties required from them.

The consideration of this induced the use of salt in various complaints, and especially in the rot, which is an affection of one of the most important of the digestive organs; and it has not deceived the expectations that were raised as to its sanative power.

As, however, the rot is a disease accompanied by so much debility, and wasting of flesh as well as of strength, tonics and aromatics are usually mingled with the salt; but first of all, the bowels are evacuated by some of the usual purgatives, and the Epsom salts are the best. The following prescription should then be tried:—

RECIPE (No. 10).

Mixture for the Rot.

TAKE—Common salt, eight ounces;
Powdered gentian, two ounces;
Ginger, one ounce;
Tincture of colombo, four ounces:

Put the whole into a fair quart bottle, and add water so as to fill the bottle.

A table-spoonful of this mixture should be given morning and night for a week, and then the following mixture may be given at night, while the former is continued in the morning.

RECIPE (No. 11).

Second Mixture for the Rot.

TAKE—Of Recipe No. 10, a quart;

Spirit of turpentine, three ounces:

Shake them well together when first mixed, and whenever the medicine is given. Two table-spoonfuls are the usual dose.

The morning dose should be given on an empty stomach, and the evening dose before the night's feed is given, if the animal is housed.

All the hay should be salted, and some have recommended that even the pasture should be impregnated with salt. This is easily managed. A little plot of ground may be selected, or a portion of a field hurdled off, and salt scattered over it as equally as possible, and in the proportion of ten bushels to an acre. Three weeks afterwards the sheep may be turned on it to graze, stocking the ground after the rate of ten sheep to an acre; in the meantime the field from which they are taken may be brined in the same manner. When they have eaten the grass quite close, they may be changed back to the other plot, and so on as often as may be necessary, strewing after each change five bushels of salt per acre on the pasture. The sheep will fatten at a rapid rate if the disease is not too much advanced, and the disease will sometimes be arrested even in the worst cases.

It must, however, be confessed, that although sheep are often saved from the rot by the use of salt, they have rarely been perfectly restored to their former health. The taint is left; they are more disposed to receive the infection from a slight cause; and, six or twelve months afterwards, they frequently die of loose or inflamed bowels: therefore, it will be the interest of the farmer to fatten them as soon as possible, and sell them to the butcher. The butcher will always tell by the appearance of the liver whether the sheep had at any former time been rotted. In some few cases lambs have been procured from ewes thus cured, but they have seldom lasted longer than one or two seasons.

SECTION XI.

THE FOOT-ROT.

ALTHOUGH this disease resembles the last in name, it is altogether different in character. It is not so fatal as the liver-rot, but it is sadly annoying: it is of very frequent occurrence, and it seems to be increasing.

It is, like the rot, peculiar to certain pastures; but there is more variety in this than is found with regard to the rot. There we must have stagnant water, and the process of evaporation going forward. For the production of the foot-rot we must have *soft ground*, and it does not seem much to matter how that softness comes about. In the poachy and

marshy meadow, in the rich and deep pasture of the lawn, and in the yielding sand of the lightest soil, it cannot, perhaps, be said that it is almost equally prevalent, but it is frequently found. Soft and marshy ground is its peculiar abode. The native mountain sheep knows nothing about it: it is when the horn has been softened by being too long in contact with some rich and moist land, that the animal begins to halt. This softness is connected with unnatural growth of horn, and with unequal pressure; and the consequence is, that some part of the foot becomes irritated and inflamed by this undue pressure, or the weakened parts of the horn, too rapidly and unevenly growing, are broken off, and corroding ulcers are produced. Although there would not appear to be any great wear and tear of the foot in this soft land, yet the horn becomes so exceedingly unsound and spongy, that small particles of sand or gravel make their way through the softened mass, and penetrate to the quick. It not unfrequently happens that injuries of this sort are produced unconnected with and independent of the foot-rot, and they may be cured much easier, but by very similar means. The hardness or the sponginess of the horn depends altogether on the dryness or moisture of the soil in which the animal has fed. Large, heavy sheep, having comparatively thinner hoofs than lighter ones, are more subject to the disease.

True foot-rot more frequently begins from above than below. The horn is rendered softer, weaker, and more luxuriant by exposure to wet: the foot, from being kept wet and cold, is exposed to reaction

with any change of weather, and inflammation is thus excited within the foot, which often proceeds to supuration, and this degenerates into those troublesome ulcers that are sometimes witnessed.

The first symptom of the disease is the lameness of the sheep. On the foot being examined, this morbid growth is almost invariably found. The foot is hot, and the animal shrinks if it is firmly pressed. It is particularly hot and painful in the cleft between the two hoofs; and there is generally some enlargement about the coronet. There is always an increased secretion, usually fetid, and often there is a wound about the coronet discharging a thin, stinking fluid: sometimes there is a separation of the horn from the parts beneath, and that too frequently preceding the dropping off of the hoof. In a comparatively few cases the hoofs seem to be worn to the quick at or near the toe. The lameness rapidly increases, and often to such a degree, indeed, that the sheep is unable to stand, but moves about the field on its knees. The soft portions of the foot, and sometimes the very bones of it, slough away, and drop off.

All this is necessarily attended by a great deal of pain, and the animal shows how much it preys upon it by its moaning, and refusing to eat, and ceasing to ruminate, and most rapidly wasting. Irritative fever comes on, and after the poor creature has crept about the field on its knees for a few weeks, it dies from irritation and starvation.

There is one circumstance connected with this disease which, though of every importance, is not yet fully decided. It is yet not settled whether foot-rot

is or is not contagious. The highest authorities lean towards the opinion that it cannot be caught from a diseased sheep by one in perfect health. Some experiments made in order to test this conclusion appear to support it, but, on the other hand, there are many facts which are powerful evidences of an opposite nature. Until the point is settled, the farmer ought to take every precaution; but, while doing so, he should not attribute every case of foot-rot to contagion. He ought to seek for other causes in the nature of the pasture, and the treatment to which the flock is subjected; and strive to mend these, which, in the great majority of instances, are the real sources of the evil.

The treatment of foot-rot is simple enough, and, in the early stage of the complaint, usually successful. The foot must be carefully examined, and every portion of horn that has separated from the parts beneath thoroughly removed, and the sore lightly touched with the butyr (chloride) of antimony, applied by means of a small quantity of tow rolled round a flat bit of stick, and then dipped into the caustic. Dilute hydrochloric and nitric acids are also very useful caustics for foot-rot. If a fungus is sprouting at the place where the horn separates from the foot, it must be first cut away with the knife, and then the root of it touched also with the caustic; or, what is still better, a little sulphate of copper in fine powder may be sprinkled upon a little tow and bound upon the part. Bandages for sheep, however, are not generally beneficial, because they are too often neglected or ignorantly applied. For those reasons,

they sometimes keep the discharge locked up, and thereby do more injury than even the dirt would. A kind of boot is however, in judicious hands, a great aid towards a cure; or, where nothing of the sort is used, a dressing of tar and pitch united will be of service.

To these must be added that reasonable and successful practice of removing the sheep to higher ground. Sheep among whom the foot-rot is beginning to appear are sometimes completely cured by being driven to a firmer and drier pasture. Some farmers, and with a great deal of advantage, have their flocks driven four or five times daily along a hard road. They thus accomplish two purposes—they wear away the irregularly formed horn, the unequal pressure of which has irritated and inflamed the foot, and the remaining horn is hardened, and enabled better to resist the influence of the moist or soft ground. These ends, however, are much better accomplished by other means, when there is not insurmountable objection to a little trouble. The road often wears the hoofs unevenly, but the knife can be made to pare the horns so that no ragged portions shall remain, while every part is made to receive equal pressure. A dressing of tar and grease then brushed over the horn will act as a gentle stimulant to the secreting structures, while at the same time it will prevent the injurious effects of moisture. This, however, will be sufficient only when the feet are comparatively healthy. Where the ulceration is extensive, means must be adopted similar to those recommended for the treatment of *foul in the foot* in



cattle ; but in most cases it will be more profitable to the farmer to destroy the sheep that has *bad* foot-rot, if it is in tolerable condition, which however will rarely be the case, as during the progress of this disease the animal very rapidly loses fat and flesh.

If, however, he is determined to attempt a cure, let him wash the foot well from all grit and dirt, and then cut off every loose and detached piece of horn, and every excrescence and fungus, and cover the wound with the following powder:—

RECIPE (No. 12).

Caustic Astringent Powder for Foot-Rot.

TAKE—Verdigris;
Bole Armenian; and
Sugar of lead, equal parts:

Rub them well together until they are reduced to a fine powder.

This should be sprinkled over the sore, and a little dry tow placed upon it, and bound neatly and firmly down with tape, and a little tar smeared over all. The animal should afterwards stand in a dry fold-yard for four-and-twenty hours.

On the next day the tape should be removed, and, if any fungus remains, the powder must be applied another day. The fungus no longer continuing to grow, a light dressing with the solution of chloride of zinc, a drachm to a quart of water, above which a coating of tar should be placed, ought to be applied every second day until the animal is well.

The sheep-master should as carefully avoid the ground producing foot-rot as that which causes the

fatal affection of the liver; and he should attempt the same method of altering the character of the low and moist ground by good under-draining. The effect of this, however, is far from being so certain and beneficial as with regard to the rot. The water which would stagnate on the surface may be drained away with tolerable ease, but the soil cannot be rendered hard and dry.

If the farmer intends to drive his sheep a considerable distance to the market or fair, he will prepare them for the journey by a few days' removal to harder and firmer ground, or, perhaps, by driving them a short distance, daily, on the still harder public road.

The farmer should not only take his sheep from light sandy soil in long-continued dry weather, because they would starve there, but because then alone that soil would give them the foot-rot: its yielding nature will not sufficiently keep down the growth of horn, which on that account, and because of the dryness of the soil, will either become torn or cracked, and many a particle of sand will insinuate itself and produce inflammation. For the same reason he should avoid dry old pastures at the season when the dews are heaviest, because then moisture would most abound there.

In grounds that are disposed to give the foot-rot, the farmer would find it advantageous to have the hoofs of his sheep rasped or pared once every fortnight or three weeks. This is not often done, but it appears reasonable, and would not be very expensive.

SECTION XII.

THE SCAB.

THIS is a most troublesome and infectious disease, and generally to be attributed to bad management. Sheep that have been too much exposed to the inclemency of the weather, or that have been half-starved, and thus debilitated, are most subject to it. The forest sheep are particularly liable to the scab. It is first discovered by the animal eagerly rubbing himself against every post, or gate, or bank, or, if the itching is very great, tearing off his fleece by mouthfuls. He looks thin and ragged; and if he is caught, there will appear on various parts, and particularly along the back, either little red pustules or a harsh dry scurf. The pustules speedily break, and the scurf succeeds. The roots of the wool are matted together by it, and portions of the fleece come off with almost the slightest touch.

No one ever doubted the infectious character of this disease, or suffered a scabbed sheep to enter his flock without dearly rueing it. Every post, or stone, or tree, against which it has rubbed itself, seems to be poisoned. Every sheep that comes in contact with it is infected.

The itching of the eruption preys upon the sheep almost as rapidly as the foot-rot. A scabbed sheep is a poor hungry-looking, half-starved creature; his fleece is spoiled, and he is useless for the butcher.

Sheep proprietors used to be fond of various lotions for the cure of scab. Some applied a strong solution of tobacco, others a solution of sal ammoniac, and others one of corrosive sublimate. If these are ever used, they should not be made too strong, for many an animal has been destroyed by them all. Not more than a quarter of a pound of tobacco should be boiled or infused in a gallon of water, nor more than an ounce of corrosive sublimate, and which should be previously dissolved either in muriatic acid or spirit of wine. The sal ammoniac rarely did much harm, but on the other hand it more rarely did good, and when used with the corrosive sublimate seemed to impair its powers. There are those who have preferred a solution of arsenic to either of the others. It is as efficacious as any of them, but it is by far the most dangerous.

A great tub or vat used to be procured, and half filled with either of these solutions, and the sheep put into it one by one, and well rubbed and washed until the fluid had evidently penetrated the fleece, and come into contact with every part of the skin; but even where these lotions succeeded, they gave a peculiar coarseness and harshness to the wool, which very much decreased its value. The scurfiness likewise did not soon come off; or, when it did, patches



of the fleece separated with it, and left the skin beneath it red, and chapped, and ulcerated.

An ointment is far preferable, for it softens the scurf, and detaches it from the wool, and saves the fleece, and heals the chaps and ulcers of the skin, and promotes the future growth of the wool.

The mercurial or blue ointment in a greater or less degree of strength is commonly used; and, if used with caution, the real strength of it being previously ascertained, it has generally a good effect; but when bought from too many druggists, the quantity of mercury is so variable, and so many tricks are played with it, that the shepherd scarcely knows how to use it, and too often salivates, and even destroys, some of his sheep.

If the mercurial ointment is to be used, it will be of advantage to the farmer, especially if he has many scabbed sheep, to make it himself, and that he may very easily do, if he has a wooden pestle and a large mortar or iron pot.

RECIPE (No. 13).

Mercurial Ointment for Scab.

TAKE—Crude quicksilver, one pound;
Venice turpentine, half a pound;
Spirit of turpentine, two ounces.

These should be rubbed well together for five or six hours until they are perfectly united, and that will be known by a little being taken and rubbed with the finger on a piece of glass. If not the

slightest globule can be detected, the *killing* of the mercury is complete; but if the smallest shining particle can be seen, the substances are not sufficiently mixed. When this is completed, four pounds and a half of lard should be added, and the more rancid it is the better, for it more readily combines with the mercury, and gives it additional power. This lard may be well rubbed with the mixture of mercury and turpentine on a square slab of marble; or it may be melted, and, when about the temperature of new milk, added to the other ingredients, and the whole stirred together until the ointment becomes stiff.

If the ointment is made during the summer, it will perhaps be too fluid to be thoroughly rubbed into the sheep. It may penetrate among the neighbouring wool, or run off and be lost. When this is the case, one pound of the lard should be omitted, and a pound of resin substituted.

A great deal depends on the manner in which the ointment is applied. It should extend to every part that is in the slightest degree affected, and it should be gently but well rubbed in. The wool should be carefully parted on the middle of the back, from the poll to the tail, and a little of the ointment rubbed in all along the channel thus exposed. If the disease is slight, another furrow may be made on either side, at the distance of two or three inches, and more rubbed in; but if it appears to be inveterate, the divisions should be made at two inches distance from each other, and over every part that is affected. A second dressing may be applied four days after-

wards if the sheep continues to rub itself, but it would not be safe to proceed farther. If the sheep should yet rub, a milder ointment should be resorted to, which may be repeated every second day with perfect safety, until the animal is cured. Indeed I should be very much disposed to use the milder ointment from the beginning, because I could go on to the very end, without any fear of unpleasant consequences ; and although the cure is effected more slowly, the process is safer and surer.

RECIPE (No. 14).

Mild Ointment for Scab.

TAKE—Flowers of sulphur, one pound ;
Venice turpentine, four ounces ;
Rancid lard, two pounds ;
Strong mercurial ointment, four ounces :
Rub them well together.

Flowers of sulphur must be used, and not the common black sulphur ; that is the refuse of the sulphur, and is almost inert, except it derives any power from the arsenic, which is generally in combination with it, and that would be a dangerous power. There are several instances of animals being destroyed by the use of the black sulphur in ointment, which had been empoisoned with arsenic.

This ointment may be used at any time of the year, but the mercurial ointment is not safe in cold or wet weather.

In very bad cases, the following powerful ointment may be employed :—

RECIPE (No. 15).

TAKE—White hellebore, three ounces ;
Bichloride of mercury, two ounces ;
Fish-oil, twelve pounds ;
Resin, six ounces ;
Tallow, eight ounces :

The first two ingredients to be mixed with a part of the oil, and the other ingredients to be melted and added.

Prevention is here again better than cure, and the practice of smearing, and especially in cold and exposed situations, is very commendable. It is not a certain preventive, but it renders the animal less likely to take the infection, and it is very comfortable and useful to the sheep in protecting him from the cold, and hindering the wet from penetrating to his skin.

RECIPE (No. 16.)

Smearing Mixture.

TAKE—A gallon of common tar ; and
Twelve pounds of any sweet grease :
Melt them together, stirring them well while they are cooling.

Here, as in dressing for the scab, the wool should be parted in rows from the head to the tail, three or four inches asunder, and the mixture rubbed carefully with the finger at the bottom of each row. The smeared fleece will not fetch so much per pound, but the increase of weight, generally in the proportion of five to four, will more than compensate for the diminution in price. The usual time for smearing is in October, and the sheep are hardier and warmer, free from vermin, and generally free from scab ; and, this being the case, they evidently thrive

better, are sooner fit for the market, and weigh heavier.

It will be evident enough that every precaution ought to be taken to prevent the reappearance of this disease. Every rubbing-place of every kind should be thoroughly washed with chloride of lime, and every sheep that begins again to *ferret* immediately separated from the flock.

The scab appears under an exceedingly virulent form in some mountainous parts of the country, and particularly in Scotland. Mr. Stevenson, in his communications to the Highland Society, thus describes two varieties of it. The first he curiously calls *red-water*, an improper term, and more especially as the same name is given to another disease to which sheep are subject. He says,—

“This disease commonly makes its appearance about the beginning or end of winter, and first appears about the breast and belly, although at times it spreads itself over other parts of the body. It consists in an inflammation of the skin that raises it into blisters, which contain a thin, reddish, and watery fluid: these continue for a short time, break, and discharge their matter, and are followed by a blackish scab.

“When the sheep are exposed to cold or wetness, the skin being fretted makes the blisters rise, or they often arise from cold affecting the animal internally, thus producing a slight fever, which throws out these vesicles on the body.”

The diseased sheep should be put into a fold by himself. A little blood should be taken, and the

blisters slit up, and a few drops of the infusion of tobacco put into them; a quarter of an ounce of sulphur should also be given on six successive mornings. A dose of physic should follow. The parts affected should also be daily washed with lime-water.

A more violent eruption is called the *wildfire*, probably from the rapidity with which it spreads. It is more infectious than the scab, or probably it is one of the worst species of scab. The nitre and sulphur should here also be given internally, and the lime-water applied externally.

SECTION XIII.

SHEEP-POX, OR SMALL-POX IN SHEEP.

THESE are the names given to a disease, which, though long known upon the continent, has but recently been recognised in England. Its appearance in this country has produced considerable excitement, and all persons, directly or indirectly connected with agriculture or with medicine, have, by the interest they have evinced in the subject, kept alive the feeling which the announcement of a new disorder among sheep was calculated to create. The general impression appears to be, that a pest has burst forth which will, before long, render mutton a rarity. The idea seems to be generated by

fear, or to be deduced from analogy; and, in either case, to be equally unfounded. Against precautionary measures there can be no objection, but, while taking these, it ought not to be forgotten that a needless alarm is in its consequences hardly less injurious than a groundless security. The farmers of England, I think, have no occasion to entertain any general fear about the disease. It has been long known in Europe; and with the continent the inhabitants of Britain have ever held intimate communication. The importation of foreign sheep has for many years been common, and though the true nature of this disorder has been only recently recognised in this country, there are good grounds for believing that isolated cases have from time to time been encountered. Without going further to establish this fact, the description given by Mr. Stevenson of a disease which he names "*Red Water*" will surely be sufficient. That gentleman, in a communication to the Highland Society, quoted in the previous Section, speaks of an affection which first appears on the breast and belly, spreads over other parts of the body, generates blisters containing a thin fluid, and, at last, after these break, exhibits blackish scabs. In a like number of words, probably a better description of "Sheep-Pox" could not be contained; and, after fairly considering it, the conclusion is forced upon us, that this affection has neither been so rare or is so novel as it is now generally esteemed to be. Had we at our command better sources of information, the truth of the opinion here advanced would possibly be made apparent; but while the agricul-

turist is content to let his flock die without seeking other aid than such as the shepherd or the equally ignorant but more presumptuous cow-leech can afford, the public must be prepared to hear strange tales of wonderful discoveries. Recollecting the vast number of sheep which have of late years been imported, and also remembering that the sheep-pox was usually more or less rife in the places whence these were brought, no reasonable man can suppose otherwise than that many of the animals landed in England have, previous to the autumn of last year, exhibited the disorder. It is only fair to conclude, even were there no statements warranting such a conclusion, that many animals have either been slaughtered while suffering under the affection, or have perished in consequence of being attacked by it. When the little attention which the sheep-master usually bestows upon the flock, and the ignorance of the persons to whose care he generally entrusts them, are duly considered, it is at once seen that such a circumstance might have occurred, and yet have been either overlooked or misinterpreted. When, also, the nature of the disorder, and the highly contagious character of the disease, its power of remaining dormant in the system, and the ease with which it can be communicated by the slightest contact are remembered, and when, in conjunction with these circumstances, the freedom of communication, and the large extent to which every species of cattle have of late years been introduced into England are considered, it appears impossible to conjecture that the sheep-pox has not been witnessed

among our sheep at an earlier date than that which announced its existence.

It is from these circumstances the brightest anticipations are to be derived. Native authors have described the disorder under various names, and from time to time animals likely to be affected by it have been introduced into this country; yet, notwithstanding, there remains the fact that, up to the present period, sheep-pox, however virulent it may have been in particular spots, has gained no confirmed footing among the flocks of England. The disorder, wherever it is seen, can always be traced to inoculation or contagion; and wherever it appears, there it in a great measure abides. Unlike those epizootics which devastate a country, it does not travel or spread in any marked direction. It never has been indigenous to this land, and appears to be incapable of being planted upon it. It comes as an exotic, and if not perpetuated by man, seems, in the course of nature, to fade away. Diseases are well known to be influenced by climate, and something in the air of England would appear to forbid the generation of this disorder among our native sheep.

Nevertheless, while no reason for present excitement is discovered, there certainly exists sufficient to justify precaution, for a constant repetition of the experiment might ultimately establish that which a few trials failed to re-produce. The notoriety which has been given to the subject will probably accomplish all that can be desired. The fuss that has been made, if it has done nothing else, at all events has

put the farmer and the grazier upon their guard. They know the danger they have to avoid, and in order that they may be the better able to recognise its presence and counteract its effects, the symptoms of the disease and the course of treatment which should be pursued will now be described.

Sheep-pox is a constitutional disease, consisting of fever, which is expelled from the body through an eruption upon the skin and mucous surfaces. It is both infectious and contagious in no ordinary degree, and dangerous alike from the numbers which it destroys, and from the condition in which it leaves those that survive. In some instances entire flocks have perished, in others the loss has amounted to one-half; but from twenty to thirty per cent. appears to be the average amount of deaths.

After the taint has been received, the sheep for an uncertain number of days exhibits no sign of disease. The disorder is in the system, but it remains dormant, and the animal is, to all appearance, in perfect health. Perhaps closer observation might discover some symptom indicative of the approaching attack, but hitherto none has been detected. Up to the present date the best and most experienced veterinarian cannot, save by the history of the case, point to the sheep as likely to exhibit the disorder, though even on the next day it may display those indications which shall denote the most virulent attack. All the outward appearances by which we judge of health are presented, and yet the sheep may be breeding the disease. The latent stage is of no certain duration. In cold weather it is longer

than when the season is either moist or warm. During the summer months it generally terminates about the sixth, and rarely lingers beyond the twelfth day. In winter it may not end before double the period has expired. The next stage, however, is more marked, and with it all appearance of health departs.

The animal shows general signs of fever. It appears dull—separates itself from the flock. The head hangs down, the ears are pendant. A watery secretion flows from the eyes, the membrane of which is highly injected. A mucous discharge runs from the nose; the breathing is quick; the mouth dry and hot, and the pulse increased. On examining the animal, a redness of the skin, as though a rash were on the eve of bursting forth, will be detected on those parts which are either but thinly covered with wool, or are nude. Sometimes, however, the fever may exist for a day or two before the colour of the skin exhibits any change, but generally the fever and the redness appear together, and these may remain with little alteration for two or four days. At the expiration of the periods stated, little lumps, which feel hard, are detected where the skin was inflamed, and with the presence of these the fever increases. These lumps may be few or many; they may be separate and distinct, or they may join together, forming patches of no definite size or shape. They are generally of a lightish red hue, but by pressure can be made to lose their vascular tint. With the development of these lumps the animal seems to suffer more and refuses food, although the

thirst shows the fever is most violent. How long the red lumps may remain is uncertain, but in two or more days, and the earlier the better, they become white upon their surfaces; and if they are then opened, from each a little, and but a little, fluid of a clear but thickish nature will be released.

With the secretion of this fluid the sheep is relieved, the fever decreases, and all the symptoms and the dangers also diminish. In a short time, however, the fluid loses its transparency, and changes into a milky opalescent liquid, at the same time that its quantity decreases. Three days, or perhaps a week, after the lumps first became white, there is seen a red or inflamed circle around them, and pus or matter is thrown out at the edges of the vesicles or little bladders which contained the fluid. Now the fever in some degree returns, and the sheep, which has passed through the more generally fatal stage, may be lost. If, however, all goes on well, scabs or crusts are formed, which in due time fall off, but leave behind them holes or ulcers, which are often difficult to heal, because of the debility which the disorder has produced.

Such is a brief description of the progress of the disorder, which generally lasts for twenty-four days or a month, and even then cannot be said to have ceased, for the after consequences are scarcely less to be dreaded than the disease itself. When the vesicles are matured, the danger, in favourable cases, has passed, but in other instances the contrary is witnessed. In some cases the constitutional fever augments, especially when the lumps appear in

bunches, and the vesicles run into one another, forming patches. Then the animal rarely recovers, but all the symptoms are aggravated. The breathing is short and harsh; the flanks heave; the head swells; the eyes and lips ulcerate; the breath becomes offensive; a thick saliva drains from the mouth, and a discoloured mucous runs from the nostrils; the wool falls from the body; sloughs in various places are cast off, and diarrhœa ultimately closes the scene of suffering.

From the foregoing account the reader will have learnt that general signs of sickness give the first positive notice of the disorder, the true nature of which is recognised by the redness of the skin, on which soon appear small lumps: these speedily become white, and then black scabs or crusts form, which fall off and expose ulcers that are slow to heal.

The fever and the redness of the skin, with the appearance of the little hard lumps, are the most valuable indications, inasmuch as they denote the disorder, and instruct us as to the course of treatment which should be pursued. There are several kinds of sheep-pox, or rather the same disease is so greatly influenced by particular circumstances, that different names are given to the various forms which it assumes. Without entering at length into those which are of no vast practical importance, it will be sufficient to state here that, when the lumps or vesicles remain distinct and are quickly developed, the disorder is generally mild; but when the lumps unite, and the vesicles joining form masses of matter, the disease

is usually fatal, and that fatality is the greater in proportion as the attack is speedy or slow in being matured.

Where the possibility of sheep-pox is suspected, the flock ought to be daily inspected. The food should be of a supporting but not of a heating nature. The utmost cleanliness must be observed, and every means adopted to protect the sheep from cold or wet. Any animal that seems to be in the least unwell must be immediately examined. Under the anus, beneath the belly, between the thighs, about the tail, and all those places where the skin is most readily seen, should be carefully inspected; and, even should not redness be observed, the animal ought to be at once separated from its companions. A mild laxative, sufficient to unload the stomach, but not powerful enough to start up purgation, should then be given, and with this no carminative should be mingled. The following drink, which is also slightly diuretic, will answer this intention:—

RECIPE (No. 17).

TAKE—Epsom salts, half an ounce;
Sulphuric ether, two drachms;
Nitre, one drachm:

Dissolve the salts in a quart of cold water, and, having added the ether, give.

This may be repeated on the following day if constipation exists, but it should not be administered oftener than is absolutely imperative; for the sheep is an animal which, from its artificial state, can ill bear up against depletion. For that reason no blood should be abstracted, nor should aloes or other

drastic agents be employed. All solid food ought to be withheld, even supposing the animal would eat it; for, as rumination has ceased, such substances would only remain in the rumen and do essential injury. Gruel and linseed-tea may be allowed in any quantity, and although they may not be touched, they nevertheless should be constantly before the animal, and when made sufficiently thin, as the thirst is great, if water be not present, these nutritive fluids will be accepted, and help to keep up the strength, on the maintenance of which every hope depends. On this account it is requisite to be cautious concerning sedatives and febrifuges, the generality of which are of too weakening and too lowering a character to be safe. Nitre is not here beneficial; and as to antimony or mercury, they are entirely out of the question. Opium is objectionable, because of its constipating tendency; and digitalis, as a violent diuretic and powerful oppressor of the heart's action, is not to be trusted. Belladonna, however, while it quiets the system, also, is more direct in its influence over the mucous and cutaneous surfaces; and of the neutral salts, those of ammonia possess combined cooling and stimulating properties. To get the skin to cast forth the eruption is now the object, and the next drink will perhaps accomplish this, while it will also aid in checking the constitutional fever.

RECIPE (No. 18).

TAKE—Extract of belladonna, a scruple;

Liquor ammonia acetatis, one ounce:

Rub down the belladonna in a table-spoonful of cold water, and, adding the liquid, give in half a pint of cold thin gruel.

The above may be administered night and morning; or, should the fever rage very high, it may be with safety given four times in the course of the day. Nothing more will be required until the lumps become white, when the fever usually subsides; then the treatment must be changed, for at this period it is that the animal shows signs of exhaustion. The food should be more generous; but, until some days have elapsed, nothing solid or requiring rumination should be offered. Boiled roots, or succulent grasses, so prepared as to render mastication almost needless, scalded oats, which had been previously bruised, or malt mashes, will now be of service; for in this disease, a little trouble judiciously devoted to such matters will do no less good than a great deal of money expended upon medicines. In fact, under favourable circumstances, the disorder has virtually terminated, and little beyond good nursing is afterwards required. The following, however, will tend to strengthen the digestion and support the body, thereby facilitating the recovery.

RECIPE (No. 19).

TAKE—Extract of gentian, one drachm;

Sulphate of copper, ten grains:

First dissolve the extract, then the salt, and give in a pint of cold gruel.

To this, after a day or two, should all sign of fever depart, half a pint of good ale may be added, and the drink be given morning and evening.

Sometimes, however, when the disorder is of the severe kind, it at this period assumes the typhoid

character, and then, though medicine will probably not stay the course of the disease, another plan of treatment must be pursued. Good thick gruel, not more than a quart at a time, for fear of overloading the weakened stomach, must be forced upon the animal repeatedly in the course of the day, and with it may be combined on each occasion two drachms of sulphuric ether, and a pint of the solution of the chloride of zinc.

When the scabs fall off, the raw surfaces may be touched gently once a day with some mild astringent, and none is better for this purpose than that which is made by dissolving a drachm of the bichloride of zinc in three pints of water.

During the latter stage acute diarrhœa often appears, and when it does, death is certainly not far off. To check it astringents are of no avail; but opium, as decreasing the pain, and chloride of lime, as counteracting the tendency to decomposition, hold out some hope, and four drachms of the solution of the last, combined with a scruple of the first, may be administered three or four times in the course of the day.

Beyond what has been recommended, cleanliness and regard for the comforts of the animal are essential. The wool should be cut from about the anus, to prevent the fæces from adhering to it; and if the discharge be thick and copious from the nostrils, a little spermaceti ointment should be smeared upon them, to prevent them from being plugged up.

The after consequences of this disease are, however, by no means unimportant. Blindness, lame-

ness, chronic affections of the lungs or intestines, and emaciation, are too frequently left behind, and the animal that has survived is comparatively worthless. Besides these, there is the loss of the fleece, the abortion of the lamb, or the death of it supposing it to have been born. These are of scarcely less importance than is the disease itself, which is the more to be dreaded as its ravages are the more severe in proportion to the value of the flock. Foreign, high-bred, fattened and breeding sheep, are more likely to die than are those of a less valuable description; and on the account of loss to which the sheep-pox exposes the farmer, is also to be reckoned the trouble, expense, and loss of time to which it subjects him.

Under these circumstances preventive measures deserve every attention, and happily something can be done in this respect. In all cases the diseased animals should be immediately placed by themselves, and on no account allowed to remain with the flock. The affected sheep ought to be so far separated from the rest that not only is the probability of communication prevented, but the possibility of infection also counteracted. The distance necessary to secure these advantages is at least two hundred yards, but it would be prudent not to limit it even to that extent. Attention to comfort and diet, with an occasional laxative, will also be of every benefit; and, lastly, inoculation will be found to confer something almost approaching to security.

On the continent the sheep-pox often rages as an epizootic. Here it is known only as the result of



contagion or infection, but wherever it appears, the whole flock had better, without loss of time, be subjected to inoculation; several advantages are thereby gained. If left to its natural course, the flock will not be freed from the attack before the expiration of three or four months, but if inoculation is resorted to, one month will terminate the disease. The gain of time is of much importance, but of even greater consequence is the result secured in another direction. When taken naturally, the disease is generally more slowly developed, and more severe in its symptoms. The deaths are more numerous, for in some instances the entire flock has been swept away; while under favourable circumstances the loss may be estimated, if the after consequences are included, as at least one-third of the whole. On the other hand, when inoculation has been practised, there has been every reason for congratulation. In 1810, in Austria, no less a number than ten thousand sheep and lambs were inoculated, and of these not one died. Under the most unfavourable circumstances the deaths are, by those who have had much experience, and have deeply investigated this matter, reported not to exceed, as a general rule, one in two hundred. The reader will find some admirable remarks on the inoculation of sheep in the "Veterinarian" for July and the subsequent months, and to these he will do well to refer. All that English writers advance upon inoculation must necessarily be borrowed from the continental authorities, as in this country we have fortunately, hitherto, had no occasion to resort to it. The instructions, however, which foreign authors

give upon this question are very clear, and provoke no disposition to doubt the correctness of the statements which accompany them.

A sheep which has the sheep-pox in its mildest form ought to be selected, that is, one in which the vesicles are few and perfectly distinct. When in such an animal the lumps have become white, the fluid contained in them ought to be carefully collected, and it will not lose its potency for at least twelve months. It can be secured in tubes, but is more readily preserved upon points, or little pieces of ivory, made for the purpose. On these it is allowed to dry, and put apart for use.

The virus or fluid of the sheep-pox is best when procured from a sheep that has taken the disease from inoculation, and even after the disease has passed through ten or fifteen animals the effect will be no less certain, but at the same time far less dangerous. After the fifteenth remove it is thought the virus becomes inoperative.

The sheep being selected for the operation, a small puncture is made at the lower part of the tail, and into this the prepared point is inserted. All the care here required is to make a wound no deeper and no larger than is necessary. If possible, blood should not be produced, but the scarf skin alone should be raised, that as little as can be of the contagious matter may be introduced. The whole of the flock should undergo this operation, and on each no more than one puncture ought to be made. The sheep are then done no more to, but are only observed until any one among them displays the signs of fever which an-



nounce the active commencement of the disease. As soon as the animal is seen to be dull, &c., it is withdrawn and placed by itself, or with other sheep that have been previously attacked. The treatment which has been advised is then followed, and the result is generally satisfactory. So beneficial indeed is inoculation found to be, that even if sheep-pox should have appeared in the flock, all the animals that have not taken the disorder ought, without delay, to be subjected to the operation; and though very young lambs are not perhaps the fittest subjects to be inoculated, nevertheless even these ought to be included. The sheep that have been inoculated should not be turned among those that already have the disease, but may be folded with safety with any that have recovered from it. In the first instance, there would be a chance of double inoculation, or of infection or contagion taking effect conjointly with the inoculation, and the danger would then be increased; but in the last, as sheep are not known to be exposed to a second attack, no risk is incurred.

There is, however, one circumstance which will probably lessen the advantages that all continental writers state to be derived from the process. There is, in England, no lymph or fluid which can be used excepting that which is taken from sheep exhibiting the disorder in its natural form; and to be fit for the purpose it ought to be procured from animals that have been inoculated with a virus rendered mild by its having passed through several bodies. In various parts of France no doubt such lymph could be procured, but it would hardly be expected that indi-

viduals should undergo the loss of time and expense which must be necessary to obtain it. Some of the societies or the government, surely, ought, without loss of time, to supply this deficiency, when, as sheep-pox is not yet naturalized to this island, the losses which ensue upon the importation of the disease might be rapidly lessened. It is the more requisite to do this, inasmuch as mere sanatory measures, however rigidly enforced, have not, in the generality of instances, been found to be altogether effectual. Much, nevertheless, will be accomplished by the warning which the public have received; and no man will for the future be free from blame who purchases in large markets animals that are wanted for other purposes than immediate slaughter, because, however healthy such sheep may appear at the time of sale, there can be no security that the affection may not on the very next day be apparent. In matters of this nature precaution is necessary; and however great may be the inconvenience which it creates, nevertheless, until the danger has subsided, or measures are adopted to prevent it, every care must be taken by those who are exposed to its effects.

A Hertford gentleman informed the editor that a farmer in his neighbourhood cured his sheep by only giving them London porter. The dose was half a pint, frequently repeated, which in the course of several days effected a perfect eradication of the disorder. The stage of administration cannot be doubted as being that when the knots become pustules, and the fever abates. At this point a tonic would have an excellent effect, and there is no better



tonic to herbivorous animals than London porter. We therefore commend the practice on theoretical grounds, and submit it to the judgment of our readers.

SECTION XIV.

LICE, TICKS, AND FLIES.

SHEEP, and especially if they are neglected and poor, are often sadly annoyed by these vermin. They frequently precede the scab: the dreadful itching which they occasionally cause prepares for or produces the scab, or they multiply most rapidly when the skin is fouled by the scab. The sheep-louse is too well known to every shepherd: it is of a brownish or reddish colour, with a flat body, and three legs on either side: the tick has a large round body, and small chest and head, which he buries deep into the skin, and by means of which he holds so fast as to be with difficulty torn off. The lice are propagated by means of eggs or nits: the origin of the tick is not so well understood.

They are both injurious to the wool, and also to the health of the animal, from the constant irritation which they produce. The louse is more injurious than the tick. The tick only buries his head in the skin; the lice burrow, and form their nest in or under it. They collect together, and a scab soon rises, whence a glutinous matter proceeds. The scab continues to increase until it is the size of a

sixpence, and undermines and destroys the roots of the wool, and the fleece comes off in patches. The itching then becomes intolerable, and the sheep rub themselves eagerly against everything within their reach, and tear off the wool by mouthfuls. The lice are thickest about the throat and under part of the neck, and when this is the case, it has sometimes happened that the sheep has been thus seriously injured, or even destroyed in a very curious way. He bends his head down as closely as he can to get at the vermin, and then some of the wool entangling itself about the teeth, the head becomes fixed, and the animal is said to be *bridled*. If he is not observed and relieved, he will be held in this manner until the muscles which move the head are seriously injured, or until he is absolutely destroyed.

Many washes have been invented to destroy these insects, but few of them have perfectly succeeded. That which seems to have the best effect is thus composed:—

RECIPE (No. 20).

Arsenical Wash for Sheep Lice.

TAKE—Arsenic, two pounds;
Soft soap, four pounds;

Dissolve in thirty gallons of boiling water, and then set it apart to cool, removing any sediment that may remain.

The infected sheep should be immersed in this, the head only being kept out; and while he is in the liquid the fleece should be well rubbed and moulded, so that the wash shall penetrate fairly to the skin. When taken out of the tub, the fluid should be pressed as thoroughly as possible out of

the fleece, which will then do for another of the flock; and the sheep should be kept from cold and wet for a few days.

Other persons prefer the following lotion:—

RECIPE (No. 21).

Mercurial Wash for Sheep Lice.

TAKE—Corrosive sublimate, one ounce;

Spirits of wine, two ounces:

Rub the corrosive sublimate in the spirit until it is dissolved, and then add—

Cream of tartar, one ounce;

Bay salt, four ounces:

Dissolve the whole in two quarts of water, and apply a little of it with a small piece of sponge wherever the lice appear.

These washes, however, are not always safe, and they are very troublesome in their application. The mild ointment which I have recommended for the scab is more easily applied, and more effectual. It may be rendered more fluid, and consequently more easily rubbed in, by being mixed with an equal weight of neat's foot oil; and it should be as carefully applied over every part as it would be in the act of smearing, for the vermin will speedily collect and burrow in any spot which the ointment may not have reached.

The tick is many times as large as the louse, but not so frequently found. When not gorged with blood it is flat, but when bloated it is round, and brown or black, and varies in size from a pin's head to a small bean. When one of them fastens itself upon the sheep, it seems to retain precisely the same situation for some weeks, or even months, and

yet the young ticks are found round the old ones, resembling numerous red points, but becoming brown as they increase in size. They, too, select the sheep that is debilitated by want of proper nourishment or by disease.

The tick is more frequent on some grounds than on others. On some farms, even although badly managed, it is seldom found; on others it is scarcely to be got rid of, even although the sheep should be healthy. It would seem as if it were bred in the ground, and that one part only of its existence is spent on the sheep. Some shepherds set diligently to work, and pick them off. This, however, is an almost endless task. Others dress the sheep with turpentine, which usually destroys them; but the scab ointment is the surest remedy, as well as preventive.

The sheep is tormented by two species of flies. The one endeavours to lay its eggs on the muzzle, and thence, speedily hatched by the moisture and warmth of the breath, the animalcule, or larva, creeps up the nostril, and finds its way into the frontal sinuses, or some of the cells above the nose, and there fastens itself, and lives and grows, until it becomes a large worm: it then creeps again down the nostril, assumes the form of a grub, burrows in the earth, and in due time appears in the form of a fly. It is only during the time of the depositing of the egg that the sheep are disturbed or injured, and then they may be seen huddling together on the barest part of the pasture, with their noses close to the ground, and, by continual shaking of the head

and stamping, endeavouring to prevent the depositing of the egg. When the little worm has reached its destined situation, it seems no longer to trouble the animal, for these *bots* are found in the heads of some of the largest and fattest sheep.

Another species of fly, or perhaps several other species, are far more troublesome and injurious. At some uncertain time after shearing, and seemingly oftener occurring to those that were early than to those that were later sheared, the sheep will be *struck with the fly*. This will be discovered by the uneasiness of the animal. It is not the itching of scab, for it is before the usual appearance of that disease, and when the sheep was shorn there was not the least appearance of it. The sheep will hang down their heads, stand for awhile as if listening, then bow up their backs, violently shake their tails, stamp furiously with their feet, gallop away for a short distance, and then turn round and try to bite the affected part. The tail is evidently the part oftenest attacked.

On being caught, there will probably be found little lumps or bladders on various parts, but particularly about the tail; and if these are pierced, they will be found to contain numerous little maggots. If there are any sores about the animal made in the shearing, they will become full of maggots in different stages of maturity, and these vermin will crawl through the wool, over almost every part of the body.

In warm weather they are peculiarly annoying and destructive. I have seen them spreading from

the root of the tail to the head of the sheep, deepening every sore, eating even through the sound skin in various places, and penetrating to the very entrails.

A sheep struck by the fly should not be neglected a single day, for the maggots will sometimes do irreparable mischief in a very short space of time. The wool should be cut off round the places where the maggots seem to be, and they should be carefully picked out: but this will not effectually destroy them; for many will crawl far away out of the reach of the searcher. Some ointment or powder must be applied, which will at the same time heal the sores and destroy the maggot. An application of this kind may be obtained in some of the preparations of lead. The following will be very useful:—

RECIPE (No. 22).

Fly Powder for Sheep.

TAKE—White lead, two pounds;
Red lead, one pound; and mix them together.

While one man holds the sheep by the head, let another have a dredger or pepper-box containing some of the powder in his right hand, and a stick in his left: let him introduce the stick near the tail of the animal, and draw it gently along the back as far as the head, raising the wool, and scattering in the powder as he proceeds. Then let him dip his hand in some of the coarsest whale oil, and smooth down the wool again, smearing the whole of the fleece with the oil. This will not only destroy the maggots, but prevent the future attack of the fly.

There are few flies that will approach anything that smells strongly of this oil: it would, therefore, be a good practice to smear the sheep with a little of it after shearing. No injury could possibly be done to the wool, but, on the contrary, its growth would be promoted.

If, however, the flies have made any deep wounds or ulcers, some of the powder should be mixed up with tar, and the ointment gently rubbed on the sores.

SECTION XV.

SORE HEADS.

THIS disease is connected with, or often produced by, the striking of the fly, and especially in woody countries. Next to the tail, the head is the part most frequently and seriously attacked; and, in defending themselves from their tormentors, the sheep are continually striking their heads with their hind feet, until at length a considerable sore or ulcer is formed. No sooner is this done than the fly persecutes the poor animal with tenfold fury, anxious to lay its eggs on or near the wound; and the ulcer will often spread so far and so rapidly as to be very difficult to heal, and occasionally it will destroy the sheep.

The first thing to be done is to procure a cap or covering for the head, made of soft leather, or of

brown paper if leather cannot be procured. This should be cut so as to protect the whole of the head, and yet not to come too close to the eyes. Then the following ointment must be prepared:—

RECIPE (No. 23).

Ointment for Sore Heads.

TAKE—Black pitch, two pounds;
Tar, one pound;
Flour of sulphur, one pound:

Melt them in an iron pot, over a very slow fire, stirring together the ingredients as they begin to dissolve, but carefully watching the compound, and removing the pot from the fire the moment the ingredients are well mixed, and before they begin to boil; for they would then rapidly swell to an extraordinary extent, and the whole mass would run over into the fire.

While this ointment is warm and soft, it should be thickly spread upon the leather, and the cap fitted to the head. If this be done in the evening, when the fly ceases to torment the sheep, the animal will be quiet, and the ointment will gradually cool and stick close to the head.

Some spread the ointment over the head without the cap, making a kind of charge, a few flocks of wool being scattered over the top of it; and if it should be somewhat too liquid for this purpose, it is stiffened by the addition of a little yellow resin. It is difficult, however, to confine the ointment to the sore when it is thus applied, and it is very apt to run over the eyelid and the face, to the great annoyance of the animal.

In some parts of Scotland there is another disease of the head that is speedily fatal. If the sheep are

suffered to rest for the night near the summit of the Grampians, or the hills of Galloway, the head will become enormously swelled, and ulcers will break out, as if the animal had been bitten by a venomous reptile. A great portion of the scalp often comes off, and the animal generally dies. The shepherds there call it the *head-hill*, and the malady is kept from spreading only by removing the flock from these elevated and dangerous spots. The cause of this disease is uncertain.

SECTION XVI.

DIARRHŒA, OR PURGING.

THE full-grown sheep is almost as subject to purging as is the lamb, but it is not so difficult to be cured, nor is it so fatal. A sheep can scarcely be turned into fresh pasture in the spring without beginning to scour, and especially when warm weather is succeeding to cold, and the grass shoots rapidly; but this, in most cases, is beneficial rather than injurious. It rouses the digestive organs to full and healthy action, and the sheep that scours a little when first turned into the meadow or on the marsh is sure to thrive more quickly afterwards. The purging, however, must not be too violent, nor continue too long.

The looseness caused by feeding on young succulent grass seldom lasts more than a few days; but if it should continue longer, the sheep must be removed to inferior pasture, and a little hay allowed them if

they can be induced to eat it. Some dry, sound old seeds should also be put before them, and the following powder administered:—

RECIPE (No. 24).

Astringent Powder for Sheep.

TAKE—Prepared chalk, a quarter of an ounce ;
Ginger, half a drachm ;
Catechu, powdered, half a drachm ;
Powdered opium, a scruple :

Give this in a little cold gruel once or twice daily, until the purging abates.

A favourite remedy with some farmers, and succeeding in slight cases, but inefficacious in severe ones, is suet boiled in milk. Others give a very curious medicine: it consists of the lime dug out of an old wall, and mixed with tar. What good purpose the tar can answer I cannot conceive, and the lime would be superseded by the prepared chalk recommended in the last recipe.

When the disease abates, the sheep must not be turned out again on their former pasture, but on the best old grass land which the farm will yield ; and even then a little good hay and corn should be daily allowed them.

The farmer should be careful that he does not confound the consequence of diarrhoea with costiveness. When there is much mucous discharge, it is very sticky, and adheres to the wool under the tail, and glues it to the rump, thus forming a mechanical obstruction to the passage of the dung. The sheep straining very hard, careless observers have supposed that he was costive, whereas all that was required

before further observation justified treatment was the removal of the obstruction.

There is but one form of the disease under which all hope is precluded, and that is when it is connected with chronic cough or confirmed hoose. That animal may be patched up for a little while, but he will most assuredly perish.

It is necessary to make a distinction between *diarrhœa* and *dysentery*, the latter being attended with considerable fever, and the evacuations are often slimy and bloody, and the disease sometimes terminates fatally in a few days. It sometimes follows diarrhœa, but is generally produced by change of food or pasture, and exposure to bad weather. Lambs are rather more liable to the disease than sheep, and it has been found to attack them very frequently on coming from low lands to high. The treatment should consist in giving mild laxatives, such as—

RECIPE (No. 25).

TAKE—Linseed-oil, two ounces;
Powdered opium, half a scruple;
To be mixed with linseed tea.

Linseed and oatmeal gruel should be given several times a day, and the second day the medicine No. 24 should be administered.

SECTION XVII.

INDIGESTION AND DEBILITY.

BAD management, and that alone, causes the appearance of these complaints in a flock. When sheep

have been over-driven, and excessively wearied; or ewes have had twins, and have afterwards been kept with their lambs on scanty pasture, where there was not enough even for the mother; or have yeaned very early, before there was any flush of grass; or, during the winter, have not been supplied with a proper quantity of hay or corn—in all these cases the sheep are apt to pine away. They do not seem to relish their food, but wander over the field, picking a little here and there, the belly being tucked up and the back bowed.

The remedy for this is simple enough if the sheep have not been neglected too long. It is plain that the powers of digestion are weakened or suspended, and the object to be accomplished is to rouse them once more to their proper tone and action. A mild purgative should lay the foundation for this. Half the Purging Drink (No. 2, p. 260) should be given, and this followed up by tonics or stomachics. Some farmers content themselves with giving a little good caudle for two or three successive days, and with general good effect, except that its sweetness is objectionable. The following mixture will be preferable:—

RECIPE (No. 26).

Tonic Drink for Debility.

TAKE—Gentian and powdered caraway seeds, of each an ounce;
Colombo and ginger, of each half an ounce :

Pour a quart of boiling water upon them, and let the infusion stand one day, well stirring it repeatedly during the time. Then pour off the clear liquid, and bottle it for use. Give a table-spoonful daily in a little gruel, mixed with half a pint of good ale.

Repeat the half-dose of physic a week afterwards, and put the sheep on fresh and good pasture.

SECTION XVIII.

BLINDNESS.

SHEEP are more subject to diseases of the eye that lead on to blindness than many persons who are accustomed to them imagine. It is a singular circumstance, and not so well known as it ought to be, that if the eyes of a flock of sheep are carefully examined, half of them will exhibit either disease then present, or indications of that which existed at no very distant date.

Inflammation of the eye, which constitutes the commencement of the disease, may arise from various causes. Sheep driven fast to a distant market have suddenly become blind; those which have been chased about by dogs have at no great distance of time lost their sight, and especially if, in both cases, they were afterwards exposed in a damp and bleak situation. The violent driving, while it produced fever, determined an undue quantity of blood to the head; it pressed, or perhaps was effused upon the origins of the nerves of the eye; and the after neglect confirmed the fever and aggravated the mischief.

At other times this seems to be an epidemic complaint. The greater part of the flock is suddenly afflicted with sore and inflamed eyes, and particularly at the latter end of the year, and when the weather

has been variable, yet cold and moist. Some have thought that this complaint is infectious, but it is at least epidemic. A white film gradually spreads over the eyes, which the animal generally keeps closed, while at first a watery fluid, and afterwards a thicker matter, is discharged from them. The film increases until the whole of the eye is of a pearly whiteness. If proper means are adopted, and often if nothing is done, the inflammation abates, and the eye begins to clear, usually commencing at the upper part of the eye, and gradually proceeding downward until the whole of the organ is once more transparent, with the exception, perhaps, of a diminutive spot or two, or a discoloration of part of the iris. Many of the sheep, however, do not perfectly recover the sight of both eyes, and some remain totally blind, either from the continuance of the opacity, or that, while the eye becomes clear, the optic nerve is palsied, the pupil does not dilate, and *gutta serena* is established.

The first thing to be done is to bleed from the vein at the corner of the eye. There will be the double advantage of bleeding generally, and of drawing blood from the inflamed part. The shepherd should take the sheep between his knees, and then placing the animal with its rump against a wall, he will have full command of it. If he now presses upon the vein with his left hand, about two inches from the angle of the jaw, and opposite to the third grinder, he will see it rise as it descends from the corner of the eye and runs along the cheek. He should puncture it about an inch or rather less from the eye. Some shepherds recommend that the blood should be suf-

ferred to run into the eye, but this is a ridiculous notion. It must do harm rather than good. Next give the Purgative Drink (No. 2, p. 260), and repeat, if necessary, in three or four days. No other medicine will be required.

No stimulating application should be put to the eye. It is too often the practice among shepherds to apply sugar, or salt, or white vitriol; but this worse than uselessly tortures the poor animal: it increases the inflammation, and causes blindness where it would not otherwise have occurred. A drop or two of the vinous tincture of opium may be introduced into the eye two or three times daily; or a tea-spoonful of laudanum may be added to a half-pint of water, and the eyes frequently washed with it.

It will be quite time enough to think of stimulants if the eye should remain cloudy after the inflammation has subsided; and then the following is the strongest that can be permitted.

RECIPE (No. 27).

Lotion for Cloudiness on the Eye.

TAKE—Corrosive sublimate, four grains; rub it down with Spirit of wine, half an ounce; and add Water, a pint.

Although, perhaps, it would be prudent to send the sheep decidedly and confirmedly blind to the butcher, lest they should perchance be drowned in a ditch, or some serious accident should occur to them, yet it is pleasing to observe how well they shift for themselves, and what little harm comes to them. For the first few days they are awkward and con-

fused; but, after that, they keep to their own walk, and take with the others, or even by themselves, the accustomed way home; and some one of the flock takes the blind sheep under his protection, and is always at his side in danger, and tells him the way that he is to go by many a varied and intelligible bleat.

SECTION XIX.

FRACTURES, WOUNDS, AND BITES.

It is not often that the sheep gets a broken bone by any fault of his own, but the shepherd is sometimes a brutal fellow. If he is a youngster, he is too frequently designedly mischievous; and in the struggle between a sheep and the dog a leg has now and then been broken. The treatment of fracture below the elbow or the hock is easy enough. The broken limb must not be roughly stretched or handled; but the divided edges of the bone must be brought gently, and as perfectly opposite, and close to each other, as possible, and kept together while splints are applied. Splints may be made of wood, cut so as to fit the leg, and then boiled till the wood is pliable; but the best are made of gutta percha, which is to be put into hot water, and then, while it is soft, moulded to the sound leg. A portion of lint should be wrapped round the broken limb. Over this splints should be placed, reaching a little beyond the joint, above and below, and there confined with

waxed thread. A little lint or linen rag should have been previously placed under the end of the splints, to prevent them from excoriating or injuring the parts beneath. This being done, the leg should not be meddled with until the bandage becomes loose, which will be in about ten days. The splints must be replaced once at the expiration of about a fortnight; and at the expiration of another ten days, if the case does well, the edges of the bone will be found to have united. The animal, however, should be kept for a little while longer as quiet as possible; and if the bone is not quite firm, the strips, without the splints, should be once more bound round it.

Sometimes considerable swelling will take place after the splints have been employed. They may have been put on a little too tight, or they do not press equally. They should not, however, be taken off at once; for the bones beginning to unite may again be separated during the removal of the bandages; but, with a sharp and strong pair of scissors, two or three notches should be cut through the edge of the bandage above and below. This will generally afford sufficient room for the re-establishment of the circulation, and the swelling will subside without the fracture having been disturbed.

If it should be a compound fracture, that is, if a portion of the bone should protrude through the skin, either the setting of the bones must be deferred until the wound is healed, or the bandages must be so applied that the wound can be readily got at for the purpose of dressing. This, however, is so diffi-

cult a matter, that it will be prudent to destroy the animal that has a bad compound fracture.

Sheep are far oftener subject to wounds than they ought to be, from the ferocity of the shepherd's dog, encouraged by his brutal master needlessly to worry the flock. They are too frequently seriously lamed, and the ears almost torn from their heads. The proprietor of sheep should never forgive wanton cruelty of this nature.

The treatment of wounds in sheep is very simple, and consists mostly in avoiding the burning irons and caustics, of which the farrier, and sometimes the shepherd, are too fond.

The first thing is to clean the wound thoroughly with a sponge and milk-warm water. If it is a simple cut wound, and the edges are not far separated, all that will be necessary to be done will be to apply daily a little of the solution of chloride of zinc, a scruple to the pint of water, and to cover the part, that the flies may not deposit their eggs on the sore. If it is a wide and gaping wound, after the bleeding has ceased, the edges of it must be brought as nearly and accurately together as possible, and confined by one, or two, or more stitches, passed through them with a crooked needle and waxed thread, and which the shepherd should always carry with him. The only dressing wanted here will be the solution just spoken of, with occasional fomentations if there is much inflammation; but the wound should be more carefully covered from the flies, either by a bandage or pitch plaster.

No dependence is to be placed on the accounts

which are given by some authors of the udders of the ewes being sucked by snakes. The reptile has never been seen thus employed ; but sheep are sometimes bitten by the viper, and a few have been destroyed by the swelling having been neglected, and inflammation widely spreading. It is difficult at all times to discover the accident. Whenever a sheep is lamed, the affected limb should be well examined ; and at other times, if he is evidently ill, and the illness accompanied by local or general swelling, careful search should be made into the nature of the mischief. The wound inflicted by a viper will be very small, but there will be swelling and heat about it, and a great deal of tenderness.

The best application is oil of turpentine, which should be well rubbed over and around the part ; while a quarter of an ounce of hartshorn, and four ounces of sweet oil, may be given to the animal, and repeated in half an hour if the part should continue to swell, or the sheep appear to be seriously ill.

SECTION XX.

GENERAL CAUTIONS.

I WILL conclude this account of the diseases and treatment of sheep with a few general observations, which may be useful to the farmer as well as the veterinary surgeon.

It is an old maxim, and a most excellent one,

that prevention is in every case far better than the cure; and there cannot be the least doubt that by a little attention, and the exercise of common humanity towards these useful and neglected animals, there need not to be half the diseases, and scarcely a fourth part of the deaths, that now occur.

In the first place, the farmer should look more than he does to the actual state, and health, and comfort of his flock. Instead of riding or walking in among them every day, and, in a manner, making every animal pass muster before him, he frequently contents himself with looking at them from a distance, or perhaps he does not look at them at all for many days together.

He deserves to be unfortunate who, in the lambing season, is not early and late among his ewes. Many a ewe is lost by rough handling; many more by not receiving the requisite assistance in difficult parturition: many a lamb is deserted by its mother; many a one palsied by lying on the cold wet ground, and many more through want of being frequently and carefully suckled.

The owner will be induced by a regard to his own interest to take into due consideration many a circumstance connected with the season and state of his flock, that would never enter into the mind of the looker-on, but on which the comfort, and thriving, and perhaps the very life of the sheep depend. Many a lamb dies for want of a little shelter in an inclement season; but many more die when the winter is mild, and the spring is early. In the one case, they are lost from cold and starvation: in the

other, from being in too high condition, and having too much milk. The shepherd will often go on in the same regular way, whatever be the state of the season: it is the proprietor alone who will have sufficient consideration to allow additional food and shelter in the one case, and in the other to stock as hardly as may be, before and during lambing. The proprietor alone will consider as much as he ought when he should suckle, and feed, and shelter the weakly; and keep back and prevent the sucking, and milk the dam, the lambs being thriving, and the weather kindly. These are affairs about which the generality of lookers-on scarcely concern themselves, and into which the best of them will not enter so anxiously as the master.

The most important circumstance to be attended to at all times, and particularly at the lambing season, is shelter,—not confinement, but shelter from the searching north and east wind. There should not be a lambing-field without a shed in it, or at least without some place surrounded with brushwood faggots on the north and east sides at least, if not all round, and into which the weakly lambs and ewes may be driven; and in stormy weather the whole flock may take refuge with manifest advantage.

Next in importance to shelter stands food. The animal may be stinted in his growth, and prepared for scab by starvation; or he may be inevitably destroyed by over-feeding, or by sudden change of food. The unhealthy seasons for sheep, putting the rot for a moment out of the question, are not the winter, when no grass grows, nor the summer, when

it is all burned up, but the spring and the autumn, when there is plenty, and too much to eat. They contrive to live, if not to fatten, in the two former seasons, but they perish from excess or change of food during the latter.

There is one disease, however, which is caught, or the foundation for which is laid in the summer, and that is the rot; but, from what has been stated with regard to this disease, a proper system of husbandry, and attention to dangerous nooks and corners, would materially limit the ravages of the rot.

The grand fault in the management of sheep, and of all domestic animals, is, that the farmer pays so little personal attention to them, and pursues one undeviating course, the same that he learned from his father, whatever the state of his flock, and whatever the state of the season. To this must be added—the most absurd, and the most injurious of all—a spirit of fatalism; a submission, not without repining, but without an effort for the avoidance of the evils it teaches, is to be attributed many and serious losses, which a little care and personal trouble might have prevented.



ON THE
DISEASES OF SWINE.

THIS subject has been greatly neglected. Until very lately there was, in the English language, hardly any work devoted to it. Mr. Youatt, however, to whose talents veterinary science is so deeply indebted, and whose writings have done more for the agriculturist than those of any single individual that ever lived, just before his death completed a book, which contains the observations of a life expressed in that pleasing language of which he was so peculiarly the master. All that is at present known concerning these animals will be found collected in "The Pig; a Treatise on the Breeds, Management, Feeding, and Medical Treatment of Swine;" by Mr. Youatt, and to that publication, which ought to be in the possession of every farmer, the reader is referred, if the descriptions contained in these pages should appear to be not sufficiently explicit.

INFLAMMATION OF THE LUNGS.

This complaint is known amongst the breeders and fatteners of swine by the term of *rising of the lights*.

There seems to be a peculiar tendency in every malady of this animal to take on a highly inflammatory character. It is the consequence of the forcing system that is adopted in the fattening of the hog. It resembles the *blood* or inflammatory fever of oxen—a general and high degree of fever, produced in a system already strongly disposed to take on intense inflammatory action from the slightest causes. Every little cold is apt to degenerate into inflammation of the lungs in the fatted or fattening hog; and so many cases of this sometimes occur in the same establishment, or the same neighbourhood—in fact, among those who are exposed to the same exciting cause—that the disease is mistaken for an epidemic. There is no doubt that when this heaving of the lights begins to appear in a herd of swine, a great many of them are sooner or later affected by it, and die. It is the cough or cold that is epidemic, but it is the plethora and inflammatory state of the animals that causes it to be so general as well as fatal.

The early symptom is cough. A cough in a hog is always a suspicious circumstance, and should be early and promptly attended to. The disease is rapid in its progress. The animal heaves dreadfully at the flanks; he has a most distressing cough, which sometimes almost suffocates him, and he refuses to eat. The principal guiding symptom will be the cough getting worse and worse, and becoming evidently connected with a great deal of fever.

In many cases congestion takes place in the lungs, and the animal dies in three or four days: in others



he appears for awhile to be getting better; but there is a sudden relapse, a frequent dry husky cough comes on, there is little appetite, rapid wasting, and the hog dies in a few weeks.

The first thing that is to be done is to bleed, and the most convenient place to bleed the hog is from the palate. If an imaginary line is drawn from between the centre and second front teeth, and extending backward an inch along the palate, and the palate is there cut deeply, with a lancet or fleam, plenty of blood will be obtained. A larger quantity of blood, however, can be abstracted from the vein on the inside of the fore arm, about an inch above the knee. The leg vein, however, is not easily seen in a lean pig, and in a fatted one will be looked for to no purpose. The orifice, also, when the vein has been found and opened, is not always readily closed. For ordinary purposes, therefore, the palate is much the best place to bleed a hog from. An assistant may easily open the mouth sufficiently by means of a halter or stout stick, but beyond this the swine is an awkward patient to manage. He will struggle obstinately against every attempt to drench him, and the inflammation may be aggravated by the contest. It will, therefore, be necessary in the majority of cases to endeavour to cheat him by mixing his medicine with his food.

Here we must recollect the nature of his stomach: it is not difficult to be acted upon or nauseated as is that of the cow or the sheep, but it approaches as nearly as possible to the structure of that of the human being; and we must select our medicine

accordingly. The emetic tartar must be omitted from our fever medicine, or it would sadly vomit the patient. The following may be given:—

RECIPE (No. 1).

Fever Medicine for Swine.

TAKE—Digitalis, three grains;
Antimonial powder, six grains;
Nitre, half a scruple.

Mix, and give in a little warm swill, or milk, or mash.

In the greater number of cases the animal will readily take this; but if he is so ill that nutriment of every kind is refused, he must be drenched.

This should be repeated morning, noon, and night, until the inflammation is abated. A purgative should quickly follow, and we have those for the hog which are mild as well as effectual. Epsom salts may be given in doses of from half an ounce to an ounce and a half to the largest, leanest hog, and the medicine may communicate a not unpleasant or unusual flavour to his broth or swill.

If it should be necessary to drench the hog, the utmost caution ought to be exercised. On no account whatever must the animal be lifted off the ground, nor should the medicine be given if the patient continuously cries. It will be better to forbear altogether, than to risk the consequence of violating these injunctions.

The food, during inflammation of the lungs, ought to be spare indeed; for a day or two water will be sufficient. After that a little good gruel, or sweet skim milk, may be by degrees increased in quantity.

Cleanliness is of the greatest importance. The sty should be thoroughly washed, and the drains inspected, for not unfrequently is the source of the disorder to be traced to the grossest neglect in these particulars, and likewise to the prevailing notion that the pig can thrive on filth, which is often half decomposed before it is put into the trough.

APOPLEXY AND INFLAMMATION OF THE BRAIN.

In distilleries, and where many hogs are kept, and too well kept, this is a very destructive, and not unfrequent malady. If the swine had been carefully observed, it would have been seen that they were making a more than usually rapid progress, but there was at the same time a laziness, or heaviness, or stupidity, about them. A dose or two of physic would have removed this, and not have interfered with the fattening; indeed they would have thriven the better after it. If this, however, has been neglected, the apoplexy will probably be established. The swine, in the act of feeding, or when moving across the sty, will fall suddenly, as if struck by lightning. He will be motionless for a little while, and then strong convulsions will come on: the eyes will seem protruded, the head will swell, and the veins of the neck will be brought into sight, notwithstanding the mass of fat with which they may be covered. In the midst of his struggles the animal will be perfectly unconscious. He will often die in a few minutes, or, should he recover, he will be strangely exhausted, and some internal injury will

be evidently done, so that he will afterwards be very subject to the return of these attacks.

The course here is plain enough. He should be bled. Epsom salts should then be given; the quantity and the heating character of the food should be diminished, and a couple of drachms of sulphur given daily in the first meal.

When apoplexy or fits have once appeared in a sty, they spread like wild-fire. There is nothing contagious in them, but all have been kept in a like injudicious manner, and all, consequently, have been subjected to the exciting cause. The most forward of them should be disposed of as soon as possible, and the mode of feeding ought to be amended.

The habit of fits once established cannot easily be broken, and the only way to prevent the continuance of much annoyance is, to separate those that are oftenest affected from the rest, and to place the others for some time on a more moderate allowance of food, or, if possible, to change the food for some of a less stimulating nature, and to attend well to the bowels.

MEASLES.

This is an inflammatory disease, not always indeed discovered during the life of the animal, but plain enough after death, and altogether destroying the value of the carcass. The red and pimpled appearance of the skin, or of the cellular substance between the flesh and the skin, sufficiently marks the disease. It shows that there has been general inflammation, either resulting from the fattening process being



carried too far, or, much oftener, from the animal having too suddenly been taken from poor keep, and suffered to have as much as it will eat of highly nutritious and stimulating food. The measles are very seldom or never fatal, but the disease may generally be recognised by the pink blush of the skin, or of some parts of it, and by the hog rubbing himself more than usual, while the skin is free from pimples and scurf. The remedy would be a less quantity of food, or of not so stimulating a character, and occasional doses of Epsom salts or sulphur.

MANGE.

Few domesticated animals are so subject to this loathsome disease as the hog, if he is neglected and filthily kept; but in a well cleaned and well managed piggery it is rarely or never seen. A mangy hog cannot possibly thrive well. His foul and scurfy hide will never loosen so as to suffer the accumulation of flesh or fat under it.

The first thing to be done is to clean the hog well: without this all external applications and internal medicines will be thrown away. The animal must be scrubbed all over with a good strong soap-lather, and when he is well dried with wisps of straw he will be ready for the ointment.

RECIPE (No. 2).

Mange Ointment for the Hog.

TAKE—Common resin ointment, three ounces;
Flour of sulphur, two ounces;
Oil of junipers, one ounce and a half.

A little of this should be well rubbed all over him every second or third day; but at the same time internal medicine should not be omitted. There is no animal in which it is more necessary to attack this and similar diseases constitutionally.

RECIPE (No. 3).

Alterative Powder for Swine.

TAKE—Flour of sulphur, one drachm ;
Æthiop's mineral, three grains ;
Nitre, and cream of tartar, half a scruple :
Mix, and give daily in a little thickened gruel or wash.

This, like the scab in sheep, is a very infectious disease, and care should be taken to scour the sty well with soap, and afterwards, as recommended at page 138. The rubbing-post, that useful but too often neglected article of furniture in every sty, should particularly be attended to.

SORE EARS.

There are very often troublesome cracks and sores at the back of the large lop-ears of some breeds. If there is any disposition to mange, it is most evident about the ears of these animals, and the mischief is sadly aggravated when brutes in human shape set every ferocious dog at the stray pig, the favourite hold of which is the ear. The Healing Cleansing Ointment for Cattle (Recipe No. 10, p. 62) will most readily heal the sores.

PIGGING.

The sow usually goes with pig four months, but there is more irregularity in her time than in that of any other of our domesticated quadrupeds. A week or ten days before her pigging she should be separated from the rest, otherwise the young ones would probably be devoured as soon as they are dropped; and if she shows any disposition to destroy them, or if she has ever done so, she should be carefully watched, a muzzle should be put upon her, and her little ones should be smeared with train oil and aloes as soon as possible.

The teats of the sow will sometimes swell, and hard knots may be felt in them, as in the garget of cattle. The treatment should be nearly the same, except that bleeding is scarcely requisite. A dose of physic, however, is indispensable. The Garget Ointment for Cattle (Recipe No. 29, p. 98) may be rubbed with advantage into the teats, which should be carefully washed before the young ones are permitted to suck again; indeed they will not suck while any unusual smell remains about the teats. The milk should also be gently but well pressed out of the diseased teats.

When it is wished to spay a breeding sow, in order that she may be put up for fattening, it may be done while she is suckling. The young pigs may be cut at three or four weeks old: they should never be suffered to suck longer than two months; and they may be rung as soon as convenient after weaning.

No hog should escape ringing, even if he is destined to live in the sty. It is the only way to keep him quiet, and will contribute materially to his thriving.

QUINSEY.

This disease in the hog is compounded of sore throat and enlargement of the glands of the throat and is something like strangles in the horse—inflammation and enlargement of the cellular substance between the skin and muscles under the lower jaw. The progress of the malady is rapid, and the swelling is sometimes so great as to prevent the breathing, and consequently to suffocate the animal. To a skin so thick as that of the hog it is useless to make any external application. The patient should be bled: a dose of salts should be given, and half-ounce doses repeated every six hours, until the bowels are well opened; while warm weak wash, or milk and water, should be occasionally poured into the trough. It is not often a dangerous disease, if remedies are early adopted.

COSTIVENESS.

This is not an uncommon complaint of the confined and fattening hog, and is easily removed by the Epsom salts, or by from two to five grains of calomel being given in a little of the animal's favourite food. It will be dangerous, however, to push the calomel beyond the second dose, for the hog is very easily salivated. The bowels having been well opened, a dose of the Alterative Powder



(Recipe No. 2, p. 356) given every fourth day will be very beneficial, and will hasten the fattening of the styed hog that exhibits any disposition to costiveness.

Sometimes, however, this costiveness is produced by—

INFLAMMATION OF THE BOWELS,

which is attended with considerable pain, heat, and tenderness of the abdomen, with the other symptoms of fever, and sometimes by fits and insensibility. The treatment should consist of copious bleeding, oily laxatives, clysters, warm fomentations to the abdomen, and, if the animal is not too large, warm baths.

ON THE

DISEASES OF POULTRY.

THE good housewife derives no inconsiderable profit from the sale of her poultry and eggs; but her fowls are sometimes sadly thinned by disease, and no one has yet condescended to offer a remedy for these maladies.

THE ROUP.

This disease stands first in frequency and in fatality, and particularly if the poultry are confined in close and dirty places, and ill-fed. The symptoms are swelling about the eyes, discharge from the nostrils, and drivelling from the mouth, at first limpid, but soon becoming purulent and stinking. The roup bears considerable resemblance to glanders in the horse: some have called it the glanders of poultry.

The farmer's wife often gives common salt in this disease, and with very good effect. It acts as an emetic. As much salt is dissolved as a certain quantity of water will take up, and the proper dose for a middle-sized fowl is half a tea-spoonful of the

solution. If the disease has been brought on by neglect or filthiness, there must be a thorough change of system ; or if the fowls have been well managed, and the roup accidentally appears, the eyes and the head must be well cleaned morning and evening. Some use weak Goulard wash for this, but warm water will be quite as effectual.

Fowls with the roup should be kept in a warm, but not a close or ill-ventilated place. Want of cleanliness and exposure to cold will almost certainly make the disease fatal.

As for medicine, little can be done. The white antimonial powder given in doses of a grain morning and night, mixed with a little sopped bread or anything that the fowl will pick, is sometimes very beneficial. Country people have their own nostrums. The best of them is garlic and rue, beaten into a mass with butter, and crammed down the throat of the fowl. It often seems to do wonders. Some give a strange mixture of rue and brick-dust, mixed together with a little butter. This, too, is thought to be almost infallible ; and whether it is owing to the stimulating effect of the rue, or the mechanical one of the brick-dust, which may aid the imperfect trituration of the food in the gizzard, or whether the brick-dust assists in the expulsion of the worms that often accompany the roup, and with which the entrails of the bird are sometimes absolutely clogged—whatever be the cause, the effect cannot be denied—it really does good.

The roup is not confined to fowls ; it frequently attacks every inmate of the yard. In the *duck* it

is very rapid in its progress, and exceedingly fatal. Among geese it is known by the name of *gargle*, and garlic and butter is accounted a sovereign remedy. Even pigeons do not escape its attack. It is characterized among them by the same symptoms—discharge from the eyes and nose, disinclination or inability to feed, moping about, and gradually wasting. The garlic and rue are the medicines here used, and certainly with success. I have occasionally forced a small portion of horse cordial-ball down the gullet; a very excellent medicine, and especially if there is not any great degree of fever. After all, however, the roup has yielded to the white antimonial powder oftener than to anything else.

There is no doubt about the contagiousness of the roup, and the sick fowls should at once be separated from the healthy ones. Where many poultry are bred, there always should be a place set apart for the sick fowls, and into which they should be removed the moment they appear to be affected with any serious disease. This place should be as warm and comfortable as it can be made; but, especially, it should be dry and plentifully supplied with clean water. The flooring of the fowl-house is, especially in winter, best covered with ashes.

There is another disease sometimes accompanying this catarrh, or *poultry glanders*; at other times, being unconnected with it, and in fact being of a very different nature, but which is also known by the name of the *roup*, because this term is too often applied to almost every disease to which poultry are liable. This is a disease of the rump.

There is a little tubercle or projection on the rump of every bird, filled with a peculiar oily matter: its use is to smooth and give a glossy appearance to the feathers, and more particularly to make them *watertight*. When rain is coming, every bird is diligently employed in squeezing out the greasy fluid, and rubbing it over the whole surface of his feathery coat, and then the drops of rain trickle off without penetrating through, or in the slightest degree inconveniencing him.

This oily reservoir is subject to occasional inflammation; either the fluid is secreted faster than it is wanted, and so distends, and irritates, and inflames the little sac which contains it, that the orifice through which the oil naturally exudes becomes closed, and thus it accumulates and does mischief. The whole rump soon becomes inflamed and enlarged. The bird suffers a great deal of pain, and sits moping and dull, with its feathers staring; but the appearance of the feathers of the rump is most of all changed: they stick out in every direction, and the quill part of them becomes filled with blood, being fed from the inflamed part.

The remedy is simple. It is loss of time to foment, or to apply Goulard or any cooling washes: the tumour must be opened, and the collected oil, now become purulent and diseased, gently squeezed out. A little cleanliness and warmth afterwards will usually perfect the cure; or if the wound does not readily heal, a little tincture of aloes may be applied.

THE PIP.

This is a very singular disease, evidently accompanied by considerable fever, like the blain in cattle, which was described at page 121 : a pustule or bladder rises near the tip of the tongue, which after a day or two breaks and dries, and a white skin or scale remains ; still, however, continuing very sore, and preventing the bird from eating, and the creature sits in some corner rapidly pining away. If the mouth is washed two or three times every day with a mixture of equal parts of tincture of myrrh and water, it will soon heal. Country people rub a little kitchen salt over the sore, and it has a very good effect. If the *pip* is neglected, the fowl will too often die ; but a great deal more from starvation, on account of being unable to eat, than from the influence of disease.

The term *pip* is also frequently given to the following verminous disease.

A great number of fowls die annually from worms in the windpipe, which, by congregating together, produce suffocation. Young birds a few weeks old are most subject to the disease, which commences with a sort of cough, and after a while the chick gapes constantly for breath, whence the disease is often called the *gapes* by country people. This complaint is evidently similar to the hoose of calves, and may be treated in a similar manner. Two drachms of spirits of turpentine may be mixed with flour and divided into twenty pills, one of which may be given every other day ; or lime-water may be used

with a little salt. Tobacco-smoke has also been employed with success, by putting the chicken in a measure, and blowing in smoke from a tobacco-pipe until he is almost lifeless. This certainly forms the most convenient remedy.

THE FLUX.

This is a very common complaint, and mostly among young fowls. When it is neglected, they waste away, and die almost as speedily and as certainly as calves or lambs labouring under the scour or skits. This disease, however, is a great deal more manageable than the other; and the fault is to be attributed entirely to the person who looks after them if many of the fowls die. The flux is brought on by various causes, but oftenest by too soft food. Potatoes will often cause it; and yet, given in moderate quantities, boiled potatoes are both economical and fattening. Any soft food that has become sour will almost certainly produce purging in chickens and young fowls.

In the majority of cases all that is necessary to be done is to change the food. Whole wheat, or more especially whole rice, should be given; rice-water should be substituted for common water; and if the purging is still obstinate, little balls of prepared chalk, caraway powder, and syrup of white poppies, should be made and forced down the throat. Too much of this, however, must not be given, lest an opposite complaint should be produced.

CROPSICK AND CONSTIPATION.

Fowls are very subject to obstructions in various parts of the digestive canal. First, in the crop which sometimes gets filled almost to bursting. This is frequently the case when new corn is given, and oftener when the fowl has got at too many beans. Either the crop is so crammed that it cannot contract upon its contents and force them on, or the corn or beans are so swelled as scarcely to be able to pass through the gullet. This will be discovered by the dulness of the fowl, and by the fulness or hardness of the crop.

Medicine will here be comparatively useless; the fowl must be mechanically relieved, and there are two ways of doing it. The food cannot be forced on, for the peculiar structure of the crop prevents it; but it may now and then be forced back again. If the crop is gently pressed, and in an upward direction, the corn or the beans may be forced out of it one by one into the gullet, and then, the gullet being stroked upwards, the undigested food may be returned by the mouth. When the crop is half empty, a little rue and butter, or, what is far preferable, a little horse cordial-ball may be given: thus the crop may be stimulated to contract upon its contents, and the work of digestion may again go on well.

When this mode of relief has been fairly tried, and none of the contents of the crop can be returned without violence, and that must never be resorted to, the crop itself may be opened. It is an insensible



kind of stomach or reservoir, like the paunch of the ox, and will bear considerable injury without serious consequences. A little slit may be made into it near the top; the contents may then be pressed out, and if the edges of the wound are brought together by one or two stitches, they will readily unite: the fowl should be caged and kept on somewhat soft food for a few days, and all will presently be well. The obstruction, however, is frequently lower down: it is in the bowels, like the constipation of other animals, and must be treated in the same manner, except that the costiveness of the fowl may generally be conquered by food alone. Dry corn must be withheld, and bran or pollard mixed with a little hot greasy liquor should be given to the fowl. In the majority of cases this will be enough; but if the obstruction should continue, a little sulphur may be added; and, that failing, five grains of the extract of colocynth with a grain of blue pill may be given, and repeated every twelve hours until the desired effect is produced.

CHIPPING.

This is a singular and a fatal disease among chickens of three weeks or a month old. Their feathers begin to stare, and stick out in every direction; the bird creeps into a corner, and there it sits, all of a heap, uttering a short and melancholy *chirp*, whence, perhaps, the corruption of the word, chipping. It can scarcely be induced to move or to eat; the rapidity with which it loses flesh is almost incredible; it con-

tinues the same unvaried cry, and sometimes in two or three days, or at other times the process occupying a week or more, the bird pines away and dies.

This is evidently a disease of the digestive organs: it belongs to the stomach or the bowels, and is generally caused by some food that disagrees with the chicken. Occasionally it proceeds from exposure to cold and wet; for these little beings are very easily affected by atmospheric changes, and a little neglect during one or two days will lay the foundation for this and several other fatal complaints.

The first thing to be done is to remove the birds to a warm and comfortable place; if they appear to be very ill, they should be put into wool or flannel; some good thick gruel should then be made, to which may be added a fourth part of the following mixture—one ounce of castor oil and a quarter of an ounce of syrup of ginger. The chicken should be forced with this in very small doses, so that it shall get no more than a tea-spoonful of the mixture in the course of the day. On a bright, sunshiny day, the chicken will get more good from the warmth of the sun than from any heat artificially applied. Very few, however, who are once seized with this chipping, recover, unless they are attended to in time, and carefully nursed. Split grits will constitute the best food when the bird begins to recover, and all slack and watery food, whether consisting of soaked bread or potatoes, should be avoided. These are improper for chickens at all times: they are pernicious to them now. If the weather is cold, they must be very carefully nursed, for there is not a disease of the fowl

which is not aggravated, if it is not occasionally caused, by damp and cold.

BLINDNESS.

This is a disease of not unfrequent occurrence; it is generally connected with the *roup*, but sometimes it is the result of pure inflammation of the eye. There is cloudiness of the eye, or ulceration of it or of the lid, or sometimes enlargement not only of the lid, but of the eye itself. If it is connected with the *roup*, that disease must be principally attacked; and as the fowl recovers from the *roup*, the eyes will usually get well. If the eyes alone are affected, they must be frequently fomented with warm water; and after each fomentation, a few drops of very diluted laudanum should be introduced between the lids. The usual proportions should be a tea-spoonful of laudanum to a couple of ounces of water.

Dependent, however, as this disease generally is on other complaints, it is often surprising how soon the eyes will clear up if the simplest means are adopted. When the eyes have been closed up with mucous matter, and the chicken could scarcely see at all, or was apparently blind, and when nothing more is done than to clean the house out well, and to remove it to a little warmer, but yet an airy place, and to give a few split grits; two or three days will scarcely pass ere the fowl can see as well as ever.

VERMIN.

These are often exceedingly annoying to the poultry, and materially prevent their growing and

fattening. They are usually to be traced to evident neglect in the management of the poultry-yard. The fowls are half-starved, or the place is all over filth, or there is no dry corner with plenty of dust or ashes in which the birds may roll themselves. It is difficult to contrive any application that can be used with safety for the destruction of the vermin. The only remedies are good food and cleanliness; and when the causes which encourage the multiplication of the vermin are removed, the fowls will take care to keep them under by diligently picking them out. No poultry-yard should be without a corner for dust and ashes. There is also a caution which should be deeply impressed on the farmer, that his poultry, especially if they are not well fed, should not be encouraged about the stable, for the vermin of the fowls are easily communicated to the horses, and produce an itching worse than any mange.

WOUNDS.

These arise principally from fighting. The young birds will not be quiet until they have ascertained which is the master. This is not easily settled, for they will often fight on until the head is sadly sore and swelled, and they are perfectly blinded. After the head has been carefully washed with warm water, in order to get rid of any dirt or gravel, the Healing Ointment recommended for cattle (Recipe 11, p. 62) will be the best application. If the swelling should be very considerable, a few drops of laudanum may be added to a tea-cupful of warm water, and the

head well bathed with it two or three times in the day; the ointment not being applied until the enlargement has subsided. Sometimes a considerable quantity of fungus will sprout from the sore heads, which must be got rid of before the wounds will heal. The most effectual application for this, and that which will give the birds least pain, is burnt alum rubbed to a fine powder, and mixed with honey in the proportion of two drachms of the former to one ounce of the latter. A little of this liniment should be smeared over the fungus twice every day until it is subdued, and then the healing ointment should be applied in order to complete the cure.

MEGRIMS, OR GIDDINESS.

Many promising chickens are lost in this complaint. Without any kind of warning they fall, roll on their backs, and struggle for a minute or two, when the fit goes off, and they rise stupid and giddy, and slowly return to their food. One fit having occurred is soon followed by others, each more violent than the preceding, until at length the little animal staggers about, half unconscious, refusing to eat, and rapidly wasting, and in the course of two or three days it dies in convulsions. In some cases the megrims occur when the fowl is poor and half-starved; but then the food has been improper: it has been watery, or disposed to fermentation, and diarrhoea has followed, and the fits have been the consequence of intestinal irritation. Sometimes, and without any assignable cause, young fowls will be

attacked by fits. They will, however, soon pass over, and the birds will perfectly recover; but as a general rule, the disposition to megrims or fits must be stopped as soon as possible. Castor oil and syrup of ginger, already recommended, will constitute a very good medicine, but it will be improved if a quarter of an ounce of the syrup of white poppies is added to it. After recovery from megrims, the fowl should be placed for some days in a comfortable room, or in a large coop, where it may obtain some degree of exercise.

DISEASES OF THE FEET.

From being cut with gravel or glass, and much oftener from living in filth, the feet of poultry become sadly diseased. Thickening of the skin about the joints is first observed; and that increases, and becomes scaly and scurfy, and hardens, and at length is changed to perfect bone, and the joint becomes stiff. Ulcerations now commence, which rapidly enlarge, and a kind of canker spreads over the foot. The only remedy is to pare off the scurfy or callous substance to the very base, even although it should reach to the bone, and then lightly to touch the exposed surface with butyr of antimony or lunar caustic, repeating the caustic as often as there is any fresh sprouting, and removing the fowl to a place which is less wet and more cleanly.

DISEASES OF RABBITS.

THESE depend altogether upon management. If a fair quantity of good clover hay, with a little corn, or perhaps some brewer's grains, quite sweet, is daily given, the rabbits will take no harm, although they are half-fed with the (not too stale) refuse of the garden; provided, however, cabbages do not form too great a proportion of the green meat: for too much cabbage or putrid vegetables will produce *inflamed liver*, and the animals will become dropsied or *pot-bellied*. Watery food seems to produce almost the same effect upon them which wet pastures do on sheep, although clean water is not, as is usually imagined, injurious to rabbits. When green meat or fresh grains cannot be obtained, it should always be allowed. If the liver has become inflamed, medicine will be thrown away. Good dry food, hay, corn, and bran, are the only remedies when the rabbit gets pot-bellied, and at the same time falls away in flesh; and even that will not avail if the disease has proceeded too far. There are plenty of weeds in almost every hedge, and particularly the dandelion and the sow-thistle, on which rabbits might be more than half-fed without much expense, and with no danger.

When scurfiness or mange accompanies the enlargement of the belly, the sooner the animal is destroyed the better; for there is no hope of a cure, and this mangy eruption soon becomes contagious.

Rabbits are subject to a highly infectious disease called the *sniffles*. It is a constant sneezing, with a profuse discharge of mucus from the nose. It will continue during some weeks without seeming materially to affect the health of the animal, and then, all at once, the animal will speedily lose flesh, and pine away, and die. It is produced by keeping too many rabbits in a close, ill-ventilated place; and especially if it is damp, and they are badly fed and rarely cleaned. If a sniffled rabbit once appear in the hutches, the majority of their inhabitants will probably be destroyed. The best course that can be adopted is to kill every one that seems to be in the least degree infected; and then to wash the hutches well with chloride of lime, and to have a new stock. If any thing is done, one grain of powdered blue vitriol may be given, morning and evening, in the bran or in a mash.

A LIST OF DRUGS

FOR THE USE OF THE FARMER AND COUNTRY VETERINARY PRACTITIONER ; WITH THE PURPOSES TO WHICH THEY ARE APPLIED, AND THEIR DOSES FOR CATTLE, SHEEP, AND SWINE.

Aconite. The tincture is an excellent agent for controlling the heart's action. It must, however, be administered in small doses, often repeated : from half a drachm to a drachm for an ox, one-sixth part for a large sheep.

Arnica. The tincture, mixed with water, is an admirable lotion for bruises and for lacerated wounds, one ounce of the tincture being added to a quart of water.

Egyptiacum. A mixture of verdigris, vinegar, and honey, sometimes used for foul in the foot in cattle, when there is not any fungus, or proud flesh, to require the use of the butyr of antimony.

Æthiop's Mineral. Occasionally used as an alterative in mangy affections.

Aloes. Rarely wanted in cattle, or sheep, or swine medicine, except in the form of tincture, made by infusing two ounces of the powder in a quart of proof spirit, which is a very excellent balsamic application for wounds, both recent and old. The addition of half an ounce of powdered myrrh will materially improve the tincture. As a purgative, aloes are very uncertain, and often irritating. Many young beasts have been destroyed by an over-dose of aloes.

Alum. An ingredient in alum-whey for the cure of diarrhœa in cattle ; not so useful an astringent, however, as the catechu. Burnt alum is applied with good effect to repress some fungous growths.

Anise-seed. The powder makes a good carminative, but far inferior to ginger or caraway. The oil is used to give a pleasant scent to a great many cattle medicines, but communicates to them no very active property.

Antimonial Powder. One of the best fever medicines for swine, in union with digitalis and nitre. The dose is about six grains. It is very nearly the same as James's Powder, and is quite as useful.

Arsenic. Used only in the composition of a wash for the scab in sheep, but not always safe.

Basilicon (a name given to resin ointment). A very useful digestive ointment when a wound is not disposed to heal readily.

Blue Vitriol is a mild caustic powder, and may be lightly sprinkled over sores that will not readily heal. A solution of sulphate of copper, in the proportion of a drachm to an ounce of water, is a very good lotion either for recent wounds or old sores. A drachm of the blue vitriol, rubbed with and dissolved in a little gruel, is sometimes very useful in long-continued discharge from the nostrils of the ox. In doses of one grain it has sometimes removed the snuffles in rabbits.

Bole Armenian. A mild astringent, sometimes used with advantage, either as a powder, or made into an ointment, for slight cases.

Burgundy Pitch. An ingredient in the charges for old strains and lameness; it is, however, scarcely better than common pitch.

Butyr, or Chloride, of Antimony. One of the best caustics for foot-rot, foul in the foot, cankered feet, and for almost every purpose. It is very manageable, and the change of colour in the part accurately shows how far it has extended, and what effect it has produced.

Calamine. The carbonate of zinc, which forms the basis of the healing ointment.

Calomel. The submuriate of mercury, rarely used in cattle, except in suspected disease of the liver. In jaundice it is given in combination with opium. It is a medicine that does not seem generally to agree well with cattle. For pigs it is a useful purge, when they cannot be induced to take Epsom salts in their swill or milk, because it lies in a small compass, and has no taste.

Camphor is used in cattle practice as entering into the composition of a very useful embrocation for rheumatism, and old swellings and sprains. The oil of camphor is a good application for rheumatism connected with old sprains. Internally it is also employed as a sedative and stimulant.

Canella Bark. A tonic and aromatic, but not equal to the gentian and ginger combined.

Cantharides, or Spanish Flies. These should be the basis of most

blisters. Corrosive sublimate and euphorbium, and all the cruel caustics of the farrier, may be laid aside if the flies are good, and a sufficient quantity of them allowed. If six pounds and a half of lard and one pound and a half of resin are melted together, and one pound of the Spanish flies, finely powdered, are stirred in when the mixture begins to cool, it will form a good strong blister. A pound of powdered flies, infused in a gallon of spirit of wine, will make a strong liquid blister. One pound of flies boiled in a gallon of olive oil, and then strained, will form a good general blister, but hardly of the strength required by cattle. This may be lowered as required with two or three or four times the quantity of spermaceti or olive oil, so as to form a sweating or stimulating liniment.

Caraway-seeds. These, next to ginger and capsicums, are the best aromatic we have; in some respects they are even preferable to the others, for they are not so stimulating. An ounce of them added to a pound of Epsom salts will prevent griping, and render the medicine more certain in its operation. The farmer or the veterinary surgeon, however, should be careful of whom he buys his caraway-powder, for in too many instances the oil is extracted from the seeds before they are pulverized, and the powder is comparatively worthless.

Carrots. These are inserted in the list of drugs, because they constitute the best medicine that can be given, either when the animal is slowly recovering from severe illness, or when he has much cough or considerable humour or foulness about him.

Castor Oil. A safe and useful purgative for cattle, sheep, and swine, when there is much obstruction, and the bowels are in an irritable state. It is, however, comparatively a dear one, and in the majority of cases, linseed oil would do quite as well. It may, however, be truly affirmed that the cases are very rare in which the Epsom salts or sulphur may not be administered with equal advantage, and without the possibility of danger.

Catechu. A useful astringent in cases of diarrhœa, and united with chalk, opium, and ginger. The dose for cattle is two drachms, and proportionably less for sheep and swine. It should be finely powdered, and administered in thick gruel.

Chalk. There are few cases of illness in any of the animals concerning the diseases of which this book treats, in which there is not considerable acidity in the stomach or bowels. Chalk is useful as being an alkali, and combining with the acid, and neutralizing it. It may form a part of the cordial and astringent medicine of young animals. From half an ounce to an ounce will be a dose for a cow;

a drachm will suffice for a sheep or hog. It should generally be accompanied by opium, and always by caraways or ginger.

Charcoal is an excellent ingredient in every poultice applied to a foul and stinking ulcer, and particularly in grease, and foul in the foot, and foot-root.

Chloride of Lime, very lately introduced into veterinary practice, but valuable as a disinfectant. In the malignant diseases of cattle it is exceedingly useful as a lotion, and almost equally so given internally when the disease is beginning to assume a putrid character; but its great value consists in its freeing the stable and the cow-house and the harness from infection of every kind. If they are thoroughly washed and scoured with it, there is, generally, an end to all danger. The farmer and the veterinary surgeon will soon appreciate its value in this respect, and never be without it. It is best kept in the form of powder in a closed jar. Half an ounce of it dissolved in a quart of water will give sufficient efficacy to the fluid as a wash; one drachm to the same quantity of water will be sufficient when it is given as a drink.

Chloride of Zinc. Invaluable as a disinfectant, somewhat more expensive than chloride of lime, but infinitely more powerful. A drachm renders a quart of water active as a purifying agent. From two scruples to a drachm to a pint of water forms an excellent lotion for wounds, open joints, and broken knees. Of the mildest lotion, from a quarter of a pint to a pint may be given as a drink to an ox, and half that quantity to a sheep. It has the property of destroying odours, healing wounds, cleansing ulcers, and of never permitting fungus to sprout.

Chloroform acts admirably when blended with oil, and given either in typhoid diseases, or with a greater portion of oil as a laxative.

Clyster. The use of the clyster is not sufficiently estimated in securing and hastening the operation of purgative medicine, and rendering it unnecessary to give any great or dangerous dose of that medicine. Epsom salts or common salt, dissolved in thin gruel, or even in warm water, will constitute an excellent clyster: the quantity may be half a pound of either. Read's pump is a convenient instrument for the administration of clysters.

Colombo. A good stomachic and tonic, but not equal to the gentian.

Copper, Sulphate of. Commonly called blue vitrol, and employed internally as a tonic, in doses of one to two drachms, and externally as a mild caustic.

Cordials. Not only common use, but something in the constitution of cattle and sheep, have long associated a certain portion of cordial medicine with almost every purgative administered to these animals, Ginger and caraways are the best. The common *cordial powder* of the druggist should never be bought or used: it is composed of the very sweepings of the shop.

Corrosive Sublimate. This forms the basis of wash for mange, scab, &c. It is also a good caustic, but almost superseded by the butyr of antimony. It is sometimes used, exceedingly diluted, to remove cloudiness from the eyes.

Croton Tiglii. A powerful purgative, which may be given to cattle in doses of from ten grains to thirty of the farina or powder of the seed, or ten to thirty drops of the oil. It should, however, be given with caution, and only where milder purgatives are insufficient.

Digitalis, or Common Fox-glove. The powdered leaf, dried in the dark, and preserved in closed opaque bottles, is used. Its immediate effect is the lowering of the action of the heart, and it speedily produces a very singular intermittent pulse. It is valuable in all cases of fever, and, given in doses of from half a drachm to a drachm, it can rarely do harm. Its secondary effect, and not often distinctly marked, is that of a diuretic. An infusion of it, or the diluted tincture, is very useful in abating acute inflammation of the eyes.

Drinks and Drenches. All medicines for cattle and sheep must be administered in the form of a drink. A ball will enter the rumen or paunch, and be returned to the mouth in the act of rumination. This has been sufficiently explained in the introductory chapter.

Emetic Tartar. This, on account of its nauseant property, and also from its determining to the skin and increasing the insensible perspiration, is a valuable medicine for cattle and sheep in fever and in all affections of the chest. The dose is from half a drachm to a drachm for cattle, and one-third of that quantity for sheep. On the stomach of swine it acts as an emetic; and in combination with calomel, forms a very good one.

Epsom Salts (Sulphate of Magnesia). This is a valuable purgative. It is always effectual, except in the obstinate costiveness that attends fever, and it is generally safe. The average dose is about a pound for cattle, two ounces for sheep, and one ounce for swine. There is this convenient circumstance about it, that it will dissolve in its own weight of warm water.

Ether (Sulphuric). An excellent adjunct to Epsom salts, as it

permits the bowels to be opened without debilitating the body. It also is, especially when joined with its own bulk of laudanum, an admirable anti-spasmodic. It has also febrifuge properties of a peculiar and a very high character, for while cooling the system it does not undermine the strength. It is likewise given with good effect in typhoid and irritative fevers. It is also spoken enthusiastically of as a stimulant, but the Editor has yet to be convinced it has any virtue of this description. It taints the flesh of the animal to which it is administered. Dose for the ox, one ounce to as much as the animal can swallow, dissolved in water; to a sheep, half an ounce.

Ether (Spirits of Nitre), is of little value save for the spirits which form its major portion. However, on this account it is sometimes given as a stimulant. Dose, from one to six ounces to an ox, from one to two for a sheep. It likewise has some small diuretic action.

Extract of Lead, or Goulard's Extract. Some practitioners use it, lowered with sixteen or twenty times its quantity of water, for contusions and sprains. It is used in a more diluted form (one drachm to a pint) as an application for inflamed eyes, or to any inflamed surface.

Fomentations. If the good effect of these was sufficiently known, many of the strange and injurious applications to wounds, and sprains and bruises, would be laid aside.

Gentian. The best of the vegetable tonics. It is stomachic and strengthening, without increasing the action of the heart, or endangering the return of fever.

Ginger. A good aromatic, which is in a manner superseding all the rest.

Glauber's Salts (Sulphate of Soda) may be used when the Epsom salts cannot be got at, but they are not so certain: they are apt to gripe, and they require three times the quantity of fluid in order to dissolve them. When Glauber's salts are long exposed to the air, they fall into a powder: half the quantity only of that powder should be used. The medium dose of the crystal is a pound.

Guaiacum. A gum resin, getting much out of use, and employed only in rheumatism or chest affections.

Hartshorn. Used chiefly in the rheumatic embrocation, and as a useful application to the part when the animal has been bitten by a viper. The spirits of hartshorn, applied upon a cloth and well covered over, forms a powerful blister in cases demanding haste. It, however, requires watching, or it will dissolve the skin.

Hellebore (black). An excellent addition to the cord or rope in

setons. It produces as much inflammation and swelling as could be desired. This is of some importance, when a blister can so seldom be made to act on the thick and insensible skin of the ox. The lock-root makes a better seton than the cord or rope, on account of its stimulating property, but it is inferior to the hellebore.

Hellebore (white). Sometimes given as a sedative in inflammation of the lungs in cattle. The dose is about a scruple.

Honey is with many persons a favourite substance in the composition of drenches, &c.

Iodine. This mineral has been very lately introduced into cattle practice, and is a very efficient one in lessening or removing the tumours to which cattle are so subject. One drachm is given daily in gruel, while an ointment, composed of the iodide of potash, and lard, is well rubbed into the tumour.

Iodide of Potassium is in much use, mixed with lard, to form an ointment for swelling of, or tumours upon the gland; it being less unpleasant, more soluble, and quite as effective, as pure iodine, is frequently substituted for the last-named drug.

Ipecacuanha. This is mostly employed in its combination with opium and sulphate of potash, under the name of Dover's powder, in the rheumatism of cattle: the dose is one to two drachms.

Iron. Sulphate of iron, or green vitriol, is a useful tonic given with gentian, in doses of two to six drachms. Tartrate of iron is also a tonic, and may be used in the same or stronger doses.

Kino. An astringent, much dearer than the catechu, but not more effective.

Lead. Both the white and the red lead are used when sheep are struck with the fly.

Linseed. The infusion of linseed (linseed tea) is a useful drink, either mixed with the gruel, or given alternately with gruel in severe catarrh and sore throat; and *linseed meal* forms the best of all poultices. *Linseed oil* is as good a purgative as castor oil, and a great deal cheaper.

Liquorice. The farriers and the farmers are fond of it, and therefore it is sometimes used. It is at least harmless; perhaps it is slightly expectorant.

Mashes. These are mostly used for the food of the sick animal. They may be made of bran, or bran and linseed, and occasionally with a little oats or malt. More care should be taken in preparing them in a cleanly way, and free from smoke, than the cow-herd will always condescend to bestow.

Mercurial Ointment. The diluted mercurial ointment is an appli-

cation for the scab ; there is, however, danger of salivation ; and all the precautions should be adopted which are recommended under the various cutaneous affections, for the cure of which it is applied.

Myrrh. A valuable addition to the tincture of aloes, making it more active, as well as balsamic.

Nitrate of Silver. The best of all caustics when animals are bitten by rabid dogs. It should be sharpened to a point, and then may be brought into contact with every part of the wound.

Nitre. An excellent ingredient in the fever-drink. It is cooling and diuretic. The dose will vary from two to four drachms for cattle, and from one scruple to one drachm for sheep.

Nitrated Ointment of Quicksilver. Occasionally used, considerably diluted with lard, for foul ulcers, and for ulceration about the eyelids.

Oak Bark. A useful astringent in combination with catechu, chalk, and opium, in cases of diarrhoea. A decoction may be applied with advantage to old unhealthy wounds, from which there is a profuse and obstinate discharge.

Opium. This is a necessary ingredient in all astringent medicines. It allays irritation ; and producing this effect, it is often the sheet-anchor of the practitioner. It is given internally in cases of tetanus. Externally applied, it forms an ingredient in the rheumatic embrocation, and the diluted tincture of it (laudanum) affords great relief in inflammation.

Origanum. The oil of origanum is used as a stimulant, and because it possesses a pleasant smell, and thus conceals other disagreeable ingredients.

Peppermint. The distilled water of peppermint is a very convenient menstruum for the exhibition of astringent and carminative medicines. The cordial drink of sheep and calves should not be given without it. The essential oil is also a valuable warming adjunct to several recipes.

Poultices. Those composed of linseed meal are the best. Bran poultices soon become dry and heating. Carrots and turnips make desirable soothing poultices, and especially where there is much unpleasant smell. If the smell is very offensive, a little charcoal or chloride of lime should be added. Nothing stronger than common turpentine should be admitted into any poultice, and that only in a small quantity, and when the ulcer is foul.

Resin is used in order to give consistence to some ointments, as well as to make them slightly stimulant. The powdered resin is diuretic, and is the best form under which turpentine can be used for this purpose.

Rye, Ergot of, or Spurred Rye, has a peculiar effect on the womb, stimulating it to contract. The dose for a cow is two drachms in decoction, given in gruel, and repeated every twenty minutes. It is thus employed only when the natural pains subside in difficult labour. It should, however, be used with great caution.

Sal Ammoniac. Occasionally used in solution as an embrocation.

Salt. The common kitchen salt is a most useful article. It forms a good purge in doses of a pound; but it should not be used for this purpose when there is any degree of fever, for it has also tonic and stomachic properties. It is on account of these properties that it is so useful mixed with the food of all animals. It is said to be a preservative against the rot. That it has this effect to a considerable extent is certain, and it is the basis of every medicine that has power to delay the progress of the rot, or, when attacked in an early stage, to cure it.

Squills. Expectorant, but possessing no great power.

Sulphur. This is a mild aperient. It is preferable to the other purgatives when it is intended to have an alterative effect, but it is not so desirable in cases of fever. The dose for the ox is about eight ounces. It is the basis of most of the ointments that have any effect in the cure of mange. The flour of sulphur should be used, and not the *black sulphur*, which is the mere refuse, and often impregnated with arsenic.

Tar is useful in digestive and cleansing ointments. It is an almost invariable ingredient in every ointment that is used about the feet. For the bruised feet of working oxen, a mixture of tar and grease, and a little pitch, is a very good application or stopping.

Terebinthinate of Cantharides. This preparation is made by digesting, for a fortnight, one pound of Spanish flies in six pints of turpentine. It is used for setons after the following manner:—A piece of tape is painted over with the terebinthinate, and then left to dry, which it quickly does. It is then covered again, and this process is repeated till it is thought the tape is sufficiently covered. The tapes, when dry, are placed in stoppered bottles, and thus guarded may be kept for an indefinite time.

Tobacco. A decoction of it has been used for the cure of scab; but it must be applied with caution, and is superseded by better things.

Turpentine. Common turpentine is an ingredient in digestive ointment. The Venice turpentine is a little, and yet but scarcely superior to it. Oil or spirit of turpentine is used in the composition of "Liquid Blister." It is an ingredient in the rheumatic

embrocation, and is by some given internally in colic, and for the destruction of worms in the bronchial passages of young cattle.

Verdigris. A useful ingredient in the caustic astringent powder for the foot rot.

Vinegar is useful in embrocations, but its employment is very limited in cattle practice.

Vitriol, Oil of (Sulphuric Acid). Occasionally given as a tonic, very much diluted; but its use as a caustic is superseded by the butyr of antimony.

White Vitriol (Sulphate of Zinc). A solution of it is sometimes an efficacious wash for indolent wounds and ulcers, and for ulcers of the feet particularly. A very weak solution of it is used in inflammation of the eyes, when the inflammatory stage has passed over, and weakness, or cloudiness, or some ulceration, remains.

Wax is used simply to give consistence to various ointments.



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