EVERY MAN
YN CATTLE DOCTOR;

CONTAINING

ES, SYMPTOMS, AND TREATMENT OF

ALL THE DISEASES

OF

EN, COWS, AND SHEEP.

BY

FRANCIS CLATER.

THE NINTH EDITION,

NUMEROUS ADDITIONS AND CORRECTIONS,

BY

HIS SONS, SAMUEL AND JOHN CLATER;

INCLUDING

A SHORT TREATISE

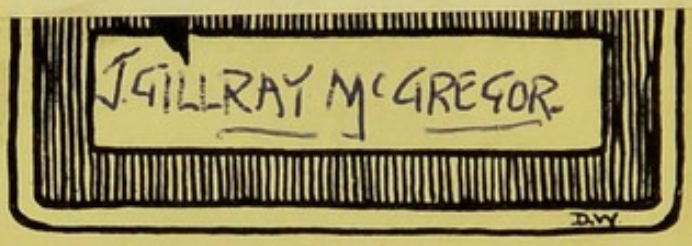
THE ANATOMY AND PHYSIOLOGY OF

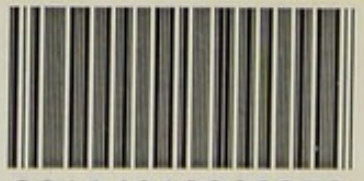
NEAT CATTLE.

LONDON.

PRINTED FOR BALDWIN, CRADOCK, AND JOY;

SOLD BY EVERY BOOKSELLER IN THE UNITED KINGDOM.





Quantity of Blood generally taken
from a Sheep is from 8 oz to a Pint,
or a Pint and a half, and sometimes
a quart—
3 to 4 oz is generally sufficient
to be taken from a Lamb P 283

Drawn & Engraved on Steel by J. Sharp

Frontispiece to Clater's Cattle Doctor

Robt. Wm. Mackay

EVERY MAN
HIS OWN CATTLE DOCTOR;

CONTAINING THE

CAUSES, SYMPTOMS, AND TREATMENT

OF ALL THE DISEASES

INCIDENT TO

OXEN, COWS, AND SHEEP.

BY FRANCIS CLATER,

(LATE OF RETFORD)

CHEMIST AND DRUGGIST; AND AUTHOR OF "EVERY MAN HIS OWN FARRIER."

THE SIXTH EDITION,

WITH NUMEROUS ADDITIONS AND CORRECTIONS,

BY

HIS SONS, SAMUEL AND JOHN CLATER;

INCLUDING

A SHORT TREATISE

ON THE ANATOMY AND PHYSIOLOGY OF

NEAT CATTLE.

LONDON.

PRINTED FOR BALDWIN, CRADOCK, AND JOY.

1825.

C. Baldwin, Printer.
New Bridge-street, London,

PREFACE

TO THE

FIRST EDITION.

THE following Treatise on the DISEASES OF NEAT CATTLE AND SHEEP, is not the production of a few years' experience, but the result of *upwards of forty years extensive practice.* The author's motives for publishing a Treatise on the disorders incident to these valuable animals are briefly as follow:

I. They have hitherto been almost entirely neglected; or have otherwise been considered as beneath the notice of medical gentlemen; whose abilities and opportunities certainly qualify them to convey better information than that, which the author of the following sheets has been able to produce.

II. In *most* of the different publications re-

lative to *Neat Cattle and Sheep*, which the author has had an opportunity of inspecting, those parts, which are appropriated to medical treatment have very far exceeded the requisite bounds in the quantity of the doses prescribed; and thus, in all probability, the strength of many valuable beasts has been materally weakened, even although their lives should not have been shortened.

For instance, in the works just adverted to, from *three* to *six ounces* of Glauber's Salts are prescribed for full-sized animals, whereas the author has always found that a less quantity than one pound would never purge full grown beasts, when in health; in fevers they require considerably more.

III. It will likewise be seen, that most of the drinks, directed in the present volume, are so adjusted in point of quantity, as to produce the desired effect, when properly administered. The practitioner is frequently cautioned in different parts of this work, to see that all articles containing an essential oil, such as seeds of every kind, and many of the roots, *be fresh pulverized*

at the time of using; for, if kept in a powdered state, they in a short time lose all their medicinal virtue. Horse or Cattle powders, bought of wholesale dealers, are mostly adulterated, and may be purchased at one half the price at which the seeds or roots of the same kind are sold.

It is of the greatest importance to have genuine drugs, in the cure of the diseases peculiar to Neat Cattle, as well as in those incident to the human species. These animals do not require seeds and roots to be reduced into so fine a powder, as others that do not ruminate or chew their cud; as they have different stomachs for medicine, as well as food to pass through, which are sufficient to extract the virtues of most vegetables.

In consequence of the repeated applications of great number of gentlemen farmers and graziers, in the neighbourhood of Retford, and in Linconshire, the author was prevailed upon to undertake the work now offered to the public; if it be found to give adequate instruction to these gentlemen, so as to enable them to prevent, as well as cure, those

maladies to which Neat Cattle and Sheep are liable, his purpose will have been fully accomplished. It only remained therefore to state what has been attempted in the present Treatise.

I. A concise description of every disease has been given, together with a particular method of treating the same through every stage.

II. The proper method of compounding the different medicines is also detailed, detecting their qualities and regulating their doses, suitable to every age and size.

III. A number of valuable Recipes are here made known, such as have never before been published. The author is fully aware that the generality of Cow-doctors or Cow-leeches, will complain that many of the recipes are too expensive, and not likely to leave much profit. Be it, however, observed, that he has *not* considered the interest of *these persons*, but that of the owners, and the lives of the animals.

Cattle of every description are valuable in this

island, more so now, indeed, than formerly.—If a poor man, for instance, lose a cow, it generally ruins him; when at the same time, if a drink or two, at a shilling or eighteen-pence each, had been given her, she might have been saved, provided the medicine were administered according to the directions laid down in this Treatise. It is the interest of every Grazier to make himself acquainted with the different diseases of Cattle, their symptoms and different methods of treatment, and if this were more generally the case, he would rarely, if ever, have occasion to employ a Cow-leech. Medicines, when wrongly applied, or not given is a sufficient quantity, increase the malignity of most diseases, while too large a dose may endanger the animal's life. By strict attention to the following rules, most persons will be enabled to act with propriety and judgment.

Particular diseases, requiring more than ordinary care, are discussed at considerable length. Such are the downfall in the Udder of Cows, Red Water, Milk Fever, Inflammatory Complaints, &c. A small part of this work is appropriated to the

description of the different diseases incident to young Calves, together with the medicines suitable to each; and towards the close of this volume, there will be found a short Treatise on Sheep, containing the different diseases, their causes, symptoms, and methods of cure. Many of the maladies, which have been deemed incurable in Sheep, the author has treated with uncommon success.

It is now upwards of thirty year since he first began to prescribe for these animals. That fatal disease, the ROT, has been successfully treated *in its wrong stage*, as well as many others, to the great satisfaction of the respective owners. All superfluous matters are rigorously omitted, and nothing but the nature and symptoms of every disease clearly pointed out, together with its proper cure; so that persons of small abilities may, in a short time, acquire sufficient knowledge to practise therein. The author is conscious that the stile and execution of the following treatise may stand in need of every allowance from the candid reader; but if, on the whole, it be found to

contain more profitable information to Gentlemen Farmers, Graziers, and Cow-leeches, than any other work of similar or greater extent, he will be sufficiently compensated in the recollection, that his labours have not been altogether fruitless.

As NEAT CATTLE certainly constitute an essential part of our national wealth, when we consider all the various purposes for which they are employed, this Preface may properly close with a few observations, on their different varieties, and on the selection of Stock for farms.

The most common names in use, which are given to these animals, are those of *Neat Cattle*, or *Black Cattle*. Under these appellations are included both sexes, as the Ox, Bull, and Cow; their generic characters are as follows:

Cloven footed, with or without horns, horns bending out laterally.

Eight cutting teeth in the lower jaw, and none in the upper.

Skin along the lower side of the neck pendulous.

Rounded horns, with a large space between their basis.

Neat Cattle are called by various other names, as the *Urus*, *Auroch*, (a common name for a bull of the temperate climate) and the *Bison*, or bull, a native of hot countries. The bunch on the shoulders of a Bison is doubtless a natural production, and is very large when the animal is in high condition; on the contrary, when reduced by poverty, it is barely discernible, and by intercopulation with others that bear no such mark, this bunch will in the course of two or three descents be entirely lost.

The all-wise disposer of events has thought it good to reduce all the animal creation under the power and dominion of man. *Neat Cattle*, in particular, may be said to rank foremost in the creation, especially when we consider their great utility, and the wonderful variety of productions these valuable animals afford towards the support and use of mankind. The milk, for instance, which a single cow will yield, in the course of the summer season, or from the time of calving to the time of letting dry, is an amazing quantity; from this are produced butter and cheese, important

articles of human sustenance. There is, in fact, scarcely a part about this useful animal, but what is of infinite use; even the *Blood* is applied to different purposes. Butchers use it for the purpose of feeding swine; the chemist employs it in the preparation of Prussian blue, and in the refining of sugar; and the farmer for manuring his land.

Further, the *Fat* or *Tallow* of Neat Cattle is made into candles. The *Hides* tanned and curried, make leather of the best and strongest kind, from which boots, shoes, and numberless other articles are manufactured. The *Hair* is used to impove the cement used in the walls of our dwelling houses, and the *Horns* are made into combs, handles for knives, drinking vessels, and a great variety of toys of different descriptions. The *Bones* are a cheap substitute for *Ivory*, from which a great number of useful articles are made by mechanics in large manufacturing towns; considerable quantities are in many parts of the kingdom used for manuring land; and lastly, the *Flesh* of this noble animal forms one of the most delicious and substantial dishes at our tables.

The form or construction of these animals varies according to every climate; our present concern, however, is with the native breeds of our own country. A great variety is to be met with in most countries or districts, throughout the kingdom. But it is greatly to be regretted, that farmers in general are so full of self confidence in their own knowledge, as to the respective breeds which are best adapted to their own farms, or at least their pockets; and the prejudices, thus deeply seated, are so difficult to be eradicated. There is, notwithstanding, a considerable number of gentlemen graziers in most counties, who have made great improvements in the breed of *Neat Cattle*, which are much to their credit. Such cattle as are intended to be reared, or brought up for the dairy, or to fatten in the pasture, ought to be bred from cows of a good make and shape, and which also have been got by a bull of the same description. The shape and make of the male are, in most counties, eagerly sought for, and are found to be equally as necessary as the choice of a stallion for mares, or of a tup for ewes. Most persons appear, indeed, to concur in

this one opinion, that a well-formed male is indispensably necessary in the breeding of cattle of all descriptions. When farmers first enter upon a farm they ought to make themselves acquainted with the nature and quality of the soil: whether it be better adapted for breeding and rearing of stock; for keeping a dairy; or for the feeding of stock for the shambles. These considerations ought, at all times to be attentively regarded. It rarely happens that cattle, purchased from *rich lands,* do well on poor soils; but, on the contrary, those taken from poor farms in general thrive well on good land. The choice of *Neat Cattle,* therefore, for the stocking of farms, ought to be regulated according to the nature and quality of the soil.

Again, the Age of *Neat Cattle* (it is highly requisite) should be known by every one, who has any thing to do with them. They, as well as sheep, have no teeth in the upper jaw, the age, therefore, must be determined by those on the *lower jaw,* see p. 9.

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, after 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 at the first is called a *Quey-Calf;* and a *Heifer* till the age of four years; she then takes the name of a cow, which is retained as long as she lives.

As soon as Neat Cattle arrive at the state of maturity, they are called by the appellation of Ox, Bull, and Cow. There is a regular time for gestation amongst the females of different animals; the Cow goes nine months in calf, sometimes a week more or a week less. The Mare goes eleven months; and Sheep five months; the Sow one hundred and twenty days. These may all vary a few days more or less; they should be attended to day and night, about the regular time of parturition, in order that every assistance may be given to the animal which nature may require, that the young may be preserved, and the life of the animal rescued from imminent danger.

EDITORS' PREFACE.

THE Editors of the present Edition consider that some apology may be required of them for the freedom with which they have altered the work of their late lamented father; but many of these alterations had been contemplated, and in part made, by himself; and they were rendered necessary by the improved methods of treating diseased cattle, to which they themselves have also devoted a constant attention.

It appeared to them also that the great increase of education, among the respectable class of persons to whom this work is more particularly addressed, requires that its structure should be somewhat more scientific; and they rejoice that the professional pursuit of one of them, namely the Practice of Medicine, enables him to supply the deficiency for which the author himself expresses

his regret in his preface; by describing in a brief, and, he hopes, intelligible manner, the physiology and anatomy of Neat Cattle—a knowledge essential to those who superintend those valuable animals either in a healthy or a diseased state.

Retford, Oct. 25.

CONTENTS.

Section		Page
	Preface to the first Edition	iii
	Editors' Preface	xv
I.	Introductory Remarks to the Anatomy and Physiology of Neat Cattle	1 to 4
II.	Bones and their Appendages	5
	Of particular Bones	7
	Of the Teeth	8
	Age of Neat Cattle by their Teeth and Horns	9
	The Trunk comprising the Spine, Pelvis, and Chest	10
	Anterior Extremities	12
	Posterior Extremities	13
III.	Of the Hide and Hair	14
IV.	The Flesh	16
V.	The Brain and Nerves	19
VI.	Organs of Circulation	25
VII.	Organs of Respiration	36
VIII.	Organs of Digestion	43
IX.	The Lacteal Absorbents, and Thoracic Duct	54
X.	The Lymphatic Absorbents	56
XI.	The Blood	60
XII.	Secretion	63
XIII.	Perspiration	66
XIV.	The Organs of Urine	67
XV.	The Peritoneum, or Rim of the Belly, and the Cawl	71
XVI.	Organs of Generation	72
XVII.	Of Conception	77
	Of Pregnancy	79
	Nourishment of Fœtal Calf	81
	Structure of the Membranous Bag, &c.	84
	Of the Udder	85

ON THE DISEASES OF HORNED CATTLE.

Chapter		Page
I.	Inflammation	87
II.	Bleeding, its Utility, and when necessary	92
III.	On the Utility of Purging Medicines, in most Diseases incident to Horned Cattle	96
IV.	On Setoning	100
V.	Fellon, Catarrh, Epidemic Cold, or Influenza,	103
VI.	Rheumatism, or Joint Fellon	109
VII.	Inflammation of the Lungs	112
VIII.	Inflammation of the Liver	116
IX.	The Yellows, or Jaundice	119
X.	Indigestion	122
XI.	Inflammation of the Brain	125
XII.	Staggers, Vertigo, or Swimming in the Head	129
XIII.	Inflammation of the Bowels, with Costiveness	133
XIV.	Dysentry, Slimy Flux, or Scouring Rot	135
XV.	Diarrhæa or looseness	139
XVI.	Inflammation of the Kidneys, or Inflammatory Red Water	143
XVII.	Red Water and Black Water	145
XVIII.	The Downfall in the Udder of Cows, (known also by the name of Sore Udders)	152
XIX.	The Milk Fever	158
XX.	Blain, or Fever with Swelling	164
XXI.	Black-Leg, Quarter-Evil, or Black-Quarter.	166
XXII.	Murrain, or the Pestilential Fever	173
XXIII.	Inflammation of the Bladder	186
XXIV.	Inflammation of the Shape	187
XXV.	Inflammation of the Eye	189
XXVI.	Cancer of the Eye	191
XXVII.	Fungous Excrescence of the Eye	193
XXVIII.	Fog Sickness, Hoven, or Blown	194
XXIX.	The Hoose, or Cough	201
XXX.	Consumptive Hoose	203
XXXI.	Joint Evil	205

Chapter Page
XXXII. To extract the Placentulæ, or the Cleansing when retained after calving..... 207
XXXIII. How to extract a Calf, when it presents itself in a wrong position..... 209
XXXIV. The Falling-down of the Calf-bed..... 214
XXXV. Cows that slink or slip their Calves..... 218
XXXVI. Locked Jaw..... 221
XXXVII. Poison..... 224
XXXVIII. The Bite of Venomous Reptiles..... 226
XXXIX. Wounds..... 228
XL. Wounds of the Joints..... 235
XLI. Strains and Bruises..... 237
XLII. Cancerous Ulcers..... 240
XLIII. The Foul in the Foot..... 244
XLIV. To dry a Cow of her Milk..... 246
XLV. Angle Berries..... 249
XLVI. Sore Teats..... 250
XLII. The Mange..... 251
XLVIII. Lice in Cattle..... 253
XLIX. Warbles..... 255
L. To make a Cow take the Bull..... 256
LI. Bull Burnt..... 257
LII. The Cow Pox..... 259
LIII. Wood-Evil, Moor-Ill, Clue-bound, and Pantas..... 262
LIV. On Diseases incident to young Calves, and the method of treating Cows after Calving 263
LV. The Method of treating the Navel-String after Extraction..... 266
LVI. Diarrhæa, or Dysentery..... 268
LVII. Costiveness in young Calves..... 270
LVIII. The Hoose in Calves..... 274
LIX. Canker in the Mouth..... 276
LX. Observations on the proper Method of dividing the different Drinks mentioned in this Treatise, suitable for Horned Cattle, from the Age of One Year or upwards..... 277

ON THE DISEASES OF SHEEP.

Section		Page
I.	The Lambing Season	284
II.	On the Diseases of young Lambs	288
III.	Red Water	294
IV.	Resp	296
V.	Sturdy, Giddiness, or Water in the Head	298
VI.	Catarrh, or Cold	300
VII.	Goggles	302
VIII.	The Yellows, or Jaundice	304
IX.	Blown, or Blast	305
X.	The Rot	307
XI.	The Scab	314
XII.	Sheep Lice and Ticks	318
XIII.	Inflammation in the Udder	321
XIV.	The Foot Halt and Foot Root	323
XV.	The Scour, or the Diarrhæa	326
XVI.	To prevent the Fly	327
XVII.	Sore Heads	330
XVIII.	Maggots	332
XIX.	Debility and Indigestion	334
XX.	Inflammation	335
XXI.	Wounds	336
XXII.	The Diseases of the Eye, commonly called Blindness	337
	Index	341

INTRODUCTION.

ANATOMY AND PHYSIOLOGY

OF

NEAT CATTLE.

SECT. I.

THE term Neat Cattle comprehends the Bull and Cow, and of course the Ox, whose distinguishing characteristics are: no upper fore teeth; cloven footed; horns with a large space between their basis; and the skin along the lower side of the neck pendulous, called dewlap.

Anatomy teaches us the structure and relative situation of the different parts composing the body of these useful animals, and by means of physiology, we become acquainted with the function and uses of each organ. The diseased appearances of the parts, as we have met with them in examining the body after death, will also be noticed in the following treatise.

The bones are the most solid parts of the body,

and are designed to sustain the soft parts, to give shape to the whole animal, and to protect some important organs, as the brain, lungs, &c. from injury. Where the bones are joined or articulated together for the purpose of allowing free motion, as in the joints of the fore and hind extremities, and the junction of the head with the spine, there is an intermediate substance between the articulating surfaces called cartilage, commonly known by the name of gristle.

CARTILAGE, or GRISTLE is a compact, smooth, and elastic substance, and appears principally intended to prevent the attrition of one bone upon another, and to facilitate their motion.

The bones are united to each other by LIGAMENTS, which are of a whitish colour, nearly inelastic, and very firm. Each joint is surrounded by the ligaments, and contains a viscous fluid, called *synovia* or *joint oil*, which lubricates the articulating surfaces, and prevents the bad effects of friction.

The bones are of themselves incapable of motion, and require, for this purpose, the aid of the fleshy parts, termed muscles. It is by the action of the muscles upon the bones that all the various motions of the body are performed.

Every part of the animal is supplied with nourishment by means of innumerable tubes, named arteries and veins. The ARTERIES convey florid

red blood from the heart to all the different parts of the body, in order to repair the waste which the system is continually undergoing from its various operations. The blood, after having afforded nourishment to the several parts, is returned again to the heart by the VEINS, of a dark red hue.

In the cavities of the joints, a deposit of synovia, or joint oil, is constantly going on; and unless the superfluous quantity was carried off, an accumulation would take place so as to enlarge the joints, and render them diseased. This accumulation of the synovia is completely obviated by what are called the lymphatic absorbents, whose function it is to take up the superabundant quantity, and to convey it into the general mass of blood. The LYMPHATIC ABSORBENTS are very delicate vessels, and extremely numerous, being distributed abundantly throughout the body.

The food that the animal eats affords, by digestion, a nutritious fluid, termed chile. The CHYLE is prepared in the intestines, and conveyed from thence into the blood, being taken up by myriads of small vessels, denominated the LACTEAL ABSORBENTS, which arise along the whole course of the intestines.

Another set of organs are named glands. The GLANDS separate particular fluids from the general mass of blood. This is termed secretion; as

milk is secreted by the cow's udder, urine by the kidneys, bile or gall by the liver, &c. The blood-vessels and the lymphatic absorbents are in larger proportion in glands, than in any other parts of the body. Most of the glands have tubes to convey the secreted fluids to their respective places: these have the name of excretory ducts, as the ureters of the kidneys are their excretory ducts, conveying the urine from thence to the bladder, to be ejected from the body.

The LUNGS are the organs of respiration, by which action the blood that circulates through them undergoes a change by means of the atmospheric air, which is absolutely essential to the life of the animal.

The BRAIN, contained in the cavity of the scull, the operations of which are the cause of those actions called instinct; and the nerves * arising from thence, and from the SPINAL MARROW, by which various sensations are transmitted to it, and the motion of the different parts of the body derived, are organs of extensive influence in the animal economy. There is the larger proportion of nerves in those parts most susceptible of impression, and most essential to life; as the eyes, ears, nose, mouth, &c.

In order that the animal may multiply and per-

* The nerves are whitish cords proceeding from the brain and spinal marrow to all the different parts of the body.

petuate its kind, there are provided for this purpose, the organs of generation.

SECT. II.—BONES AND THEIR APPENDAGES.

THE bones, though so solid, are as perfectly organised as any other part of the body, having blood-vessels, lymphatic absorbents, and nerves entering into their structure, and these are absolutely necessary to their existence in the living animal. The earthy matter to which bones owe their hardness is deposited from the blood passing through their minute vessels by a peculiar process, termed secretion.

In examining the fœtal calf, during the second or third month of pregnancy, all the bones are not found completely formed, but a cartilaginous or gristly substance supplies their place: as the bony or earthy matter is deposited, the cartilage is removed by the lymphatic absorbents, and then the bones acquire hardness.

There is a constant absorption and deposit of earthy matter going on in the bones, which is evident from the following well-known fact. If a growing animal be fed with madder for two or three days, as much bone as is deposited during that time will be red; discontinue giving it, and, in a short time, this red tinge will disappear.

The internal parts of almost all the bones are

more or less hollow, and contain marrow. The marrow is an animal fat or oil secreted by the vessels of the thin transparent membrane in which it is lodged: this membrane is formed into circumscribed cells, that confine the marrow and prevent its running from one cell to another.

Appendages of the Bones.

These are *cartilages, ligaments,* and *periosteum.*

Periosteum, called so from its covering the bones, is a membrane or thin bladdery substance extending over the surface of all the bones, except the teeth. Its chief use is for a minute distribution of blood-vessels and nerves, which pass from thence into the substance of the bones.

Ligaments, as we have before stated, are white, thick, and fibrous, and are for the purpose of connecting one bone to another. Synovia (vulgarly called joint oil), which lubricates the joints, is secreted from the internal surface of the ligaments.

Cartilages, or gristles are of a whitish hue, smooth, and very elastic. The ends of the bones, forming the joints of the anterior and posterior extremities, have cartilage between them, which facilitates their motions, and prevents bad effects from concussions;—other articulating bones have also cartilage between them.

Of particular Bones.

The head, comprehending the skull and face of the animal, is composed of a number of bones closely united to each other, the whole being covered with skin and flesh. The broad square space situated between the eyes and horns is the bony covering called the skull. If the skull be carefully removed by a saw, &c. we shall find under it a very delicate and noble substance, denominated the brain. On the superior and lateral parts of the head are placed the ears; below and more anteriorly are the eyes; under these are the nose and mouth; and at the end of the nose, the sense of touch resides. These organs have nerves sent to them from the brain, by means of which the five senses—hearing, seeing, smelling, tasting, and touching, are received and immediately propagated to the brain, which is the seat of instinct, and the fountain from which these different senses, so essential to the well being of the animal, are derived. The nerves are transmitted from the brain to their respective parts through holes in the skull; as the two nerves going to the eyes pass through an opening in the sockets. There are many pretty large holes, or rather canals, in the bones of the face and lower jaw, for the passage of blood-vessels and particular nerves, that are distributed to them.

Of the Teeth.

Neat cattle have eight fore teeth in the lower jaw, but none in the upper; ten grinders in the lower jaw, and as many corresponding ones in the upper. Each grinder has its body and roots; the body is all that part appearing without the gum, the roots or fangs are covered by the gum, and lie deep in the bony sockets. The body of the grinders is composed of two substances; one the dark bony part, the other white and very hard, called the *enamel*. The enamel is so intermixed with the bony part as to give these teeth a striated appearance. This peculiarity of structure renders the upper surface of them rough and unequal, and better adapted for chewing their cud: the enamel scarcely wears at all. The teeth of neat cattle, owing to the quantity of enamel in them, are very durable, continuing good to extreme old age.

All the teeth are, in some degree, hollow, and have an opening at each of their roots where the blood vessels and nerves enter: the vessels convey blood to them for the purpose of repairing the waste they undergo from chewing.

How to ascertain the Age of Neat Cattle by their Teeth and Horns.

The eight fore teeth of the lower jaw are shed, and replaced by others that continue through life. The two middle fore teeth fall out at about two years old, and are succeeded by others not so white. At three years old they get two more, next to the new ones, and, in this manner, by the two succeeding years all the fore teeth are renewed, and they are then termed *full mouthed,* being five years old. The last two are, at six years old, completely up, which makes the row even.

Age by the Horns.

At the age of three years their horns are smooth and even; and every succeeding year there is a wrinkle or circle round the basis near the head, which keeps moving the other forward; so that if the first wrinkle be stated at three years old, it will be easy to tell the age of any beast after that time.

THE TRUNK.

The trunk of neat cattle is composed of the spine, pelvis, and thorax or chest.

The Spine.

The Spine or back-bone extends from the skull

to the end of the rump, where the tail commences. It has within it, along its whole length, a canal for lodging the *spinal marrow*, which is a very delicate and important substance, and consequently requires protection from external injuries. The spinal marrow is, indeed, a continuation of the brain, which, as soon as it passes out of a large hole at the back part of the head into the canal of the back-bone, acquires this name.

The spine consists of a number of distinct bones, named by butchers the *rack-bones:* there is between each of these, and along their upper part, an elastic gristle-like substance, which connects them together and allows of some degree of motion between each of them. There are nerves, arising from the spinal marrow, which pass between each of the rack-bones, through small holes formed between them, and go to the neck, fore and hind legs, and to some of the internal parts of the body.

The tail has from thirteen to sixteen bones in it, which are so articulated as to make this part very flexible.

*The Pelvis.**

The Pelvis is the posterior bony part of the trunk of the body. It consists of the rump bone

* It is so called in the human subject from its supposed resemblance to a bason.

above, and two large, broad, and irregular shaped bones on each side of it. The upper and by far the greater portion of these two irregular-shaped bones are termed the *haunches*, and the two large protuberances near to the hip joint, are commonly called the *huggens*. Each haunch bone has a large socket for admitting the head of the thigh bone.

That part of these irregular shaped bones extending from the socket backwards to the point of the buttocks, is called the *hip bone*. Another portion that passes from the socket downwards and joins its fellow of the opposite side, is named the *spare bone*.

The Thorax or Chest.

The *Thorax* or *Chest* is the large bony cavity containing the heart and lungs. It is formed or 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 little motion in respiration. The heart and lungs are, by means of the chest, surrounded and defended from external injuries.

ANTERIOR EXTREMITIES.

The *Shoulder Blade* is a broad, flat, and triangular-shaped bone, situated on the outside of the fore ribs. It has a cavity at its lower end for admitting the round head of the shoulder bone:

—a strong ligament surrounds the joint, connecting the shoulder blade to this bone.

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

The Leg Bone, or *Fore Arm* is situated between the shoulder bone and knee, and is the longest bone of the anterior extremities. At the upper and back part of it, there is a process called the *elbow*.

The Knee consists of two rows of small bones. The upper row has four bones, the superior surface of which articulates with the leg bone. The under row has two bones, their inferior surface articulating with the fore leg. These bones form a compound joint of considerable strength, and allowing likewise of extensive motion.

The Fore Leg. The bone reaching from the knee to the two great pastern bones is called the fore leg. Its pulley-like extremity is received into the upper concave surface of these two pastern bones, with which it is strongly articulated.

The Great Pastern Bones. In the horse there is only one coronet or little pastern bone, but in neat cattle we find two, placed by the side of each other. At the upper and back part of these pastern bones, there are four small ones, which increase their articulating surfaces.

The Little Pastern Bones, or *Coronet Bones.* In the horse there is only one coronet, or little pastern bone, but in neat cattle we find two, situated by the side of each other. The coronet bones are articulated above with the ends of the pastern bones, and below with the coffin bones: they are rather more than an inch in length.

The Coffin Bones. There are two coffin bones of a porous texture, and but one in the horse. These two receive the hoofs, and form the cloven foot. Two false hoofs or toes, are situated at the posterior and inferior part of the fore leg.

THE POSTERIOR EXTREMITIES.

The Thigh Bone is a large and rather short bone, extending from the cup-like cavity of the hip bone to the stifle. It is inclined obliquely forwards, and its lower end articulates with the leg bone.

The Stifle is a smallish bone answering to our knee-pan. It is situated at the fore part of the joint, between the lower end of the thigh bone and the upper end of the leg bone. It has two surfaces; its external one rough, having the sinews that extend the leg inserted into it; the internal is smooth, being covered with cartilage.

The Leg Bone, in neat cattle and in the horse, is commonly called the thigh bone, from its situation in respect to the body of the animal. The leg

bone reaches from the stifle to the hock, inclining obliquely backwards.

The Hock is a compound joint, being, like the knee of the fore extremities, composed of two rows of smallish bones.

It will be unnecessary to describe the remaining bones of the hind leg and foot, as they are so much like those of the fore leg, and have, also, the same names. All the joints of the anterior and posterior extremities are firmly secured by strong ligaments, which surround them and prevent the escape of the lubricating fluid of the joints, termed synovia. There is cartilage between the articulating surfaces of the joints, which being smooth facilitates their motions.

Sect. III.—Of the Hide and Hair.

The hide or skin consists of three layers; the first and outermost, called the *scarf skin*, the middle, the *mucous substance*, and the bottom one, the *true skin*.

The true skin is a thick, dense, and elastic substance, and is that from which leather is made. It has numerous minute blood-vessels and nerves, and consequently cannot be cut with any instrument without drawing blood, and giving pain to the animal. When neat cattle want to feel the

external qualities of any substance, they apply their nose and lips to it, as the sense of touch in them more particularly resides in these parts, the skin being here extremely sensible and void of hair.

The Mucous Substance is thin, delicate, and soft, resembling in texture fine net-work. It is this integument that gives colour to the complexion in human subjects;—in the Negro it is black,—in the Mulatto yellowish,—and in Europeans more or less white. It adheres more firmly to the scarf-skin, than to the true skin, and separates with it, when the hide is prepared by the tanners.

The Scarf Skin is the uppermost layer, and extends over the whole external surface of the body, it is a perfectly insensible part, something horny, and defends the true skin from much injury. The scarf-skin has no blood-vessels, and is easily separated from the surface it covers by putrefaction: Blistering applications will also do this.

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 eye-lashes, and the hair within the ears seem principally designed to protect these parts from insects, &c. The hairs at the end of the tail are longer than those of the rest of the

body, which make it well adapted to drive insects away. The hairs arise from bulbous extremities in the skin, and they receive their nourishment from these roots.

Sect. IV.—The Flesh.

The fleshy pannicle is with us called the *Rhine*. It is a thin fleshy expansion, situated immediately under the true skin, and above the fat. It is supposed to extend almost over the whole body, but is more conspicuous in some parts, than in others; —as over the ribs, and on the sides of the belly,— under the jaws, also, it is very apparent:—where you cannot trace its fleshy fibres, it then becomes membranous.

The chief use of the fleshy pannicle is to agitate the skin for the purpose of shaking off flies, or any thing that may annoy the animal.

Of 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. Between the muscles, or fleshy parts, there is a layer of fat which connects one muscle to another, and facilitates their motions.

The heart and the kidneys are surrounded with

much fat, especially the latter. The caul, that is attached to the first stomach, contains a large quantity of it, and there is, also, a great deal about the intestines. The fat is contained in innumerable cells, formed of a thin membrane :—when the fat is separated from these membranous cells by heat, it is then called *tallow*. These cells communicate with each other, and may be distended with air, as is practiced by butchers in blowing their veal. In *black leg* these cells are distended with air arising from mortification of the parts.

Neat cattle are subject to large fatty tumours in various parts of their body ; I lately saw a very large one, situated on the shank bone.

Cattle, that are in excellent condition, soon become lean when turned from a good into a bad pasture. In these cases the fat is taken up by the lymphatic absorbents, and conveyed into the circulating mass of blood, thereby supplying the deficiency of food.

The Muscles.

The flesh or meat that we see in the SHAMBLES is, by ANATOMISTS, denominated the muscles ; but they are here cut and divided, and not found in those separate and distinct masses, as are met with when properly dissected. The muscles are fibrous and red coloured, and as action is performed by

them, so they are found in every part of the body that hath action.

They are attached to the bones, and each muscle has its *origin* and *insertion*;—the origin is that part which is its fixed point,—the insertion the part which the muscle has to move. Each muscle has mostly a fleshy origin, and generally terminates in a white, shining and dense substance, called the *sinew* or *tendon*. Almost all the muscles of the anterior and posterior extremities are inserted by tendons into the bones: if the muscles themselves were continued and inserted into these bones, instead of the tendons, the legs would be so large and clumsy, as to render them incapable of performing their proper functions.

When a muscle bends any part of the body, it is termed a *flexor*,—when it straightens a part, it is named an *extensor*, &c. &c. The muscles of the anterior and posterior extremities are chiefly flexors and extensors;—it is by the alternate actions of these, that the animal moves from one spot to another. The head is raised and depressed by means of the flexor and extensor muscles of the neck, extending to the head. The lower jaw has strong muscles for eating and chewing the cud.

The muscles of the trunk, as those between and above the ribs,—and the very broad and large muscles of the sides of the belly, loins, and flanks, have

several important uses. They principally assist in respiration, in the evacuation of fæces and urine, and in the expulsion of the fætal calf:—they also cover and protect the internal organs.

The red colour of the muscles is owing to the blood-vessels distributed to them. The muscular fibres, surrounding the STOMACHS and INTESTINES, are of a whitish colour, yet are very vascular, but the vessels so small as scarcely to admit the red particles of blood.

The muscles have a large proportion of nerves entering into their substance, and ramifying betwixt the fibres with extreme minuteness. The sensibility and action of the muscles are derived from their nerves.

Muscles during the time of their action are shortening themselves, and, by this means, move the bones in which they are inserted, producing all the various motions, that the body is capable of. This contractile power of the muscles may be very well seen in the *fleshy pannicle,* for the space of an hour after the animal is killed, the hide being removed from it.

SECT. V.—THE BRAIN AND NERVES.

IT would be useless to give a minute description of the structure of the brain, as it would nei-

ther tend to elucidate the functions of this organ, nor to increase our knowledge of its diseases: such parts only will be mentioned as have been found, or are likely to be affected in disease, as inflammation of the brain, black leg, pestilential fever, &c.

Functions of the Brain.

The brain is a pulp-like substance contained in the cavity of the skull, by which it is strongly and admirably well defended from external injuries. The brain and the spinal marrow which is a continuation of the brain, hold correspondence with the whole body, imparting, by means of the nerves arising from them, sense and motion to every part of it.

The five senses, viz. *vision, hearing, feeling, tasting*, and *smelling*, so necessary to the animal's existence and well-being, are all situated about the head, not far distant from the brain. The organs, that produce the five senses, are the eyes, ears, end of the nose, and lips, the tongue, and the internal parts of the nose; these have nerves sent to them from the brain, by which they receive the different impressions made upon them by external objects. The particular sensation received by any of these organs, as, for instance, the cow-man's voice, is, by means of the nerves of the ears being affected by the sound, instantaneously communicated to the

brain, and the animal thereby becomes conscious of it, and acts agreeably to such perceptions.

All the actions of the animal are under the guidance of instinct, and chiefly tend either to the *preservation* of *life*, the *propagation* of the *species*, or the *care* of their *young*. Instinct is not a power superadded to the animal,—it results from the wonderful operations of the brain. In inflammation of the brain, neat cattle are mad and furious, arising from the functions of this organ being deranged: in black leg and pestilential fever, they are mostly dull and stupid.

Anatomy of the Brain.

Having removed the skull-cap as directed in p. 7, the brain is exposed to view, and found enveloped by two membranes, denominated the dura mater, and the pia mater.

The *Dura Mater* is the outermost one, is strong, and adheres to the skull.

Processes of the Dura Mater. Along the middle of the upper part of the head betwixt the two hemispheres of the brain, the dura mater projects some way down, and divides it into two parts: this I shall name the *perpendicular process.* There proceeds, from the superior and inferior part of the perpendicular processes, the *transverse processes,* one on each side.

Large Veins of the Dura Mater. The dura mater is, at these processes, composed of two membranes or strata. The internal membrane of the perpendicular process forms a large vein, which terminates in two similar ones, situated within the transverse processes. All the small veins of the dura mater, pia mater, and brain, empty their blood into these large veins, and it passes from them into the jugular veins to be conveyed from thence to the heart.

The *Pia Mater* immediately covers the brain, is thin, and has numerous blood-vessels. It insinuates itself between the winding furrows seen on the surface of the brain, and lines also its internal cavities. The small veins of this membrane pierce the dura mater to enter the large vein within the perpendicular process.

The Brain. The brain, as we have just said, is divided by the perpendicular process into two parts, called its hemispheres. If you separate the hemispheres a little with your fingers, a white central substance comes into view, termed, from its being somewhat harder than the rest of the brain, the *corpus callosum:* the corpus callosum connects the two hemispheres together. By removing, with a scalpel, or pen-knife, a small portion of the corpus callosum, we find two cavities called the *lateral ventricles*;—these are separated from each

other by a thin partition proceeding from the under part of the corpus callosum. If you remove the upper part of the brain from off the lateral ventricles, you will see them very distinctly. Each of the lateral ventricles is lined by the pia mater, and contains a few drops of transparent fluid.

The substance of the brain is white in the middle, and of a greyish colour on the outside.

Nerves of the Brain. Nine pair of nerves arise from the base of the brain, and proceed, through holes in the skull, to the different parts about the head, as the nose, eyes, ears, &c.; and some of them go to the organs contained in the chest and belly. The *first pair* are the nerves of smelling, they arise from the brain, and go to the nose. These differ very much from all the other nerves of the body, in being soft, and as if they were a prolongation of the substance of the brain; whereas the other nerves are *firm white cords*, consisting of extremely minute fibres. The *second pair* go to the eyes, and are the nerves of vision: the third and fourth pair are distributed to the muscles that move the globe of the eye. The *fifth pair* are very extensive nerves, they divide into three separate branches which ramify into numerous filaments or twigs, that are distributed principally to the muscles and bones of the head, and the teeth. The *sixth pair* go to

the muscles of the eye. The *seventh pair* are distributed to the internal parts of the ear, and on these depend the sense of hearing. The *eighth pair* are principally distributed to the organs contained in the chest and belly. The *ninth pair* go to the tongue, and give to it the faculty of taste, which neat cattle enjoy in a very superlative degree.

These nine pair of nerves may be readily seen proceeding from the brain by gradually raising it from the fore part of the cavity of the skull, when they will appear in regular succession.

Diseased Appearances of the *Brain* and its *Membranes.* I have in several cases of black leg examined these parts soon after death, and have, in every instance, found the dura mater and pia mater in a gangrenous state, being livid and easily torn ; and there was between these two membranes, and also in the lateral venticles, an effusion of watery fluid, evidently indicating previous inflammation.

SPINAL MARROW.

The spinal marrow is a continuation of the brain, and is like it enveloped by the pia mater and dura mater. When the brain passes out through the large opening at the back part of the skull into the canal of the spine, it is then called the *spinal mar-*

row. It extends throughout the whole length of the backbone, and gives origin to many nerves.

Nerves of the Spinal Marrow. Either thirty-two or thirty-three pair of nerves arise from the spinal marrow, and pass through notches formed between the junction of each of the rack bones, and go to be distributed to the exterior parts of the trunk, the fore and hind extremities, and to some of the internal organs within the body. All the muscles that move the body from one place to another are supplied with nerves arising from the spinal marrow, and it is by their influence, that they are excited to act at the will of the animal.

The spinal marrow is so essential to animal existence, that life itself is extinguished when a knife is plunged into it, which is sometimes done by butchers to kill the animal. The nerves arising from this substance derive from it the means they possess of communicating to the various parts, to which they are distributed, the sense of feeling, and the power of muscular motion, &c.

SECT. VI.—ORGANS OF CIRCULATION.

EVERY part of the body is supplied with blood by means of the heart and the vessels arising from it, and the regular course in which it flows from and to the heart again, is denominated the *circulation* of the *blood.*

THE HEART.

The heart is situated about the middle of the chest, rather inclining to the left side, and rests upon the breast-bone. It is contained in a strong dense, and fatty membrane, the internal surface of which is smooth and lubricated with a serous fluid, exhaled from its minute vessels.

The heart has four cavities, their internal structure is found very irregular, having numerous furrows or meshes formed by bundles of fleshy fibres. Two of these cavities are placed upon the base or broad portion of the heart, one on each side, and are named auricles, from a slight resemblance they are supposed to have to the ears of an animal; the other two are considerably larger than the auricles, and are called the *ventricles*. The right auricle and the right ventricle communicate directly with each other, and so do those situated on the left side.

The *Right Auricle* has indented edges like a cock's comb, and on cutting into its cavity, you will find two large veins arising from it. These two veins are, for the sake of distinction, termed the anterior and posterior venæ cavæ: they receive the blood from all parts of the body, and convey it to the heart. The blood passes immediately from the right auricle, and is prevented from returning back again into it by a membranous valve.

This VALVE arises from a whitish line or circle, that separates the auricle from the ventricle. It has at its edge several tendinous cords, that are attached to round fleshy projections which fix it to the sides of the ventricle: these cords, every time the heart contracts on the blood, allow the valve to rise and form a partition, preventing thereby its return into the auricle.

The *Right Ventricle* is broad at its commencement, but becomes gradually less so towards the point of the heart. The substance of this ventricle is considerably thicker than the auricle, and its internal surface much more irregular. You will find in the broad part of this cavity, on its left side, a large opening which is the beginning of an artery termed the *pulmonary artery*.

The blood passes from the right ventricle into the pulmonary artery, and is prevented returning back again by three thin semilunar valves, which are small and placed at the very commencement of the artery.

The *Pulmonary Artery*, soon after emerging from the heart, divides into several branches, which enter into the different lobes of the lungs, and ramify through their substance into innumerable minute branches.

From the minute branches of the pulmonary artery arise corresponding veins, called the *pulmo-*

nary veins. These gradually keep uniting, and becoming larger, and at last form several large trunks which terminate in the left auricle of the heart. On cutting open these venous trunks, you will find numerous branches of the pulmonary veins terminating in them.

The *Left Auricle* receives the blood from the large trunks of the pulmonary veins, and it passes directly from this cavity into the left ventricle.

There is, at the aperture of communication between the left auricle and left ventricle, a membranous valve, nearly similar to that on the right side, which, during the contraction of the left ventricle, prevents the blood from returning back into the left auricle, whence it came.

The *Left Ventricle* is very similar in its structure to that on the right side. In the broad part of this cavity, on the right side, there arises a large artery named the *Aorta.*

The *Aorta* receives the blood from the left, and it is prevented returning back again by three semilunar valves, similar to those of the pulmonary artery, situated immediately at its origin from the ventricle. The blood is distributed throughout every part of the body, except the lungs, by means of the aorta and its innumerable branches. The pulmonary artery only distributes blood through the lungs.

The substance of the heart is nourished with blood by two small arteries, that arise from the aorta just above its semilunar valves. From the extreme ramifications of these two arteries arise corresponding veins which unite and form a trunk, that you may see terminating in the left side of the right auricle: the blood of these arteries is brought to the heart by this trunk.

The heart is supplied with nerves by small filaments sent off from the eighth pair of nerves, and some few from the nerves of the spinal marrow.

The right auricle and right ventricle are separated from those on the left side by a strong fleshy partition.

THE ARTERIES.

The *Pulmonary Artery*, arising from the right ventricle of the heart, together with its branches, have been already sufficiently described, when speaking of that organ: we shall now proceed to the other large branch, the *aorta*.

The *Aorta*, soon after emerging from the left ventricle of the heart, divides into two great branches which are denominated the *anterior*, and *posterior aorta*.

The *Anterior Aorta* passes forwards through the lungs, and gives off four considerable branches, two on each side, which go to the *fore extremities*, *the neck*, and *the head*; and numerous rather small

branches arise from it transversely, which go to be distributed to the membrane lining the inside of the chest, to the muscles between the ribs, and to the muscles upon the ribs.

The Posterior Aorta is a larger branch then the anterior. It soon makes rather a sharp curvature backwards, and passes through the lungs, and along the belly on the left side of the spine, and extends to the back part of the loins. It gives off many small branches in the chest, which are distributed to the muscles between the ribs, and to the midriff. When the posterior aorta gets within the cavity of the abdomen, it gives off numerous considerable branches which are distributed to the digestive organs, viz. the spleen or milt, the four stomachs, the pancreas or sweatbread, the liver, the intestines, and the membranes attached to them; also to the caul, &c. In the loins, the posterior aorta sends off two large but short branches, one on each side, which go directly to the kidneys, and ramify through their substance. Just behind these two that go to the kidneys, there are two small ones arising from it, which are distributed to the ovaries in cows, and to the testicles in bulls. Besides these, the posterior aorta gives off other small branches, which go to the large muscles of the loins and flank. The posterior aorta, after giving off the branches just stated,

divides at the loins into two great branches, and these soon divide into others almost as large, the branches of which go to be distributed to the back part of the trunk, the buttocks, and to the internal organs of generation; two of these large branches, one on each side, pass out of the belly, and go on the inside of the thighs to be distributed to the posterior extremities.

These branches of the anterior and posterior aorta keep giving off, in the parts to which they are distributed, numerous other branches which become smaller and smaller, till at length they are so minute as not to admit the red particles of the blood, only allowing the serous or watery portion of it; as, for instance, the white part of the eye is as vascular as other parts, as may be seen when it is attacked with inflammation,—the minute vessels of the white of the eye being then dilated, and admitting the red part of the blood to enter them.

THE VEINS.

The blood, having been conveyed to the different parts of the body by the branches of the anterior and posterior aorta, is returned back to the heart by two large veins, called the *anterior and posterior venæ cavæ.*

The branches of the anterior and posterior venæ cavæ are distributed very similar to those of the

anterior and posterior aorta; the extreme branches of these veins communicate, and are indeed continuous with the extreme branches of the arteries.

The Anterior Vena Cava arises from the right auricle of the heart, and proceeds forwards through the lungs to about opposite the first rib, where it gives off four large and principal branches. Two of these large branches pass along the neck on each side of the windpipe, and are called the jugular veins; these receive all the blood from the brain, and also from the numerous veins of the head and neck: the right jugular is the vein from which we bleed. The other two large branches go to the fore extremities, and receive the blood returning by the veins distributed to the legs, shoulders, &c. which empty themselves into these two large ones.

The anterior vena cava, before dividing into the four principal branches just mentioned, gives off one or two smaller branches which pass backwards along the chest near to the spine, and receive the blood returning by the numerous small veins distributed to the membrane lining the chest, the muscles between the ribs, and to the muscles upon the ribs; the minute extremities of which veins communicate directly with the extreme branches of the arteries sent to these parts.

The Posterior Vena Cava arises from the right auricle of the heart, and is longer and larger than

the anterior vena cava. It passes through the chest, and along the belly on the right side of the spine, and terminates about where the posterior aorta does, and there divides into some considerable branches. Before passing through the membranous portion of the midriff or skirt into the belly, it gives off several small branches which ramify on the sides of the chest, and the midriff, and receive the blood from the arteries distributed to these parts. As the posterior vena cava passes behind the liver towards its right side, it sends off some large branches which begin immediately to ramify through the substance of that organ, and receive the blood conveyed to it by a large vein, called the vena portæ, and an artery, called the hepatic artery. The posterior vena cava proceeds backward, and at the loins gives off two pretty large branches which go to the kidneys, and ramify through their substance, receiving the blood sent to these organs by the two large branches from the main artery. It gives off several more rather small branches in its course through the loins, the minute ramifications of which receive the blood from the arteries of these parts. The posterior vena cava divides at the loins, where the spine forms a curve, into several large branches whose innumerable ramifications are distributed to the organs of generation, to the bladder, and to the posterior extremities, receiving

the blood returning from the arteries of these parts, and conveying it to this large vein, the posterior vena cava, to be from thence transmitted to the right auricle of the heart.

The Pulmonary Veins have been sufficiently noticed in the description of the heart. See p. 27.

STRUCTURE of the VEINS and ARTERIES. The veins of the anterior and posterior extremities have membranous valves within them, placed at irregular distances, which allow the blood to flow towards the heart, but prevent it returning the contrary way. The veins are thinner than the arteries, and are found more or less collapsed after death. The arteries are strong, white, cartilaginous canals, are elastic, and not found collapsed after death: as may be seen by examining the anterior and posterior aorta.

CIRCULATION OF THE BLOOD.

The heart is a strong muscular organ constantly in action, being the principal agent in propelling the blood throughout every part of the body. The substance of the heart is extremely irritable, so that immediately when its cavities are distended with blood, it instantly contracts and impels the blood onward, the different valves, already mentioned, preventing it returning back again. In describing the course of the blood through the body, I think

it will be as well to commence at the left ventricle of the heart.

Circulation of the Blood. The left ventricle of the heart, immediately on its being distended with blood, contracts and propels it with great force into the aorta. The innumerable branches of the anterior and posterior aorta convey the blood to all parts of the body, and is received from them by numerous corresponding veins. The blood is continually flowing from these veins into the anterior and posterior venæ cavæ, both of which empty themselves into the right auricle of the heart. The right auricle, being filled with blood from the two venæ cavæ, instantly contracts, and propels its contents onward into the right ventricle; from the right ventricle, it is impelled with great force into the pulmonary artery. The blood passes through the numberless branches of the pulmonary artery, ramifying in the different lobes of the lungs, and is received by corresponding veins, denominated the pulmonary veins, which return it to the left auricle of the heart. The left auricle, being dilated with the blood returning by the large trunks of the pulmonary veins immediately contracts and impels it onward into the left ventricle of the heart; the left ventricle propels the blood into the aorta, the part at which we set out in describing the circulation of the blood.

It is the valves situated between the auricles and ventricles, and at the origin of the two large arteries of the heart, that determine this regular course of the blood. The contraction of the left ventricle causes a dilatation of the arteries, which is termed the *pulse*.

The Pulse.

The pulse of neat cattle is about fifty in a minute, and may be distinctly felt in the hollow of the neck. In inflammatory complaints, the pulse is generally quicker than natural, and, when this is the case, bleeding and purging is mostly necessary, and the animal should be kept up a few days.

Sect. VII.—Organs of Respiration.

Respiration is so absolutely essential to the life of quadrupeds, that if it be suspended for a few minutes, the animal dies suffocated. The blood undergoes in the lungs, by means of the inspired air, a very important and remarkable change, which will be noticed in the course of this section.

The Windpipe.

The windpipe is that long tube, situated in the fore part of the neck, for the passage of air into and out of the lungs. It commences at the back

part of the mouth behind the root of the tongue, and passes down to the chest, and just before entering the lungs, it divides into two large branches. From these two large branches, numerous smaller ones arise, which ramify through the various lobes of the lungs, and become smaller and smaller, till at length they cannot be traced any farther.

Structure of the Windpipe. Upon the top of the windpipe, there is a cartilaginous substance of a triangular shape, which allows the ingress and egress of the air, but, during deglutition, closes the mouth of the windpipe, and prevents any thing getting into it. The windpipe consists of a number of circular rings formed of dense cartilage, and these are connected together by a strong ligamentous substance which is very elastic, and intervenes between each of them: this peculiar structure not only renders the windpipe very flexible, but keeps it constantly open. That part of it contiguous to the gullet has a ridge, formed by the junction of the circular rings, which tends to prevent the passage being compressed, when a turnip, potatoe, or any thing stops in the gullet. The whole passage is lubricated with a viscid fluid, secreted from the membrane lining its internal surface.

The Lungs.

The lungs are contained in the cavity of the

chest, and when expanded with atmospheric air, they fill that cavity, but if a knife has only slightly penetrated their substance, the air gets vent, and you will find them comparatively small. They are divided in the middle, by a strong fatty membrane, into right and left lungs, and each of these have usually three smaller divisions, termed the lobes of the lungs: before the windpipe divides into the two great branches, it gives off on its back part two or three lesser ones which pass immediately into a portion that has two or three small lobes. The minute ramifications of the windpipe in the different lobes of the lungs finally terminate into numberless membranous cells, termed *air-cells;* these communicate with the respective branches of the windpipe, and are all filled with air during inspiration. The pulmonary artery, which conveys the blood from the right side of the heart into the lungs, ramifies upon the sides of the air-cells with extreme minuteness. The whole of the lungs have more blood circulating through them, than any other part of the body, and, on this account, when they are attacked with inflammation, the treatment must be prompt and energetic. The inside of the chest, and the midriff, is lined with a smooth membrane, and the whole external surface of the lungs is also covered with a continuation of the same membrane, which causes the lungs to move with great facility.

The Midriff or Skirt.

The midriff is that very broad muscle, which divides the cavity of the chest from the abdomen or belly. The centre or middle of the midriff is strong, white, and tendinous, and its circumference thick and fleshy, and attached to the sides of the posterior ribs; and to the back-bone, at the loins.

The posterior vena cava passes through the tendinous portion of the midriff into the belly, and proceeds backwards behind the liver to the loins: if you raise the liver and move it to the left side, you will have an excellent view of the posterior vena cava from the right auricle of the heart, through the chest, and along the belly. The gullet, vulgarly called the wizand, passes through a large hole, situated upon the spine in the fleshy portion of the midriff, and enters the first stomach, termed *paunch*. The posterior aorta, together with a very important vessel termed the thoracic duct, (see p. 55) proceed likewise through the fleshy part of the midriff, close to the left side of the back-bone. The midriff is a muscle constantly in action, as will appear in the following section on respiration.

Respiration and Animal Heat.

Respiration consists in the reception of air into the lungs, and its expulsion out of them again,

and these continue alternately during the life of the animal.

In inspiration, the air passes through the windpipe into the lungs, and expands them, and the capacity of the chest is consequently much augmented. This enlarged capacity is effected by means of the midriff, and the muscles situated between the ribs; the former elongates the cavity of the chest, while the latter increases its circumference. The midriff is a muscle admitting of very free motion, and is found, after the animal is killed, convex towards the lungs and concave towards the belly. When the midriff contracts, as it does in inspiration, it becomes tightened like a drum, with the tendinous portion much more backward, and in this way the cavity of the chest is lengthened; at the very same instant, the muscles between the ribs contract and augment its circumference by bringing the posterior ribs more forward, and causing them to bulge outwards.

In expiration, or the expulsion of air from the lungs, the midriff is slackened and convex towards the lungs, similar to what it is found after death, and the muscles between the posterior ribs are relaxed and allow them to return back again. The muscles of the flanks are attached to the ribs, and also assist in expiration by contracting and bringing the ribs back. In inflammatory complaints

respiration is mostly increased, which is perceptible by the working of the muscles of the flanks.

Change of the Blood in the Lungs. The anterior and posterior venæ cavæ return the blood, from all parts of the system, to the right side of the heart of a dark colour, and this is called *venous blood.* It passes, in this state, by the pulmonary artery through the lungs, and in the extreme ramifications of that artery, there arises from it a highly noxious vapour that immediately combines with the air in the air-cells of the lungs, and is expelled in combination with it during expiration, and the blood then assumes a beautiful scarlet colour, and is called *arterial blood:* this change of venous into arterial blood is absolutely essential to the life of the animal. The arterial blood is received from the extreme branches of the pulmonary artery by corresponding veins which convey it to the left side of the heart, and from thence it is distributed, by the anterior and posterior aorta, to every part of the body for the various purposes of life.

The blood is of a dark colour in all the veins, except the *pulmonary veins,* and is of a bright scarlet in all the arteries, except the *pulmonary artery.*

Animal Heat. The heat of the body, no doubt, principally arises from the continued influence, that the nervous system has on the blood. The constituent principles of the blood are, by means of the

nerves, undergoing perpetual changes of combination, and forming new substances, in order to repair the waste that the body is continually suffering, and to form the different secreted fluids; these substances are bone, flesh, fat, skin, milk, bile, urine, &c. &c. all which are secreted from the blood chiefly by the energy of the nervous system on it: the result of these changes in the blood, is the production of animal heat.

During the digestive process in the four stomachs and intestines, heat is evolved from the food, and is a consequence of the changes it undergoes in these parts.

Diseased Appearances of the Lungs and Windpipe.

Inflammation is the chief complaint to which the lungs are liable, and, when injudiciously treated, the animal generally dies, and a quantity of watery fluid of a bloody hue is found in the chest, and the texture of the lungs is commonly more compact than natural, and of a deep red or livid colour. In examining calves that have died of the hoose, I have found, in many cases, a viscid fluid, like the white of an egg, with membranous filaments floating in it, and, sometimes, there are a number of small worms adhering to the inside of the windpipe; the lungs have, also, appeared red and more compact

than when in a healthy state: these appearances indicate previous inflammation of the affected parts.

SECT. VIII.—ORGANS OF DIGESTION.

The food that neat cattle eat, 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, being, thereby, fitted to repair the waste, that this fluid has suffered in nourishing the body, and in supplying materials for the various secretions, as milk, bile, &c. &c. The organs of digestion in neat cattle are more complicated than in the horse, or in man, for these have only one stomach, but they have four stomachs, which render them more liable, particularly in their present domesticated state, to plethora, or what is called overflowing of the blood, especially when it is not counteracted by milking or labour.

The Gullet.

The gullet is a thick fleshy canal that receives the food from the mouth, and conveys it into the first stomach, or paunch. It commences at the back part of the mouth, immediately behind the top of the windpipe, and passes behind it, and

along the chest close to the spine, and through a large hole in the fleshy part of the skirt, or midriff. The gullet, as soon as it has passed through the midriff, enters the paunch, contiguous to the second and third stomachs: the gullet has as free communication with the second and third stomachs, as with the paunch. The inside of the gullet is lined with a smooth membrane, which facilitates the passage of the food through it.

The Four Stomachs.

The first stomach, called paunch, or great bag, is a very large receptacle for the food, where it is retained till the animal ruminates. The internal surface of this stomach is covered with rough processes, formed of the inner membrane.

There is a flap in the paunch, contiguous to where it joins the second stomach, which appears to act as a valve and prevent the escape of gas, during the maceration of food in it.

The second stomach, called honey-comb bag, or bonnet, is situated rather to the right side of the gullet, near to the midriff, and on the upper and fore part of the paunch. It is much smaller than the paunch, and its internal structure resembles a honey-comb, from which it derives its name.

The third stomach, termed manyplies, or manifolds, is placed on the upper and right side of the

paunch, and is generally found filled with food. There are numerous folds in this stomach, formed of the inner membrane, and like the leaves of a book; these are covered with small hard bodies, which bear some resemblance to millet seeds. If you remove the food from between these membranous leaves, you will find them vary in size, there being two small leaves between two broader ones, which is the case with them all.

The fourth and last stomach, termed caille, red, or maw, somewhat resembles, in form, the pouch of a bagpipe, with its right and smaller extremity connected with the intestines. The maw is the true digesting stomach, the other three being only preparatory to that process. The internal surface of the maw is lined with a smooth membrane, which projects and forms several longitudinal folds: from this membrane a peculiar fluid is secreted, called the *gastric juice*, which is the chief agent in digesting the food. The fourth stomach derives, from the gastric juice just mentioned, the property of curdling milk: the maw of calves, when dried, is called rennet.

Structure of the four Stomachs.

The three first stomachs are composed of three coats, similar to each other; the internal one is a strong membrane covering their inner surfaces, and

appears to be like that lining the gullet: the different appearances of the three first stomachs arise from this membrane. Under the internal coat, there is a series of muscular fibres passing in several directions, the combined action of which is necessary to produce those motions in the stomachs, which propel the food from one stomach to another, transmit the cud to the mouth, &c. The third or external coat is a strong covering to the stomachs, derived from a membrane, termed the *peritoneum*.

The structure of the maw, or fourth stomach, is similar to the three just noticed, except in the internal membrane which, in this stomach, is fine and smooth, and secretes a peculiar fluid, called the gastric juice, which is the principal agent in the digestive process.

The Guts or Intestines.

The guts, or intestines, are the very long membranous canal which commences at the right extremity of the maw, forming numerous convolutions in the belly, and finally terminates at the fundament, from which the excrements are expelled. If you trace the intestines from the maw, you will find opposite the liver two ducts terminating at one common opening into them; one of these conveys bile from the gall-bladder into the intestines,

the other a fluid formed in the pancreas, or sweet-bread. In tracing the intestines, regularly, for a considerable distance further, they appear nearly of the same size, but become paler and thicker, till at length you come to a sudden expansion of them, which is like a fifth stomach: this we shall name the *great gut*. The intestines from the great gut to their termination are of larger size and thicker, than those extending from the maw to it.

Structure of the Intestines. The intestines are composed of three coats, nearly similar to those of the maw. From the membrane lining their internal surface, arise an infinite number of minute vessels which absorb the nutritious part of the food, and convey it into the circulating mass of blood. The muscular coat consists of a series of pale musuclar fibres running in different directions, the united action of which produces those contractile and worm-like motions of the intestines, which gradually propel their contents from the commencement of them at the maw to their termination at the anus: the fæces are expelled from the body, chiefly, by the power of the muscular coat. The third, or external coat, is a strong membrane, derived from the peritoneum, which surrounds the intestines, and then rises double to be attached to the back-bone: this doubling of the peritoneum forms a broad expansion, denominated the *mesentery*.

The mesentery supports the intestines, and keeps them in their respective situations, and also allows the numberless minute vessels which arise from the internal coat, to pass off on it to the thoracic duct.*

The gullet, four stomachs, intestines, and mesentery, are plentifully supplied with blood-vessels and nerves.

The Liver.

The liver is a large gland, of a purple or lake colour, situated in the belly on the right side, and secretes a bitter fluid named *bile*, or GALL. A considerable part of the liver lies on the midriff or skirt, and the remaining portion which is thicker than the other, extends as far as the right kidney. It is attached to the parts on which it lies by the membrane covering its external or convex surface, and by the vena cava posterior which adheres firmly to it. Its internal surface is somewhat concave, and rests upon the stomachs and intestines.

Blood-vessels of the Liver.

The four stomachs and part of the intestines being removed from the belly, you will find contiguous to the right extremity of the liver sweet-

* For description of these vessels and the thoracic duct, see section ix.

bread, a large but short vein, called *vena portæ*, which passes, transversely, from the left to the right side, and enters the liver, not far from the gall-bladder. The vena portæ is formed of several rather large veins, coming from the sweet-bread, the milt, and the intestines, which return the blood from these parts, and from the four stomachs, and empty themselves into this large vein, to be from thence conveyed to the liver. As soon as the vena portæ enters the liver, it divides into several large branches, and these immediately subdivide and continue ramifying throughout the substance of the liver into endless branches. The bile or gall is formed from the blood circulating in the extreme ramifications of the vena portæ, and is taken up, as soon as formed, by an infinite number of minute ducts, called *bile ducts*. From the extreme ramifications of the vena portæ, arise corresponding reins, termed *hepatic veins*, which, by repeatedly uniting, form several large branches that terminate in the vena cava posterior; these receive the blood returning from the liver, and convey it to the vena cava, and from thence it passes to the right side of the heart.

Bile Ducts. Numberless minute vessels, called bile ducts, arise from the extreme branches of the vena portæ, for the purpose of taking up the bile that is formed in them. These repeatedly com-

municate and become larger and larger, till at length they form several considerable branches, which unite into one trunk, denominated the *hepatic duct.* The hepatic duct terminates in the intestines soon after their origin from the maw, but before its termination it gives off rather a large branch that goes to the gall-bladder, and conveys into that reservoir the larger portion of the bile.

Gall-Bladder. The gall-bladder lies transversely on the concave surface of the liver, and is a receptacle for part of the gall or bile. The bile is constantly forming in the liver, but as it is not always immediately wanted to assist in the process of digestion in the intestines, a considerable portion of it passes, by the branch of the hepatic duct just mentioned, into the gall-bladder, where it becomes more viscid and acrid from the absorption of its watery parts. The bile, besides assisting in the digestive process, acts as a necessary stimulus to the intestines; for when a sufficient quantity of it is not poured into them, as frequently happens in the yellows, the beast is constipated, or what is, in this part of the country, called sapped.

The Pancreas, or Liver Sweet-Bread.

The pancreas, or liver sweet-bread, is a pretty

large gland, of a whitish colour, which secretes a fluid like saliva, termed the *pancreatic juice*, that is poured into the intestines, and assists in the process of digestion. When the four stomachs and part of the intestines are removed from the belly, the liver sweet-bread may be then very distinctly seen lying across the spine, with its left extremity attached to the great gut, and the right one to the liver. It has numerous blood-vessels, which supply it plentifully with blood, in the extreme ramifications of which the pancreatic juice is formed.

The pancreatic juice is taken up by minute ducts arising from the extremities of the blood-vessels; these communicate with a large one, named the *pancreatic duct*, into which they pour their contents. The pancreatic duct is situated in the middle of the sweet-bread, and runs from the left extremity of it to the right, and terminates in them, mostly, along with the hepatic duct: the pancreatic duct frequently gives off a branch, which enters the intestines a little nearer the maw than what it does.

The Spleen, or Milt.

The spleen, or milt, is a large and oblong substance of a dark purple hue, situated upon the paunch, being between it and the midriff. The posterior aorta, or main artery, gives off a branch,

which enters the spleen, and ramifies through its substance into an infinite number of minute branches, supplying it with blood.

The blood, being altered in its properties by this organ, is received from the extreme branches of the artery by corresponding veins, which form by their union a large trunk, that empties itself into the vena portæ (see p. 49).

The blood that flows from the large vein of the spleen into the vena portæ, and from thence through the liver, has undergone an important change in the spleen, which renders it more fit for the secretion of bile.

DIGESTION.

Digestion is a term used to express that change which the food undergoes in the four stomachs and intestines, by which a fluid is separated from it for the nourishment and growth of the body. Grass, or any other kind of food that the animal eats, passes directly, without much chewing, into the paunch, where it is retained until a sufficient quantity be collected. The food, while in the paunch, mixes with a fluid secreted in this receptacle, in which it is macerated and undergoes a peculiar change, which destroys its texture, and converts it into a pulpy mass. When the animal ruminates, or chews the cud, the paunch contracts

and propels some of its contents into the honey-comb, and from thence a portion of it is transmitted, by a voluntary act of the beast, through the gullet into the mouth to be mixed with saliva, and more accurately comminuted by the grinders. The beast having chewed the cud, swallows it, and it now passes into the manyplies to be reduced to a still finer pulp, and incorporated with the fluid secreted in that stomach. The alimentary mass is gradually pressed from the manyplies into the true digesting stomach the maw, in which it undergoes a change that is absolutely necessary to the separation of the nutritious part from it. The food, after being detained for some time in the maw, is expelled into the intestines, and in them the digestive process is completed.

It becomes intimately mixed in the intestines with the bile and the pancreatic juice; these produce a decomposition in it, the result of which is the separation of the nutritious from the excrementitious part, which action is going on throughout the long track of the intestinal canal. The nutritious fluid extracted from the food, is of a white, or milk-like colour, and is termed *chyle*. The chyle is taken up by myriads of minute vessels, denominated *lacteal absorbents*, which arise from the whole internal surface of the intestines, and pass along the mesentery to the thoracic duct which

receives the whole of this milk-like fluid, and conveys it to the left jugular vein, and there it mixes with the mass of blood: the lacteal absorbents and thoracic duct are described in the next section.

Calves that are fed solely upon milk do not ruminate, but the milk passes immediately into the maw, where it is rendered into curd, and changed in its properties; it then passes into the intestines, and gets mixed with the bile and pancreatic juice, that chyle may be formed from it.

Sect. IX.—The Lacteal Absorbents, and Thoracic Duct.

The chyle, a nutritious fluid, extracted from the food by the process of digestion, is absorbed and conveyed into the circulating mass of blood by means of the lacteal absorbents and the thoracic duct, in order to repair the losses that it has sustained in supplying materials for the nourishment and growth of the animal.

Lacteal Absorbents. These are small transparent vessels arising from the whole extensive track of the intestines with open but imperceptible mouths, for the purpose of taking up the chyle. Myriads of these vessels proceed from the intestines along the membranous fold, named mesentery, to

terminate in the thoracic duct, into which they empty their contents. They are provided with numerous valves that prevent the chyle, as it ascends in them to the thoracic duct, from returning back again.

A number of small glandular bodies of a whitish colour, like the sweet-bread, are situated between the membranous fold of the mesentery; through these the lacteal absorbents pass before their termination in the thoracic duct, and the chyle, no doubt, undergoes some change, or receives some addition from them, as they are so abundantly supplied with blood-vessels.

The lacteal absorbents may be seen, immediately after the animal is slaughtered, by examining the mesentery, or internal surface of the intestines, where they appear in great numbers resembling white lines, and rendering the mesentery, in some places, completely opake from their being in such multitudes, and filled with chyle.

Having passed through the glands of the mesentery, they repeatedly communicate and form several considerable trunks, that terminate in the thoracic duct.

Thoracic Duct. The thoracic duct is a membranous canal, that receives the chyle from the lacteal absorbents which enter it near its com-

mencement. This duct begins at the loins, and penetrates the fleshy part of the midriff along with the posterior aorta, and proceeds forward through the chest on the left side of the spine, terminating in the jugular vein not far from the heart. It empties itself into the jugular vein, where the chyle mixes with the blood, and passes to the right side of the heart for the purpose of repairing the losses that the blood has sustained. It is difficult to find the thoracic duct from its being thin and transparent, and always empty and collapsed after death.

Sect. X.—The Lymphatic Absorbents.

These are vessels analogous to the lacteal absorbents, but take up, instead of chyle, a colourless fluid, called lymph, which is conveyed by them to the thoracic duct: all the lymphatic absorbents terminate in this duct. They exist in infinite numbers throughout every part of the body, and are constantly transmitting a lymphatic fluid.

Every part of the body is perpetually in action; the old, worn-out particles of the solids, as the bones, flesh, fat, gristles, ligaments, skin, &c., become dissolved and form lymph which is conveyed to the thoracic duct, and from thence into the cir-

culating mass of blood, serving a second time to nourish the body, and what is unfit for that purpose is evacuated principally by means of the kidneys.

The opposite functions subsisting between the arteries and the lymphatic absorbents; the former incessantly depositing new particles of matter, while the latter remove the old, exhausted ones, appear actions necessary to maintain the heat of the body, to prevent the putrefaction of the solids, and also for several other important purposes. The secretion of synovia, or joint oil, from the internal surface of the ligaments surrounding the joints is constantly going on, and a morbid accumulation would be the consequence, were the lymphatic absorbents inactive, and not to take up the superfluous quantity. The membrane covering the lungs, and the inside of the chest, and the peritoneum lining the internal surface of the belly, exhale a watery fluid that lubricates their internal surfaces, an accumulation of which is prevented by means of the lymphatic absorbents. In the Yellows the passage of the bile into the intestines is obstructed, and the lymphatic absorbents of the liver and gall-bladder, in consequence, take up a portion of it, and transmit it to the thoracic duct, and from thence into the mass of blood, tinging the serous part of it of a yellow hue, and hence declares the nature of the complaint in different

parts of the body. The udder of cows, soon after calving, frequently becomes hard and indurated for want of activity in these vessels; when this happens the whole udder should be rubbed with the hands, or an apron, which will stimulate them to increased action, and by this means disperse the hardness.

A part of Dover Cliff, some years ago, giving way, as I have been informed, the whole family of a Mr. —— were buried in the mass one hundred and sixty days, and while the labourers were one day digging for the materials of the building, they fancied, on getting near to the ruins, that they heard the noise of an animal, and at last discovered, with much labour, a live hog.

The weight of this animal, previous to the accident, was known to be 160 stone, and it was now reduced to three or four stone. He had been induced to enter his litter while buried in the mass, and licked the water that trickled down the side of the rock, which was all the nourishment he had. Here we have a remarkable instance of the effects of vital operation in reducing the weight of an animal, if not supported with food; the lymphatic absorbents, in these cases, keep gradually taking up the fat, flesh, and other solids of the body in the form of lymph, and convey it to the thoracic duct, and from thence into the cir-

culating mass of blood, repairing the losses that the blood has sustained in maintaining the life of the animal. In most of the diseases of neat cattle the appetite is diminished, and the animal in consequence becomes lean in the manner just explained.

The lymphatic absorbents* are affected in Farcy, a disease to which horses are subject, and which affords frequently an excellent demonstration of them and their valves: the valves cause that knotted appearance denominated *farcy buds*.

The lymphatic absorbents have appendages termed *lymphatic glands*, commonly called *Kernels*, situated chiefly in the loins, groin, between the jaws, and at the bottom of the neck, in the fat, or cellular substance under the skin. They all of them pass through their respective glands before terminating in the thoracic duct, and the lymph which they transmit, no doubt, receives a change in them. They are provided with numerous valves, which prevent the regurgitation of the lymphatic fluid in its course to the thoracic duct.

The *lymphatic absorbents* of the *head*, neck, and *fore extremities*, communicate and become

* These were formerly supposed to be veins that were affected, the lymphatic absorbents being vessels of modern discovery.

larger as they advance towards the thoracic duct, forming a few considerable trunks which enter the duct, near to its termination in the jugular vein. Those of the lungs inosculate in like manner, and terminate in the thoracic duct within the chest.

The *lymphatic absorbents* of the *hind* extremities, of the udder, or penis, the liver, the four stomachs, the milt, &c., repeatedly communicate and become larger, and, at length, form a few considerable trunks that terminate in the thoracic duct near to its commencement at the loins.

In the Joint Evil the lymphatic absorbents are affected, being in a state of increased and morbid action. The lymphatic glands or kernels situated between the jaws near to the windpipe, are enlarged in the disease, called Consumptive Horse, and some of the lobes of the lungs are also, in this complaint of indisposition, found indurated. The kernels between the jaws are sometimes enlarged, when the symptoms which attended them have disappeared.

Sect. XI.—The Blood.

The blood is incessantly circulating, in the heart and blood-vessels, through every part of the body, supplies materials for its nourishment and growth, and for the various secretions. The different component parts of the system are constantly re-

ceiving and appropriating to themselves, by a power inherent in them, those elements of the blood which are proper to supply the waste that they are continually sustaining from the necessary actions of life. Life is not a distinct principle in quadrupeds, but consists in the multifarious and combined actions of the whole animal machine. The health and vigour of the body require a new, daily, and liberal supply of fresh blood; for life cannot be supported two days with the same blood. The losses that it experiences in nourishing the body are, as we have before stated, repaired by the chyle, which is separated from the food by the process of digestion. Cows that give much milk will eat twice as much as those that are not milked, the secretion of this fluid causing such a waste of the blood and lymphatic fluid, from both of which it is formed.

The heat of the animal body, estimated at about 100 degrees of Fahrenheit's thermometer, arises, in part, from the alternate destruction and recomposition of the component parts of the body, effected by means of the blood-vessels and lymphatic absorbents.

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*.

Serum is the watery part of the blood, and surrounds the red clot. It contains several kinds of salts, and if heated to 160 degrees of Fahr. therm., it coagulates, and has the appearance of the white of an egg: a little sulphur is, also, detected in it, from its tinging silver of a dark hue.

Red Clot, or *Cake,* coagulates spontaneously, and is found to consist of two parts, namely, gluten, or coagulable lymph, which is a whitish, fibrous substance, and of extremely small red globules. These red globules may be separated by macerating the red clot in water, the coagulable lymph losing its redness, and becoming nearly white, while the red globules are dissolved in the water.

It is the red globules that give colour to the whole circulating mass of blood, to the flesh, and other parts of the body. In *Red Water* an immense number of these red globules is evacuated along with the urine, tinging it of a red colour; and in obstinate and fatal cases of this disease, the flesh, fat, kidneys, &c., are found preternaturally pale. Butchers sometimes bleed their calves to render the veal white, the red globules being longer in forming than the other constituent parts of the blood.

SECT. XII.—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 formed, is termed *secretion.*

In the section on the digestive organs, we have there mentioned the liquors secreted in the three first stomachs, and the gastric juice in the fourth; and the bile and pancreatic juice formed by the liver and sweet-bread, all of which dispose the elements of the food to a decomposition necessary to separate from it, that portion which is proper to become formed into blood. The saliva that flows so copiously into the mouth when the animal chews its cud, is secreted from the blood by two pretty large glands placed on each side of the head below the roots of the ears, and by glands situated between the jaws, and in the throat; each of these has a single duct, formed from numerous minute ones, for the purpose of conveying the saliva into the mouth to mix with the food, preparing it for the digestive process.

The blood and lymph of the lymphatic absorbents, which are determined, during the time of pregnancy, to the womb, become gradually diverted

therefrom before calving, and flow to the udder, supplying that large glandular organ with materials from which to secrete milk for the nourishment of the young animal as soon as born.

The perspirable matter constantly exhaling from the whole surface of the body, the vapour emitted from the lungs during respiration, and the urine secreted by the kidneys, are excrementitious fluids, that would prove injurious to the well being of the animal, were they not separated from the mass of blood by organs adapted for that purpose.

The mucous membrane lining the different cavities, as the throat, the gullet, the intestinal canal, also the nostrils, the windpipe, and the urinary passages, is lubricated with a fluid, termed mucus, which is secreted by little glands situated under the membrane, which exude upon its surface this slippery fluid, thus protecting these parts from external irritation.

The unctuous glary fluid, called synovia, or joint, oil, is secreted in the cavities of the joints to facilitate the motion of the articulated bones.

The semen, so necessary to the propagation of the species, is secreted by the testicles.

All the glands are abundantly supplied with blood-vessels and lymphatic absorbents; they have

also nerves ramifying through their substance, and each of them has an excretory duct, or pipe, to convey the secreted fluid to its particular part.

The glands vary very much in size, structure, and appearance, and each is endowed with a peculiar power of acting on the general mass of blood, and separating from it the different fluids of the body. The secreted fluids are, in general, formed in those minute ramifications of the blood-vessels, where the red particles of the blood do not enter.

When the glands are affected with disease, the fluids they secrete are altered in quantity and quality. In downfall the secretion of milk is diminished, and of a different quality from what it is in health. In diarrhœa, or scouring, the mucus that lubricates the intestinal canal is much increased in quantity, as appears from the thin glary stools, and instead of being of a bland nature, and protecting the bowels from acrimony, has now itself become acrid, and is a source of irritation to them. In all the inflammatory diseases, the secretions are more or less affected.

Perspiration, which has been just noticed, will be more particularly treated of in the following section.

Sect. XIII.—Perspiration.

A subtle vapour, called the perspirable matter, or perspiration, is continually exhaling from the surface of the body, and immediately combines with the surrounding atmospheric air, and is like it, imperceptible to our vision. When, however, they have been driven some distance, the perspirable matter flows more abundantly, and may be seen flying off from the body in the form of steam, and a portion of it condenses, and produces a moisture upon the skin, familiarly known by the name of sweat.

The perspirable matter appears to be a noxious vapour, very similar to that passing from the lungs in respiration. It is separated from the blood, and penetrates the coats of the innumerable minute blood-vessels ramifying on the skin.

Most of the diseases incident to neat cattle, arise from the perspiration being obstructed by sudden changes in the weather, or from the peculiar state of the air in particular situations, and frequently from both these causes operating conjointly.

The moist air in low, marshy, and fenny grounds, diminishes perspiration, and relaxes and debilitates the body, rendering the cattle exposed to its in-

fluence liable to slip their calves, to diarrhœa, &c. I have frequently observed the red water prevalent in low meadows and closes, situated by the side of woods, while the cattle feeding on the hills, not far distant, have been exempt from it.

Stalls for cattle should be in dry situations, and well ventilated, that the air may be free from moisture, and the perspiration thereby not obstructed.

Sect. XIV.—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 are imbedded in fat. They are of a red colour, and divided externally into between twenty and thirty distinct lobes, or portions.

A great quantity of blood is continually circulating through them, and they being glandular bodies, separate from it an excrementitious fluid, called urine. In winter the vessels of the skin are constricted, and the perspiration is thereby diminished, but the kidneys, not being influenced by the cold, secrete more urine, thus making up for the deficiency, showing that the noxious and useless parts of the blood must be evacuated by one outlet or another. If it be asked how the heterogeneous particles constituting urine are gene-

rated, I would say that they are, principally, the result of vital action, being contained in the blood returning by the veins, from all parts of the body, to the right side of the heart; and in the fluid conveyed by the lymphatic absorbents, to the thoracic duct, and from thence into the circulating mass of blood.

Each of the kidneys has an artery and a vein, termed *emulgents*, which enter at a depression in them, opposite to the spine, and an excretory duct, called *ureter*, that passes out of the same depression, a little behind the blood-vessels.

The *emulgent artery* arises from the posterior aorta, and passes directly into the kidney, ramifying throughout its substance into numerous minute branches.

The *emulgent vein* arises from the posterior vena cava, and passes immediately into the kidney, dividing into innumerable ramifications, the extremities of which inosculate with the extreme branches of the emulgent artery.

The vein and the artery lie close together, and may be distinguished from each other by the vein being much larger than the artery.

The *excretory duct*, or *ureter*, situated a little behind the two emulgent blood-vessels, may be traced, originating in the kidney; and if you cut open this portion of the duct, you will find a

number of small protuberances, of a whitish colour, like nipples, terminating in it, called *mamillary processes.*

The mamillary processes are chiefly composed of extremely minute tubes, called *urinary ducts*, which arise from the extremities of the arteries, and take up the urine that is secreted in them, and empty it into the ureter, by which it is conveyed into the bladder.

The blood is constantly flowing from the posterior aorta into the emulgent artery, and in the minute branches of that artery the urine is secreted; and the blood that remains after the secretion of urine is received by the emulgent veins, and conveyed to the posterior vena cava, and from thence to the heart.

Ureters. There are two ureters, one to each kidney. They pass from the depression in the kidneys to the superior part of the bladder, into which they terminate obliquely, and by this means the urine is prevented from returning. The ureters are for the purpose of receiving and conveying the urine from the kidneys to the bladder.

The Bladder is a large membranous reservoir, for receiving and retaining the urine, until such quantity be accumulated as to excite the organ to contract and expel it from the body. It is situated in the posterior part of the belly; in the

female animal immediately under the womb, and in the male under the gut from which the fæces are expelled.

The bladder is composed of three coats or membranes, analogous to those constituting the maw and the intestines (see page 45). The internal membrane secretes a mucous fluid to defend the bladder from the acrimony of the urine.

Diseases of the Kidneys. The most common diseased affection of the kidneys is that which gives rise to red water. Inflammation of the kidneys is not an unfrequent disease. Sometimes one of the kidneys is found, after death, enlarged and altered in structure, and at other times much less than natural; in these cases, the urine was thick and turbid, and they almost lost the use of the affected side, as if seized with palsy: medicines are of no avail when these diseased changes have taken place, but they might frequently be prevented by timely bleeding and purging at the first onset of the complaint, being then, generally, only a simple inflammation of the kidney.

The bladder is subject to inflammation, but not so much so as the kidneys, causing great pain and difficulty of making water (see inflammation of the bladder).

SECT. XV.—THE PERITONEUM, OR RIM OF THE BELLY, AND THE CAWL.

The *peritoneum*, or *rim of the belly*, is a strong and extensive membrane, lining the internal surface of the belly, and covering all the organs contained therein. This membrane may be distinctly seen, after the hide has been removed, and the butcher cuts into the belly; it lies immediately under the flesh, and a portion of it is generally at this moment detached, by the muscular fibres contracting and leaving it bare.

A doubling of the peritoneum proceeds from the loins, forming the mesentery, and investing the intestines and the four stomachs (see p. 46).

Another portion of it passes from the loins, and affords a covering to the kidneys, assisting to keep these organs in their proper situation: a considerable quantity of fat lies under that part of the membrane, immediately surrounding them.

The womb, and other internal parts of generation in the female, are entirely invested by a prolongation of it, which tends to support them in their respective places.

The bladder, the liver, the spleen, and also the testicles in the male, have all a membrane en-

veloping them, which is derived from the peritoneum.

The internal surface of the peritoneum is smooth and lubricated with a fluid which is exhaled from the minute vessels, ramifying on every part of it.

The Cawl is a broad and fatty membrane which arises from the stomachs, particularly the paunch, and from a portion of the intestines, covering all of them like a cloak. It consists of two membranes, between which there is a large quantity of fat secreted and deposited by the blood-vessels ramifying on them.

It is sometimes, from its peculiar structure, compared to a lady's veil, the spaces between the fatty deposits being thin and transparent.

The cawl appears to be, principally, for the purpose of keeping the stomachs and intestines warm by acting as a cloak to them.

Sect. XVI.—Organs of Generation.

The different internal organs described in the preceding sections, perform functions essential to the life and well-being of the animal. Besides these, there are organs destined to the propagation of the species, denominated *organs of generation*.

Female Organs.

The *Vagina*, or *Sheath* of the *Womb*, is a thick, elastic, and membranous canal, leading from the shape to the mouth of the womb, and is for the passage of the penis in the act of coition. It commences just within the shape, between the neck of the bladder and the fundament, and passes in a horizontal direction to the womb, to which it is firmly attached.

In the inner surface of the vagina, there are numerous wrinkles running longitudinally, which unfold themselves, and increase the capacity of this canal for the passage of the penis, or the fœtal calf. A thick, glutinous matter lubricates its internal surface, a considerable quantity of which is usually found in it.

In the lower part of the shape, there is a small pendulous projection which, at the time of bulling, becomes enlarged and very irritable.

Womb or *Calf-Bag*. It is attached to the extremity of the vagina, and contains the fœtal calf during pregnancy. In describing the womb, it will be better to divide it into three parts, namely, into *neck, body*, and two *cornua*, or *horns*.

The neck is that part of the womb connected to the end of the vagina, and has in its centre an aperture, named the *mouth* of the *womb*, which

opens into the cavity of that organ. The internal part of the neck is rough and wrinkled by numerous callous and longitudinal folds, and is lubricated with a glutinous fluid secreted from the membrane lining its internal surface.

The body of the womb extends from the neck, to where it divides into its cornua, or horns, and has internally longitudinal folds which gradually disappear as the impregnated womb becomes expanded.

The two cornua, or horns of the womb, are convoluted, and somewhat resemble in shape the horns of an animal.

There are on the internal surface of the cornua a number of small glandular bodies which, in the impregnated womb, become considerably enlarged and attached to the membranous bag containing the fœtal calf, and are then denominated *placentulæ;* these secrete a nutritious fluid for the nourishment and growth of the fœtal calf.

Tubes of the Womb. Two rather long and slender tubes are given off from the extremity of the cornua, one to each, and proceed in a zigzag manner, towards two small oval bodies, termed *ovaries*, or *female testicles.* The terminating part of the tubes are suddenly expanded like the end of a trumpet, by which means, during copulation, they grasp and almost surround the ovaries.

The *Ovaries*, or *Female Testicles*, are two whitish, oval bodies, about the size of a large nutmeg, situated near the extremity of the tubes, at the sides of the body of the womb. There are a number of small vesicles, termed *ova*, or *eggs*, full of a limpid fluid, found in the ovaries; these ova, physiologists suppose, contain the rudiments of the future animal, and, in the time of copulation, get vivified by the male semen, and received into the cavity of the womb, where they are nourished and developed: this theory we shall attempt to refute, when speaking of conception.

Several small bodies of a yellowish or turmeric-like colour, termed *corpora lutea*, are also found in the ovaries; if the animal has had any calves, one of them is considerably enlarged, and projects from the right or left ovary like a nipple, and in the middle of it there is a small oval cavity.

The ovaries, tubes of the womb, the womb, and the vagina, are enveloped by a doubling of the peritoneum, which is attached to the sides of the belly, and keeps them in their proper situation.

The female organs of generation are abundantly supplied with blood-vessels, lymphatic absorbents, and nerves.

Male Organs.

The *Testicles* are two glandular bodies of a soft texture, situated within the cod. They secrete a

glutinous fluid, called *semen*, or *seed*, which, in the act of coition, is ejected and fecundates one of the ovaries.

Structure of the *Testicles*. The testicles are chiefly composed of blood-vessels, lymphatic absorbents, and ducts, which take up the semen as soon as formed, denominated *seminific ducts*.

The posterior aorta gives off, near its termination, two small arteries which go to the testicles, one to each, and ramify through them into an infinite number of extremely minute branches. The semen is formed from the blood as it passes along the ramifications of these arteries. The blood that remains after the secretion of semen is changed from a florid to a dark red colour, and is received by corresponding veins, which arise from the extremities of the arteries. These veins keep gradually uniting, and form, at length, several considerable branches which pass from the testicle close to the artery, and soon after entering the belly, they form one large trunk, that empties its blood into a large branch of the vena cava posterior.

Seminific Ducts. The seminific ducts are extremely numerous and minute, and arise from the extremities of the arteries, being for the purpose of receiving the semen. They communicate and form larger ducts which pass from the back part

of the testicle, and almost immediately become convoluted, forming an oval prominence that projects from the body of the testicle. These ducts, at length, unite into a single duct or tube which is also tortuous, and constitutes the superior part of the oval prominence. This single duct, termed *vas deferens* from its conveying the semen to the penis at the time of copulation, passes from the oval prominence, and ascends, along with the artery and vein, into the belly, and then separates from them to terminate in the urinary passage of the penis, near to the neck of the bladder.

The Penis, or *Yard*, lies within its sheath. It has a passage, termed *urethra*, arising from the neck of the bladder, and terminating at the extremity of the yard, by which the urine is expelled from the bladder.

The yard is plentifully supplied with blood-vessels which, when it is erect, are distended with blood, thereby, enlarging and elongating it, and, in the act of coition, it emits the semen with great force, through the urethra, into the female organs of generation.

Sect. XVII.—Of Conception.

Few subjects have engaged more the attention of physiologists than that of conception, and various

opinions have, in consequence, been suggested, as to the manner in which it is effected. Our limits will not permit us to state all these different opinions, but only to notice that which is generally received at the present time, and one which we have been induced, from our own observations, to conjecture as the efficient cause of the propagation of the species.

The prevailing theory of conception is, that each vesicle of the ovaries contains the rudiments of the fœtal calf, and that one of these, at the time of bulling, gets matured and fit for impregnation. In the act of copulation, the two tubes of the womb are elongated and grasp the ovaries; through one of these tubes, the male semen is transmitted and fecundates the matured ovum. The generative action immediately commences, the impregnated ovum enlarges and detaches itself from the ovary, and is received by the tube of the womb into the corresponding cornua. It adheres to the internal surface of the womb, is nourished, grows, and, at the end of nine months, is expelled from it, and changes its mode of existence.

The ovum, when received into the womb, is a term used to express the fœtal calf, the navel-string, and the membranous bag containing a limpid and glutinous fluid, in which the fœtal calf swims during the first month or two of pregnancy.

Our opinion of conception is, that the rudiments of the fœtal calf do not pre-exist in the ovaries, but that the ovum is the result of the process of secretion, carried on in one of the corpora lutea of the ovaries, and excited to this generative action by the male semen being conveyed to it at the time of coition. One of the corpora lutea is, after the first conception, found very much enlarged, and projecting from the surface of the ovum like a nipple, and in the middle of it there is a small cavity with a duct extending to the extremity of the nipple-like projection. The little ovum, we suppose, is formed in this small cavity, as is just stated, by the process of secretion, and passes through the duct into one of the tubes of the womb, and from thence into the womb itself.

Of Pregnancy.

The small ovum attached to the inside of the womb, is, in the first or second week of pregnancy, about the size of a walnut. The little animal may, even now, be seen through the transparent membrane which surrounds it, suspended in a limpid and gelatinous fluid. By the fourth week the ovum has considerably increased, and occupies the two cornua and part of the body of the womb, and the fœtal calf is about the size of a mouse.

The fœtal calf, by the fourth month, is large, but the skin not yet covered with hair, and the quantity of watery fluid is proportionally less in quantity, and changed to a yellowish or straw colour. A thick, glutinous, and very tenacious substance is secreted, during pregnancy, in the mouth and cavity of the womb, to as far as where it is expanded, which excludes all external communication, and preserves entire the ovum.

The skin gets covered with hair about the sixth or seventh month, and in the ninth the fœtal calf is large enough to change its mode of existence, and the womb contracts and expels, by a law of nature, the young animal and the burthen, and it is now fed on milk for a few months, till the digestive organs are fitted for more substantial food.

The fœtal calf lies in the womb so as to occupy least space; the fore and hind legs incline towards the belly, the head is bent towards the chest, and the back is slightly curved: the whole position resembling that in which the young animal lies, when asleep after birth. The young animal, a little before calving, alters its position; the head and fore feet now lie towards the mouth of the womb, the nose being placed between the feet, and the back is upwards, corresponding to the cow's back.

Nourishment of the Fœtal Calf.

The fœtal calf is contained within a membranous bag which is studded with spungy substances, that adhere firmly to the inside of the cavity of the womb. These spungy bodies, named *placentulæ*, are between sixty and one hundred in number; they secrete a nutritious fluid, resembling chyle, which passes into the blood-vessels, and is conveyed to the young animal for its nourishment and growth.

The blood-vessels of the womb, during pregnancy, are increased in size, and very conspicuous, allowing a much greater quantity of blood to circulate through them than in the unimpregnated state, and supply the placentulæ with materials, from which they separate the nutritious fluid. This chylous fluid is taken up by vessels appropriated for that use, which empty their contents into veins, originating in the placentulæ. These veins pass from the placentulæ in considerable branches, and are dispersed on the membranous bag, and, at length, form two large veins, denominated *umbilical veins.* The two umbilical veins, as soon as they have penetrated the navel of the fœtal calf, unite and form one trunk. This trunk passes through a fissure in the liver, nearly opposite the navel, and goes to the vena portæ, into which it pours its blood for the nutrition and growth of the

animal; before, however, communicating with the vena portæ, it gives a branch that terminates in the vena cava posterior, conveying a portion of blood directly into it. The blood sent to the vena portæ, circulates in the liver through the ramifications of that vein, and is then received by the hepatic veins, and conveyed by them into the vena cava posterior, and from thence to the right auricle of the heart.

The circulation of the blood in the fœtal calf is nearly similar to that of the animal after birth, except in two peculiarities which will immediately be noticed.

The fœtal calf does not respire in the womb, there being no air within its cavity, and, besides, it is surrounded with a watery fluid, and its mouth closed; the lungs are, therefore, not dilated as in respiration, but collapsed, in which state they have not sufficient capacity to allow all the blood conveyed by the anterior and posterior venæ cavæ to circulate through them. There is consequently a communication between the right and left side of the heart, by means of a small opening in the membranous partition that separates the two auricles from each other, which allows a portion of blood to pass directly into the left auricle. The blood that is propelled by the right ventricle of the heart into the pulmonary artery cannot all circulate through the lungs. The pulmonary artery, therefore, gives off, just before it divides into its several branches,

a small and short one that passes immediately to the aorta, or main artery, into which it pours part of its blood.

The blood that remains after circulating through the system of the fœtal calf, is returned to the placentulæ by two arteries, called *umbilical arteries*, which arise from the termination of the main artery, where it divides into its two great branches. The umbilical arteries pass on each side of the bladder, and proceed forward through the navel, accompanying the two umbilical veins, and forming with them the navel cord.

The blood undergoes a change, while circulating through the placentulæ, which renders it again fit to be transmitted to the fœtal calf; its losses are repaired by the nutritious fluid secreted in the placentulæ.

Immediately after the fœtal calf is expelled from the womb it breathes, and every time the lungs are expanded by the ingress of air a free passage is allowed to all the blood, returning by the anterior and posterior venæ cavæ, to circulate through them; the opening between the right and left auricle becomes, consequently, closed, and the small branch passing from the pulmonary artery to the main artery is obliterated: the two umbilical arteries are now no longer required, and become changed to a gristly substance.

Structure of the Membranous Bag, &c.

The membranous bag which envelops the fœtal calf, and contains a gelatinous fluid, consists of two membranes; the external one is strong, and has the numerous large ramifications of the umbilical veins and arteries dispersed on it; the internal is thinner than the external membrane, but is very vascular, being covered with minute blood-vessels, from which is secreted the gelatinous fluid. The gelatinous or watery fluid contained within the membranous bag, by keeping the womb upon the stretch, prevents unequal pressure on the young animal, and allows it to grow equally in every part. It is also my opinion, that the nutritious part of the gelatinous fluid is taken up by absorbent vessels, and passes into the umbilical veins, and is conveyed by them to the fœtal calf.

The four stomachs, and part of the intestines, and likewise the gall-bladder, are filled with a gelatinous fluid, analogous to that within the membranous bag, which not only favours the growth of these parts, but a nutritious fluid is extracted from it by the process of digestion, for a considerable quantity of tenacious excrement is found in the intestines of the fœtal calf: this gelatinous fluid is, no doubt, secreted from the internal membrane lining these organs.

There proceeds from the broad end of the bladder of the fœtal calf a membranous canal, termed *urachus*, which accompanies the umbilical arteries out of the belly, and along the navel-cord; but I have not been able to trace it any further. The urachus appears destined to convey the urine from the bladder into the membranous bag, when secreted in such quantity, that the bladder can no longer contain it.

The navel-cord is composed of four blood-vessels; two of these transmit the blood from the placentulæ to the fœtal calf, and are called the umbilical veins; the other two return it from the fœtal system to the placentulæ, and are called the umbilical arteries; and there is also the urachus.

Of the Udder.

The udder is a large glandular organ, destined to secrete milk for the nourishment of the young calf, and is situated under the belly between the hind legs. It is distended, some time before calving, with a milk called *beastings*, which not only nourishes the calf after birth, but also acts as a gentle and salutary purgative to it.

Structure of the Udder.—The udder is composed of a spongy substance, blood-vessels, lymphatic absorbents, nerves, and numerous milk-vessels to receive the milk as soon as formed, and retain it till wanted.

It is my opinion, that the milk is not secreted entirely from the blood circulating through the udder, but that a considerable portion, perhaps its watery or serous part, is derived from the lymph conveyed to it by the lymphatic absorbents; for when the udder is cut through after death, a quantity of lymphatic fluid is discharged; besides, one would scarcely think that such an abundant quantity of milk as the cow gives, could be formed altogether from the blood.

ON

THE DISEASES

OF

HORNED CATTLE.

CHAP. I.

INFLAMMATION.

INFLAMMATION is the most frequent diseased condition to which neat cattle are subject. This may no doubt be owing to their peculiar organization in respect to the four stomachs, disposing them to a plethora or redundancy of blood in the system. It is highly proper to be acquainted with a subject of so much importance as inflammation, and this may be done with a little study and reflection.

External inflammation is known to exist by the part being *swollen*, *tender*, and *hotter* than natural. In downfall, which is an inflammation of one or more quarters of the udder, the affected parts are swollen, tender, and hotter than usual, which are

the common marks of inflammation, wherever it happens.

If the downfall be neglected, it is most likely that matter will form, which is a consequence of the inflammation, and may be denominated the *suppurative process.*

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

In black-leg, a disease peculiar to young cattle, the affected part loses its sensibility, and becomes dark coloured, and is said to be *mortified:* this state succeeds the inflammation which was not violent, but quick and weak. It is, however, most commonly the case in the other diseases incident to neat cattle, that mortification is preceded by a high degree of inflammation.

The three preceding paragraphs describe the most common terminations of inflammation: when the inflammation proceeds to the suppurative process, it is termed *suppuration;* when resolved, *resolution;* and when the part becomes mortified, *mortification* or *gangrene.*

External inflammation most frequently proceeds from outward causes, such as wounds, according to

their situation and extent;—bruises, and other accidents they are liable to, on various parts of the body. These produce different degrees of inflammation, according to the severity of the injury; when the inflammation runs high, it affects the whole system, and very often brings on feverish symptoms. The greatest danger attendant on wounds is when the inflammation exceeds its natural bounds, and instead of generating pus, a gangrene takes place; which, if not opportunely checked, will most likely destroy the animal.

External inflammation is sometimes induced from the animal taking cold, as in blain, downfall in the udder, and in the joints, joint felon, &c.

Proximate Cause of Inflammation.

The *swelling* in inflammation is principally to be ascribed to the increased quantity of blood passing through the vessels of the inflamed part, and its course in them being retarded. The *tenderness* arises in consequence of an augmented degree of energy determined to the nerves.

The heat of inflammation depends upon the increased reaction of the constituent parts of the blood, by which more heat is evolved than natural, and consequently the blood here more rarefied: this reaction of the blood is owing to the peculiar state of the nerves in the part effected.

The proximate cause of inflammation is, in my opinion, a peculiar action of the blood-vessels, nerves, and absorbents of the affected part, differing from that in a state of health.

Internal Inflammation.

Internal inflammation, as to its nature and terminations, is the same as external. If inflammation seizes any of the organs essential to life, as the brain, lungs, intestines, or other internal and important parts, the functions of the affected organ are impaired or deranged, and a fever is produced. In inflammation of the brain, the animal appears wild and terrific, which sufficiently indicates the part attacked. When the lungs are inflamed, there is a difficulty of breathing, and other symptoms denoting the nature of the complaint. If the bowels are inflamed, the beast is costive, lies down and rises again with great difficulty. When the calf-bed becomes inflamed, or a preternatural quantity of blood flows to that organ, in gestation, the cow in general slips her calf.

All inflammatory diseases are accompanied with fever. Fever is indicated by the beast appearing dull and languid, the eyes inflamed, mouth dry and harsh, breath hot, the breathing quicker than ordinary, and the pulse beating to about 60 or 70 in a minute; loss of appetite, and frequently the

bowels are disposed to be constipated. The extremities and roots of the horns are mostly cold, and frequently the animal moans.

When neat cattle are seized with any complaint, the symptoms should be carefully observed; for it is by these that one disease is distinguished from another.

GENERAL TREATMENT OF INFLAMMATION.

WHETHER inflammation be internal or external, resolution is to be attempted, or, in other words, the inflammation is to be subdued.

When inflammation seizes any important organ, as the *brain, lungs, bowels, kidneys, eyes, udder*, or *womb*, bleeding is to be immediately had recourse to, in order to resolve the inflammation; and after bleeding a purging drink is to be administered, and sometimes it is necessary to set a seton in the dewlap; but for the particular treatment I must refer you to the respective sections on these diseases.

In the blain, sleeping staggers, and downfall in the joints, copious bleeding and purging drinks are the chief remedies to be depended on.

In external inflammation from severe bruises, wounds, and other accidents, fomentation with warm water, poultices made of bean-meal, or rye-

flour, when they can be applied, and the purging drink (No. 3, or 4), tend to lessen the inflammation and promote a cure. If external inflammation be considerable it will be necessary to bleed the beast, lest mortification ensue.

If the swelling, from a bruise, or other cause, should increase in size, suppuration is most likely commenced, and the tumor must be opened with a lancet or pen-knife, when matter is fully formed.*

CHAP. II.

BLEEDING, ITS UTILITY—AND IN WHAT CASES NECESSARY.

BLEEDING is a most useful and powerful remedy in the cure of inflammatory and other complaints. It lessens the quantity of blood in the blood-vessels; diminishes nervous power, by which means it reduces the inflammation, and removes a too great fulness of blood in the system. The following are the chief diseases that indicate bleeding to be necessary.

1. Where animals in a thriving state rub themselves until they fetch off the hair, the spot being frequently covered with a dry scab, and when the eyes appear dull, languid, red, or inflamed, the

* For the further treatment of wounds, see section on wounds.

breath hot, and the veins puff up and seem considerably larger than common; these symptoms show a plethora or redundancy of blood in the body: in such cases bleeding should be resorted to, and a purging drink administered, which will in general restore the animal.

2. In all kinds of inflammatory diseases, as inflammation of the *brain, lungs, kidneys, bowels, eyes, womb, bladder, shape,* and *downfall* in the the udder, or joints, bleeding is employed, and frequently repeated again and again, until the disease abates.

3. In the disease called Blain, not uncommon amongst neat cattle, bleeding has the very best effects; the tumefaction in general almost immediately subsides, and the beast speedily recovers.

4. When there is an undue determination of blood to the head, as in sleeping staggers or giddiness in the head, copious bleeding is necessary.

5. If the glands or kernels between the jaws, or of the throat, are perceived to be enlarged, and they are only recently affected, immediate recourse should be had to bleeding, or the lungs will probably become diseased, and consumptive hoose will be the consequence.

6. In bruises, hurts, wounds upon the head, strains in different parts, and all other accidents that may occur to the animal where there is reason

to apprehend considerable inflammation, bleeding will be proper.

6. In violent catarrh or cold, bleeding is employed, but in slight cases, cordial drinks will alone restore the animal.

7. The Yellows, when attended with feverish symptoms, or constipation of the bowels, requires bleeding. 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 the vessel which we open; but in inflammation of the eye, the eye-vein is also frequently cut, and in foot-halt, we sometimes bleed in the toe. The quantity of blood that may be proper to take away at one time cannot here be determined, but must be regulated according to the size, strength, condition, and the disease under which the animal may labour at the time. In many inflammatory diseases, too much can hardly be taken, provided the beast be not faint, or likely to fall down. A strong healthy beast will bear the loss of three or four quarts of blood, without the least injury; larger cattle, that are attacked with inflammatory complaints, will bear a larger proportion to be taken away at once than usual, from four to six quarts; but when it is necessary to repeat the bleeding, two or three quarts will generally be

sufficient. In inflammatory diseases, the bleeding may be repeated in eight or twelve hours, if the malady does not abate. The blood should flow from a large orifice made in the vein, as sudden depletion is more powerful in its operation. The beast must *never be suffered to bleed upon the ground, but into a measure,* in order that the proper quantity may be taken. The animal should neither be suffered to drink cold water immediately after bleeding, nor to graze in the field: the former may suppress perspiration, and the latter may cause the orifice to bleed again. If this operation be performed in the summer season, it will be best to fetch the cattle out of the pasture towards evening; bleed, and let them stand in the fold-yard all night; and the next morning take them to their pasture.

Bleeding will be found prescribed under different heads in this work; and the proper quantity necessary to be taken, must be regulated according to the disease, and urgency of the symptoms, and the size, strength, and condition of the animal.

CHAP. III.

On the utility of purging medicines, in most diseases incident to horned cattle.

Neat cattle are subject to a variety of different diseases as well as the horse, though not to the same extent as the latter; this may, in a great measure, be owing to the labour and fatigue which the one undergoes more than the other. Physic for cattle is one of the principal remedies, when properly administered, towards curing most of their complaints.

Purging medicines operate by increasing the evacuation of fæces from the bowels. Their effects on the animal machine are various; they excite the peristaltic or wormlike motion of the intestines, and increase the secretion of the exhalent vessels situated in their internal coat; they divert the increased flow of the blood from the affected organ, and determine it to the bowels, which is well elucidated in red water; 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: by these means they remove plethora or over-fulness of blood, cool and refresh the

body, when labouring under feverish symptoms, and have a tendency to resolve inflammation.

The chief purgatives in use for neat cattle, are Glauber salts, Epsom salts, Barbadoes or Cape aloes, caster oil, and sometimes we add too a common purging drink, in obstinate constipation of the bowels, two or three drachms of gamboge in powder. In some of the diseases of calves *calomel*, another purgative, is a powerful remedy, particularly in the hoose. The doses of these are as follows; one pound of Glauber, or Epsom salts, are commonly sufficient to purge a full sized beast; half an ounce, or six drachms of aloes, are added to the salts in particular diseases. One pint and a half of castor oil is a common dose, which is often given in inflammatory complaints, especially when attended with costiveness. The dose of calomel for calves is from eight to ten grains, or a scruple, according to the size and strength of the young animal. 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 purging drink about every six weeks, by way of keeping off the downfall, which in general has had the desired effect.

2. A purging drink is sometimes given to cows soon after calving, to prevent the milk fever.

3. Neat cattle are by nature of a greedy and ravenous disposition, whose appetite is unbounded, and hardly ever satisfied. Milch cows in particular are of this description; for, if feeding on herbage, or other food agreeable to their palate, they will very often continue until they be in danger of suffocation. Thus the powers of digestion become over burdened, and frequently the animal appears dull and heavy, and sometimes feverish symptoms are induced, in which cases purgatives alone can give relief; but it is often proper, after purging, to give a cordial drink or two, to promote digestion, when it seems defective.

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 be obtained: a clyster must be given, if the first drink does not operate. If the costiveness be accompanied with pain and feverish symptoms, an inflammation of the bowels is to be suspected, and must be treated accordingly. *See inflammation of the bowels.*

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

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

7. When medicines are given to prevent cows slipping their calves, we mostly commence with a purging drink.

8. Cattle that are fardell bound, purging medicines and clysters are requisite, and sometimes bleeding.

9. In all the inflammatory complaints, which is mentioned in the last chapter, a purging drink is commonly administered after bleeding.

10. Bulls that are bull burnt, a pound and an half of Epsom salts is given with the best effect.

If external inflammation, occasioned by wounds, bruises, and other causes, runs high and affects the whole system, purgative medicines are necessary to lessen the inflammation. When the inflammation is considerable, copious bleeding will likewise be requisite to subdue it, or mortification will probably be the consequence.

In different parts of this treatise a great variety of purging drinks will be found suitable for every disease; the reader is referred to those marked with the following numbers—(Nos. 3, 4, 8, 10, 16, 21, and 23).

The first two numbers are most chiefly in use.

All these drinks, it should be observed, are calculated for full grown cattle.

A gentleman in this neighbourhood (Retford, Nottinghamshire) had a cow that fed on turnips:

she licked up a large quantity of sand, in consequence of which she presently became *saped*, or bound in the body; and before a proper passage could be forced, she took six drinks, (No. 3, p. 108.) every day one; at last it had the desired effect, and she evacuated a large quantity of sand of a dark hue, and shortly after recovered. The remainder of the purging drinks will be found under the respective diseases to which they belong.

CHAP. IV.

ON SETONING.

THE utility of setoning for the prevention and cure of several diseases incident to neat cattle, is undoubtedly great. I know several situations in our neighbourhood, where, if the farmers did not adopt this precaution, they would lose great numbers of their young cattle with the black-leg.

In certain counties, the hoose in calves is very prevalent and fatal; where it so happens, they should be all setoned before it is accustomed to make its attack, which would prevent it, or, at least, render the complaint milder.

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

Setoning is often prescribed, in the course of this treatise, in inflammatory complaints, as inflamma-

tion of the lungs, hoose in cows, &c.; and acts by diverting the increased determination of blood from the inflamed part.

The discharge of pus or matter produced by setoning, is formed by a certain action of the vessels without the waste and loss of surrounding parts, and is as much a secretion as the bile, milk, and other fluids of the animal are.

Setoning operates as a preventive of disease, not, as is commonly supposed, by diverting the peccant matter from the vitals, but by exciting the suppurative process which prevents the black-leg, or hoose in calves, in the same manner as the secretion of milk will preserve cows from those diseases, namely, by preventing an inflammatory disposition in the body, arising from a plethora or redundancy of blood.

Mode of inserting a Seton.—The seton is commonly made of tow and horse-hair plaited together, or tow by itself will do, which should be about the thickness of the fore finger, and eight, ten, to twelve inches in length. Before inserting the seton, it must be dipped into an ointment composed of equal quantities of hog's-lard and common turpentine, previously dissolved. The seton being now prepared, an assistant is to hold the animal while you plunge the seton-needle, with the cord affixed to it, into the upper edge of the brisket or

dewlap, and bring it out again at its lower edge; the space between the two openings should be four, six, to eight inches between each other. The seton is to be secured by fastening a small piece of wood to both ends of the cord, having previously cut a furrow in the middle of each piece of wood, where the seton is to be tied. Matter will begin to run in a few days, and after that the cord must be drawn backwards and forwards two or three times a week for about a minute each time, to irritate the parts, and by this means increase the discharge. The seton, when inserted to prevent the black-leg, or hoose in calves, may stay till it rots out.

When setoning is had recourse to in inflammatory complaints, the cord should 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 quicker in stimulating the parts to action, and in bringing on the suppurative process, than the hog's-lard and common turpentine.

CHAP. V.

FELLON, CATARRH, EPIDEMIC COLD, OR INFLUENZA.

Each of these terms is occasionally made use of to express what is commonly denominated *a cold.*

Description.—The symptoms that are produced by taking cold, are; the beast appears dull and heavy, with weeping eyes; the nose is dry; the hair looks penfeathered or staring, and seems to stand the wrong way on the animal's back; loss of appetite, and, if a milch cow, the secretion of milk is diminished, or she is said to trick of her milk. If the hand be pressed upon the chine, or any part of the back, the animal will in many cases instantly give way; this is for the most part called the *chine fellon,* and is best understood by that name in the country. At other times the joints become more particularly affected than any other part, from which circumstance it is in general termed the *joint fellon. Old cows* are the most subject to this last complaint, especially a short time before calving. This necessarily occasions much trouble to the owner, which, if proper care had been taken, might have been prevented. When this happens, they generally require some assistance at rising, until the time of calving; in all other respects

they appear well, and eat their food as usual. For more information on this head, see Chap. VI. on *rheumatism*, or joint fellon.

When the *cold* is more violent, feverish symptoms are induced; respiration is rather accelerated, which is perceived by the working of the flanks; the animal hooses; the pulse is quicker than natural, being from 60 to 70 in a minute; the nose and mouth are dry, and the breath hot; restlessness, the beast moving from one place to another in apparent distress; the bowels are sometimes in these cases costive, or, what is best understood in this neighbourhood by the word *saped.*

Causes. Sudden and great changes of the weather, which occur particularly in spring and autumn, are the usual sources of this complaint. At the spring of the year, especially when the eastern winds prevail, great numbers of cattle are seized with it. A warm and moist air succeeded by a piercing, cold, and dry wind, will very often produce it.

Those cattle are the most liable to be attacked with colds that have been tenderly managed during the winter; cows after calving; and such as have been poorly fed, or been driven long distances, and after that exposed to a cold piercing wind.

These vicissitudes of the weather operate upon the animal frame by lessening the perspiration:

from this cause the functions of the body become deranged, particularly those of digestion and the secretion of milk.

Treatment. The most effectual means of treating colds, when not violent or attended with the feverish symptoms above described, is to give the animal a warm cordial drink, which, acting as a stimulant to the stomachs and intestines, assists the defective digestive energy; if a milch cow, increases the secretion of milk, restores the obstructed perspiration, and enables nature to resume her former course. Either of the following drinks will be found sufficient to answer the desired effect, under proper management.

RECIPE (No. 1.)

Cordial Drink.

TAKE—Aniseeds, carraway-seeds, grains of paradise, and fenugreek, fresh powdered, of each, two ounces:
Mix them together for one drink.

RECIPE (No. 2.)

Cordial Drink.

TAKE—Sweet fennel-seeds, and cummin-seeds, fresh powdered, of each two ounces;
Long pepper, turmeric, ginger, and elecampane, each one ounce in powder:
Mix for one drink.

The method of giving either of these drinks is as follows: take one and put it into a pitcher with two ounces of fresh butter, and two table-spoonfuls of treacle or coarse sugar; then pour one quart of boiling ale upon the whole; cover them down till new-milk warm, and then give the drink to the beast. By this method the whole virtue of the seeds will be retained, which chiefly consists in the essential oil.

By giving a few of these drinks to cattle that have been much reduced from scanty food, during a long winter, the animals have been so much revived thereby, as to resume nearly all their original life and vigour. In cases of this kind, where the system appears debilitated, one of the above drinks may be given every day, for three or four days together; but if the animal be in tolerable condition, the drinks may be repeated every other or third day, as may be thought most requisite.

In two hours after giving the drink, let the animal have a good mash made of scalded bran, or ground malt, with a handful or two of ground oats, or barley-meal added to it, and warm water that day. If north-east and easterly winds prevail, it will be proper to house the beast, at least during the night.

In slight colds during the summer, these drinks

may be given to cattle while in their pasture: and, where it can be made convenient, let them fast two hours after, and then graze as usual.

It is necessary to examine the sick animals every day, to watch them while they both dung and stale, and to see whether the body be of a proper heat, and the nose or muzzle of a natural breeze. If these be regular, there is not much danger.

If no feverish symptoms appear, the cordial drinks will be found sufficient to restore the animal. In some cases, however, a stiffness and pain remain; when this occurs, add a table-spoonful of laudanum to the drink (No. 1 or 2.)

If, however, the feverish symptoms mentioned above should appear (which frequently happen) the animal must be housed, or sufficiently sheltered from the inclemency of the weather, and it will in general be proper to have immediate recourse to bleeding. Three or four quarts of blood, according to the strength and size of the beast, should be taken away, and, in an hour or two after bleeding, let either of the following purging drinks be given. When the feverish symptoms are but slight, these purging drinks are alone sufficient to effect a cure.

RECIPE (No. 3)

Purging Drink.

TAKE—Glauber salts, one pound;
Ginger, in powder, two ounces;
Treacle, four ounces.

Put all the ingredients into a pitcher, and pour three pints of boiling water upon them. When new-milk warm, give the whole for one dose.

RECIPE (No. 4.)

Purging Drink.

TAKE—Epsom salts, one pound;
Aniseeds and ginger, in powder, each one ounce;
Treacle, four ounces.

Let this drink be given in the same manner as the above (No. 3.)

Either of these drinks will, in most cases, be found sufficient to purge a full-grown animal of this kind; the last, I frequently think, works its passage more quickly. If the purging drink should not operate in sixteen or twenty hours, let one half of either No. 3, or No. 4, be repeated, and add to it half an ounce of Barbadoes aloes powdered, which will no doubt have the desired effect. By strict attention to the above method of treat-

ment, the feverish symptoms will be removed, and the animal speedily restored. In severe cases of cold, it is sometimes necessary to repeat the bleeding and the purging drink. When the beast has recovered, it should be gradually exposed to the weather again; north-east and easterly winds are to be avoided as much as possible, and two or three *cordial drinks* may be given, which will recruit the strength.

CHAP. VI.

RHEUMATISM, OR THE JOINT FELLON.

THE word fellon is of frequent occurrence in the country; it is chiefly applied to diseases proceeding from cold, and is variously called as follows,—*cold fellon, joint fellon,* and *chine fellon.*

Description. The following are the symptoms: the animals for the first two or three days only appear stiff in the joints: afterwards they begin to tumefy or swell, and are painful, particularly when the beast attempts to move. Sometimes the stiffness extends all over the body, to such a degree that the beasts are unable to rise, when down, without some assistance. Cattle labouring under this disease suffer very much from the

severe pain of the parts, as well as from listlessness and inability to stir.

Causes. This is an inflammatory affection of the joints, and chiefly attacks milch cows and young cattle, at the spring of the year. It is in general occasioned by the animals being kept in a state of poverty and starving during the winter, and being suddenly exposed in the spring to the vicissitudes of the weather, or the inclemency of the north or north-easterly winds, especially in low situations.

Treatment. As soon as this disease makes its appearance, the cow must be taken to a warm cow-house or stable, or into a situation sheltered from the severity of the weather will do in slight cases, by which means the cure will be greatly promoted. Two or three of the following drinks will, in most cases, effect a cure, if given at the commencement of the disease.

RECIPE (No. 5.)

Cordial Drink for Rheumatism.

TAKE—Best flour of mustard, two ounces;
Aniseeds, carraway-seeds, and grains of paradise, in powder, of each two ounces;
Treacle, four ounces:
To be given in a quart of warm ale.

Or the following may be given.

RECIPE (No. 6.)

TAKE—Gum guaicum, in powder, one ounce;
Aniseeds, carraway-seeds, and grains of paradise, in powder, of each two ounces;
Laudanum, half an ounce:
To be given in a quart of warm ale.

If the ale be poured *hot* upon the drink (No. 6.), the gum guaicum must be kept out, and afterwards mixed in the drink when new-milk warm, or at the time of giving it.

It will in general be found necessary to repeat either of these drinks every other day for a few times. At the very commencement of the disease, it will frequently be soon removed, by giving them two or three of those excellent cordial drinks (No. 1, or 2, p. 105.) as there directed.

Should, however, the bowels be bound, or there be symptoms of fever, with considerable pain and swelling of the joints, one of the purging drinks (No. 3, or 4, p. 108.) must be given, as there directed; and, if the fever runs high, three or four quarts of blood should be taken from the animal.

In obstinate cases, the affected joints should be rubbed twice a day with the following oils, for about a quarter of an hour each time.

RECIPE (No. 7.)

Stimulating Oils.

TAKE—Neat's-foot oil, or linseed oil four ounces;
Spirit of turpentine, and water of sal ammoniac, of each two ounces:
Mix; and shake them well together when used.

In some few instances, a scaly eruption has broke out on the joints and other parts of the extremities, after the animal has recovered of the original complaint. When this happens, you must apply the following lotion to the affected parts morning and evening.

RECIPE (No. 8.)

Lotion.

TAKE—Blue vitriol, white vitriol, and alum, powdered, of each half an ounce;
Boiling water, one pint and a half:
Shake the bottle just before you use it.

CHAP. VII.

INFLAMMATION OF THE LUNGS.

IN speaking of the organs of respiration (see p. 36,) the lungs are described as being of a

delicate structure, more vascular than any other part of the body, and so essential to life that if their action be suspended for a short time, the animal dies. When inflammation, therefore, seizes them, death will soon ensue, or the beast will be injured and reduced by a lingering recovery, if the most prompt and rigorous treatment is not employed to subdue it. In inflammation of the lungs their action is in course impaired, which is perceived by the working of the flanks, and the breathing being quick and laborious.

Description. It commences with great difficulty of breathing, which is sometimes preceded by a cold shivering fit; the mouth is open, and a ropy fluid frequently runs from it; a cough or hoosing attends the complaint. The beast looks dull, and seldom lies down, as it can breath best in the standing posture; the ears, roots of the horns, and legs are cold, and the animal has no appetite. The pulse is scarcely to be felt, but rises after bleeding, and beats from 60 to 70 in a minute.

Causes. Inflammation of the lungs is induced by the perspiration being obstructed from sudden and great changes of the weather, especially when accompanied with wet. Cattle that are drove long distances and then exposed to the cold and damp air all the night, are particularly liable to it. It can always be traced to originate from cattle being

imprudently exposed to the cold, which might have been prevented from good management, and it most frequently attacks those that are feeding, or in excellent condition.

Treatment. Copious bleeding is the remedy most to be depended on for subduing the inflammation, and should be had recourse to as soon as the disease is discovered. The beast must be brought up, and put into a cool cow-house well littered, and let three, four, to six or eight quarts of blood, according to the size, strength, and the condition of the animal, and the violence of the symptoms, be immediately taken away. If the difficulty of breathing and other symptoms are not much relieved in six or eight hours after the first bleeding, it will be proper, by that time, to repeat it. A third or fourth bleeding, at intervals of six or eight hours between each, is sometimes requisite, but in smaller quantities, as two to three quarts, being regulated by the urgency of the smptoms.

A seton should be set in the dewlap immediately after the first bleeding, and either of the following drinks administered.

RECIPE (No. 9.)

Cooling Purgative Drink.

TAKE—Epsom salts, twelve ounces;
Nitre, one ounce;
Elecampane, one ounce:

Put the ingredients into a pitcher, and pour three pints of boiling water upon them, and give when new-milk warm.

Or the following may be given.

RECIPE (No. 10.)

Purgative Drink with Castor Oil.

TAKE—Epsom salts twelve ounces;
Nitre, one ounce;
Opium, one drachm;
Castor oil, one pound:

Pour one pint and a half of boiling water upon the salts and opium, and when cool add the castor oil, and give it directly.

One half of either of these drinks, or the whole of them, may be repeated every other or every third day, for two or three times, or oftener if required. Warm water and mashes must be regularly given two or three times a day.

When the beast has recovered, it will be proper, as much as possible, to avoid all those causes which induced the complaint. You may house the animal, during the night, for a short time, and if the weather be very unsettled, keep her up altogether, or turn her out only for a few hours in the middle of the day.

CHAP. VIII.

INFLAMMATION OF THE LIVER.

The liver is the organ that secretes bile, which is poured into the intestines to assist in the process of digestion, and to keep up their natural and healthful peristaltic motion. When the liver becomes inflamed, the secretion of bile is diminished, and there is an obstruction of the biliary ducts; less bile in consequence flows into the intestines, which generally causes costiveness, and a portion of the bile is taken up into the circulating mass of blood, and produces a yellowness of the eyes and other parts of the body.

The costiveness and feverish symptoms which accompany inflammation of the liver, sufficiently distinguish it from the yellows.

Description. Cold shiverings alternating with increased heat of the body; breathing short, which is seen by the working of the flanks; pulse quicker than natural; the white of the eyes, mouth, and other parts are of a yellow colour; the bowels are mostly constipated, or saped; loss of appetite.

The yellow tinge of the eyes and other parts of the body sometimes do not come on at the very commencement of the complaint; in these cases,

you would be led to suppose from the quick breathing and other symptoms, that the beast was labouring under inflammation of the lungs, or severe catarrh, and by the bleeding and purging adopted for its cure, you in general immediately check its progress.

In examining cattle that have been slaughtered while labouring under this disease, I have, in every case, found the lungs more or less inflamed, and in some few instances I have seen the inflammation extend to the intestines.

Causes. Fat beasts, or such as are in good condition, are the most liable to be attacked with this disease; particularly in hot weather, when overheated by driving, or from gadding and running about in the pasture on very hot days;—drinking cold water;—or being exposed to sudden cold after the body has been so heated. It is also produced by sudden vicissitudes of the weather.

It is sometimes occasioned by external injuries inflicted in the region of the liver; as one beast goring another with its horns, or from any violent contusion on the right side, where the liver is situated.

Treatment. It will be proper to have immediate recourse to bleeding, in order to subdue the inflammation. Three or four quarts of blood must

be taken away, and repeated the ensuing day if the quick breathing and other symptoms of fever are not much relieved; but in general one bleeding is sufficient.

The following purging drink is to be administered immediately after bleeding.

RECIPE (No. 11.)

Purging Drink with Aloes.

TAKE—Epsom salts, one pound;
Barbadoes aloes, powdered, half an ounce;
Salt of tartar, one ounce;
Aniseeds, in powder, one ounce:
Mix, and give in a quart of warm gruel.

This drink generally operates in the space of twelve or fourteen hours; if it does not, it will be proper to repeat it, by giving one half of the above drink every six or eight hours until the bowels are opened. The purging drink may be repeated until the complaint abates.

When the beating of the flanks and other symptoms of fever have disappeared, two or three of the following drinks will speedily restore the beast.

RECIPE (No. 12.)

Stomachic Drink.

TAKE—Cummin-seeds, and aniseeds, in powder, of each two ounces;
Salt of tartar, half an ounce;
Gentian-root, and turmeric, in powder, of each one ounce and a half;
Treacle, four table-spoonfuls:
To be mixed, and given in a quart of warm gruel or ale.

The diet should be mashes, made of scalded bran, with a proper quantity of ground corn and linseed cake mixed in it, or stiff gruel (see p. 128).

By strict attention to this method of practice, a cure will soon be effected.

CHAP. IX.

THE YELLOWS, OR JAUNDICE.

THIS is a common disease amongst neat cattle, and mostly proceeds from a debilitated state of the stomachs.

Description. This disease is first observable in the white of the eyes, which appears of a yellow tint, and as it increases, the whole skin becomes impregnated with the same yellow hue; the ears, tail, eyes, and mouth, are the parts where it is

most conspicuous to the sight. In every stage of the disease the animals have a weakness, and great debility of the nervous system, an aversion to move, and want of appetite. When in the pasture, they wander about by themselves, by the side of hedges or fences in a dejected manner. The secretion of milk, if a milch-cow, is lessened; the bowels sometimes costive; and the fore-teeth loose.

Causes. It generally arises from a debilitated state of the stomachs, which, being distended with food from slow and difficult digestion, especially the manifold, press upon the bile ducts, and prevent the bile flowing into the intestines. The bile being thus obstructed, is taken up by the lymphatic absorbents, and conveyed into the circulating mass of blood, and gets diffused throughout the body. Milch-cows are the most subject to it in the spring, and the latter end of the year, although they are not exempt from it at all other times. The fluctuating state of the weather seems frequently to give rise to this disease; care should therefore be taken to house them, when the weather is very changeable, and they appear not well.

Treatment. As soon as this disease makes its first appearance, it may for the most part be removed by a purging drink, and two or three stomachic drinks. The purging drink (No. 3,) or (No. 4,) p. 108, should be administered: if it is

necessary to repeat a purging drink, we sometimes give the following.

RECIPE (No. 13.)

TAKE—Epsom salts, half a pound;
Barbadoes aloes, six drachms;
Salt of tartar, half an ounce;
Ginger, and aniseeds, in powder, of each one ounce;
Treacle, four table-spoonfuls;
Mix for one drink.

Put the above drink into a pitcher; pour a quart of boiling water upon it; and when new-milk warm give it to the animal.

It must be observed, that it will be proper to keep the body sufficiently open throughout the disease.

After the purging drink has had the desired effect, let the following be given.

RECIPE (No. 14.)

Stomachic Drink for Yellows.

TAKE—Cummin-seeds, aniseeds, and gentian-root, in powder, of each two ounces;
Grains of paradise, in powder, and salt of tartar, each one ounce;
Treacle, four table-spoonfuls:
Mix for one drink.

Put the whole into a pitcher, then pour a quart of boiling ale upon the ingredients, and cover them down till new-milk warm, then give the drink.

If the disease does not yield to the above treatment in a few days, and the beast be in middling condition, it will be proper to take three or four quarts of blood away, and to repeat the stomachic (No. 14). The animal should not be turned out after bleeding that day, nor at night, but the morning following it may go to pasture as usual.

After the disease is removed, two or three of the stomachic drinks (No. 14) may be given with great advantage; they will invigorate the system, and, if a milch-cow, restore it to its former flush of milk again.

CHAP. X.

INDIGESTION.

THIS disease depends upon a state of debility of the stomachs, and is of frequent occurrence, especially amongst milch-cows. The healthy functions of the four stomachs are so important to the well-being of the animal, that when they become disordered, it is soon discovered by the effects produced.

Description. The symptoms attending indigestion vary in different cases, but may always be known by some of the following;—the animal appears dull and languid, with loss of appetite, and the two first stomachs are often distended with wind, which causes frequent belchings, and violent twitching pains in these parts, and, if a milch-cow, the secretion of milk is very much lessened. When the weakness of the stomachs is considerable, the beast throws up her cud and drops it, becomes thin and weak, being fatigued with a little exercise, the hair looks pen-feathered or staring, and she wanders about by herself in a dejected manner. As the disease advances, the tongue becomes swollen and white, a ropy fluid flows from the mouth, and frequently the animal is saped, or bound in the body.

Causes. This complaint is brought on by starving cattle during the winter, by poor diet, unwholesome food, change of pasture and situation, stagnant water, want of proper exercise, and sometimes comes on after cows calve, and arises from other causes easily discovered by a discerning grazier. These produce the disease by debilitating the stomachs, which renders digestion slow, difficult, and imperfect.

Cure. Indigestion is in most cases easily removed by giving the affected animal a liberal

supply of good nourishing food, and administering such medicines as promote digestion and invigorate the system. The drink (No. 14.), or the following, will be found excellent for that purpose.

RECIPE (No. 15.)

Stomachic Drink.

TAKE—Aniseeds, carraway seeds, and the best mustard, in powder, of each two ounces;
Grains of paradise, and salt of tartar, of each one ounce;
Gentian root, in powder, one ounce;
Treacle, four table-spoonfuls.

Mix these for one drink, and give it in a quart of warm ale or gruel.

If the beast is much reduced or affected by the complaint, the above drink should be repeated every day for three or four days together; but, in slight cases, every other or third day will do.

Should the bowels be costive at any period of the disease, let the following purgative drink be given:—

RECIPE (No. 16.)

TAKE—Castor oil, one pound;
Epsom salts, half a pound;
Aniseeds, and ginger, in powder, of each one ounce.

Dissolve the salts in a quart of boiling water, and, when new milk warm, add the castor and powders, and then give it immediately.

If the tongue hangs out, is white, and a slimy fluid flows from the mouth, it will be proper to take away three or four quarts of blood, and to give the purgative drink (No. 16). When these symptoms are relieved, the tone of the stomach is to be restored and strengthened by administering a few of the stomachic drinks (No. 15). The treatment here laid down will effect a cure in the worst cases, with proper management. Let the animal have good sweet hay, and a sufficient quantity of it; also mashes, with ground oats or barley in them, and if a poor pasture, remove her to a better.

CHAP. XI.

INFLAMMATION OF THE BRAIN.

THIS disease is one of the most distressing to which cattle are subject, and is commonly called by the name of *frenzy* or *sough*. It is most prevalent during the months in the summer season.

Description. The eyes appear much inflamed, and ready to start from their orbits; the affected animals have a peculiar wildness and anxiety in their looks; stagger when they move, and some-

times fall down of a sudden, and rises again with the same volatility, until nature is quite exhausted. Sometimes they are very wild and terrific; I have seen them, in these severe cases, tear up the turf with their feet, and toss it up into the air with the utmost violence. As the disease proceeds, there comes on a copious flow of saliva, a grinding of the teeth, total want of rest, together with a constant trembling of the limbs;—all which are unfavourable symptoms.

Causes. It proceeds most commonly from a redundancy of blood in the system, called an overflowing of the blood, which is induced by cattle thriving too fast when turned on rich pasture grounds, or feeding them too quick to get them into condition for show or sale. I have known it occasioned by the intense heat of the sun, when cattle have been in fields where there has been nothing to shade them from its influence. It may be induced by severe contusions on the head, or by their being harassed and frightened, when driving them through large towns.

Cure. A cure is generally effected by copious and repeated bleedings, and the use of purging medicines; but bleeding is the chief remedy to be depended on. If the weather is not hot, it will be better to bleed the beast in the field; four, six, to eight quarts of blood, or even until the animal

faints, may be taken away. The bleeding must be repeated in six or seven hours, if the symptoms are not considerably abated by that time. Three, four, or more bleedings, at intervals of eight or ten hours, are sometimes necessary if the beast can bear it, but in smaller quantities, diminishing it at each bleeding. The following purging drink will be found well adapted for this disease, and should be administered as soon as possible.

RECIPE (No. 17.)

TAKE—Glauber salts, one pound;
Cape aloes, half an ounce;
Nitre, one ounce;
Camphor, one drachm, pulverized with a few drops of spirits of wine.

Mix and put the whole into a pitcher, and pour three pints of boiling water upon them, and give the drink when new milk warm. This drink may be repeated, if the case require it. The animals, in this complaint, cannot sometimes of themselves take a sufficient quantity of nourishment to keep them alive. It will therefore be found necessary to pour a sufficient quantity of that kind which produces the most nutriment.

The following gruel will be found adequate to the purpose:—

TAKE—An equal quantity of linseed in powder and oat-meal; make them into a stiff gruel, by just giving them a boil in a sufficient quantity of water, and, when new milk warm, from two to four quarts may be poured into the beast, or more, if necessary, three or four times a day; the gruel may be sweetened with coarse sugar or treacle, and half an ounce of nitre, and a little common salt added, if thought proper.

This may be reckoned one of the severest diseases to which horned cattle are liable; and after the symptoms disappear, it leaves them in a low, dejected, and debilitated state. The following restorative drink will be found very suitable for such cattle as have been reduced by severe disease:

RECIPE (No. 18.)

Restorative Drink.

TAKE—Gentian, in powder, one ounce;
Nitre, and salt of steel, in powder, of each, half an ounce;
Aniseeds, carraway seeds, and ginger, in powder, of each one ounce.
Treacle, four table-spoonfuls.

Mix for one drink; and give it in a quart of warm gruel. A wine glass of gin may be added to the drink, if thought proper.

It will be necessary to repeat this drink every two or three days, for three or four times, or longer, if required; or the following, if thought more proper, may be given.

RECIPE (No. 19.)

Restorative Drink.

TAKE—Peruvian bark, and gentian, in powder, each one ounce;
Salt of steel, half an ounce;
Ginger root, in powder, one ounce;
Elixir of vitriol, two drachms;
Treacle, four table-spoonfuls;
Gin, or brandy, two table-spoonfuls.

Mix, and give it in a quart of warm gruel, the same as No. 18.

CHAP. XII.

STAGGERS, VERTIGO, OR SWIMMING IN THE HEAD.

HORNED cattle are subject to this disease, which is generally known by some of the above-mentioned names. The seat of the complaint is in the brain, and arises from a too great quantity of blood being determined to that organ, unaccompanied with inflammation, but sometimes terminating in it, and is then called *inflammation* of the *brain, phrensy*, or *sough*.

Description. The symptoms are attended with heaviness and dulness of the whole frame, a constant disposition to sleep, which is manifested by the beast resting its head upon any convenient place; and the animal reels or staggers when it attempts to walk. If this disease be not checked in its infancy by bleeding, evacuating, and proper management, it will probably terminate in an inflammation of the brain.

Causes. This disease arises from an increased determination of blood to the brain, which compresses that organ, and thereby disturbs its functions, producing the symptoms just mentioned. It mostly attacks those cattle that have been kept in a state of poverty and starvation during the winter season; and which have in the spring of the year been admitted into a fertile pasture: hence is produced a redundancy of blood in the system, which gives rise to the disease. In these cases, also, the animals overload their stomachs, which weakens the digestive powers, and causes a too great distention of those organs; the free circulation through the lungs is in consequence impeded, which prevents very much the return of blood from the brain.

Cure. The cure must first be attempted by taking three, four, to six quarts of blood from the animal, according to size and strength; two or

three hours after, give one of the purging drinks (No. 3), or (No. 4, p. 108), or, if thought more proper, (No. 16, p. 124). Any of these are generally sufficient to purge a beast of moderate size: but if they should not operate in the space of sixteen or twenty hours, let one-half of either of the aforesaid purgings be given every eight hours, until the desired effect be obtained. If the heaviness and other symptoms are not much relieved after the purging drink has done operating, the following drink must be given, which will promote digestion, and act by the kidneys, by which the blood will be diverted from the head.

RECIPE (No. 20.)

TAKE—Resin, in powder, two ounces;
Nitre, and cream of tartar, in powder, of each one ounce;
Ginger, and aniseeds, in powder, of each one ounce;
Treacle, four table spoonfuls.
Mix, and give it in a quart of cold ale.

This drink may be given two or three times in the course of the complaint, if thought requisite. It will be necessary to repeat the bleeding, if the disease does not readily give way. Should symptoms of inflammation of the brain come on, the beast must be treated as directed for that complaint.

The keeping of the body sufficiently open with purgative medicines, bleeding, and administering the above drink according to the rules laid down, I have no doubt, will prove sufficient to perform a cure. If the disease continue long, the following blistering ointment may be well rubbed on the poll of the head, and on each side of the neck, with the hand.

RECIPE (No. 21.)

Blistering Ointment.

TAKE—Yellow basilicon ointment, three ounces;
Spirits of turpentine, one ounce;
Spanish flies, in powder, half an ounce,
Euphorbium, in powder, two drachms.

Mix them well together on a slab, and put them in a pot for use.

It will be proper to repeat this blister once a day for several days together, and if it take proper effect, it will, in general, give considerable relief to the head. When the blister has ceased to discharge, the part may be rubbed with elder or marsh-mallow ointment once a day, for two or three times, and after the symptoms are abated, the animal may be restored by giving the drink, (No. 17, p. 128), or (No. 18, p. 129), as there directed.

CHAP. XIII.

INFLAMMATION OF THE BOWELS, WITH COSTIVENESS.

INFLAMMATION of the bowels is by no means an uncommon disease amongst neat cattle, and frequently proves fatal to them from injudicious treatment. It is a complaint easily known by the fever, pain, and costiveness attending it.

Description. The animal appears remarkably weak and low; lies down frequently, and rises again with much difficulty, and sometimes strikes at the belly with the hind feet. The bowels are costive, and the urine generally voided with difficulty. The pulse is quicker than natural, and the beast breathes rather quick, which is perceived by the heaving of the flanks.

Causes. It mostly arises from cattle catching severe colds; and is often brought on by their going into rivers or ponds, after being heated and fatigued. It is sometimes produced by change of pasture, and error in diet.

Treatment. If this disease continues for a day or two with all the aforesaid symptoms, a mortification of the bowels will ensue, which will soon terminate the animal's existence. This, however,

may be prevented by proper treatment at the onset of the complaint. Four, five, or six quarts of blood, according to the strength and size of the animal, and the violence of the symptoms, are to be taken away as soon as ever the disease is discovered. If the animal is not relieved in the space of six or eight hours, the bleeding must be repeated, taking about three quarts, and a seton set in the dewlap. A pint and a half of castor oil should be given immediately after the first bleeding, or the following, which is more powerful.

RECIPE (No. 22.)

Purgative Drink.

TAKE—Castor oil, one pound and a half;
Epsom salts, half a pound;
Nitre, one ounce.

Dissolve the salts in two pints of boiling water, and when new-milk warm, add the castor oil, and then give the drink. If this drink does not operate in about eight hours, it must be repeated, and the following clyster injected, previously back raking the animal.

RECIPE (No. 23.)

Clyster.

TAKE—Thin gruel, three quarts;
Common salt, half a pound;
Sweet oil, half a pint.

Inject it up the anus when new-milk warm, not warmer.

A third or fourth bleeding is sometimes requisite, but in smaller quantities, being regulated in this respect by the urgency of the symptoms.

The cow-house must be kept moderately warm, and the stall well littered, and the animal should have warm water and bran mashes.

CHAP. XIV.

DYSENTERY, SLIMY FLUX, OR SCOURING ROT.

THIS disease is met with at every season of the year, but is most prevalent in autumn, particularly in low, wet, and swampy situations.

Description. It begins with frequent and painful efforts to expel the dung, which is thin, slimy, and altered in colour, not appearing like the natural fæces; flatulency and severe gripings of the bowels, as appears from the restless state of the animal, frequently lying down and soon rising again, and a rumbling noise in the intestines, which proceeds from wind generated in them. If the disease be neglected, or improperly treated, the beast becomes in a short time reduced to a very weak and debilitated state, attended with loss of appetite;

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 often a membranous or skinny-like substance is seen in it; and the hair all over the body appears penfeathered or staring. Feverish symptoms also accompany the disease; the eyes appear dull and inflamed, working of the flanks, and the pulse quick.

In some instances, and I have seen one lately, hardened dung is retained in the bowels, and nothing but a slimy or liquid matter is ejected. Many cattle, I have no doubt, die of this particular kind of dysentery, for want of timely bleeding, purging drinks, and clysters.

Causes. Dysentery or slimy flux most commonly arises from suppressed perspiration, induced by exposure to sudden vicissitudes of the weather, especially when it has been previously fine and warm. Cattle that are over-heated by driving, and turned into pasture at night, where they lie upon the wet grass, are sometimes attacked with it.

These causes produce the complaint by occasioning a peculiar inflammation of some parts of the bowels. In examining cattle that have been slaughtered, while labouring under this disease, I have found the intestines much paler and thicker than natural, which are marks of inflammation.

In one case, the inflammation extended to the female organs of generation, and caused barrenness.

Treatment. The animals thus affected should be taken from grass, and put into a lage cow-house, or an open yard, where they can be sheltered from the weather, and kept on dry meat, such as good hay, ground oats, barley, and beans. Take an equal quantity of any one of these three articles, and add to them a similar quantity of linseed cake; this will make good food for cattle labouring under this disorder. A proper quantity should be given them two or three times a day, and if they are much reduced and their appetite is quite gone, a stiff gruel may be made of the same, and horned into the beast three or four times a day. A strict attention to this method of diet will very much assist in promoting the cure.

If the eyes be inflamed, with heaving of the flanks, and painful twitchings of the belly, accompanied with severe gripings in the expulsion of the excrements, bleeding should be immediately resorted to; three or four quarts of blood may be taken from the beast.

The following purgative drink must be given as soon as the disease makes its appearance.

RECIPE (No. 24.)

Purgative Drink with Opium.

TAKE—Epsom salts, one pound;
Ginger, and aniseed, in powder, each one ounce;
Solid opium, cut in small pieces, one drachm:

Pour three pints of boiling water upon the ingredients, and give the drink when new-milk warm.

Let the following drink be administered when the physic has done operating, or in about twenty-four hours after the above drink has been given.

RECIPE (No. 25.)

Drink for Dysentery.

TAKE—Prepared chalk, four ounces;
Bole armenic, and aniseeds, in powder, of each two ounces;
Ginger, in powder, one ounce;
Solid opium, one drachm:
Mix for one drink.

This drink may be given in a quart of warm ale or gruel, and repeated every other day for three or four times, or oftener if required. In case the above should fail, it will be necessary to have recourse to others of a more astringent quality, as (No. 28), or (No. 29, p. 142), prescribed for

diarrhœa. The mutton suet, with opium in it, see p. 142, may be given every evening with advantage. In obstinate cases, the surface of the body should be kept warm with a rug or woollen cloth.

CHAP. XV.

DIARRHŒA, OR LOOSENESS.

THIS disease is in most cases soon cured, if properly treated at its commencement; but when neglected, it frequently proves very obstinate.

Description. Diarrhœa shows itself by frequent and copious evacuations of thin dung, which is sometimes slimy or mucous, and, in some few instances, bloody. If the disease continues any time, the beast becomes reduced in flesh, together with loss of appetite; the dung has a glairy appearance, and the complaint not unfrequently terminates in dysentery.

Diarrhœa, or looseness, may be distinguished from dysentery, by the purging in the latter being accompanied with severe gripings, and painful efforts to expel the dung; the eyes dull and inflamed; heaving of the flanks; together with loss of appetite from the beginning; and, moreover, the dysentery is most prevalent in autumn,

Causes. It most frequently arises from the perspiration being obstructed by the changeable state of the weather, and the want of sufficient vigour in the animal to resist these changes. It is often occasioned by the severe effects of the north and north-easterly winds, at the spring of the year. The time when cattle are most liable to be seized with diarrhœa, is in the months of April and May, especially if the season be wet and cold, grass plentiful, and of a sappy nature.

Cows, after calving, are liable to take cold when exposed in damp or wet situations in severe weather, which frequently causes this disease.

It more particularly attacks those cattle that have been *clammed* or *pined* during the winter, which renders the body more susceptible of being affected by the vicissitudes of the weather. It sometimes proceeds from a weakness of the bowels, induced by unwholesome food, poor keep, and the debilitating effects of milking.

Treatment. It will be proper to put the affected animals, if the weather be unfavourable, into a cow-house, or an open yard, where they can be sheltered from the weather, and kept on dry meat as directed in the last chapter for dysentery. In the generality of cases, either of the following drinks will be found sufficient for the cure.

RECIPE (No. 26.)

Drink for Diarrhœa.

TAKE—Prepared chalk, four ounces;
Aniseeds, in powder, two ounces;
Ginger, in powder, one ounce;
Opium, cut in small pieces, one drachm:
Mix for one drink.

Or,

RECIPE (No. 27.)

TAKE—Prepared oyster-shells, four ounces;
Prepared chalk, two ounces;
Ginger, and grains of paradise, in powder, each one ounce;
Dover's powders, two drachms;
Mix for one drink.

These drinks should be given in a quart of warm ale or gruel, and repeated every other day, until the diarrhœa be checked. One drink is frequently sufficient for the cure.

When, however, the diarrhœa is of long standing, or obstinate, we must resort to others more powerful, which are of an astringent nature, such as the following.

RECIPE (No. 28.)

TAKE—Prepared chalk, four ounces;
Galls, and gum kino, in powder, of each half an ounce;
Aniseeds, and ginger, in powder, each one ounce;
Opium, one drachm:
Mix for one drink.

Or the following, which is stronger.

RECIPE (No. 29.)

TAKE—Prepared oyster-shells, six ounces;
Pomegranate-shell, in powder, two ounces;
Galls, in powder, half an ounce;
Grains of paradise, and caraway-seeds, of each one ounce;
Solid opium, one drachm.

Either of these drinks may be given in a quart of warm ale or gruel, and repeated every other day, until the desired effect be obtained. In these obstinate cases, the cure is promoted by giving the following to the beast every evening, if thought requisite.—Dissolve one pound of mutton-suet in two or three quarts of milk, and boil with one drachm of opium, and give when new-milk warm. In these severe cases, the beast should be kept warm. A strict attention to the method of cure here laid down will rarely fail in removing the complaint.

CHAP. XVI.

INFLAMMATION OF THE KIDNEYS, OR INFLAMMATORY RED WATER.

INFLAMMATORY red water is accompanied with symptoms of fever and pain from its very commencement, which sufficiently distinguish it from red water. It is almost always confounded with red water, from the urine being bloody; and for want of bleeding, it frequently proves fatal. In the inflammatory red water, the kidneys are inflamed; but in the common red water, there is only an increased determination of blood to them: the latter, however, when improperly treated, frequently terminates in the former.

Description. It begins with a shivering, succeeded by increased heat of the body; the muzzle dry; working of the flanks; urine of a red colour, discharged in small quantities, and sometimes with considerable pain; loss of appetite. As the disease proceeds, the animal loses strength; the bowels become constipated; the urine of a dark colour, and death soon closes the scene, which might have been prevented by proper treatment.

Causes. The origin of this disease is most generally to be ascribed to cattle taking cold,

particularly when turned into low pasture grounds at the spring of the year. It most frequently seizes young beasts that are feeding, or in good condition; for a fulness of blood in the system renders them more liable to the complaint.

Sometimes inflammation of the kidneys proceeds from external injuries; such as a violent bruise across the loins in consequence of other beasts ramping on them, or from a severe blow in the region of the kidneys.

Treatment. Bleeding is uniformly necessary at the onset of this disease; in proportion to the size, strength, and condition of the beast, from three, four, to six quarts of blood may be taken away. About two hours after bleeding, let the following drink be administered.

RECIPE (No. 30.)

TAKE—Epsom, or glauber salts, one pound;
Cape aloes, in powder, half an ounce;
Aniseeds, and caraway-seeds, in powder, each one ounce.

Pour one quart of boiling water upon the ingredients, and when new-milk warm give it.

This drink may be repeated every other or every third day, as the circumstances of the case may require. Should the feverish symptoms continue, it will be proper to repeat the bleeding, but

in smaller quantity; two to three quarts will be sufficient.

If the animal gives way, when the hand is rather forcibly pressed on the region of the kidneys, let the loins be fomented two or three times a day with hot water, for about fifteen or twenty minutes each time.

Sometimes the urine continues of a red colour, after the feverish symptoms have disappeared by the above method of treatment; when this is the case, you must have recourse to the drinks (No. 32, or 33) ordered for red water.

CHAP. XVII.

RED WATER AND BLACK WATER.

THIS disease is common among neat cattle of every description, but more particularly attacks milch-cows than any other.

Description. The red water and black water *seldom occur separately.* The former I conceive to be the *original* disease, and the latter (black water) to come on as the complaint advances, and is generally an unfavourable symptom, frequently arising from inefficient treatment. When the change takes place from red to black water, the animal in general stales free from either for several

times. In slight cases, where the blood is passed away with the urine, the beast does not appear to be affected by it: if a cow, she holds to her quantity of milk, and seems no worse. But when the blood so passed away is considerable, and continues for a length of time, it reduces the quantity of milk, and likewise the animal itself to a very low state; and if some powerful remedy be not resorted to, the beast must inevitably sink under the pressure of the disease. In these bad cases, the milk sometimes becomes discoloured, and the beast is frequently so weak, that she is unable to rise when down, and requires gruel to be horned into her.

The red water is sometimes attended with a lax state of the bowels, and, in some instances, a considerable quantity of blood is evacuated with the thin dung, and none with the urine.

Causes. The red water and black water arise from a preternatural quantity of blood being determined to the kidneys, and a consequent rupture of some of the minute blood-vessels of those organs. This undue determination of blood to the kidneys is very frequently induced by turning cattle, at the spring of the year, into low pasture grounds, or woodland pastures, where the air is moist, which relaxes and debilitates the animal frame, and lessens perspiration, occasioning the blood to become

too watery. The balance of circulation is deranged from the perspiration being suppressed, and a too great quantity of blood is in consequence determined to the kidneys, which gives rise to the disease. On removing cattle, thus affected from the state of the atmosphere, into a more elevated situation where the air is drier, will frequently restore the beast without the aid of medicines, but it is generally better, in these cases, to give the purging drink (No. 3, p. 108). It very often proceeds from cattle being removed from *good* to *bad land*, the grass of which disagrees with them, and the vigour of the body is thereby impaired, and they in consequence take cold, which flies to the kidneys, and occasions red water. It is often produced by their taking cold from the changeable state of the weather, or driving them long distances in the day, and turning them into fields at night, where they take cold. Cattle that are dried of their milk, and turned into a good pasture to get them into condition, are sometimes attacked with it, but more commonly with the downfall; these should have a purging drink about every five or six weeks, which would, in general, prevent the above diseases. I have known some to have been attacked with this complaint, once or twice a year for two or three successive years, and at last literally bled to death, defying all the powers of medi-

cines and change of diet. The red or black water is most prevalent in the spring and summer, when the grass is nutritious and produces a plethoric state of the system, or what is commonly called a *redundancy*, or *overflowing* of the *blood*, which favours an unequal distribution of the blood, when they are affected by the causes above mentioned. Some cattle are more liable to the red water than others, which may in a great measure be owing to the nature of the soil, and the state of the air they have been accustomed to: these, when removed into pastures where the land is bad, and the air moist, are frequently attacked with it.

Treatment. The cure must first be attempted by purging medicines; for which purpose the following drink will be found suitable.

RECIPE (No. 31.)

Purging Drink for Red Water.

TAKE—Glauber salts, one pound;
Nitre, and cream of tartar, in powder, of each one ounce;
Ginger, in powder, two ounces;
Treacle, four table-spoonfuls:
Mix, for one drink.

Put these articles into a pitcher, and pour three pints of boiling water upon them. Stir the whole, and when new milk-warm, give the drink to the

beast. This contributes powerfully to remove the cause of the disease; for, if it operate sufficiently, it in general cures without any other aid; and if not, it will be necessary to repeat it. The greatest danger which attends the animal in this disease, is that of costiveness, or being *saped*, which the above drink will be found amply sufficient to remove. Should the disease be accompanied with looseness, or symptoms of pain, as a straining or holding out of the tail, add a drachm of opium to the above drink, and give the beast two or three of the cordial drinks (No. 1, or No. 2, p. 105.)

If the purging drink should not have the desired effect, by the time it ceases to operate, it will be necessary to give the following drink.

RECIPE (No. 32.)

Astringent Drink.

TAKE—Resin, in powder, four ounces;
Alum, in powder, three ounces;
Bole armenic, and red sanders, of each one ounce;
Treacle, four ounces:
Mix for one drink.

Let this drink be given in a quart of decoction of oak bark: the decoction must be cool when the ingredients are put in. The decoction should be made by boiling, for about a quarter of an hour,

three ounces of oak bark, coarsely powdered, in three pints of water, and when cool, strain.

If this drink be given to beasts that are inclining to be costive, it will increase the danger, by reason of its astringent quality; in such a case, therefore, it will be most adviseable to give the purging drink *first*. As long as the animal does not appear to be inclined to a costive habit of body, the drink may be given every other day for two or three times, and if the beast is not cured in that time, it will be proper to have recourse to others of a more powerful nature, as follows:

RECIPE (No. 33.)

Astringent Ball.

TAKE—Strained turpentine, four ounces;
Armenian bole, alum, and red sanders, in powder, of each two ounces:
Mix them together in a mortar, and beat them into a proper consistency for one ball.

Or,

RECIPE (No. 34.)

TAKE—Venice turpentine, four ounces;
Nitre, bay berries, and Armenian bole, in powder, of each two ounces;
Alum, in powder, four ounces:
Make into one ball.

Let either of these balls be sliced, and put in a pitcher, and a quart of hot gruel poured upon it, or otherwise dissolved in the gruel over the fire; put it into a pitcher, let it stand till new milk-warm, and then give it. The ball may be repeated every other night. I have frequently found the ball (No. 34) to have the desired effect, after all other means have failed.

The following drink I have known to cure this disease, after others have been administered without effect.

RECIPE (No. 35.)

TAKE—Strong spirit of vitriol (that commonly called oil of vitriol) half an ounce;
Tincture of opium, half an ounce;
Treacle, four table-spoonfuls:
Mix, and give it in two quarts of warm gruel.

This may be repeated once a day, if found necessary, until a cure be obtained. There is a great number of other medicines made use of in the cure of this complaint; but I could never find any to excel the recipes above given. Some instances indeed have occurred, where half a pound of common salt, dissolved in two quarts of sour buttermilk, has completely succeeded in removing this complaint. The animal ought to be kept from food two hours before any of the preceding drinks or balls are given, and also one or two hours after.

They seldom require any particular kind of diet, as they are rarely, if ever, off from their food, except they are attacked with a fever; in which case they are liable to become costive or *saped*, which is always attended with danger. When a fever does come on in this complaint, the beast must be bled, have purging medicines and mashes, and treated as directed for inflammation of the kidneys (see p. 144.)

In obstinate cases of red water it is sometimes requisite to remove the cattle upon better land, or in a more elevated situation, where the air is dry and salubrious.

CHAP. XVIII.

THE DOWNFALL IN THE UDDER OF COWS, KNOWN ALSO BY THE NAME OF SORE UDDERS.

THIS is a disease of the utmost consequence to the owners of neat cattle. Young cows in high condition are the most liable to it, especially at the time of calving. Such as are more aged are the most 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, a summer's keep being generally thrown away, to the loss and disappointment of the owner.

Description. This disorder makes its appearance in one or more quarters of the udder, which is swollen, indurated, hotter than common, and painful when pressed; if a milch-cow, the secretion of milk is lessened, and changed to a ragged, bloody, or corrupt appearance. At other times the secretion 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 often disables the animal from rising when down. Sometimes the udder is scarcely or not at all affected, but the disease appears confined to the joints, which is known by their being swollen and inflamed, and attacking such cows as are liable to the downfall in the udder.

Causes. It arises from an inflammation of one or more quarters of the udder, which is most commonly induced by the animal catching *cold*, and particularly seizes those cows that have a redundancy of blood in the system, or are said to be of a gross habit of body. Young cows in high condition are, as we have already mentioned, the most subject to it, especially at the time of calving, but this species of downfall will be treated of in

the next chapter. I have know nung heifers have this complaint.

Treatment. It will be necessary, as soon as the downfall is first discovered, if the animal be in the pasture, to fetch her out, and take from three to five quarts of blood, according to her size and strength. If bled at night, it will be proper the mext morning to give her a purging drink, either (No. 3), or (No. 4, p. 108), as there directed; if a stout beast, add half a pound more of salts to the drink, which will be found to operate sufficiently in the space of twelve or fourteen hours; if not, it may be repeated. The beast should be kept up for a few days, and lie dry, and fed upon bruised rape cake, with ground oats or barley mixed in it, and let her have good hay to eat. By these means the inflammation will in general quickly disappear. The udder may at the same time be well rubbed with the following liniment, which will be found an excellent remedy in discussing inflammatory tumors in these parts.

RECIPE (No. 36.)

Soap Liniment.

TAKE—Soft soap, half a pound;
Spring water, two pounds;
Rectified spirits of wine, four ounces;
Spirits of turpentine, four ounces;

Dissolve the soft soap in the two pounds of boiling spring water, and when cold add the spirits of wine, and the turpentine.

Let this mixture be well rubbed on the part affected every night and morning after the cow has been well milked; and, if very bad, she may be milked in the middle of the day, and her udder well bathed with cold water. By frequent milking, and the application of the above liniment, the inflammation is generally removed in a few days. After the purging drink has ceased to operate, let the following drink be given.

RECIPE (No. 37.)

TAKE—Aniseeds, and caraway-seeds, fresh powdered, of each one ounce;
Resin, juniper-berries, and nitre, in powder, each two ounces:
Salt of tartar, half an ounce;
Treacle, four ounces;
Mix, and give in a quart of cold ale.

Or, the following may be given.

RECIPE (No. 38.)

TAKE—Nitre, two ounces;
Cape aloes, in powder, half an ounce;
Salt of tartar, one ounce;
Yellow resin, in powder, four ounces;
Juniper-berries, and ginger, in powder, of each two ounces;
Treacle, two table-spoonfuls:
Mix them all together, and give in a quart of cold ale.

These drinks may be repeated every third day for three times, or oftener if found necessary.

These are excellent drinks for curing the downfall in the udder of cows; and in all slight cases, one is in general sufficient to carry it off. If it be repeated every month or five weeks, it will totally prevent its return, and give time to the animal to fatten; but, if they be neglected, the season may be lost and the beasts be in a worse condition at the latter end of the year than they were before they were turned out in the spring. It therefore behoves every person to use his best endeavour to prevent this disease, and if possible not to suffer it to proceed to a state of suppuration. Where this is the case, it must be opened with a lancet, or one or more of the paps may be cut off, as may appear most convenient for discharging the matter.

In *some* instances, it may be found necessary to amputate, or cut off the whole of the udder. When this is needful, it requires a man of skill to undertake an operation of this kind. The bleeding of these wounds must be stopped by applying the styptic powder ordered in the chapter on wounds, which may, if necessary, be supported with a proper bandage across the loins: and after the blood is sufficiently stopped (which may be expected in twelve or fourteen hours), let the wound be dressed as directed in the section on wounds.

Should any reason be required why this disease is called by the name of *downfall*, the author begs leave to state that it is *universally understood* by that appellation in this part of the country (Retford, Nottinghamshire), and by no other. The different authors who have written on neat cattle say very little upon this complaint, and that chiefly under the name of *sore udders*.

A person in the neighbourhood of Retford had a large cow, of gross habit of body, that had been accustomed to have this complaint several times in the course of the summer, which was of considerable disadvantage: the summer after, he determined to dry and feed her; she had not been long at grass before she was attacked with the same complaint; I advised him to give her a pound and a quarter of *glauber's salts*, every six weeks

during the time of feeding; this prevented a return; she fatted and did well.

In downfall of the joints, copious and repeated bleedings are sometimes necessary.

CHAP. XIX.

THE MILK FEVER.

THIS is a disease peculiar to cows in high condition at the time of calving: whether young or old, all are liable to be attacked with it. Whenever it takes place, either at home or in the field, it is distressing to the animal, as well as troublesome to the owner; they seldom are able to rise in less than two or three days after. The puerperal, or milk fever, is most frequent during the hot weather of summer. The cows most liable to be attacked with this fever, have large udders that are full of milk for several days before calving, and often very much inflamed and swelled. It is a very dangerous disease when severe, and often proves fatal even under the most judicious treatment. The milk fever most commonly attacks the cow about the second or third day after calving. I have known it seize some a few hours after calving. It is first perceived by the animal refraining her food, looking dull and heavy, and walking still as if she had caught cold.

Description. A cold shivering-fit comes on, accompanied with so much debility that the beast commonly drops, and is unable to rise, until she obtains relief from medicines. The animal becomes very restless, and appears to experience great pain in the body, as she often looks towards the flanks, and kicks with her feet, and seems very much distressed. The head, as the disease proceeds, is in general so severely affected that the cow loses her senses, and will knock and bruise her head against any thing, and do herself much injury, if great care is not taken. The pulse is quick, being about 70 in a minute; and the tongue parching dry. The bowels are costive; there is no secretion of milk; and the slimy discharge from the barren ceases. As the disease advances the belly becomes enlarged; if purging medicines lessen the swelling of the body, it is a good sign, but if they are made use of, and the belly still increases in size, there are little hopes of her recovering.

Causes. Cows in high condition at the time of calving, are the most subject to this complaint. Sometimes, however, it attacks lean cows, especially if they are deep milkers. Its immediate cause is, I conceive, an inflammatory state of the udder, which is frequently induced by the animal taking cold, and from a redundancy of blood in the system. About the second or third day after

calving, a much greater quantity of blood than usual is determined to the udder for the purpose of the secretion of milk, but when the udder is inflamed, this act does not take place, and the blood is in consequence transferred to some other part or parts, as the peritoneum, the bowels, kidneys, &c. which deranges the whole animal frame and produces the milk fever.

Treatment. It is sometimes better to bleed in this disease, and sometimes not. If the feverish symptoms run high, attended with much pain, it will be proper to take three or four quarts of blood away. In every case a purging drink should be administered as early as possible, and I know of no one preferable to the following.

RECIPE (No. 39.)

Purging Drink for Milk Fever.

TAKE—Epsom salts, one pound;
Nitre, two ounces;
Ginger, and aniseeds, in powder, of each one ounce;
Treacle, four ounces:

Pour three pints of boiling water upon the ingredients, and give when new milk-warm.

This drink must be repeated in the space of sixteen or twenty hours, if it does not operate

before that time. If the bowels are with difficulty moved, it will be proper to inject the following clyster up the anus, having previously raked the animal.

RECIPE (No. 40.)

TAKE—Thin gruel, three quarts;
Common salt, half a pound;
Spirit of turpentine, half a pint;
Treacle, four ounces:
Mix, and when new-milk warm, inject, or force it up the anus.

This clyster will promote the evacuation of fæces, and tend to remove the swelling of the belly.

When the bowels are opened, and the animal still appears low and unable to rise, it will be requisite to administer the following cordial drink.

RECIPE (No. 41.)

Cordial Drink for Milk Fever.

TAKE—Ginger, and grains of paradise, in powder, of each half an ounce;
Aniseed, caraway-seeds, and flour of mustard, in powder, of each two ounces;
Salt of tartar, half an ounce;
Oil of turpentine, once ounce;
Treacle, four table-spoonfuls:
Mix, and give it in a quart of warm gruel, with the addition of a wine-glassful of gin or brandy.

This drink will invigorate the system, and promote the secretion of milk. It may be repeated once a day, or every other day, for two or three times. If the bowels are inclined to be bound at any period of the complaint, the purging drink (No. 39.) should be immediately had recourse to.

Cows afflicted with the milk fever, require great care and good nursing. The stall where they lie, must be well littered; and it is frequently necessary to cover them with a blanket, or some warm covering, when they are cold and shivering. The udder should be rubbed two or three times a day, for about half an hour each time, with soft soap, or pipe-clay, and cold spring water, which will assist in subduing the inflammation of this part. The paps should also be drawn occasionally, to solicit the flow of milk: it is a good sign when the milk begins to be secreted. As they are frequently unable to take a sufficient quantity of support of themselves, it becomes necessary to horn some nutritious food into them. The gruel in p. 128, is well adapted for this purpose, and may be given three or four times a day, to the quantity of two or three quarts at a time. Linseed porridge, with some treacle in it, is likewise very proper to give them at this time. When the head is much affected, the beast must be constantly attended, or she will do herself some serious injury.

Prevention of Milk Fever. The best method of preventing this disease is as follows: take four or five quarts of blood from the beast, about eight or ten days before her time of calving. Let the blood be taken away at night, and the beast be kept in a fold-yard till next morning. The purging drink (No. 39,) should be given before the animal is put to grass, as it will cool the body, and obviate the tendency to inflammation of the udder. The above purging drink is frequently given as a preventive to such cows as appear liable to the complaint, soon after calving, and with good effect.

If the cow's udder is not sufficiently relieved by bleeding and purging, the part may be well rubbed with the soap liniment (No. 36, p. 154,) as there directed, and the purging drink may be repeated. If the inflammation still continue to increase, or does not abate, it will be proper to milk her once or twice a day, for several days, before calving. When this is the case, the above lotion may be omitted, and the following emollient liniment may be applied each time after milking.

RECIPE (No. 42.)

Liniment.

TAKE—Elder ointment, marshmallow ointment, and soft soap, of each four ounces;
Spirit of turpentine, two ounces;
Mix the whole well together on a slab, and keep it in a pot for use.

This will greatly assist in removing the inflammation.

CHAP. XX.

BLAIN, OR FEVER WITH SWELLING.

THIS is by no means an unfrequent disease, and is commonly known by the name of blain, hawkes, or gargyse. It is generally not discovered until it has made some progress, and then appears with a swelling of some part of the body, and, in a few instances, I have seen it extend almost over the whole surface of the body, accompanied with symptoms of fever.

Description. The animal appears dull and languid; the eyes red and inflamed, with tears trickling from them; swelling of some part of the body, as about the nose, lips, and under the chaps, extending to the brisket; sometimes the tumefaction is more particularly under the belly, reaching frequently to the barren, and, in many cases, the udder is affected.

Sometimes the swelling begins about the eyes, and then appears on other parts of the body; there are often blisters under the tongue, and back part of the mouth; the pulse quicker than natural; more or less beating of the flanks; and the bowels sometimes constipated. When the complaint is not

checked at the onset, there is often a copious flow of saliva from the mouth; the beast becomes extremely weak and reduced; the swelling is frequently considerable, and there is often a large quantity of watery or serous fluid in the tumefied part, which must be discharged by puncturing it with a penknife; extensive sloughing sometimes takes place.

Causes. Those cattle are the most subject to this complaint that are in high condition, and feeding on rich pasture grounds. It appears in many cases to be brought on by a redundancy of blood in the system, or from the beast taking cold while in that state. It is most prevalent in the summer months, especially when the weather is hot and sultry, which oppresses the animal, and deranges the healthy functions of the body.

Treatment. Bleeding is the remedy chiefly to be depended on in the cure of this disease, and should be had recourse to on its first appearance. Three, four, or five quarts of blood, according to the size and strength of the beast, should be taken away, and repeated if necessary. The first bleeding often produces almost immediate relief; the inflammatory action is subdued, and the swelling subsides.

After bleeding let the following cooling purging drink be administered.

RECIPE (No. 43.)

Purging Drink for Blain.

TAKE—Epsom, or glauber salts, one pound;
Nitre, two ounces;
Ginger, and aniseeds, of each one ounce;
Treacle, four ounces.

Put the ingredients into a pitcher, and pour three pints of boiling water upon them, and give when new-milk warm.

This drink may be repeated, if the feverish symptoms continue. If the disease be severe, the animal should be housed, and fed on rape, or linseed cake, and bran mashes, together with good hay.

When sloughing of the tumefied parts takes place, the animal becomes extremely weak and reduced: in these cases, it will be proper to have recourse to the restorative drink (No. 105, p. 128) or the cordial drinks (No. 1, or 2, p. 105.)

CHAP. XXI.

BLACK-LEG, QUARTER-EVIL, OR BLACK-QUARTER.

THIS disease is called by a great number of other names; but as they all indicate the same

disorder, it would be of no advantage to the reader here to repeat them.

The symptoms are in some respects similar to those of the *Murrain* or *Pestilential Fever* (described in p. 173.) It is, however, highly necessary to discuss this malady in a separate section, as it does not appear either infectious or epidemic, but is almost wholly confined to young cattle from one to two years old.

Description. When this disease is discovered at its commencement, the animal appears dull and heavy, and walks lame as if sprained. In a short time a swelling takes place in some part of the body, as on the legs, shoulders, under the belly, or on some part of the back; when it appears on this last part towards the loins, it will be attended with the most danger. These swellings are at first soft, but soon a quantity of air is generated in them, in the cellular membrane situated between the skin and flesh, which produces a crackling kind of noise, when they are rubbed, or pressed with the hand. The mouth, and under the tongue, are sometimes affected with blisters, which arise from the severity of the fever. The pulse is quicker than natural, being about 50 in a minute.

Causes. When the vegetable creation springs up in all its perfection, the young animals are not

able to stand against such luxurious living, particularly those which have been much reduced by bad keeping and scanty food during a long and severe winter. A redundancy, or overflowing of the blood, is the consequence of the sudden change from bad to good living, and it is to this that the disease most commonly owes its origin. It is almost wholly confined to young cattle from one to two years old, and chiefly attacks those that are the most thriving. Milch cows, or lean cattle of all descriptions, are seldom seized with this disease. It is most prevalent in the summer and 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 does, however, frequently occur in the winter and spring, when they are feeding on turnips. Some situations are more subject to this complaint than others. I have observed it most frequent in low, marshy grounds, and pastures situated by the side of woods. In these places the air is apt to be loaded with moisture, which relaxes the animal frame, and lessens perspiration, thereby deranging the healthy functions of the body, by which means the disease is induced.

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

a glutinous, or bloody ichorous fluid of a very offensive smell 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.

Treatment. This disease rarely admits of cure, but fortunately it may in general be prevented. If the disease be discovered as soon as it makes its appearance, the young animal should be immediately housed, and then take from one to three quarts of blood away, according to age and size. Two hours after bleeding, give the following purging drink, which will be found of a proper strength for young cattle from the age of one to two years old.

RECIPE (No. 44.)

TAKE—Glauber salts, from eight to twelve ounces, according to size and strength;
Nitre, half an ounce;
Camphor, (rubbed into a powder, with a few drops of spirits of wine,) one drachm;
Aniseeds, and ginger, fresh powdered, of each one ounce;
Treacle, four table-spoonfuls:
Mix for one drink.

Let the ingredients be put into a pitcher, and then pour a quart of boiling water upon them,

and cover the vessel down until new-milk warm, and then give it. If the animal be more than two years old, the salts may be increased in proportion until the quantity shall amount to one pound. The affected part should be fomented, at the first appearance of the disease, several times in the course of the day, with hot water, for at least an hour each time. For this purpose you should have two or three large pieces of flannel in the hot water, and wring one of them out, and apply to the part affected, and when this gets cold, apply a fresh one. If the above treatment appears to take effect, it will be proper, in about twelve hours after giving the drink (No. 44), to administer the following.

RECIPE (No. 45.)

Drink for Black-leg.

TAKE—Resin, in powder, one ounce;
Myrrh, and salt of steel, powdered, of each half an ounce;
Gentian root in powder, one ounce;
Aniseed, and carraway seeds, in powder, of each one ounce;
Treacle, two table-spoonfuls:
Mix, and give in a pint and a half of cold ale.

This may be repeated every morning or evening.

Should the disease be not discovered until there is considerable swelling, and a crackling noise in the tumefied part, a cure is seldom effected. Bleeding, at this stage of the complaint, tends to hasten the death of the animal. If a cure is in these cases attempted, the drink (No. 45) should be given, which will invigorate the system by its cordial and tonic powers, and prevent the mortification extending. An incision is to be made with a scalpel, or pen-knife, the whole length of the swollen or tumefied part, and then nitre is to be put into the opening, and pledgets of tow soaked in hot spirits of turpentine, which will encourage the formation of matter, and by this means check the progress of the gangrene, and separate the dead parts from the living. The dressings are to be renewed every day, in the manner just stated.

Prevention of Black-leg. It will now be proper to lay before the reader a few observations worthy of notice, respecting the prevention of this malady in those districts where it is accustomed to appear. Every possible precaution cannot be too strictly adhered to in preventing so destructive a disease among young cattle; for, if once attacked, their cure is extremely doubtful. Such as thrive most are, in general, first attacked, and in the greatest danger. As soon as this disease makes its appearance upon any one of the herd, while in the

pasture, let them all be brought in the evening into a fold-yard, when from two to three quarts of blood may be taken from each, according to its size, condition, and strength. After bleeding, set a seton in the brisket, or dewlap. Let them be kept up till next morning, and then give to each beast the following drink.

RECIPE (No. 46.)

TAKE—Nitre, and madder, of each one ounce;
Salt of steel, half an ounce;
Ginger, and aniseeds, in powder, of each one ounce:
Mix for one drink.

This drink must be given fasting in the morning, in a quart of warm gruel, two hours after the beasts may be turned into the pasture. You may repeat the drink every three or four weeks. Such as are feeding on turnips are liable to be attacked with the disease, and when you have reason to dread it, they should be setoned in the dewlap before you turn them out, but not bled, and the drink (No. 45) given to them. In those situations that are particularly subject to the black-leg, the young animals must be setoned before turning them out to pasture, and the drink (No. 46) administered to them.

CHAP. XXII.

MURRAIN, OR THE PESTILENTIAL FEVER.

THIS disease is a putrid and malignant fever, which has from time to time destroyed immense numbers of neat cattle. It has, at different periods, made great ravages in most parts of Europe, as well as in our own country.

The murrain, it has been frequently remarked, made great destruction among horned cattle from the years 1744 to 1770: and I may further add, that few years pass away without its appearance in one part or other of the kingdom, and with different degrees of virulence. There is every reason to suppose, that this distemper is a contagious one, and is drawn in by the breath, at the nose and mouth of the animal, from others that are infected; and if the latter were timely separated and housed, there is no doubt but that the further progress of the infection would be prevented. This disease is first observed by its effects in disordering the whole animal frame for a short time, and sometimes for several days, before it make its outward appearance.

Description. The murrain that prevailed in Great Britain from the years 1766 to 1770, is well described by Dr. Layard, a physician who wrote a

treatise on the disease, at the time it was making such great havock amongst the neat cattle. The first appearance of this infection, says the Doctor, is a decrease of appetite; a poking out of the neck, implying some difficulty of deglutition; a shaking of the head, as if the ears were tickled; a hanging down of the ears, and deafness; a dulness of the eyes, and a moving to and fro, in a constant uneasiness. All these signs, except the last, increase till the fourth day; then ensue a stupidity and unwillingness to move, great debility, a total loss of appetite, a running at the eyes and nose, sometimes sickness and throwing up of bile, a husky cough, and shivering. The fever, which was continual the three first days, now rises and increases towards the evening; the pulse is all along quick, contracted, and uneven. A constant diarrhœa, or scouring of fœtid green fæces, a stinking breath, a nauseous steam from the skin, infect the air in which the morbid creatures are placed. Their blood is very florid, hot, and frothy; their urine is high coloured: the roof of the mouth and the barbs are ulcerated. Tumours, or boils, are to be felt under the fleshy membrane of the skin; and eruptions appear all along their limbs, and about their bags. If a new milk-cow is thus ill, her milk dries up gradually, her purging is more violent, and on the fourth day she is commonly dry. There is such

sharpness in the dung of the diseased, that a visible irritation is observed, during some time, in their fundament. They groan much, and are worse in the evening, and mostly when they lie down. These symptoms continue increasing till the seventh day, on which, generally, though sometimes protracted till the ninth, the crisis or turn takes place.

Bulls and oxen are not so violently attacked as cows and calves; and of these, cows with calf, and weakly cow-calves, are in the greatest danger.

If a cow with calf, at the critical time of this disease, slips her calf, she then takes her fodder and recovers. Some may only give signs of such abortion, and bear their calf several days, nay even weeks before they slip it, and yet recover. Calves receive the infection from the cow, by sucking her milk; and may also, if first seized, infect the cow.

This disease takes place at all times and seasons; but in summer and autumn it will rage most. The fate of the beast is generally determined on the seventh day from the invasion, though it has sometimes been delayed till the ninth.

Favourable Symptoms. If eruptions appear all over the skin, or boils, as big as pigeons' eggs, in different parts of the body, but especially from the head to the tail, along each side of the back-bone, and so ripe as to discharge putrid and stinking

matter; if large abscesses are formed in the horns, or in any part of the body; if the dung is become more consistent and hard; if the urine is thick, and not quite so high coloured as before; if the beast has had a shivering, succeeded by a general glow of heat, upon which the fever has abated, and the pulse beats regularly; if the nose be sore or scabbed; if the eyes look bright and brisk, and if the beast pricks up its ears upon a person going into the hovel, and will eat a little hay or peas; these symptoms will determine that the creature is out of danger.

Unfavourable Symptoms. But if, on the seventh day, the eruptions, or boils, are decreased in bulk, or have totally disappeared, without having broke or discharged outwardly; if the scouring continue almost constantly; if the breath be very hot, while the body, limbs, and horns are cold; if the groaning and difficulty of breathing are increased; if the running from the nose and eyes is lessened; if the eyes are dim, and sunk into the head, with a perfect stupidity; if the urine is dark coloured, the pulse intermitting, and a cadaverous smell is observed, we may assuredly pronounce the creature to be near its end.

Appearances after Death. A tumor was met with either across the loins, or on some other part of the body, which, when pressed with the hand,

made a crackling noise somewhat similar to that of a bladder, when dry and full of wind. All the carcases that were opened appeared extenuated by the scouring. Upon opening the skin, much stinking air rushed out, and sometimes a purulent and sanious discharge. The vessels of the brain were tinged, and filled with blood of a very red colour and loose texture; the ventricles filled with water. The membranes of the nose, the glands, the whole extent of the frontal sinus, and the pith of the horns, were highly inflamed, ulcerated, and full of small abscesses. There was the same appearance in the mouth, and about the glands of the throat. The lungs were inflamed with livid sphacelated spots, here and there loaded with hydatides, and the cellular texture was frequently distended with air. The heart was large, flabby, and dark coloured, containing in its venticles clots of black blood, of a very loose texture, without serum; the fat about it was a bright yellow. The liver was large; its blood and biliary vessels were fully extended with dark fluid blood, and very deep coloured bile; the substance of the liver was so rotten, as to separate on the least touch. The gall-bladder was stretched to a great size, and full of greenish bile. The œsophagus was ulcerated in some. The paunch was distended with air, flabby, and contained a large substance, like a dried turf,

consisting of fodder hardened to that degree. There were several appearances of gangrene on all the stomachs. The honeycomb had no fluid in it, but some pappy fodder. The manifold contained, between its plaits, a great deal of dried fodder, which clung to their sides. The runnet-bag was empty, but highly inflamed and gangrened in several places. All the intestines were empty, and beset with red and black spots. The kidneys and bladder were large, without urine. The kidneys were of a loose texture, easily torn. The flesh of some was livid, in others of a lively red; but it soon turned green. The fat that remained was of a bright yellow. In such cows as were with calf, the uterus was gangrened in several parts, and the water included in it stunk most intolerably. The virulence of the disease appeared to have sometimes fixed itself on the vital part, and sometimes on another, and frequently in more places than one.

Causes. The doctor's opinion as to the nature of this complaint, is undoubtedly incorrect. He supposed it to be an eruptive fever of the variolous kind; hence inoculation was had recourse to, but without the least effect.

The immediate cause of the murrain appears to arise from a putrefactive tendency in the solids and fluids of the body, induced either by contagion, or by other means acting in a similar manner

on the animal frame. Having stated the immediate cause, I shall proceed to give my opinion as to the remote or inducing causes, which gave origin to the murrain that raged about the middle of the last century, in this island, and, at different periods, on the continent of Europe. Infection was without doubt the most frequent exciting cause of the disease. It is most likely, however, that the complaint originated, in the first instances, amongst the herds of neat cattle, from a peculiar state of the air, and then propagated itself by contagion. From the improved state of cultivation and the draining of lands, the murrain has lost much of its malignity, and is now more confined in its operation. When it raged with such devastation in this country, it was observed to be most prevalent, where the land was very low, flat, and marshy, which no doubt arose from the air here being very humid, and contaminated with swampy exhalations. When it visited France in the year 1779, it chiefly prevailed in the low meadows and marshes of Roussau Mainteni, after an inundation. In Italy, which has so frequently been infested with it, many parts of the country are very low and marshy, and it was in such places that the murrain most prevailed. When it appeared in Hungary in 1712, 'the spring,' says an author, 'had been rainy, with great changes

in the temperature of the atmosphere; for on the same day the morning was cold, and the middle of the day very warm; the cold began about three o'clock, and the evening became warm.' I have repeatedly treated the murrain, but in its less malignant form, and have observed it principally on low, fenny grounds, particularly those situated contiguous to the river Idle, and, also, on lands by the side of woods. From these and other remarks that might be adduced, we may, I think, conclude that the murrain originates in the first instances from the unwholesome state of the air, its being too moist, almost stagnant, and contaminated with putrid exhalations, frequently accompanied with other changes as to its temperature and constitution.

Treatment. The murrain, when it first made its appearance in 1744, was in general so malignant, that the remedies employed had little or no effect in lessening its fatality. In such cases that were not so violent, bleeding was had recourse to, which, with other means, frequently restored the beast. The method of cure recommended by Dr. Layard, is as follows. 'The beasts,' says the doctor, 'should be kept in well-aired houses, and be plentifully bled, from two quarts to one, according to their age and strength.' I should think four or five quarts of blood might have been taken

away. 'They should be washed with water and vinegar to clear the skin from filth, and be frequently rubbed, which affords them much pleasure as well as benefit.' The water and vinegar should, I think, have been new-milk warm. 'A rowel should be made, as soon as possible, in the dewlap, and it should be kept open for some time after the cure. If the dung be hard, a cooling purge should be given, and plenty of antiseptic drinks, such as bran-water, vinegar, bitters, and salts; but no hay till they chew the cud. The mouth, barbs, and nostrils, should be washed carefully and frequently. If a purging comes on by the fourth day, it should be checked, by warm medicines proper to throw the morbid matter off by the skin, such as snake-weed, and other warm plants, or Venice treacle, with which Mr. Montgomery, one of the doctor's neighbours, cured six beasts out of seven.' The drink (No. 26, or 27, p. 141) would have been very proper, when the complaint was attended with purging. 'If the colour of the mouth becomes dark, the creature cold, the dung black and fœtid, and the discharge from the mouth and nose sanious, an ounce of jesuits'-bark or oak-bark, with snake-root or other warm ingredients, should be given every four hours, to prevent mortification.' The restorative drink (No. 19, p. 129) would have been

proper. If matter be formed in the horns, or any part of the body, an opening should be made there, as also in the emphysema, and digested by warm applications. If a purging naturally occurs after the crisis, the bowels should be emptied with a smart purge, after which a draught of warm ale may be given at night. On recovery, the beasts should be gradually exposed to cold air, and by degrees habituated to their usual food.

Further Remarks on the Murrain. The murrain, after it had existed sometime, lost much of its original malignancy, and tended more to common fever, accompanied with local inflammation. It was now not so rapid in its progress, and the symptoms that characterized this milder species of the complaint were the following.

Description. It generally commenced with a shivering and trembling of the limbs;—a want of appetite;—cough or hoosing; and often shed tears;—the mouth was mostly affected with blisters, or white spots; and, if a milch cow, the secretion of milk was diminished. In a few days the inflammation extended to the lungs; the pulse quicker than natural, being about 60 in a minute; dryness of the muzzle; the head, horns, and breath hot; the body and limbs cold; and all the symptoms that first appeared became aggravated.

Treatment. When this milder species of the murrain seizes any of the herd, the affected animal must be housed, and bled as soon as possible.

Four, five, or six quarts of blood, according to the size and strength of the animal, should be taken away, and the next day, if the symptoms still continue, three or four quarts more. In general these two bleedings are sufficient to check the progress of the disease; if not, a third or fourth bleeding may be employed. A seton should be set in the dewlap, and kept running for some time. The purging drink (No. 39, p. 160), is to be administered after the first bleeding, and repeated occasionally, if the complaint continues.

RECIPE (No. 47.)

Drink for the Murrain.

TAKE—Cape aloes, in powder, three drachms;
Opium, one drachm;
Camphor (rubbed into powder with a few drops of spirits of wine) one drachm;
Nitre, two ounces;
Elecampane, two ounces;
Treacle, four ounces:
Mix, and give in a quart of linseed gruel.

It may be repeated every evening, or every other, as the circumstances of the case may require. They must be kept clean and well-littered, and

have mashes of scalded bran or malt, with two or three handfuls of ground corn, or barley, mixed in them. If the disease should leave them in a low and debilitated state, it will be proper to give them a few of the restorative drinks (No. 18, p. 128) or (No. 19, p. 129).

The cow-house where the diseased cattle are should be comfortable, but properly ventilated, and, when the disease is malignant or contagious, it must occasionally be fumigated with the following

RECIPE (No. 48.)

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 then gradually pour the oil of vitriol on it, and stir them together with a stick, and immediately leave it to prevent inhaling the fumes, closing the cow-house door at the same time.

When the cattle have recovered, the fumigation should be repeated, and the stalls cleaned and white-washed. Those cattle that die of the complaint must be buried at the depth of four or five feet, or more; least an effluvia should arise from the carcase, and infect the air.

Prevention of the Murrain. Where the murrain prevails, every means must be used that has a tendency to prevent its propagation. The disease, as we have before stated, does not arise solely from infection, but is, in many instances, generated by an unwholesome state of the air. The cattle must therefore be protected, as much as possible, from the pernicious influence of the atmosphere by housing them; or removing the animals to an elevated situation, will sometimes be sufficient. If you do turn them out in the day time, they should be fetched up in the evening. When the disease attacks any of the herd, I should recommend you to seton the whole of them. And those that appear dull and languid, trick of their milk, and lose their appetite, should be bled, and have a purging drink administered to them, and after that a cordial drink. I should, likewise, advise you to give those that are well a cordial drink, which will invigorate the system, and render them less liable to the complaint. The sick cattle must be kept at a proper distance from the rest of the herd, lest the infectious effluvia should be communicated to them. Cleanliness must be strictly attended to; the beast kept dry, and fresh littered every day, and let the cow-house be occasionally fumigated.

CHAP. XXIII.

INFLAMMATION OF THE BLADDER.

NEAT cattle are occasionally subject to inflammation of the bladder, which causes a difficulty in voiding the urine, and is commonly called *strangury*. The inflammation in general occurs about the neck of the bladder.

Description. This complaint is indicated by frequent and painful efforts to void the urine, which is discharged in small quantities, thick, and sometimes offensive to the smell. It is accompanied with slight feverish symptoms; as the beast appearing dull and languid, with loss of appetite, beating rather in the flanks, pulse quicker than natural, and sometimes a shivering fit.

Causes. It most commonly arises from the beast taking cold. In one case that I attended, it proceeded from a dead calf being for some time in a state of putrefaction in the womb.

Treatment. It will be proper first to have recourse to bleeding to subdue the inflammation at its onset. Three, four, or five quarts of blood, according to the size, strength, and urgency of the symptoms, should be taken away, and the next day about three quarts more, if the strangury still continues. After bleeding, let the purging drink

(No. 3, p. 108) be given. Clysters of thin gruel, about three quarts at a time, should be injected up the anus, and the shape may be fomented with warm water. If the strangury continues, after the purging drink has operated, let the following be given.

RECIPE (No. 48.)

TAKE—Opium, cut in small pieces, one drachm;
Camphor, (pulverized with spirit of wine) one drachm;
Tartarized antimony, one drachm;
Ginger, and aniseeds, in powder, of each one ounce;
Treacle, two table-spoonfuls.

This drink is to be given in a quart of linseed gruel, and repeated every day, until the beast recovers.

The animal should have warm mashes once or twice a day.

CHAP. XXIV.

INFLAMMATION OF THE SHAPE.

COWS are liable to this complaint, especially in the summer season.

Description. It is attended with considerable irritation of the affected part, which is perceived by the actions of the beast; the shape is swollen,

and there are frequently boils about the barren, that break and discharge pus or matter. There is sometimes a considerable discharge of glairy fluid from the sheath or vagina, which proceeds from the inflammation extending up the shape.

Causes. It most commonly attacks cows that are in high condition, and seems to arise from a redundancy of blood in the system. I have known it proceed from cows taking cold in calving; and sometimes it occurs after bulling.

Treatment. The cow must be bled to the quantity of three or four quarts, and the purging drink (No. 3, p. 108) or (No. 4, p. 108) be given to her. The drink may be repeated in the course of two or three days, if the inflammation is not much abated. The tumefied part is to be bathed, two or three times a day with the following lotion.

RECIPE (No. 49.)

Lotion.

TAKE—Goulard's extract, two ounces;
Spirits of wine, one ounce;
Rain water, one quart:
Mix the goulard and spirits of wine first, and then add the water, and shake the bottle when used.

The shape must be well bathed with this lotion two or three times a day. In cases where there is

a discharge from the sheath, the following injection will be of great service.

RECIPE (No. 50.)

Injection.

TAKE—Alum, and blue vitriol, in powder, of each half an ounce;
Boiling water, one quart:
When cold, it will be ready for use.

It is to be injected up the inside of the shape twice a day, while the discharge continues.

CHAP. XXV.

INFLAMMATION OF THE EYE.

INFLAMMATION of the eye in neat cattle does not frequently occur, and, when it does, is not difficult to cure, if proper remedies are employed at the beginning.

Description. This disease is obvious from the redness of the eye, and that increased sensibility which renders light so painful that the haw is drawn, as much as possible, over the affected organ, to preclude its stimulus, and the eyelids keep constantly closing. The eyelids are swollen, tears run down the cheeks, and there is generally a dis-

charge of matter from the internal angle of the inflamed eye.

Causes. Inflammation of the eye mostly proceeds from external injuries, such as blows, bruises, hurts, or any substance getting into the eye, and causing great irritation in it. It sometimes arises from a redundancy of blood in the system, and the beast taking cold while in that state.

Treatment. When the inflammation runs high, it will be necessary to take three or four quarts of blood away, and to give the purging drink (No. 108, p. 160) or (No. 3, p. 108), and likewise to put the beast in a dark or shady situation, to prevent the stimulus of the light affecting the eye. Either of the following lotions may be applied to the eye.

RECIPE (No. 51.)

Eye Lotion.

TAKE—Spirits of wine and camphor, one ounce;
Goulard's extract, one ounce;
Spring water, one quart:
Mix, and shake the bottle when used.

Or,

RECIPE (No. 52.)

TAKE—White vitriol, two ounces;
Sugar of lead, two ounces;
Tinture of opium, half an ounce;
Spring water, one quart:
Mix for use.

A clean linen rag is to be dipped into either of the lotions, and the affected eye must be well bathed with it for about a quarter of an hour, and repeated two or three times a day: the eyelids should be opened a little, that a small quantity of the lotion may be poured into the eye.

If the inflammation does not readily yield to the above treatment, a seton may be set in the dewlap, and let the eye-vein be cut:—the same vein from which shepherds commonly bleed sheep.

In slight cases of inflammation of the eye arising from external injuries, the lotion (No. 51 or 52), and a purging drink will be sufficient for the cure.

CHAP. XXVI.

CANCER OF THE EYE.

CANCER of the eye is occasionally met with amongst cows. It will, if not checked in its progress, destroy the eye, and the contiguous soft parts, and even affect the bones themselves.

Description. The globe of the eye appears dull and lessened in bulk; an offensive ichorous fluid is discharged from it, which is so acrid that it denudes the parts over which it runs. The eyelids are swollen and ulcerated, and are sometimes almost glued together with matter.

Causes. This disease, in many cases, arises from a peculiar state of the constitution, and appears somewhat analogous to the scrophula in the human subject. In one cow that I treated, it was brought on by a common inflammation of the eye arising from a blow, having been neglected.

Treatment. It will be proper to bleed the beast, if in middling condition, as soon as the disease is discovered to exist, particularly if it arises from a constitutional affection. The purging drink (No. 39, p. 160) should be given, and repeated occasionally, if required. The following ointment is to be applied to the affected eye.

RECIPE (No. 53.)

TAKE—Red precipitate, finely levigated, two scruples;
Spermaceti ointment, half an ounce:
Mix on a slab.

A small quantity of this ointment is to be put in the eye, morning and evening, by means of a feather. I have cured two or three cases of cancer of the eye with this ointment, bleeding, and the above purging drink.

A seton should be set in the dewlap, if the disease is obstinate, and the following ointment may be tried, for a change is sometimes necessary.

RECIPE (No. 54.)

TAKE—Nitrated ointment (citron ointment), six drachms;
Spermaceti ointment, half an ounce:
Mix, and apply to the eye, as the ointment (No. 53.)

We have sometimes used the nitrated ointment by itself: it should be well tempered on the slab, with a little oil of almonds, before applying it.

CHAP. XXVII.

FUNGOUS EXCRESCENCE OF THE EYE.

FUNGOUS excrescence of the eye is more frequent than cancer of that organ.

Description. The fungous substance always arises, in every case that I have seen of this complaint, from the internal angle of the eye, and sometimes grows to a considerable size. If it is not removed, it will proceed to the transparent part of the eye, and impede vision.

Causes. This disease commonly arises without any manifest cause. External injuries may sometimes produce it.

Treatment. These excrescences of the eye can generally be removed by a ligature, but they are apt to be reproduced again. In removing them by ligature, an assistant is to hold the animal's

head, while you pass a curved needle through the fungous production, near to its basis, and then apply a ligature of Dutch twine waxed. The ligature is to pass twice round the excrescence, close to its origin, and should be tied in a noose. The noose is to be tightened every day, until the substance drops off. When it is detached, the eye must be well bathed, two or three times a day, with the eye-lotion (No. 51, p. 190), and a purging drink may be given. The part of the eye from which the excrescence originated, should be touched with a little lunar caustic for a few times.

In obstinate cases of this disease, it is sometimes necessary to cut the eye out.

CHAP. XXVIII.

FOG SICKNESS, HOVEN, OR BLOWN.

THIS is a common disease amongst neat cattle, and is attended with symptoms of the most distressing nature. It requires speedy relief, or the animal will be suffocated from the confined air in the two first stomachs, or a rupture of them take place, which soon terminates the life of the beast. Hoven usually proceeds from a voracious and greedy disposition, incident to neat cattle when permitted to satiate their appetite with food of

which they are most fond; such as red clover, vetches, rich fog, or different kinds of grasses; likewise turnips, potatoes, corn, and sometimes chaff.

Description. This complaint scarce requires any description, as it is well known to most cattle-keepers. The wind generated in the stomachs causes the beast to swell, and produces a difficulty of breathing, with much apparent distress. If relief is not soon obtained, the difficulty of breathing increases, and the animal is unable to stand, and generally dies suffocated.

Causes. The immediate cause of the disease is a preternatural distention of the two first stomachs from confined air. It is, as already intimated, in general occasioned by the animal feeding for a considerable time upon rich succulent food, so that the paunch or first stomach becomes overcharged, and they, through their greediness to eat, forget to lie down to ruminate or chew their cud. A fermentation of the food in the paunch takes place, and a considerable quantity of air is consequently generated, which so distends the two first stomachs that, by their pressing against the skirt or midriff, the capacity of the lungs for air is diminished, which causes the difficulty of breathing, and sometimes produces suffocation. This complaint is sometimes occasioned by turning cattle into fresh

aftermath pastures in autumn; at which time the grass is changed in quality, and the weather frequently wet or foggy; and then is called fog sickness.

Treatment. The digestive organs of neat cattle are not only influenced by the particular kind of food that they have been for some time accustomed to feed upon, but they have also a conformity to almost any change of diet, with little apparent injury to health, if brought about gradually. The greatest caution is necessary in turning cattle into a fresh pasture, if the bite of grass be considerable; nor should they be suffered to stop too long at a time in such pastures before they are removed into a fold-yard, or some close where there is but little to eat, in order that the organs of rumination and digestion may have time to discharge their functions.

If this be attended to for a few times, it will take away that greediness of disposition and prevent this distressing complaint.

Various expedients are employed for the purpose of affording relief, both with medicine and manual operation. Some farmers (to whom the author is known) have made it a practice to give such cows as are of a greedy disposition a comfortable drink, viz. (No. 1, or 2, p. 105), about an hour before they are turned into a fresh

pasture, which invigorates the digestive organs, and prevents a liability to the disease. This, I believe, has had the desired effect, for I never knew any one instance of its failure.

As soon as the beast is discovered to be either hoven, or blown, by eating too great a quantity of succulent grasses, let the purging drink (No. 3, p. 108) or (No. 4, p. 108) be given as there directed; or the following which I have found very efficacious in checking fermentation in the first stomach.

RECIPE (No. 55.)

Drink for Hoven, &c.

TAKE—Epsom salts one pound;
Salt of tartar, three ounces;
Ginger, and aniseeds, in powder, of each two ounces.

Put the ingredients into a pitcher, and pour three pints of boiling water upon them. When new-milk warm, add a wine-glassful of gin, and give the whole for one drink. This drink will be found more powerful in checking the fermentation than either of the preceding.

When medicine fails to have a speedy effect, recourse must be had to external means, such as the contrivance of Dr. Monro, first communicated to the public in the year 1793. It consists of an iron wire formed into a flexible tube, and covered

over with soft smooth leather; this instrument may be had ready-made in London, and in most market towns. The distance, found by the doctor, from the fore teeth to the first stomach in a large ox, is about six feet. The instrument, therefore, should be full that length, or rather longer, and then gently passed down the beast's throat into the first stomach; when a large quantity of offensive air will be discharged. It may remain there for a short time, as it does not impede respiration. Sometimes the ball of the instrument gets clogged up with food, and the air cannot escape; this must be attended to.

There is another kind of instrument recommended by Mr. Eager, which appears to be equally useful with that of Dr. Monro's. Mr. E.'s contrivance is of two sizes, the one adapted for cattle and the other for sheep; for which the London Society for the Encouragement of Arts voted him a premium of fifty guineas in the year 1796. These instruments are constructed as follows: that for cattle is six feet long, with a round knob of wood properly secured to one end of the cane. A man is ordered to lay hold of the horn with one hand, and the nostrils with the other. The assistant must lay fast hold of the tongue with one hand, while he pushes the cane down the animal's throat with the other. As soon as it enters the

stomach, a large quantity of fetid air will be disengaged, which will easily be discerned by the animal's body sinking to its former state again; and nature taking its regular course, the beast will soon be restored to health.

If neither of these instruments are near at hand, the following may be used, and I have no doubt but that it will answer every purpose of the former. Take a knob of wood turned in the form of an egg, with a hole bored through the centre and out at each end. Then take a common cart-whip two yards long, and secure one end fast in the knob, dip it in oil or soft grease, and introduce it in the same manner as the former.

Paunching is another method frequently resorted to in dangerous cases. The operation is performed in the following manner: take a sharp pen-knife, and gently introduce it into the paunch, between the haunch bone and the last rib on the left side, about three or four inches from the point of the last rib. This will instantly give vent to a large quantity of offensive air: a small tube of a sufficient length may then be introduced into the wound, and remain until the air is sufficiently evacuated; afterwards take out the tube, and lay a pitch plaster over the orifice. Wounds of this kind are seldom attended with danger; where it has arisen, it has been occasioned by the injudicious operator intro-

ducing his knife into a wrong part. After the wind is expelled, and the body has been reduced to its natural state, let the following stomachic drink be given.

RECIPE (No. 56.)

TAKE—Ginger, and aniseeds, in powder, of each two ounces;
Gentian, and cummin seeds, in powder, of each one ounce;
Salt of tartar, one ounce;
Treacle, four table-spoonfuls:
Mix, and give it in a quart of warm ale.

This drink may be repeated every other day for two or three times: or the following may be given, if thought more adviseable.

RECIPE (No. 57.)

TAKE—Aniseeds, grains of paradise, and cummin seeds, of each two ounces, in powder;
Salt of tartar, half an ounce;
Spirits of turpentine, two table-spoonfuls;
Treacle, two table-spoonfuls:
Mix, and give them in a quart of warm ale or gruel.

This may be repeated once a day for two or three times.

These stomachic drinks will give energy to the digestive organs, and promote the process of di-

gestion; if a milch cow, they will increase the secretion of milk. When you turn cattle into a fresh pasture, it is often adviseable to give two or three of these drinks, as they will commonly prevent any ill consequences that might ensue from such a change.

CHAP. XXIX.

THE HOOSE, OR COUGH.

DISEASES of this kind are often very troublesome, as well as distressing to the animal. Cows and young cattle are the most liable to complaints of this nature.

Description. The chief symptom that characterises this complaint, is the frequent coughing or hoosing, not accompanied with much difficulty of breathing, or with swelling of the glands, or kernels, between the jaws. It must be carefully distinguished from the consumptive hoose, treated of in the next section.

Causes. The hoose, or cough, proceeds from taking cold, or from being kept in a warm hovel, and afterwards exposed to the inclemency of the weather; which produces the complaint by checking the perspiration, and causing an inflammation of the membrane lining the inside of the windpipe,

which induces an irritation in that part, that excites the hoosing.

Treatment. The following drink will be found powerful in removing this complaint.

RECIPE (No. 58.)

Drink for Hoose.

TAKE—Balsam of sulphur, two ounces;
Barbadoes tar, one ounce;
The yolks of two eggs, beat them well together in a large bason until they be properly incorporated;
Then add ginger, aniseeds, cummin seeds, elecampane root, grains of paradise, and liquorice root, of each one ounce, in powder;
Salt of tartar, half an ounce;
Honey, four ounces:
Mix all together, and add, by a little at a time, (constantly stirring) one quart of warm ale or gruel. If gruel be used, add a wine glass of gin, and give it when new-milk warm.

Let this drink be repeated every other day, or every third day, for three or four times. If it be given at the commencement of the disease, one or two of the drinks are generally found sufficient to remove the complaint. This drink warms and stimulates the stomachs, promotes the digestive process, invigorates the whole system, by which

means the suppressed perspiration, and other healthy functions of the body, are restored.

When this disease is of long standing, it can seldom be removed without first giving a purging drink, such as (No. 3, p. 108) or (No. 39, p. 160.) After either of these drinks have been given, and have ceased to operate, it will be proper to give the above drink, and repeat it as already directed.

By this method of treatment, together with plenty of good mashes, warm water, and proper management, the beast will in general be soon restored.

In obstinate cases, a drachm of solid opium may be added to the above drink, and a seton set in the dewlap.

If the hoose be frequent, attended with working of the flanks and symptoms of fever, the lungs are, no doubt, in this case, inflamed, and the disease must be treated accordingly. See *inflammation of the lungs.*

CHAP. XXX.

CONSUMPTIVE HOOSE.

CONSUMPTIVE hoose is not a frequent disease amongst neat cattle, but is a very obstinate one,

and generally incurable, if not taken at its very commencement.

Description. It is first discovered by the animal having a hoose, and poking out of the neck, and when examined between the jaws, the glands there are swollen, which, by pressing upon the head of the wind-pipe, causes the beast to poke out her neck for breath. If the disease be not checked in its progress, the lungs become affected, producing a wheezing and difficulty of breathing on the least exertion. When the lungs are thus attacked, a cure, as far as I have observed, cannot be effected; the animal soon begins to lose flesh, and the disease is commonly prevented from proceeding further by the owner disposing of her to the butcher.

On examination of the lungs after death, they are not found collapsed as in health, but are large and thickened in their texture; and there are hard tumours of various sizes in the different lobes, appearing to be the lungs changed to that state.

Causes. This disease, in many cases, I think, arises from the peculiar constitution of the beast, particularly a want of capacity in the chest. It is sometimes brought on by colds being neglected, and other causes not yet well ascertained.

Treatment. As soon as this disease is discovered, it will be necessary to fetch the beast up, and take three or four quarts of blood away, and

then set a seton in the dewlap. The purging drink (No. 3, p. 108) is to be given, and after that has operated, let the following be administered.

RECIPE (No. 59.)

TAKE—Nitre, two ounces;
Salt of steel, one ounce;
Glauber salts, four ounces;
Ginger, and aniseeds, in powder, of each one ounce;
Treacle, four ounces:
Mix for one drink.

Let these be put into a pitcher, and a quart of boiling water poured upon them: when new-milk warm give it.

It may be repeated every other, or every third day. The beast should not be out at night while taking these drinks, except the weather be very mild.

CHAP. XXXI.

JOINT EVIL.

THIS disease is more prevalent in some parts of the country than in others.

Description. It commences with small hard tumours about the joints and legs, with more or less inflammation of the affected parts, which causes

the animal to walk rather lame. These tumours generally soon maturate and break, discharging a thin bloody matter that corrodes the neighbouring parts.

Causes. In an heifer that I attended with this complaint, it was brought on by turning her, in autumn, into a pasture that had been but lately flooded, where she took a severe cold, which, together with the bad quality of the grass, occasioned the disease.

Treatment. If this disease be taken in time, and treated properly, the tumours may frequently be prevented from proceeding to a state of ulceration. The animal should be bled at the very onset of the complaint, taking from three to five quarts of blood. Let a purging drink be given a short time after bleeding, and when it has ceased operating, commence with the drink (No. 37, p. 155) and continue it every other day for a few times.

When the disease is obstinate, that is, the tumours are passed to a state of ulceration, and difficult to heal, a seton must be set in the dewlap, and kept running for some time. The ulcers are to be dressed every day with an ointment, composed of equal parts of nitrated ointment, and yellow basilicon, and the parts should be tightly bandaged after applying the ointment, if they will admit of it: always clean the ulcerated parts with

a sponge and warm water before using the ointment, and they should be dressed once a day.

CHAP. XXXII.

TO EXTRACT THE PLACENTULÆ, OR THE CLEANSING WHEN RETAINED AFTER CALVING.

THE cow ought to part with the cleansing soon after the calf has come away. Sometimes, however, some portion of the placentulæ adheres so firmly to the inside of the calf-bed, that it is retained, and passes to a state of putrefaction, which is frequently attended with very bad consequences. If the cow has gone her full time, there is in general not the least difficulty or danger in taking it from her, provided it be done properly, and with care. If the cleansing is not expelled for several hours after the calf has come away, you should endeavour to extract it in the following manner.

The operator must take a towel, or a wisp of hay or straw, and lay hold of the cleansing, and every time she attempts to strain draw it gently forward, if only for a few inches at a time, until you get it dislodged from its bed, and then it generally comes all at once. If you do not succeed in this way, you should take hold of the cleansing with the left hand, and introduce your right arm

up the shape, as far as you can reach (having previously anointed the arm with hog's lard), and then lay hold of the placentulæ, and draw gradually forwards with some force, but do not use too much, lest you tear the womb. If the cleansing adhere so firmly that it will not come away the first time of trying, try again in a few hours. Sometimes it is not brought away till after several attempts have been made. When you have taken it away, give the cow the drink (No. 60.)

Those cows which have slinked or slipped their calves before the regular time of gestation (and likewise such as have gone their full time, where the cleansing has been neglected to be taken away) in a few days become so tender, that the least pressure upon it will cause it to tear. In these cases it will be proper to give her two or three of the following drinks.

RECIPE (No. 60.)

TAKE—Spermaceti, two ounces;
Spirits of turpentine, one ounce;
The yoke of an egg;
Beat them in a marble mortar, till well incorporated;
Then add aniseeds, grains of paradise, and caraway seeds, fresh powdered, of each one ounce;
Treacle, four ounces:

Mix the whole in a quart of warm gruel, and add a wine glass of gin, and give it when new milk warm.

It will be proper to repeat this drink every other day for three or four times. I have sometimes added an ounce of *compound spirits of ammonia* instead of the turpentine. This is a most excellent drink for cows of all descriptions after calving.

If the cow does not clean properly, and if there is any deficiency in the milky secretion, it will be proper to give her a few of those cordial drinks (No. 1, p. 105) or (No. 2, p. 105) as there directed. These are excellent drinks for cows after calving, especially if four ounces of fresh butter, or sweet oil, be added to them, and the whole be given as directed.

CHAP XXXIII.

HOW TO EXTRACT A CALF, WHEN IT PRESENTS ITSELF IN A WRONG POSITION.

PERSONS of all descriptions, who have any thing to do with neat cattle, are, or ought to be, well acquainted with the manner in which a calf should present itself when in a natural or proper position.

All those positions are called unnatural, in which the calf presents itself otherwise than with its head

and fore-feet first, and its back towards the cow's back. It is well known to all who have the management of cows, or those who practise in medicine amongst them, that calves are very commonly presented in a variety of different postures, for which no just reason can be assigned. And whenever they present themselves in a wrong posture, both cow and calf are in danger, and that more or less according to the ability of the person employed to give the necessary assistance.

In the first place, then, after the waters are broke, and only the head and one foot present themselves, you must lay hold of the calf's head and wait till the throes are off, then gently push it back, and rectify the other foot; after which it may be extracted without danger.

2. If the head only presents itself, and both feet are left behind, the head must be pushed back with a gentle hand as soon as her throes are off, and the feet properly placed with the utmost care, lest by any means you wound or tear the uterus.

3. If all the four feet be turned where the back ought to be, towards the top of the uterus, in this situation it will be impossible to extract the fœtus until it be put in a proper position. In operations of this kind every thing depends upon the management and activity of the person employed in putting the beast into a favourable posture. The hind

parts of the cow must be sufficiently raised with straw, or otherwise with bags filled with that or any thing else that is soft and easy to lie on, and properly placed under her. By these means the person will be very much assisted in putting the calf in a suitable posture for extraction; afterwards wait a little until her throes or pains return, and then give nature your best assistance.

4. It sometimes happens that the hind legs make the first appearance; in this case it will be found better to extract them in that position than attempt to turn them.

5. Instances frequently occur of calves being dropsical in the head; this may be known by the largeness of the latter; in which case the other parts are generally small and wasted away. Under these circumstances, if the calf cannot be extracted in the common way, the best method will be to fix a proper cord round each foot, or upon the upper or under jaw, (as may be thought most convenient at the time of the operation) and then to assist the animal every time nature attempts to do its office. If, however, the calf be dead, it may be cut away with a proper knife. This requires a person of skill and experience, otherwise he may take the life of the cow.

6. Frequent instances have also occurred, where the shoulder has presented itself first at the mouth

of the uterus. This is a difficult case, and requires the hand to be introduced in search for the fore-legs; or, if thought more proper, the hind-legs may be brought forward: this must be left to the judgment of the person employed.

7. It sometimes happens in cases where the calf is dead, or dropsical in the head, that instruments are found necessary to be used. When this is the case, the cow is mostly reduced to a weak, low, and emaciated state. The instrument may be formed out of a small rod of iron or very strong wire (sufficiently polished) with a small hook at the end. This hook must be so placed in the operator's hand as not to endanger the uterus when introduced. It must then be fixed in some part of the calf's head, as the sockets of the eyes, in the mouth, or in any other part about the head, as may appear most convenient at the time of extraction. Sometimes the fœtus is so enlarged, and the womb so contracted, as not to admit of extraction. It will then be necessary to take it away by pieces. This may be done; but it requires a man to be well skilled in this kind of practice. The knife must be made for the purpose, and the blade be so placed in the ball of the hand, with the fore-finger over the point, as to protect the uterus from danger of being wounded. In all cases where the cow has been roughly handled, and the inner

parts much bruised, the following mixture will be found of great use.

RECIPE (No. 61.)

TAKE—Compound tincture of myrrh and camphorated spirit of wine, of each four ounces;
Barbadoes tar and olive oil, of each three ounces;
Sweet spirit of nitre and tincture of opium, of each two ounces;
Treacle, four ounces:
Mix them all together, and keep them in a bottle for use.

The method of using these oils is as follows: Take from two to four table-spoonfuls in the hollow of your hand, then introduce it up the matrix or womb; or a sponge may be filled with a sufficient quantity of the medicine, and introduced as above, pressed well out with the hand, and brought back again: either method will answer the purpose. Some persons, perhaps, would prefer a syringe to the former method of using the mixtures, and inject it up the uterus: this may sometimes answer, but the two former methods, I think, are by much the best.

As soon as the operation is over, give her the drink (No. 60, p. 208) as above directed; if this drink be not in readiness, (No. 1, p. 105), or (No. 2,

p. 105) may be given. It will be necessary to repeat them for three mornings together at least. Her body likewise should be kept open with mashes of scalded bran, and a small quantity of ground oats, barley, or malt mixed along with it. Good nursing and proper management will soon restore the animal to her former state again.

CHAP. XXXIV.

THE FALLING DOWN OF THE CALF-BED.

THIS is a complaint, or rather an accident of frequent occurrence among cows, at the time of calving, and consists in the calf-bed being turned inside out, and falling down. It frequently proceeds from the force employed in extracting the calf in laborious parturition, and drawing away the cleansing immediately after, before the womb has had time to contract, or lessen itself. In these cases, it is proper to support the calf when just out of the shape, and then tye the naval-string a few inches from the navel, with a little thick twine, and let the cleansing be expelled by the throes of the beast. I would recommend this plan to be adopted in laborious parturition, where no manual force has been used. For when once a cow has

had this complaint, she is always liable, at any future period, either to slip her calf, or to a recurrence of the accident.

The cows most liable to this complaint are those that rise considerably on the small of the back, in form of a curve, and begin to lower towards the tail: the hips, rump, and sirloin, are for the most part straight. Cows made in this form denote great weakness in those parts: and, without care and proper management at the time of calving, are almost sure to have this complaint.

The observance, however, of the following rules, may prove a means of preventing it.

1. If they are kept in a cow-house at the time of calving, the floor or pavement should be on a level: it would be greatly to the advantage of some cows to stand *higher behind* than before for a considerable time before calving; as it would enable them, when down, to rise with more ease, and with less danger of straining themselves.

2. If the falling down of the calf-bed be suspected, the cow ought to be carefully watched at the time of calving, and it should be prevented, if possible, by the means above mentioned.

Treatment. As soon as the falling down of the calf-bed takes place, care should be taken to have in readiness a clean sheet to put underneath and around the calf-bed, if she lay down, or to

support it, if standing, and likewise to protect it from particles of dirt or straw adhering to it, as also from the effects of air. Then, if any portion of the cleansing adheres to the womb, it must be removed in the gentlest manner possible, least you tear the calf-bed. Afterwards bathe the parts that are exposed, with spirits of wine, or any kind of spirits will do, if they can be procured almost immediately; if not, it will signify very little. As soon as the parts have been bathed, you must then endeavour to return it into its natural situation by the following method.

The calf-bed is to be raised, and the person who replaces it, should clinch his hand, or have a large sponge in it, and press gradually in the middle part of the womb, until it is returned into its proper situation. He must thrust it forwards, as far as possibly he can reach, and turn his hand round to feel that it is properly replaced, and hold it there for some time, which will stimulate the womb to contract, and prevent it, in a great measure, from falling down again.

Sometimes, it is with difficulty prevented from falling out a second time; when this happens, take a small wire and pass it through the lips of the shape, and bend each end of the wire, in order to prevent it from falling out. This may be permitted to remain there several days, or until such

time as the calf-bed gets properly fixed in its former situation. This will easily be known by the animal having no more symptoms to strain herself, after which the wire may be taken away.

As soon as the calf-bed is properly replaced and made secure, it will be necessary to give her the following drink, which will strengthen the animal frame, and remove those violent after-pains, to which cattle in this state are liable.

RECIPE (No. 62.)

TAKE—Gentian, white ginger, and grains of paradise, in powder, of each one ounce;
Aniseeds, fresh powdered, two ounces;
Solid opium, cut small, one drachm;
Treacle, four table-spoonfuls:

Mix and put the whole into a pitcher; then pour a quart of hot ale upon the ingredients, and administer when new milk-warm.

This drink should be repeated once a day, or every other day, for two or three times. Warm mashes, and proper management, must strictly be attended to.

CHAP. XXXV.

PROPER TREATMENT OF COWS THAT SLINK, OR SLIP THEIR CALVES.

ABORTION, or cows slipping their calves in an early period of gestation, is a great misfortune to the owner: it appears that cows in the best condition are the most liable to this misfortune. It is sometimes occasioned by accidents, that frequently happen to them during the summer, which separate a part of the cleansing, or produce an inflammation of the womb, and then abortion generally takes place. At other times it has appeared of an epidemical nature; several having slipped their calves in the course of a few days: in this case it appears to proceed from debility, and a peculiar affection of the womb, which will presently be spoken of.

Cows are the most liable to slink their calves towards the latter end of the year, while feeding on fog, or autumnal grasses; or on low marsh and fenny grounds. A gentleman of Uxbridge, in a letter which he wrote to me, says, 'During this summer and autumn, out of fifteen cows, I have had thirteen slip their calves, which were all perfect and well formed, healthy and in good condition; previous to which they had all gone their

full time, and produced good calves. They are,' says he, 'kept in low meadows.' The greater number of cows that I have known slip their calves, have been in low situations, where the air ha been too moist for the right performance of the animal functions; the body in consequence becomes relaxed and debilitated, the perspiration diminished, and the blood watery, which too frequently produces a preternatural determination of blood to the calf-bed, that impairs the healthy actions of that organ, and occasions abortion. It appears to me to originate, in these instances, from the same causes as red water does; only in the one the calf-bed is affected, in the other the kidneys.

At other times it has proceeded from the smell of *carrion,* which may have been exposed in the pasture, or too slightly covered with earth; or from the disagreeable smell of the placentulæ of a cow that has slipped her calf, which has been retained for some time in the womb and become putrid. The *sense of smell* in horned cattle is *remarkably acute:* I have known them on a warm day, in an open pasture, collect in great numbers to a particular spot, where some dead carcases had been buried several years, and with their horns and feet tear up the earth in a surprising manner, at the same time making a most horrid noise.

Treatment. Cows that are in danger of slip-

ping or slinking their young, before their due time of gestation, should be taken from their pasture over-night; and from two to three or four quarts of blood should be taken from each beast, which ought to stand in the open yard till next morning; then give the purging drink (No. 39, p. 160), and after it has operated, administer the following

RECIPE (No. 63.)

TAKE—Alum, in powder, four ounces;
Nitre, one ounce;
Grains of paradise, and aniseeds, fresh powdered, of each two ounces;
Solid opium, cut small, half a drachm;
Treacle, four table-spoonfuls:
Mix for one drink.

Put the drink in a pitcher, and pour a quart of boiling water upon it; cover it down till new-milk warm, then give it to the beast. This drink may be repeated in eight or ten days, when there is every reason to believe that it will produce the desired effect.

Some cows are constantly a bulling every fortnight or three weeks, during the summer: a better drink cannot be given to put a stop to this; and also to make her hold to the bull. The drink should be given to the cow, two hours after bulling: it strengthens and braces the parts of

generation: and, if she be in good condition, let two quarts of blood be taken from her.

When a number of cows on a farm have slipped their calves, it is certainly adviseable to part with the whole of them, as they are so liable to continue in the same practice. If a cow should slip her calf, it will be proper to separate her immediately from the rest of the herd, lest she should affect them. You should administer the drink (No. 60,) to such as have slipped their calves. The last thing that I shall remark on this subject, is, that I would recommend, when this accident occurs to any one of the herd, to remove the whole of them to a more elevated situation, where the air is dry and salubrious, and the grass of a superior quality.

CHAP. XXXVI.

LOCKED JAW.

THIS disease is not so common amongst neat cattle as horses. It is a very dangerous disease, and frequently proves fatal.

Description. Whenever it takes place, it generally begins with a sudden stagnation and contraction of almost the whole muscular system; every muscle appears seized at once, and the jaws

are so fast closed as very often to require an instrument to force them open, at the time of giving medicines. The eyes appear glistening and fixed in their orbits, with a peculiar anxiety wrought upon them. The breathing is more or less affected, which is indicated by the working of the flanks.

Causes. Locked jaw most frequently proceeds from wounds in different parts of the body, especially those inflicted on the extremities. Other causes, however, produce it, as the taking of poison, or eating any poisonous herbs, or insects; these affect the brain and the nervous system, by which the complaint not only seizes particular parts, but very often extends over the whole body. It very likely, in warm climates, arises, sometimes, from sudden and excessive changes in the temperature of the atmosphere.

Treatment. The first thing necessary towards a cure must be to bleed, taking away three, four, or five quarts, according to the animal's size and strength, after which give the following drink.

RECIPE (No. 64.)

TAKE—Opium, three drachms;
Assafœtida, cut small, one ounce;
Put them in a marble mortar, and gradually add a pint of boiling water, keep constantly stirring till all be dissolved; then add spirit of hartshorn, two ounces;

Ginger in, powder, one ounce;
Cayenne pepper, half an ounce;
Treacle, four table-spoonfuls:
Mix them all together, and give in a pint of warm gruel.

It will be proper to repeat this drink once or twice a day as long as the symptoms continue urgent. If this disease attack the beast in the *winter-season,* two or three pails of *warm* water may be thrown upon him, and if in the *summer, cold* water may be used. Afterwards let two persons, one on each side, rub him well down with a wisp of straw. This well applied all over the body, legs, and ears, will very often give considerable relief. After which cover the animal down with a warm blanket, as warmth in this disease is always found beneficial. All such parts as are most contracted may be well rubbed two or three times a day with the following liniment, which will be found to have a powerful effect in removing spasms in all parts of the body.

RECIPE (No. 65.)

TAKE—Strong spirits of sal ammoniac, oil of turpentine, and opodeldoc, of each four ounces;
Spanish flies, in fine powder, two drachms:
Mix and shake when used.

The clyster (No. 40, p. 161) is to be injected,

and if you cannot give the drink (No. 64), add three or four drachms of opium to the clyster. If the symptoms are not removed in twenty-four hours, the bleeding and the clyster must be repeated; and the drink (No. 64,) may be continued, if there appears any chance of success. The bleeding may be repeated in twelve hours, particularly if the complaint proceeds from poisons; for bleeding is a powerful antidote against poisons.

CHAP. XXXVII.

POISONS.

POISONS may be considered under two distinct heads, the one *external*, and the other *internal*. We shall in the present chapter confine our attention to the *latter*.

Causes. They proceed from different causes during the summer season; such as eating of some deleterious vegetables, as the yew-tree, hemlock, the various kinds of crowsfoot, or the drinking stagnated waters that often swarm with great variety of insects, many of which there is reason to believe are of a poisonous nature.

Symptoms. Whether the beasts have taken poison by eating of some deadly plant, or from

drinking filth out of stagnated waters, the symptoms are a violent pain and sickness at the stomach;—the body frequently swells to a prodigious size, attended with giddiness and stupidity;—and from eating the yew-tree, I have known the beast become mad. From whatever source the poison may have been taken, it generally proves fatal in a short time, if suitable remedies are not promptly made use of.

Treatment. Beasts that are suspected to have taken poison, should be immediately bled, and have the drink (No. 3, p. 108) or (No. 4, p. 108) administered to them as soon as possible, with one ounce of salt of tartar added to it. If they begin to swell, let a pen-knife be introduced (between the haunch bone and the last rib on the left side) into the paunch, or the elastic tube may be made use of; see Hoven, p. 197. This will instantly give vent to the foul air, and very often afford speedy relief to the animal; particularly if the poison proceeds from vegetables. After either of the aforesaid drinks have been given, it will be found necessary to give the following, in order to destroy the effects of the poison, and to assist the purging drink in evacuating the bowels.

RECIPE (No. 66.)

TAKE—Prepared kali, (commonly called salt of tartar,) one ounce;
Castor oil, four ounces, or in its stead, four ounces of olive oil, (if the former cannot be procured in time;)
Tincture of opium, half an ounce;
Mix, and give in a quart of warm gruel.—To be repeated twice a day, until the animal be relieved.

By strict attention to the above method of treatment, there will remain but little doubt of a speedy cure, which may be greatly assisted by giving a few of those excellent cordial drinks (No. 1, p. 105) or (No. 2, p. 105).

CHAP. XXXVIII.

THE BITE OF VENOMOUS REPTILES.

IN this kingdom we have but few poisonous animals, compared with those found in warmer climates, where they often prove fatal to both man and beast. The viper or the adder is most common in this country, and the bite of these reptiles is often attended with dangerous consequences. Neat cattle are more liable to be stung

by these reptiles than any other of the domestic animals. Some instances have been known, (where the tongue of the beast has been stung while grazing,) that have proved mortal. Adders seldom attack cattle, except the latter disturb them when grazing; this is the chief cause, why so many are bitten about the head, and sometimes about the feet. The stings of the hornet, wasp, or bee, are attended with considerable pain and inflammation, and require a treatment similar to the former.

Treatment. The following liniment will be found a powerful remedy in checking the progress of the poison, and destroying it in the part affected.

RECIPE (No. 67.)

TAKE—Olive oil, half a pint;
Strong spirits of hartshorn, and spirit of turpentine, of each four ounces;
Put them together in a bottle, and shake them well every time they are used.

Let a sufficient quantity of this liniment be well rubbed on the part affected, two or three times a day until the swelling and inflammation abate. In some cases, that are more dangerous than others, the parts affected, especially those about the head, may be fomented with the following fomentation, or with warm water.

RECIPE (No. 68.)

Fomentation.

TAKE—White poppy-heads, bruised, half a pound;
Camomile-flowers, four ounces:
Boil them for a short time in two gallons of water, and then strain.

Foment the parts affected two or three times a day, and let the fomentation be quite warm; after each time rub the above liniment in.

If any feverish symptoms should appear (which frequently happen during the hot weather in summer,) it will be proper to take from three to four quarts of blood, and in the space of three or four hours after to give the purging drink (No. 3, or 4, p. 108) as there directed. If the animal appears much affected after bleeding and the operation of the purging drink, it will be proper to give the cordial drink (No. 1, p. 105), with an ounce of strong spirits of hartshorn added to it.

CHAP. XXXIX.

WOUNDS.

WOUNDS are common to horned cattle as well as others, and may be defined to be a recent division or separation of some of the parts of the

body, and it is of considerable importance to know how to treat them in all their different situations in the body, as the management must vary according to the part where the wound is situated, and the circumstances under which it takes place. The animal's constitution and habit of body must also be considered, as well as the immediate structure of the divided substance; and whether the wound be made with a sharp instrument or a blunt one; if with the former, and the wound be not considerable, it will be adviseable to attempt a union by the first intention, which may be performed in the following manner.

First, cleanse the wound from dirt and all extraneous matter: than pour in a sufficient quantity of the tincture of benzoin, and bring the edges of the wound together, and close it neatly with a proper suture, as follows:—Take a flat crooked needle, and a thin white leather cord well tallowed; if silk or thread be employed (which are the most common in use for purposes of this nature), they are required to be doubled several thicknesses, or otherwise they will be apt to cut themselves out: but white leather is preferable to either of the other. Every stitch across the wound should be tied, and one inch be allowed between every stitch; this will in general be found sufficient for most purposes.

When the parts are properly closed, take a pledget of tow or lint, and soak it in the tincture of benzoin, and apply it over the mouth of the wound; then secure it well on with a proper bandage or roller. The bandage may be taken off once a day, and fresh pledgets soaked in the same tincture be applied, and rolled up as before. This kind of union it is very difficult to accomplish on the ox, except on the lower extremities.

Cattle are more liable to accidents of this kind in the summer, than at any other time, in consequence of their gadding about and breaking out of their pastures; likewise, when strange cattle are intermixed, they often fight, and are apt to gore one another with their horns.

Treatment of bruised and lacerated Wounds. The cure of these is in general easily affected, without much trouble or expense. The wound must first be cleansed with warm water, and then, if there is any extraneous body suspected to be in the wound, a probe or the finger must be introduced to search for it; and if there be any, it must be carefully removed. The wound is to be dressed with the following liniment.

RECIPE (No. 69.)

Liniment for Wounds.

TAKE—Yellow basilicon ointment, half a pound;
Spirits of turpentine, two ounces;
Mix, and keep in a pot for use.

A tent of tow, soaked in this liniment, must be gently introduced into the wound; cover it over with a pledget of tow spread with the same, and fasten it on either by a roller or by taking a few stitches across. The first dressing, after that of the accident, should not be applied in less than three days; by which time matter is generally formed. The wound, after this, may be dressed once a day or every other day, as may be thought necessary.

If the inflammation and swelling be considerable, the wound and all the parts affected should be fomented three or four times a day, for half an hour each time, with hot flannels wrung out of water quite warm. If the constitution becomes affected, which is sometimes the case in extensive wounds, three quarts of blood must be taken away, and the purging drink (No. 3, p. 108) given to the animal, with an ounce or two of nitre added to it.

If strict attention be paid to the above described method of treatment, the wound will in a short time be brought to a state of suppuration, and the bottom of it begin to heal and fill up with little

granulations of flesh, as the discharge begins to diminish: it frequently happens that these granulations become too luxuriant, and prevent the wound from healing or skinning over, which require the application of escharotics to keep them down. For this purpose, sprinkle or dust some blue vitriol, in fine powder, all over the surface of the wound, and then apply a dossil of lint dipped in a strong solution of the vitriol, and secure it with a bandage; if these means are not sufficient, lunar caustic must be used, and apply a piece of dry lint over the wound.

Wounds that are in a fleshy part, deep, and considerably bruised, require a more active treatment.—The inflammation is very often great; in which the constitution appears to sympathise; the pulse is attended with hardness, and feverish symptoms generally begin to appear. Unless the wound take a favourable turn, a grangene will ensue, and, if it be not timely checked, death may be expected.

When accidents so desperate occur, every means should be employed to prevent violent inflammation supervening, and to promote suppuration. It will be proper, in these cases, to take three or four quarts of blood away immediately, and let the purging drink (No. 3, p. 108) be administered to the animal in a short time after. The wound,

and all the parts affected, must be fomented four or five times in the course of the day, and continued for a few days until the inflammation subsides, and matter is formed. Poultices should likewise be applied after fomenting the parts. When good matter is formed, the fomentation and poultices may be discontinued, and the wound dressed as above described.

In these bad cases there is often considerable sloughing, and the wound emits an offensive smell: when this happens, take a sufficient quantity of finely powdered nitre, and sprinkle it over the wound, both inside and out; rub it gently in, and afterwards dress the wound with the following

RECIPE (No. 70.)

TAKE—Liniment (No. 69), four ounces; add by a little at the time one drachm of oil of vitriol, and keep it constantly stirring until united; A small quantity of spirits of turpentine may be added to thin it.

A tent of tow or lint dipped into this liniment is to be introduced to the bottom of the wound with a probe. The tent must be sufficiently long so as to admit of one end hanging a little out of the wound, by which it may be taken out at pleasure, and fresh put in. This liniment seldom requires to be used more than a few times, and when

discontinued, the wound must be dressed as already mentioned.

Wounds that penetrate into the cavity of the chest, require nearly the same treatment as other fresh wounds; bleeding, the purging drink (No. 3, or 4, p. 108), fomentation with warm water and poultices, are to be had recourse to; and in two or three days after employing these, they may be dressed with the liniment (No. 69). Wounds of the abdomen or belly, where part of the intestines protrude, are treated as follows.—If there be any dirt, clotted blood, or any extraneous matter, about the bowels, it must be removed by a sponge and warm water. Having done this the bowels are to be replaced, and the wound stitched up. A linen compress is to be applied over the wound, and a broad roller or bandage that will pass several times round the body, which will support the bowels, while the wound is healing.

Treatment of Hemorrhage or Bleeding. In bruised and lacerated wounds, they should be allowed to bleed for a short time, if the bleeding is not profuse. Whenever a considerable blood vessel is wounded or divided, and the hemorrage likely to prove dangerous, our first care must be to *stop the bleeding* by pressure with a dossil of lint, and, where the situation will admit of it, the application of a roller or bandage. Pressure, where

it can be properly applied, is certainly the best remedy; but as there are many cases that will not admit of this treatment, the stoppage of blood may be attempted by actual cautery, where the part will allow it; otherwise, the following styptic powders may be used. Sometimes, however, it is more convenient to tie up the blood vessel: but these circumstances must be left to the judgment of the operator, at the time.

RECIPE (No. 71.)

Styptic Powders.

TAKE—Alum, in fine powder, and flour, of each two ounces;
Emetic tartar, one ounce:
Mix them together for use.

The mouth of the divided vessels must be covered over with a sufficient quantity of these styptic powders, and pressed to with lint or tow, and then well secured by a roller or bandage.

CHAP. XL.

WOUNDS OF THE JOINTS.

THESE are not so common among horned cattle as among horses. The former are seldom troubled with any thing more in these parts, than those wounds which are of a common nature, and which

generally heal by the first intention, while the latter are subject to severe contusions that often render them of little use afterwards.

The treatment of wounds in the joints greatly depends on the manner in which they have been received.

Such as are attended with severe bruises, are more difficult to heal than those received from a cut or rent. All recent wounds that are attended with swelling and inflammation, it will be necessary to foment well with warm water, three or four times in the course of the day; after which dress with the liniment (No. 69, p. 231). The dressings should not be persisted in, more than three or four days, or till the inflammation and swelling begin to subside, otherwise they might occasion a discharge of synovia or joint-oil. The following compound will be found an excellent application for the cure of most wounds in the joints of horned cattle.

RECIPE (No. 72.)

TAKE—Mel-egyptiacum, two ounces;
Tincture of myrrh and aloes, and tincture of benzoin, of each two ounces;
Aquafortis, half an ounce:
Mix, and keep them in a bottle for use.

The wound, if possible, ought to be filled with

this mixture, either by injection, or pouring it in, and its mouth should immediately after be stopped up with lint, to prevent its running out; and supported with a roller or bandage. This method, if proceeded in, will in most cases be found sufficient to cure all wounds in the joints of horned cattle; if not, it will be necessary to apply the actual cautery. If feverish symptoms come on, let the animal be bled, and give the purging drink (No. 3, p. 108.) with an ounce or two of nitre in it.

CHAP. XLI.

STRAINS AND BRUISES.

THESE accidents befall cattle of all descriptions daily; and, as most persons are well acquainted with them, they require but little description here. Horned cattle are not so liable to strains as the horse, which perhaps may be accounted for in the following manner. The horse exerts himself more than the ox in all his paces; indeed, the labour of the latter is but a trifle compared with that of the former, when we consider the great exertion they frequently undergo. Strains, or bruises, may affect either the muscles, ligaments, or tendons. Strains of the former are generally

attended with considerable inflammation, and the latter with a rupture or breaking down of the tendon; but this last is not so common among horned cattle.—Strains of the stifle, whirl-bone, and back, are very frequent amongst these animals; and are chiefly occasioned by one beast riding or romping the other.

Treatment. The cure in all the different parts must first be attempted by removing the inflammation and swelling. The following mixture will be found suitable for every purpose of this kind.

RECIPE (No. 73.)

TAKE—Spirit of sal-ammoniac, with lime, two ounces;
Oil of olive, four ounces;
Spirit of turpentine, and camphorated spirit of wine, of each four ounces:
Mix, and keep them in a bottle for use.

These oils will be found excellent for all kinds of strains, bruises, and hurts, in different parts of the body. Let them be well rubbed in, on the part affected, once or twice a day; and if necessary, they may be assisted by fomenting the part with warm water, or the fomentation (No. 68, p. 228). If any feverish symptoms should appear, it will be proper to keep the body open by giving the purging drink (No. 3, or 4, p. 108.) Strains of

the hip-joint, shoulder, stifle, and back, being more deeply seated, require bleeding and a more powerful application than the former.

RECIPE (No. 74.)

TAKE—Opodeldoc, four ounces;
Spirit of sal-ammoniac, with lime, and spirit of turpentine, of each two ounces;
Oil of origanum, one ounce;
Oil of olive, two ounces;
Cantharides, in powder, two drachms:
Mix them together, and keep them in a bottle for use.

These are powerful oils in curing deep seated strains in the fleshy parts of the body. They must be well rubbed on the part affected once or twice a day, as may be thought most proper. After the pain, inflammation, and the effects of the oils are gone off, a weakness in the part frequently remains for a considerable time, which may be removed by applying the following strengthening plaister.

RECIPE (No. 75.)

TAKE—Black pitch, half a pound;
White pitch, half a pound;
Rosin, four ounces:
Melt them over a slow fire; when dissolved, take them from the fire, and add grains of paradise, and ginger, (fresh powdered,) of each one ounce:

Stir them well together, and when new-milk warm apply the plaister all over the part affected with a spatula, and immediately cover it over with short wool, or a flannel bandage, if more proper for the situation.

This will warm and strengthen the parts: if it be stuck on with wool, let it stop until it fall off of itself; but if with flannel, cut the stitches in a month after, and then let it take the same course.

CHAP. XLII.

CANCEROUS ULCERS.

THESE are the most difficult to heal of any ulcers to which horned cattle are liable. They generally make their first appearance in a hard tumor, seated in some of the glandulous parts of the body. Some of these are moveable, and others more fixed; some are inflamed and quickly break out, and discharge a thin acrid ichor; at other times, they discharge a thick yellow matter, and the wounds are apt to fill up with fungous flesh. The author has seen several ulcers of this description that have baffled the powers of medicine to heal them. These have been chiefly on the cheeks, eye-lids, and on the glands between the jaw-bones. They are produced by a peculiar

action of the neighbouring vessels, and generally arise from a bad habit of body, and attack those beasts that are of a delicate constitution.

Treatment. The cure greatly depends on the part of the glands where the ulcer is seated. There are some parts that will admit of a total extirpation; which may be done with a suitable knife, or (if preferred) by actual cautery. Some persons indeed attempt to remove every excrescency by means of caustics. The choice of these different methods must be left to the judgment of the operator, who will in course adopt that which is most convenient at the time of operating. After the wound has been thoroughly cleansed from all extraneous matter, let it be touched all over with lunar caustic, or sprinkled with red precipitate; and afterwards dress it with the following mixture.

RECIPE (No. 76.)

TAKE—Egyptiacum, four ounces;
Compound tincture of myrrh, and spirit of turpentine, of each two ounces;
Sublimate, in fine powder, two drachms;
Spirit of salt, half an ounce:
Mix and keep them in a bottle for use.

Let the wound be dressed with small pledgets of lint, or tow, dipped in this mixture, once a day: and if any superfluous flesh should appear,

it will be necessary to keep it down with the above caustic; or instead of this the wound may be sprinkled all over with blue vitriol, in fine powder, before it be dressed with the mixture. As wounds dressed with the above seldom fill up in the same manner as those which are dressed with digestives, it may therefore be in some cases adviseable, after the wound has been well cleansed, and the acrid discharge has been stopped, to use one part of the liniment (No. 69, p. 231.) and two parts of the above mixture well mixed together on a slab, with a spatula. The wound may be dressed once or twice a day with this spread on lint or tow.

Purging is sometimes adviseable in cases of this kind, and may be administered once a week for three or four weeks together. Either of the purgatives (No. 3, p. 108.) (No. 4, p. 108.) may be occasionally given as there directed; by these the plethoric state of the system, and the quantity of blood determined to the affected part, will be lessened, and cause the above medicine to act more powerfully on the wound. When these hard excrescent tumours, or scirrhous swellings of the glands, first make their appearance, they may frequently be removed by the following mercurial ointment.

RECIPE (No. 77.)

TAKE—Quicksilver, half a pound;
Strained turpentine, four ounces;
Spirit of turpentine, two ounces;
Rub them together in a marble mortar until all the globules of the silver disappear;
Then add hog's-lard, one pound:
Work them well together till properly incorporated; and keep the mixture in a pot for use.

A sufficient quantity of this ointment must be well rubbed on the parts affected once a day for eight or ten days successively. Then leave off the dressing for a month; and if any substance remain after that time, the ointment may be repeated as before. In some cases perhaps the following compound mercurial ointment will be more efficacious.

RECIPE (No. 78.)

TAKE—Mercurial ointment, (No. 77,) two ounces;
Strong aquafortis, two drachms;
Mix them well together;
Then add cantharides, in powder, two drachms;
Mix the whole together for use.

This must be well rubbed on the part affected

every morning for five or six days together; then leave off for a month or six weeks; and if the tumor be not dispersed in that time, repeat the unction a second time as before. In this manner it may be repeated as often as may be found necessary. There is no danger in the application of either of these ointments on any part of the animal's body, provided they are prevented from licking it.

CHAP. XLIII.

THE FOUL IN THE FOOT.

THIS proceeds from the habit of body, or redundancy of blood in the system; from being on wet pasture grounds; and from hard driving. Horned cattle of all ages are liable to this complaint; but cows of a gross habit of body suffer most by it. It generally first makes its appearance betwixt the claws or hoofs in the form of a hard crack, attended sometimes with considerable inflammation, and in a short time will discharge a fetid and offensive matter similar to that of the grease in horses' heels. At other times it makes its appearance with swelling upon the cornet between the hair and the hoof, and about the fetlock-joint, attended with violent pain and inflammation. This I conceive to be similar to the

downfall, and to proceed from the same cause, though not in the same place (one being seated in the udder, and the other in the foot). The pain is often so considerable, as to reduce them of their flesh till they become a mere skeleton.

Treatment. If this disease first make its appearance between the claws, wash the part clean from all dirt and filthiness; when dry, take a pair of cow-hopples (such as are used for tying their legs at the time of milking), or a rope of the same thickness, and then chafe the part affected betwixt the claws till all of a glow, afterwards dress the part with a wood skewer dipped in butter of antimony, oil of vitriol, or aquafortis, and let them stand dry one hour after, and turn them on a dry pasture. This may be done for two or three days together; but if the parts about the fetlock joint swell and appear much inflamed, it will be necessary to apply a large poultice, made of linseed powder, bean-meal, or rye-flour. The poultice is to be continued until the inflammation and swelling be reduced, and the parts acquire their former state. The cure may be finished by continuing to dress the wound with (No. 76, p. 241) or (if that be thought too strong) the sublimate may be omitted; and in many cases, it will be accelerated by giving the beast a purging drink (No. 3, or 4, p. 108), or the drink (No. 37, p. 155).

When the foul appears to arise from a bad habit of body, or redundancy of blood in the system, three, four, to six quarts of blood, according to the size and strength of the animal, and the urgency of the symptoms, are to be taken away, and the purging drink (No. 3, p. 108), administered once a week, for two or three weeks, as there directed; the drink (No. 37, p. 155), as ordered for downfall, should also be given.

CHAP. XLIV.

TO DRY A COW OF HER MILK.

THIS is a subject with which every gentleman grazier ought to be well acquainted. It is frequently found necessary to dry cows of their milk, at all times of the year, in order that they may the better be fed for the shambles. Some cows are more difficult to dry than others, by reason of their giving so large a quantity of milk, and the gross habit of body peculiar to some beasts.

Without great care and management these will be liable to the downfall, either in the udder or foot; or otherwise it may terminate in some fatal inflammatory disease.

Cows that are apt to milk themselves, are difficult to dry: they should therefore be dried

early in the spring, while at dry meat. Others may be dried, either in the pasture or in any other place. Such cows as are in the pasture, give a considerable quantity of milk, and are in good condition, ought to be fetched into a fold-yard over night, and from three to four quarts of blood taken from them. The next morning give the following drink.

RECIPE (No. 79.)

TAKE—Roach alum, in powder, six ounces; (if a large beast, eight ounces;)
Bole armenic, in powder, two ounces:

Mix and put them in a pitcher, then pour a pint and a half of boiling ale upon the ingredients. Afterwards add one pint of good vinegar, and give when new-milk warm.

The cow must be milked clean at the time the above drink be given; and, two hours after, may be turned into her pasture. About four days after, if her udder appear hard and full, let her be fetched out of the pasture, milked clean, and the drink be repeated as before.

This is generally sufficient to dry any cow of her milk; but, as some cows give so much that it renders them very difficult to dry, it is therefore frequently found necessary to repeat the drink and milking every fourth day, for three or four times,

before they can be completely dried. Or, the following drink may be given, which is equally as useful as the former, if not more efficacious.

RECIPE (No. 80.)

TAKE—Red wine tartar, in powder, one pound;
Treacle, four table-spoonfuls:

Put them in a pitcher, and pour three pints of boiling water on them.

Stir the whole together, and give it when new-milk warm.

This is a powerful drink for the purpose, as well as the former; yet, in order to gain a little more time (as some persons are very impatient) it may be necessary to change the drinks, provided they be of equal efficacy; another formula is therefore subjoined.

RECIPE (No. 81.)

TAKE—Alum, in fine powder, six ounces;
Red wine tartar, in powder, half a pound;
Bole armenic, in powder, two ounces;
Treacle, four table-spoonfuls:

Mix and put them in a pitcher, and pour a quart of boiling water upon the ingredients. Then add a pint of good vinegar, and give to the cow new-milk warm.

These are two excellent drinks, as well as the

former, and are equally powerful (if not more so in drying up the milk). They may be repeated in the same manner as the first. If one of those drinks were given every month during the summer to cows that are of a gross habit of body, it would prove a means of preventing that dreadful disease the downfall in the udder, which often baffles the skill of persons well acquainted with the diseases of horned cattle in general.

CHAP. XLV.

ANGLE-BERRIES.

THESE are cutaneous tumors growing out above the surface of the skin, and of different sizes, with a very disagreeable appearance. Young heifers, or cows of their first and second calves, are the most subject to them. These fleshy excrescences make their appearance on different parts of the body.

Those upon the udder are not only disagreeable, but cause the cow to be very troublesome to milk. They rise from a small base, and hang in a pendulous form, of different sizes. The common method made use of to extirpate these excrescences, is, to fix a ligature round their bases, and to suffer them to rot of themselves. Others, after they have been

well secured with a strong cord, or twine, will cut them off with a sharp knife, and anoint the part with oil of vitriol. But the most ready and effectual way is, to throw the animal down, and take hold of the angle-berry at the base with a pair of broad flat barnacles, (such as are used in farriery): then take a firing iron, after it has been sufficiently heated, and sear or burn it off; touch the seared part all over with a skewer dipped in oil of vitriol, or aquafortis. Either of these will destroy the roots, and prevent them from growing again; but if they be attended to in time, before they come to their full growth, they may be destroyed by touching them a few times with strong nitrous acid.

CHAP. XLVI.

SORE TEATS.

SOME cows are more subject to sore teats than others; they are liable to this complaint at all seasons of the year, particularly such cows as have newly calved. If the teats be afflicted in the summer, they often become ulcerated; and the flies plague and teaze them to such a degree, as to render it difficult to milk them. It is a great nuisance at the time of milking, as blood and corruption are liable to pass between the fingers into the milk.

The following liniment ought always to be kept in readiness for purposes of this kind.

RECIPE (No. 82.)

Liniment for sore Teats.

TAKE—Elder ointment, and yellow basilicon ointment, of each four ounces;
Spirit of turpentine, one ounce:
Mix them together on a slab.

The cow's teats may be well rubbed with this ointment every night and morning after milking. If in the summer, and the flies plague them, add one ounce of assafœtida, or aloes, in powder, and dissolve it along with the ointment and wax. This will prevent the flies from teazing the animal.

CHAP. XLVII.

THE MANGE.

THIS disease is well known to most graziers, and therefore requires but little description. It is seated in the skin, and for the most part proceeds from scanty keep during the winter: it makes its appearance early in the spring, as soon as the warm weather begins to set in.

The symptoms are as follows: the skin, or hide, appears fast on all parts of the body; and every

time the beasts rub themselves, the hair comes off, and a thick white scurf, of a scabby appearance, is to be seen in a short time after.

In the cure of this disease, mercurial ointment cannot be used with any degree of safety among horned cattle; as there is hardly a possibility of preventing them from licking themselves. Either of the following ointments, therefore, may be safely used in all diseases of this kind.

RECIPE (No. 83.)

TAKE—Hog's-lard, one pound;
Oil of vitriol, two ounces:
Mix them together for use, gradually adding the oil of vitriol to the lard:

Or the following may be used.

RECIPE (No. 84.)

TAKE—Hog's-lard, one pound;
Spirit of turpentine, four ounces;
Flower of sulphur, half a pound;
Sulphur vivum, four ounces:
Mix them all together into an ointment.

All the parts affected must be well rubbed with either of these ointments, every third or fourth day for three times. Let it be done under a warm shade when the sun is out; or otherwise an iron may be heated and held at a proper distance,

whilst another rubs it on. Thus the medicine will produce a good effect, and very often in slight cases one dressing will be found sufficient, if the ointment be well applied. At the same time it will be necessary to give the following drink.

RECIPE (No. 85.)

TAKE—Aniseeds, and carraway seeds, fresh powdered, each two ounces;
Grains of paradise, and nitre, in powder, of each one ounce;
Flower of sulphur, two ounces;
Crude antimony, in fine powder, half an ounce;
Treacle, four table-spoonfuls:
Mix for one drink, and give it in a quart of warm ale.

This drink may be repeated every third day for three times, or oftener if necessary. It will be found to possess the requisite quality of promoting the animal secretions, by which nature will be regenerated.

CHAP. XLVIII.

LICE IN CATTLE.

LICE in cattle, like the former disease, require no description, as the filth is always visible to the eye; if not, by shedding the hair, they will soon

be made to appear. The cattle most subject to lice are those which, through bad keep and poverty, are reduced to a low state, so that nature is not able to cast off her old coat; in consequence of this, an extra harbour is left for the vermin to accumulate in.

Different kinds of medicines have been applied for the destruction of these lice. Mercurial ointment (such as is used for the scab in sheep) would prove the most effectual in destroying them, if it could be used with safety: but as beasts are so liable to lick themselves, it would endanger the life of the animal, by bringing on salivation. It will therefore be better to omit its use, and to apply the following, which will be found equally efficacious.

RECIPE (No. 86.)

Wash for Lice.

TAKE—Stavesacre, half a pound;
Tobacco, cut small, two ounces:
Boil in one gallon of urine down to three quarts.

When this wash is cool, the beast is to be sponged with it on all parts of the body where lice are found, and repeated a second time, if necessary, in five or six days after: once or twice dressing is generally sufficient to clear them of filth of this kind. Or, if they are not destroyed after the first

time of using the wash, common Scotch snuff is sometimes dusted on the beast with the desired effect. It will be necessary to give to cattle, when reduced to so low a state, a good nourishing drink or two, such as (No. 1, p. 105), or (No. 2, p. 105), as there directed.

CHAP. XLIX.

WARBLES.

THESE proceed from a fly, well known by the name of the gad-fly, breeze, or ox-fly, which punctures small holes in the backs of horned cattle, and there deposits its eggs. These being speedily hatched by the heat of the animal's body, a small tumor arises, containing a grub, and having a small hole in its centre, that answers as a breathing place for the insects, and also to cast out the superfluous matter, which, if confined, might soon produce a large abscess, and destroy the grub. Country people frequently dislodge these creatures by pressing the fingers and thumb on each side of the lump. The readiest way of destroying these worms, is to pull off the scab that generally covers the mouth of the hole, and pour a few drops of the black oils (No. 70, p. 233.) into the orifice of the wound, or a few drops of spirits of turpentine may be used where the other is not in readiness.

CHAP. L.

TO MAKE A COW TAKE THE BULL.

It is sometimes necessary to promote this desire in cows, as otherwise the most profitable time for making butter or cheese might be lost: but it is very rarely wanted, if the animal be healthful and in good condition; and it is much better when nature is permitted to perform her own office, but this cannot always be dispensed with. The following drink therefore may be given.

RECIPE (No. 87.)

Take—Aniseeds, grains of paradise, and bay-berries, fresh powdered, of each two ounces;
Cantharides, in powder, two drachms:
Mix them all together for one drink.

This drink may be given in a quart of warm milk at any time of the day; and, if convenient, let them stand two hours after without meat; then turn them into their pasture, or feed them as usual. If this drink has the desired effect, the cow will take the bull in the course of eight or ten days: if not, the drink may be repeated with the addition of half a drachm more of cantharides added to it. If she be a very large cow, the quantity of flies may be increased to three drachms, but this is very rarely

necessary. It is best to give this drink on a full stomach, as it will be less liable to bring on the stranguary. But if the latter should take place, give her the following drink.

RECIPE (No. 88.)

TAKE—Nitre, in powder, two ounces;
Sweet spirit of nitre one ounce;
Tincture of opium, half an ounce:
Mix, and give in a quart of linseed tea.

This drink may be repeated, if found needful.

CHAP. LI.

BULL BURNT.

THIS is a local disease, affecting the sheath and penis of the bull; the parts become swollen, tender, and full of little ulcers, and sometimes there is a discharge of matter from the urethra. The most effectual way of curing this disease is, to throw the bull down, and turn him on his back, with his belly upwards. Then take a linen cloth, and fold it round his yard, and gently draw it out of the sheath till you can see to examine all the ulcerated parts, which should be bathed and washed with the following lotion.

RECIPE (No. 89.)

TAKE—Goulard extract, and camphorated spirit of wine, of each two ounces:
Soft water, eight ounces:
Mix, and keep them in a bottle for use.

The bull should be dressed twice a week with this lotion, and kept from bulling cows until well. Care must be taken every time he is dressed, that every part is properly washed or bathed with the mixture. Or he may be dressed in the same manner with the following mixture, which is more powerful.

RECIPE (No. 90.)

TAKE—Sugar of lead, white vitriol, blue vitriol, and bole armenic, of each half an ounce;
Boiling water, one pint:
Mix, and when new milk warm, put them in a bottle for use.

This is a very powerful mixture, but should not be used the first time of dressing; afterwards it may be used with safety. During the time of his getting better, it will be proper to give the bull the purging drink (No. 3, p. 108), or (No. 4, p. 108), with the addition of four ounces more of salts. Give the medicine as directed in the pages here referred to; and repeat it once a week for two or three times.

The vagina and shape of the cow is sometimes affected by the bull, which causes the parts to inflame and swell, likewise to discharge a disagreeable ichor; at the time of staling she appears to have considerable pain. All the parts that appear to be infected must be bathed with the lotion (No. 89), the other being too strong for the cow: and a linen rag may be soaked in the lotion, folded round the finger, and introduced into the vagina, or injected up with a syringe. A few dressings will in general be found sufficient.

CHAP. LII.

THE COW POX.

It appears from different authors that this disease was never noticed by any one before Doctor Jenner, who certainly is the first man that ever attempted to convince the world in a public manner of its great utility in protecting the human race from that baneful disease the small-pox. Vaccine inoculation has been introduced into most parts of Europe, the East and West Indies, besides many other parts of the world. As a substitute for the small pox, it appears to have met with the approbation of the public: yet, like many other discoveries, it has met with many powerful oppo-

nents, and still has many more to contend with. Some persons conjecture that the grease in horses' heels is of the same nature as the cow-pox; but this is a mistake, and the contrary may easily be proved. Some horses have the grease for years together, and are never free from it, either winter or summer. The cow-pox is a disease that gradually proceeds to maturation, and afterwards declines or dies away: it is now beginning to be generally known among the keepers of large dairies, and is indicated by the following symptoms.

The eyes of the animals appear heavy and dull, and the milky secretions are considerably lessened, frequently to more than one half in a few days. The beasts moan, and wander about by themselves. "Irregular pustules appear on the nipples of the cow; which, at their first appearance, are commonly of a palish blue, or rather of a colour somewhat approaching to a livid, and are surrounded by an erysipelatous inflammation *."

As soon as this disease takes place, a cordial drink may be given, which is very necessary to warm and stimulate the stomachs, and invigorate the system, by which nature will be better able to repel the disease: the drink (No. 1, or 2, p. 105), may be given as there directed, for two

* See Medical and Physical Journal, vol. i. p. 3.

or three times. If any feverish symptoms should appear, the body must be kept open by giving one of the following purging drinks as there directed (No. 3, p. 108) (No. 4, p. 108) or (No. 39, p. 160); any of these drinks will be found sufficient to purge the body and check the fever. The teats and udder may be well rubbed with the liniment (No. 82, p. 251) twice a day after milking; or, the following lotion may be used, if there be any objection to the use of the liniment.

RECIPE (No. 91.)

TAKE—Crude sal-ammoniac, in powder, half an ounce;
Wine vinegar, half a pint;
Camphorated spirit of wine, two ounces;
Goulard, one ounce:
Mix, and keep them in a bottle for use.

This lotion is more pleasant to use than the liniment, and is very suitable for sore teats in general, though they may proceed from other causes. It should be well rubbed on the parts affected twice a day.

CHAP. LIII.

WOOD-EVIL, MOOR-ILL, CLUE-BOUND, OR FARDEL-BOUND, AND PANTAS.

A GREAT variety of curious names is given to many of the diseases of neat cattle, by different authors. It certainly would be a great conveniency if nearly one half of them were expunged, and more rational ones admitted.

The *Wood-evil* chiefly proceeds from debility, occasioned by taking cold when exposed to bleak winds in open commons or pastures. This brings on a pain and stiffness in the joints; and if early attended to, may be easily removed by giving a few of the drinks (No. 1, or 2, p. 105) as there directed. But if the disease be of some time standing, it will be more proper to treat the animal in the same manner as for the rheumatism or joint-felon *.

Moor-ill, is a state of debility said to be occasioned by the want of fresh water; this may easily be remedied by removing the beast to a fresh pasture, where it is more plentiful, and by giving a few of the above-mentioned drinks for the wood-evil.

Clue-bound, or Fardel-bound.—The animal, when in this state, is disposed to be saped, or cos-

* Vide chap. vi. p. 109, *supra*.

tive; the thin part of the excrements force their way through the middle, or one side of the more hardened part. This frequently takes place at the commencement of a fever, and requires speedy relief, otherwise the life of the beast will be in danger. Let the purging drink (No. 3, p. 108.) or (No. 4, p. 108.) be given (as there directed) as soon as possible, and repeat it until a proper passage is obtained. The beast may be restored in a short time after, by giving two or three of the drinks (No. 18, p. 128), as there directed.

Pantas, is another species of disease similar to the former, requiring the same treatment.

CHAP. LIV.

ON THE DISEASES INCIDENT TO YOUNG CALVES, AND THE METHOD OF TREATING THE COW AFTER CALVING.

After the extraction of the calf, proper care should be taken of the cow, in providing her a suitable place to lie down in; and also to allow her the privilege of licking her calf, which not only makes her fond of it, but the friction of her tongue puts the young animal in motion, and will enable it to rise much sooner than it otherwise would. About a quart of the first milk (usually called

beestings) should be taken from the cow before the calf be allowed to suck: after which, it may have free access to the cow.

The milk for the first three or four days being of an opening and purging quality, will evacuate the bowels or intestines of the dark viscid matter called the meconium; which is collected in the bowels during gestation. If therefore this should not be able to perform the necessary evacuation, recourse must be had to medicines; of which the following will be suitable for this purpose.

RECIPE (No. 92.)

TAKE—Castor oil, one ounce;
Prepared kali, half a drachm;
Ginger, in powder; one tea-spoonful:
Mix, and give it in half a pint of warm milk.

This drink may be repeated the next day if the bowels are not sufficiently open. It is always adviseable to let the calf have free access to the cow, as soon as it is able to stand; and on the second day the calf may be tied in a corner of the hovel where the cow is; and if she has more milk than it can take at one time, it will be proper to milk a part from her, before the young animal is let loose to her; this should be done three times a day, for two or three days.

Afterwards let the calf be taken away, if the

cow's udder be free from kernels, or indurations, which are found in the udder of most young cows after calving: otherwise, it should be permitted to suck for a day or two longer.

The jolting of the calf's head against the udder, greatly assists in dispersing these indurations, and in preventing the downfall, or an inflammation taking place in this part; which might cause much trouble, or endanger the life of the cow.

The diet and treatment of cows, at the time of parturition, must be regulated according to the season of the year: if in the winter, or early in the spring, care should be taken to house them as soon after as possible, and to give them warm water and mashes of scalded bran, with a little ground corn in them twice or three times a day. If in the summer, they require to be kept under a shade, where they can be protected from the sun in the day, and from the cold in the evening, and treated with mashes and warm water for two or three days as above.

As the rearing of young calves from the pail is a distinct branch of farming economy, it could not properly be introduced here. The reader who is desirous of information, may see the different methods employed for this purpose in the valuable work referred to below *.

* The Complete Grazier, 8vo. third Edition.

CHAP. LV.

THE METHOD OF TREATING THE NAVEL-STRING AFTER EXTRACTION.

As soon as the calf has been taken from the cow, and has been properly cleaned, either by the animal licking it, or with a clean linen cloth, let the umbilical cord or navel string, be properly secured with a ligature, in the following manner.

Take a waxed thread of several thicknesses, and pass it several times round it, about two inches from the body; secure it fast with a double knot, then take a pair of scissars and clip it off a little below the tied part. Care is always necessary in tying the thread, lest it cut the navel string, and cause an effusion of blood that might prove difficult to stop and endanger the life of the young animal. When this happens to be the case, the ligature must be tied again above the cut part. If the navel-string is separated so near the belly that a ligature cannot be used, and there is bleeding from it, it will be necessary to take a pledget of lint or tow, and apply it to the part affected, and support it with a proper bandage round the body. This will in general put a stop to the bleeding; if it does not, a fresh pledget may be dipped in a

strong solution of blue vitriol and applied, and, in obstinate cases, oil of vitriol may even be used. If the part tumefy, let it be fomented with warm water twice a day, and rubbed after with the following

RECIPE (No. 93.)

TAKE—Spirit of turpentine, and spirit of sal-ammoniac, made with lime, of each two ounces;
Linseed oil, four ounces:
Mix them together in a bottle, and keep them for use.

All the swelled part must be well rubbed with this mixture twice a day. If matter forms and the tumour breaks, poultices should be applied morning and evening; and if the wound does not heal kindly, dress it with the liniment (No. 69, p. 231) as there directed. Under circumstances of this nature, it frequently happens that the young animal is so much reduced by pain and the loss of blood, as to require medicine to brace and strengthen its relaxed frame. The following restorative will be found very serviceable in this case.

RECIPE (No. 94.)

TAKE—Peruvian bark, in powder, and ginger fresh powdered, of each two drachms:
Mix, and give them in half a pint of new-milk.

This draught may be repeated once or twice a

day, for a few days, until the calf recovers its strength. By a strict attention to the above rules, and the treatment, the life of the animal may be preserved in cases that appear most desperate.

CHAP. LVI.

DIARRHŒA, OR DYSENTERY.

THIS is a disease to which young calves are very subject, at the age of from two to six weeks; and is chiefly brought on through change of diet, or from taking cold. Some farmers' wives are so penuriously disposed that they will scarcely allow that subsistence which nature requires at so early an age, and for want of which great numbers die.

The time of changing the diet of these young animals is the most difficult. Care should therefore be taken to change it very little for the first fortnight, but to allow it for the greatest part new milk; afterwards bring it to porridge by slow degrees, or otherwise, a dysentery, or scouring may be expected to take place, which will greatly weaken the calf, and if not checked in time will end in a complete dysentery.

The symptoms are as follows:—great weakness:—loathing of its food;—a continual purging;—every thing it takes turns acid and coagulates

on the stomach. Toward the last stage of this disease the stools become bloody and fetid, a large portion of the defensive mucus of the intestines is mixed with them; after which, a gangrene or mortification soon takes place, and terminates in the death of the animal.

Treatment. All these disasters *may be* prevented (if timely attended to) by proper management and suitable medicines. A table-spoonful of tincture of rhubarb, with a tea-spoonful of laudanum in it, given in a little gruel; or either of the following drinks, will in most cases remove the complaint.

RECIPE (No. 95.)

TAKE—Dover's powders, two scruples;
Compound cinnamon powder, three scruples;
Prepared chalk, two drachms:
Mix together for one drink.

This drink is proper for a calf at the age of from one to eight weeks. It must be given in about half a pint of gruel every morning and evening, as long as the purging continues. Or the following may be given, when the above drink has been administered for several times without success.

RECIPE (No. 96.)

TAKE—Dover's powders, two scruples;
Starch, in powder, one ounce;
Pomegranate shell, in powder, half an ounce:
Mix for one drink.

Pour a pint of boiling water upon the ingredients, and give the drink at night when new-milk warm. In cases of long standing there is often a continual motion to dung, which may be properly called a *tenesmus;* when this occurs, a tea-spoonful or two of laudanum may be added to the drink (No. 95) every time it is given. The whole surface of the body, in severe cases of diarrhœa, should be kept warm by a rug or woollen cloth.

When diarrhœa, or dysentery, is accompanied with feverish symptoms, and a constant motion to dung; or if the calf lies down, and kicks at its belly, or appears to labour under pain, it will be requisite to take half a pint, or a pint of blood away, according to the size and strength of the young animal, and to administer the purgative drink (No. 97, or 98, p. 272) with a tea-spoonful or two of laudanum in it.

CHAP. LVII.

COSTIVENESS IN YOUNG CALVES.

THE costive habit of some calves may take place at the age of three or four days; but in general, it does not appear until the time when the young animal is put to dry meat: which may be reckoned at or about the age of eight or ten weeks.

In every state of costiveness the animal will be in danger of its life, if not timely removed.

Horned cattle, whether young or old, when labouring under any internal disease, are very liable to become costive, or saped. Cattle labouring under this complaint are liable to inflammatory fevers of different kinds. And if purgative medicines are not given in time, there is often little hopes of recovery. Neat cattle of all other verge most rapidly to a state of dissolution, when suffering under any imflammatory disease.

The greatest art of curing diseases is, to be well acquainted with their nature, and the constitution of the animal, together with a proper knowlege of the quality and quantity of every medicine necessary to be given in each disease, in order to obtain the desired effect. Without this knowledge, there will be but little probability of success. If the purgative dose be too small, it will be apt to increase the disease; and, if too large, it will be liable to reduce the young animal to a very weak state. A proper quantity therefore, sufficient to produce the desired effect, is the point most necessary to be sought for; and, of this point the author ventures to hope that long experience has given him a confident knowledge. The following different formulas will serve to elucidate the sub-

ject, so as to enable the practitioner to prescribe for calves of every age. The following drink is suitable for one of six weeks old.

RECIPE (No. 97.)

TAKE—Glauber salts, three ounces;
Ginger, in powder, half an ounce;
Aniseeds, fresh powdered, half an ounce;
Treacle, two table-spoons full:
Put the whole in a pitcher, and pour a pint of boiling water upon the ingredients. Cover them down and when new-milk warm give the drink.

The following may be given to one about eight weeks old.

RECIPE (No. 98.)

TAKE—Glauber salts, four ounces;
Rhubarb, in powder, two drachms;
Ginger, carraway seeds, and Aniseeds, fresh powdered, of each half an ounce;
Treacle, three table-spoonfuls:
Put the whole in a pitcher, and pour a pint of boiling water upon the ingredients, cover them down, and give when new-milk warm.

Or, if thought more proper, the following may be given, especially in imflammatory cases.

RECIPE (No. 99.)

TAKE—Castor Oil, four ounces;
Rhubarb, in powder, two drachms;
Prepared kali, one drachm;
Ginger and aniseeds fresh powdered, of each half an ounce;
Treacle, two table-spoonfuls:
To be given in a pint of warm gruel.

Any of these drinks may be repeated once a day, until they produce the desired effect. By increasing the glauber salts, or the castor oil, the drinks may be accommodated to every age. The great utility of purging medicines consists principally in carrying off those crudities, which so frequently engender in the stomachs and intestines of young calves, and produce many fatal diseases; as is obvious to those who have the management of young cattle.—It will be necessary here to introduce a cordial drink which is always proper to be given after purging; as it not only invigorates the system, but produces a healthful tendency in the body.—It will be found of infinite use in removing flatulency from the stomachs and intestines, and in promoting the digestive process, which is the best method of preserving health in these young animals.

RECIPE (No. 100.)

TAKE—Aniseeds, and caraway-seeds, fresh powdered, of each one ounce;
Coriander-seeds, ginger, grains of paradise, fresh powdered, of each half an ounce;
Treacle, two table-spoonfuls;
A lump of butter, of the size of a walnut:
Put the ingredients into a pitcher, and pour a pint of boiling ale upon them. Cover the whole down till new-milk warm, and then give it.

This will be found an excellent drink to remove indisposition, strengthen the stomachs, and promote an appetite.

CHAP. LVIII.

THE HOOSE IN CALVES.

THIS disease most commonly attacks young calves during the first year, and generally seizes them while at grass in the summer. In some dry summers it has carried off large numbers to the great loss of the owners. Upon examination after death, the author has frequently caused their windpipe to be laid open and inspected, in which he has found *a bunch of worms*, netted or matted together, and sometimes a thick whitish fluid, with

skinny filaments floating in it; the lungs have also appeared red, and more compact than in a state of health. There is a continual tickling sensation in the windpipe, which causes the young animal to be almost in a constant state of hoosing or coughing; and the powers of digestion are so much impaired as to render the chewing of the cud impracticable. And, if proper medicines are not applied, they languish and pine away like a consumptive patient. All these evils may be prevented with care and proper management.

Treatment. The following ball and drink will in most cases be found effectual in removing this complaint, and should be resorted to as soon as possible.

RECIPE (No. 101.)

Ball for Hoose in Calves.

TAKE—Calomel, from eight to twelve grains;
True gentian, in powder, two drachms;
Syrup sufficient to make a ball:

It is to be given in the morning fasting, and let the calf be kept from food for two hours after: half a pint of gruel should be administered at the same time, to wash the ball down.

This ball is to be repeated in the course of four or five days, if the hoosing continues. Let the following drink be given in a morning or two after the above ball.

RECIPE (No. 102.)

Purgative Drink for Hoose.

TAKE—Epsom salts, four ounces;
Ginger, in powder, two drachms:
Pour a pint of boiling water upon the ingredients, and give when new-milk warm.

CHAP. LIX.

CANKER IN THE MOUTH.

IN this disease the mouth is so affected that the young calf cannot eat properly. The inside of the cheeks, and gums, are tender, red, and ulcerated, and the teeth loose. It is sometimes attended with feverish symptoms, and then requires internal medicines.

Treatment. The following mixture is in general sufficient for the cure of this complaint.

RECIPE (No. 103.)

TAKE—Burnt alum, roach alum, and common salt, of each half an ounce;
Armenian bole, in powder, half an ounce;
Honey, two ounces:
Put the whole in a pitcher, then pour a pint and a half of hot vinegar upon them, when cold put them in a bottle for use.

The mouth must be well washed with this mixture two or three times a day, in the following manner. Take a stick or cane two feet long, and fold round one end a small lump of linen, or fine tow: secure it well with strong thread; then shake the bottle well, and pour a sufficient quantity into a pot. Dip the end of the cane or stick that has the linen or tow fixed on it, into the gargle mixture, and apply it all over the mouth.

I know some graziers, who use the above mixture merely to harden the gums and mouth, that the young animals may eat the better for it. If feverish symptoms appear in the disease, it will be requisite to administer the purgative drink (No. 97, or 98), and after that has done operating, give the cordial drink (No. 100), and let it be repeated, if thought proper.

CHAP. LX.

OBSERVATIONS ON THE PROPER METHOD OF DIVIDING THE DIFFERENT DRINKS, MENTIONED IN THIS TREATISE, SUITABLE FOR HORNED CATTLE, FROM THE AGE OF ONE YEAR OR UPWARDS.

THE reader is requested to bear in mind that in the preceding pages, the drinks are chiefly

calculated for cattle that have arrived to a state of maturity. It will therefore be necessary for those persons who have the management of horned cattle, to have a proper knowledge of the method commonly used in dividing each drink suitable for their different ages. Those of a purgative nature first claim our attention, as they are the most necessary for every one to make himself thoroughly acquainted with.

If too large a dose be given, the animal's life will be in danger: on the other hand, if too small a quantity be administered, the symptoms will be increased; thus it will be obvious that either extreme may lead to disappointment of cure, if not the death of the animal. It is indispensably necessary, that all those persons who are in the habit of prescribing medicines for horned cattle, should make themselves well acquainted with the nature and power of the animal frame,—the symptoms of all diseases,—and likewise the quality and operative powers of the medicines usually prescribed. Without this knowledge our proficiency in the healing art will be very deficient.

The following method, if strictly attended to, will lead to a proper division of those drinks, whose operative powers are the most considerable.

I. For a heifer, or a steer, of one year old, and from that to a year and a half; one half of any of

the following purging drinks will be sufficient, (No. 3, p. 108.) (No. 4, p. 108.) (No. 11, p. 118.) (No. 13, p. 121.) (No. 17, p. 127.) (No. 31, p. 148.)

II. For such as are from one year and a half to two years and a half, three parts out of four may be given of any of the aforesaid drinks, afterwards a whole drink may be given. By this method every drink may be properly divided suitable for every age, size, and constitution. The above rule will also serve to regulate the other drinks.

ON

THE DISEASES

OF

SHEEP.

In the following sections on the diseases to which sheep are most liable, we have pursued the same plan of discussion, as in the preceding part of this work, on the disorders prevalent among horned cattle. The remarks on the causes, seat, and treatment of the various maladies of sheep, are founded wholly on long and extensive experience. Our practice has indeed been chiefly confined to the most *fatal disorders* that usually attack and rapidly carry off these useful animals: the author has endeavoured to state the mode of treatment in the clearest manner possible.

Many of those diseases which prove most fatal commit the greatest ravages among sheep that are in the best condition, either in the spring, or the latter end of the year, if the season be wet, or the weather very changeable, as also when they are at turnips.

Low grounds, or woodland pastures, where the air is moist, particularly in wet seasons, are unfavourable to the health of sheep. In wet seasons they should be in the highest and driest land; for a dry air is particularly congenial to the healthy condition of these animals. When disease attacks your flock, you should always endeavour to ascertain the cause or causes, that have brought it on; as, whether it may arise from plethora, or redundancy of blood in the system, infection, errors in regimen, humid air, or extreme heat or cold. When the real cause or causes are known, the further extension of the complaint may, by avoiding them, and administering suitable remedies, be prevented, or at least considerably lessened.

The diseases of young lambs are most frequently owing to want of proper support, error in diet, or undue exposure to the weather, which debilitate the animal frame, and they in consequence take cold.

The best method of obtaining information (when any of these animals fall) is to open them, in order that the nature and seat of the complaint may be found out; by which means, *if the shepherd be a man of judgment,* he will soon be enabled to put a stop to the fatality of the disease.

The structure of sheep so nearly resembles that of neat cattle, that the anatomy and physiology

of the latter, which we have treated of in the fore part of this work, will suffice for that of the former.

Many of the diseases of sheep are analogous to those of neat cattle, and require a very similar treatment. If I was asked what proportion of any drink prescribed for a cow would be sufficient to give a sheep, if at any time it might be thought proper to give the same kind of medicine, I should say, about a sixth or eighth part.

The quantity of blood usually taken from a sheep is from eight ounces to a pint, or a pint and a half, and sometimes a quart, and the bleeding may in some instances be repeated for two or three times, taking less away each time. Three or four ounces is generally sufficient to take from a young lamb. They are commonly bled, in this part of the country, in the vein below the eye, and in the nose; but it would be much better to bleed them in the neck, as we do neat cattle, which I always recommend, and have seen performed with great dexterity in several flocks; the blood should be caught in a basin, that the proper quantity may be taken away.

SECTION I.

THE LAMBING SEASON.

THE lambing season depends wholly on the time when the tup is put to the ewes; which in general is so calculated, that they should bring forth their young towards the latter end of February, or the beginning of March. This is an inclement season both for the ewe and the lamb, especially if they have been badly kept for some time before yeaning. The consequence naturally to be expected on this occasion, must be a severe loss amongst both the ewes and their offspring.

If the dam has not sufficient support for herself, the lamb in course will be weakly at the time it is brought forth. It is therefore indispensably necessary, that all sheep breeders should pay every attention to these animals, that nature and the season of the year may require. For a month or six weeks, at least, before the time of yeaning, they should be supplied with plenty of food, in order that nature may provide for her offspring at the appointed time. If strict attention be paid to these observations, the health and strength of these animals will be preserved, by which they

will be enabled to go through the difficulty of parturition.

Further, every farmer or grazier, who is in the practice of breeding sheep, should be properly provided with a fold-yard suitable for the purpose. It may consist of a small plot of ground, well protected from the north-east and westerly winds, with a suitable shade, and a fire-place in it, and other conveniences for the purpose. Thus, the shepherd will be the better able to attend them at all the hours of the night, to give his assistance if required, and to take proper care of them. By attending to these observations the lives of many will be saved.—It frequently happens during the lambing season, that ewes are severely handled through the largeness of the lamb, or its being in a wrong position, so as to bruise or tear the different parts through which it passes. It will be necessary to have in readiness at these times, the following mixed oils.

RECIPE (No. 104.)

TAKE—Venice turpentine, and Barbadoes tar, of each four ounces;
Spirit of turpentine, half a pint;
Linseed oil, one pint:
Mix them all well together; then add the following:

Mel-Ægyptiacum, two ounces ;
Oil of vitriol, and aquafortis, of each half an ounce ;
Mix them together, and add tincture of myrrh, half a pint:
Mix, and shake them all well together in a bottle for use.

Whenever these oils are used, let the bottle be well shaken, and the quantity of one or two table-spoonfuls be conveyed into the vagina, or sheath, either by the hand or with a spoon. They warm and stimulate the parts affected, and will most effectually prevent or cure the gangrene or mortification in these parts, as well as in other fresh wounds. The following drink will be found of infinite service, if given to those ewes which are injured by a difficult parturition.

RECIPE (No. 105.)

TAKE—Peruvian bark, and ginger, in powder, of each one drachm:
Mix them in half a pint of warm gruel, and add
Treacle, two table-spoonsful ;
Brandy, one table-spoonful:
Mix, and give it new-milk warm.

It is frequently necessary to repeat this drink once or twice a day, where the animals have received

much injury, or where they have been reduced by indifferent, bad, or scanty keep for a long time before the lambing season commences.

In every case where nature appears to be in a languid and debilitated state, nothing can equal the effect of these powders in restoring them. The gruel that is necessary to be given to ewes at the time of lambing should be made as follows.

RECIPE (No. 106.)

TAKE—Linseed, fresh powdered, one pound;
Oatmeal, two pounds;
Mix them together, and when gruel is wanted, take a sufficient quantity of the powders and water;
Boil them together in gruel, in the same manner as if made of oatmeal alone;
A table-spoonful or two of gin or brandy may be added, and a similar quantity of sugar.

This will give abundance of support to the animals, as well as nourish and heal their insides, through the richness of the seed being combined with the oat-meal. From half a pint to a pint of this gruel may be given at one time and repeated twice a day if necessary. If the ewe be deficient in her milk (which very frequently happens at the time of lambing, for want of better support), let the fol-

lowing drink be given, which will be found to greatly assist the secretion of that fluid.

RECIPE (No. 107.)

TAKE—Aniseeds, sweet fennel seeds, caraway seeds, and grains of paradise, of each one drachm; (let them all be fresh powdered:)
Mix and give in a half pint of warm gruel.

Such persons as may find it necessary to give their sheep the above drink, would find it more convenient to have three or four ounces of each, powdered and mixed together; and if they be not used in a few days, to put them in a pot and tie them close down with a bladder. Half an ounce of these powders may be mixed and given as above, at any time. By this method the whole virtue of the seeds will be preserved. This drink acts as a cordial, and powerfully promotes the milky secretion, at the same time it warms and stimulates the stomachs and intestines.

SECTION II.

ON THE DISEASES OF YOUNG LAMBS.

YOUNG lambs are liable to a variety of different diseases, arising either from insufficient keep, from

a redundancy of milk, or from the cold state of the weather. If they proceed from the former, support must be given them, either by allowing them to suck other ewes, or by giving them new cow's milk, as warm as what it comes from the animal. When the ewe has too much milk, which is seldom the case, it is apt to coagulate and form into a hard substance in the maw, by which many of the best lambs are frequently carried off.

Diarrhœa in Lambs. This is a most destructive malady amongst lambs in some parts of the country. It is most fatal while the lambs are under a week old. It frequently seizes them at twenty-four hours old, and many die in six hours after. But for the most part it makes its first appearance about twenty-four hours old, and lasts two days, in which time it kills five out of six that are attacked with it, except proper remedies are administered at its very onset.

The diarrhœa commences with frequent purging, and severe griping pains, and the lambs are generally very much blown up on its attack from wind in the stomachs and intestines. If the disease continues for some time, and no assistance be attempted to give relief, the diarrhœa becomes more stationary; and the stools are attended with a copious dejection of the mucus of the intestines, together with a

griping pain, while the young animal daily pines away.

Treatment. The cause that induces the complaint must be ascertained, if possible. If it proceeds from cold, and want of proper support, new cow's milk should be given to the lamb, and let the young animal be kept warm, and the drink (No. 108) be administered to it. If the ewe's milk appears to disagree with the young animal, it will be proper to change her diet, and to feed the lamb, in severe cases, altogether on new cow's milk, if it can be done, not neglecting to milk the ewe. The ewe should also be purged once or twice by giving two ounces of epsom salts in a little water, with a small tea-spoonful of elixir of vitriol in it. The following drink will be found useful in restoring the suppressed perspiration, in correcting the acrimony of the stomachs and intestines, and in allaying the severe griping pains, by which means it puts a stop, with proper management, to the diarrhœa.

RECIPE (No. 108.)

TAKE—Dover's powders, from ten grains to a scruple;
Compound cinnamon powder, two scruples;
Prepared chalk, one scruple:
Mix, and give in a little warm new milk, thickened with starch.

This drink is proper for a lamb at the age of from twenty-four hours old to a week or two old. It may be repeated every three or four hours until the symptoms are greatly abated, and then once a-day will be sufficient, should the diarrhœa continue. After giving one or two of the above drinks, it will frequently be of great use, in severe cases of diarrhœa, to add from two to four grains of calomel to it, which may be repeated every day for two or three times; or *half a table-spoonful* of castor oil may be given with the drink.

A strong lamb, six weeks or two months old, will require half a drachm of Dover's powders, one drachm of compound cinnamon powder, and from two scruples to a drachm of prepared chalk. At this age, however, the diarrhœa is commonly not so fatal, and will in general yield to a table-spoonful of castor oil, with from forty to sixty drops of laudanum in it, given in a little weak gin and water.

When diarrhœa attacks lambs that are weaned, and from that time to six or seven months old, it most commonly arises from the nature of their food, or from taking cold. In these cases their pasture should be changed: I have frequently known removing them into a stubble corn field put an immediate stop to the over purging. It will

sometimes be requisite to administer the following powders.

RECIPE. (No. 109.)

TAKE—Prepared chalk, eight ounces;
Aniseeds, caraway seeds, and ginger, fresh powdered, of each one ounce:
Mix them well together in a mortar.

One small table-spoonful of these powders must be mixed in a little warm milk, thickened with flour or starch, and given to them once a-day, and, in obstinate cases, twice. Forty drops to a tea-spoonful of laudanum should be added to each dose. By adhering to the above method of treatment, a cure may in general be soon expected.

Costiveness in Lambs. This is mostly accompanied with slight symptoms of fever. The lamb appears dull and heavy, eats very little, and after it has recovered the wool generally comes off.

Treatment. It will be necessary to give the lamb half an ounce to one ounce of epsom salts, dissolved in a little water; or a table-spoonful or two of castor oil, which the shepherd should always have by him. If it seems much affected, bleeding will be proper. In case the lamb does not take sufficient support, you must give it water gruel, which will not only nourish it, but cool the body and relax the bowels.

Staggers in Lambs. This attacks the most thriving, and frequently proves fatal to them, especially when about three or four months old. The lamb seized with this complaint is giddy, falls down, and in general cannot rise again, until it obtains relief. Sometimes the lamb is affected with convulsions, and appears very much distressed. I have opened lambs that have died of this complaint, and have found no part diseased except the brain, the blood-vessels of which were turgid and distended with blood, much more so than in health; in one instance I found water in the brain.

Treatment. Bleeding must be had recourse to immediately, and a purgative drink, composed of about one ounce of epsom salts dissolved in a little water, with half a drachm of elixir of vitriol added to it, should be given as soon as possible to the lamb. After the operation of the drink, the following ball should be administered to the lamb, taking care to keep it housed.

RECIPE. (No. 110.)

TAKE—Calomel, from three to six grains, according to size and strength;
True gentian, in powder, half a drachm;
Syrup enough to make a ball,

This ball, with the purgative drink, may be given to lambs whenever they are indisposed, if the complaint is not attended with purging.

SECTION III.

RED WATER.

THIS disease is of the inflammatory kind, and prevails most at the latter end of the year, or during the winter, among sheep feeding on turnips, or succulent grasses.

In the neighbourhood of Retford this disease has been common for several years past: it seldom misses a season, but it makes its appearance amongst some of the numerous flocks that feed on vegetables of these kinds, and for the most part attacks those sheep first which are in the best condition: and if no relief can be obtained, they generally die in the space of *twenty-four hours* or *less*. In such sheep as have been opened, the disorder has on examination been found to proceed from an inflammation and consequent mortification of some particular part or parts of the body, viz. the peritoneum, or rim of the belly, the kidneys, and the intestines. There is a considerable quantity of watery fluid of a red colour in the belly, which was formed from the peritoneum

being inflamed. Sometimes the intestines become loaded with sand and gravel, while feeding on turnips; by which the inflammation is considerably increased. Whenever this disease makes its appearance amongst flocks of sheep that are feeding on turnips or succulent grasses, no time must be lost in putting a stop to so destructive a disease.—The loss sustained by the grazier in consequence is often very considerable.

The symptoms indicating the presence of this disease are, the sheep appears dull, and loiters behind the rest of the flock, loss of appetite, and the belly a little swollen.

Treatment. The following medicine the author has had an opportunity of trying on a large scale, sometimes on five or six hundred sheep, belonging to one man, in the course of the day. The sheep must be bled before administering the medicine.

RECIPE (No. 111.)

TAKE—Epsom salts, six ounces;
Nitre, in powder, four ounces;
Boiling water, three pints, pour the water hot upon the salts;
When new-milk warm add
Spirits of turpentine, four ounces;
Bole-armenic, in powder half an ounce;
Mix, and shake them well together at the time of giving.
The dose is from three to four table-spoonfuls.

When this medicine is intended to be given to a number of sheep, they must be taken from the turnips, or whatever they are feeding on, and put into a pen or fold yard for two hours before it is given.—Then a small horn should be provided, that will just hold the quantity proper for each sheep. Let the bottle be well shaken each time it is poured into the horn.

This method of giving drinks to sheep will be found very advantageous, when many require it at one time. They must be kept from food two hours after the medicine is given, either in a fold-yard, or a pen; after which they may be put in their pasture as usual. When this disease is so severe that several die every day, it will be necessary to repeat the medicine every third day, for three times or more, if thought proper, and to change their diet, and remove them into a more elevated situation. This medicine, together with bleeding, will be found a powerful preventive to most inflammatory complaints which sheep are liable to, while feeding on turnips or in a luxuriant pasture.

SECTION IV.

RESP.

THIS disease is frequently called the garget, the blood, and the blood-striking. It is a similar

complaint to the black-leg in young cattle. The sheep are often found dead of the resp without any previous symptoms having been observed. In many instances, however, it is discovered by the sheep being dull and languid, and having an unwillingness to move; the eyes appearing of a yellowish hue, or inflamed; and the affected animal is frequently unable to void its urine, and if it does, the urine is mostly tinged with blood. A coma or lethargic dulness comes on, and the sheep dies without a struggle, often found lying as though asleep. The resp proves fatal from a mortification, or corruption taking place in different parts of the body. In opening sheep that have died of it, some one or more of the organs essential to life were found mortified, or rotten; as the kidneys, the bowels, and the milt. There was, in several cases, a large quantity of watery fluid in the lungs, near to the heart. The flesh is frequently discoloured, and the whole body emits a peculiar offensive effluvia.

The cause that most commonly induces the disease, is a plethora, or overflowing of the blood, arising from sheep feeding on turnips, cole, or the rich succulent grasses. It is most prevalent in low situations, and in woodland pastures where the air is humid.

Treatment. As soon as this disease makes its

appearance in a flock, the whole of the sheep should be bled and the purging drink (No. 112) administered to them.

SECTION V.

STURDY, GIDDINESS, OR WATER IN THE HEAD.

THIS disease consists of a limpid fluid, like water, contained in a thin transparent vesicle, or bleb, which is situated in the head, and deranges the healthy functions of the brain. A sheep with the sturdy appears stupid, turns round and round, and the eyes are frequently as though fixed in their orbits. As the water increases in quantity the sheep becomes more and more affected; the vision of one or both eyes is impaired or lost; the sheep staggers to one side, if you drive it a short distance; and different parts of the body are seized with palsy; and it in time dies quite emaciated.

Water in the head is most frequent in those flocks that are exposed to the inclemency of the weather without shelter, or that feed in low meadow grounds, where the air is moist, which obstruct the perspiration, and by this means produces an increased proportion of the watery fluid in the mass of blood. It most commonly attacks young sheep.

In examining sheep with this complaint after death the skull-cap should be carefully removed with a saw, &c. that the size and situation of the bleb, or vesicle of water, may be perfectly seen. It is generally found between the brain and the skull, and the bone is here so thin, that the bleb may be felt while the animal is living. The bleb is also frequently situated in the right or left ventricle of the brain, but most commonly in the right, in which case the vision of the left eye is either impaired or lost. The seat of the vesicle may in general be discovered by the opposite side of the body, to that where the bleb is situated, being affected with palsy or convulsions.

In some cases there is a large quantity of water in the head, and the whole brain is almost consumed, and changed to a gelly-like consistence: the brain is always wasted in proportion as the bleb increases in size.

Treatment. When a cure is attempted a hole must be made in the skull with a pen-knife, and a small tube put in to let out the water. Having discharged the contents of the vesicle, the sheep should be bled and have the following drink administered to it.

RECIPE (No. 112.)

TAKE—Epsom salts, two ounces;
Spirits of turpentine, one tea-spoonful;
Ginger, in powder, a tea-spoonful:
Dissolve the salts in three ounces of boiling water, and when new-milk warm add the turpentine and give it.

It may be repeated every other day for a few times. Sometimes a part of the skull is removed, and the bleb taken away entire.

SECTION VI.

CATARRH, OR COLD.

LONG continued rains, and sudden vicissitudes of the weather, are the usual causes of sheep taking cold.

Catarrh is sometimes severe and destroys numbers of sheep, and appears in some flocks to be epidemic. The symptoms of catarrh are a heaviness, the eyes watery, the nose runs and is almost glued up with a thick matter, which must be cleaned away, or else respiration will be impeded. The complaint is accompanied with a cough, the sheep appears starved, walks stiff, and eats very little.

On opening sheep that have died of this complaint, the windpipe and its branches, and also the lungs, exhibited marks of inflammation and incipient gangrene, sufficient to account for the death of the animal.

Treatment. In severe catarrh the affected sheep should be bled in the neck to the quantity of a pint, or a pint and a half, according to the urgency of the symptoms. In violent cases we have repeated the bleeding every day for two or three times with the most decided good effect. The following drink should be given to the animal after bleeding.

RECIPE (No. 113.)

TAKE—Epsom salts, one ounce and a half or two ounces, according to the size of the sheep;
Nitre, one drachm;
Cummin-seeds, in powder, one large tea-spoonful.
Treacle, one table-spoonful.
Put them in a pitcher, and pour four ounces of boiling water upon them; stir the whole together, and give it when new-milk warm.

This drink may be repeated, in obstinate cases, every day or every other day, for two or three times. It is sometimes necessary to change their pasture, especially when feeding on turnips, cole, or food difficult of digestion. They should also be

housed at night, and littered with clean straw, particularly when it proves very fatal. If they do not take a sufficient quantity of nourishment to support life, water gruel should be given to them three times a day. When the catarrh is not violent, the cordial drink (No. 107) will be sufficient to restore the animal.

SECTION VII.

GOGGLES.

GOGGLES is an inflammatory affection of the brain, induced in general from a plethora or overflow of the blood. Both young and old are liable to be attacked with it, especially soon after being turned into a rich luxuriant pasture. The symptoms that indicate the presence of this complaint vary according as the membranes, or the substance of the brain, are affected. I have known lambs seized with the goggles, run about the pasture quite frantic, till at length they dropped down, and were unable to rise again from being deprived of the use of their limbs. These have in most cases soon recovered by immediately bleeding them. When the substance of the brain is more particularly the seat of the complaint, the sheep becomes stupid, and loses the use of one side, or

of the hind extremities. The complaint, in these cases, almost always proves fatal from water forming in the venticles of the brain, in consequence of the inflammation.

Treatment. This disease may in general be better prevented than cured. If it arises, as it most frequently does, from a redundancy of blood in the system, the whole of the sheep should be bled and have a saline purgative drink administered to them, as soon as it seizes any of the flock. It will sometimes be advisable also to remove the sheep into a less luxuriant pasture, where they will have more exercise in collecting their food. The following drink we have found useful in the cure of this complaint, and as a preventive of it.

RECIPE (No. 114.)

TAKE—Epsom salts, one ounce and a half, to two ounces;
Nitre, one drachm;
Spirits of turpentine, one tea-spoonful:
Ginger a large tea-spoonful:
Pour three ounces of boiling water on the salts, and when new-milk warm add the turpentine, and give it.

I have frequently given, to those sheep that were seized with this complaint, the calomel ball (No. 110) at the time of administering the above drink, and with apparent good effect.

SECTION VIII.

THE YELLOWS, OR JAUNDICE.

THE yellows is sometimes very fatal among sheep. It is most prevalent in low situations, where the grass is of an indifferent quality, or of a coarse kind, and the air moist. I attended, some time back, two flocks that were seized with this complaint, soon after being turned on a fresh luxuriant pasture; the one on red clover, the other on rape. Here they began to thrive, but numbers of the sheep were soon attacked with the yellows, from the nature of the food, and for want of proper exercise in collecting it: many of them died of it. The disease, however, instantly disappeared, when proper remedies were administered, and their exercise increased.

The yellows, or jaundice, manifests itself by the white of the eyes, the mouth, and other parts of the body being tinged of a yellow hue. The affected sheep appears dull, and when the disease is more advanced, they have an aversion to move, and the urine is voided of a dark colour.

Treatment. The sheep must be immediately turned into a less luxuriant pasture, or have a proper quantity of the food they were feeding upon

given to them in a bare field, and laid at proper distances that they may have plenty of exercise in gathering it. The whole flock should be bled, and have the drink (No. 225) administered to them. After it has operated, let the cordial drink (No. 107) be given to those sheep that are indisposed.

SECTION IX.

BLOWN, OR BLAST.

THE blown, or blast, is most commonly occasioned by turning sheep from poor keep upon turnips, or the rich succulent grasses. They eat greedily of this fresh food and overload the paunch, or first stomach, and neglect to chew their cud; air is in consequence generated in that receptacle, from the food fermenting, and it becomes so distended with wind pent up in it, as to produce the most distressing symptoms. I have known it brought on by their being turned from the fold yard into the pasture, when the dew was upon the grass.

The symptoms which indicate the existence of blown, or blast, are; the sheep is swelled almost to a state of suffocation, pants excessively, and if not relieved, lies down in the greatest distress, and frequently dies suffocated.

Treatment. The operation, called *paunching*, is frequently resorted to in dangerous cases. It is performed by piercing a sharp pen-knife into the paunch, between the haunch bone and the last rib on the left side, which will instantly give vent to the confined air. The elastic tube, made on purpose for sheep, is also frequently used. Some shepherds employ, instead of the elastic tube, a slender stick about three feet long, with a knob at the end of it, round which they put a little wood and secure it on with a bit of linen. When numbers in a flock are affected with it, they should be immediately turned into a bare pasture, and driven about gently until the symptoms disappear, which will, in slight cases, restore the animal without manual aid. When the sheep are relieved by any of the above means, the following drink may be administered, which will prevent a fresh generation of wind, and invigorate the stomachs.

RECIPE (No. 115.)

TAKE—Epsom salts, one ounce and a half;
Ginger, in powder, one large tea-spoonful;
Elixir of vitriol, a small tea-spoonful:
Pour four ounces of boiling water on them, and when new-milk warm give it.

SECTION X.

THE ROT.

THIS disorder has been more fatal to sheep than any other: and, having at different times carried off great numbers, it has occupied the attention of the learned, who have favoured the public with a variety of opinions; the symptoms, however, of this fatal disease cannot be more accurately stated than in the following description of Dr. Harrison.

"When in warm, sultry, and rainy weather, sheep that are grazing on low and moist lands feed rapidly, and some of them die suddenly, there is reason to fear that they have contracted the rot. This suspicion will be further increased, if a few weeks afterwards, the sheep begin to shrink and become flaccid in their loins. By pressure about the hips at this time a crackling is sometimes perceptible. Now, or soon afterwards the countenance looks pale, and upon parting the fleece, the skin is found to have exchanged its vermilion tint for a pale red; and the wool is easily separated from the pelt.

"As the disorder advances, the skin becomes dappled with yellow or black spots. About this time the eyes lose their lustre, and become white

and pearly, from the red vessels of the *tunica adnata* and eye-lids being contracted, or entirely obliterated. To this succeeds debility and emaciation, which increase continually till the sheep die; or else *ascites*, and perhaps general dropsy, supervenes before the fatal termination.

"These symptoms are rendered more severe by an obstinate purging which comes on at an uncertain period of the disorder. In the progress of the complaint, sheep become what the graziers call *chockered*, that is, affected with a swelling under the chin; which proceeds from a fluid contained in the cellular membrane under the throat.

"In five or six days after contracting the rot, the thin edge of the small lobe of the liver becomes of a transparent white, or bluish colour, and this spreads along the upper and lower sides, according to the severity of the complaint. Sometimes it does not extend more than an inch from the margin. In severe cases, the whole peritoneum investing the liver is diseased; and then it commonly assumes an opake colour, interspersed with dark red lines or patches.

"The upper part of the liver is sometimes speckled like the body of a toad, to which it is said to bear a striking resemblance; round the ductus communis choledochus and hepatic vessels, jelly-like matter is deposited, which varies accord-

ing to the severity of the attack, from a table-spoonful, or less, to five or six times that quantity. Upon boiling, the liver loses its firmness, and separates into small pieces in the water, or remains soft and flaccid. Several graziers and butchers, with whom I have conversed at different times, having observed that sheep are much disposed to feed during the first three or four weeks after being tainted, omit no opportunity of producing it, to increase their profits.

"When the first stage is over, flukes begin to appear in the pori biliarii, the ductus communis choledochus, and in the gall-bladder. At first, the quantity of these creatures is small; but, as the disease advances, they increase; and, before death, are often very numerous.

"In the last part of the complaint, they are sometimes to be found in the stomach, as well as in the intestines and liver. This, like the visceral disorders of the human body, may terminate in resolution,—effusion,—suppuration, or schirrus.

"First, the complaint is said to terminate in resolution, when the inflammatory action goes off, without destroying the state and texture of the parts. However, I am strongly inclined to believe, that every considerable inflammation in the human body, and in other animals, although it ends in resolution, leaves behind it some remains, which

may be discovered by an experienced anatomist.

"When the vessels are thrown into inflammatory action for a few days only, effusion commonly takes place, and the coats become thicker, and assume a buffy colour. These changes in the sanguinary system often continue through life, and lay the foundation of many chronic and incurable diseases. Sheep that recover from the rot exhibit very different appearances after death, according to the severity of the attack; but the taint is seldom or never entirely removed. I was desired within these few days, to look at the liver of an old ewe that died fat, and contained fourteen pounds of suet in her body. The back part of the small lobe was dappled with whitish spots; the coats of the ductus communis and pori biliarii were considerably thickened and more solid than usual. In colour, they resembled the human aorta in old people, and were full of flukes; in other respects the liver appeared to be sound and natural. The butcher asserted that this was occasioned by a slight taint of long standing, which had not been considerable enough to disorder the economy, or impair the health of the animal sufficiently to prevent its feeding.

"Secondly, when sheep die suddenly in the first stage of the disorder, an effusion of serum, or of

wheyish-coloured fluid, may be commonly discovered in the cavity of the abdomen, and then the peritoneum surrounding the liver is generally covered with a membrane or coat of coagulable lymph. This form of the rot has been frequently confounded with the resp, or red water, though it differs from the latter disorder in the colour of the effused liquid, in being much less disposed to putrefaction, and in several other particulars.

" Thirdly, abscesses in the liver exhibit another termination of the malady. They are seldom considerable enough to kill immediately; but, in consequence of the absorption of the purulent matter from them, the sheep frequently waste away, and die hectical or dropsical. When the collections are small, sheep will recover sufficiently to bear lambs for three or four seasons, and afterwards become tolerable mutton.

" Fourthly, the most common termination is in schirri, or what the shepherds call knots in the liver; I have seen the whole substance of this important viscus so full of small roundish lumps, or schirrous bodies, that it was difficult to find any sound part in it. The first attack is unfortunately so very insidious that the disorder is scarcely observable, before the animal begins to waste and lose flesh. In this advanced state it is said to labour

under the rot, or pourriture, from overlooking the commencement of the disorder."

About ten or twelve years ago, the author of these sheets published a medicine for the rot in sheep, accompanied with printed directions; and as this disease prevailed very much on low grounds, particularly by the Trent side, and in some parts of Lincolnshire, he had sufficient opportunity of giving the medicine a fair trial; and had great satisfaction in proving its efficacy in curing this complaint. He undertook many even in the last stage: and frequently succeeded in curing nine out of ten. Farmers whose lands lie in a low situation, and are subject to this disease, will find the following recipe of infinite value.

RECIPE (No. 116.)

TAKE—Nitre, in powder, six ounces;
Ginger, fresh powdered, four ounces;
Colcothar of vitriol, in fine powder, two ounces;
Common salt, three pounds and a half;
Boiling water, three gallons:
Pour the water hot upon the ingredients. Stir them, and when new milk-warm, add to every quart of the mixture, three ounces of spirit of turpentine, and bottle it for use.

If this medicine be put in bottles holding from one to two quarts of the mixture, it will be much

the better, as the bottles will be more convenient for shaking at the time of giving, which will be found necessary in order to keep the turpentine in a more divided state.

The following directions must be strictly regarded:

Keep the infected sheep from food all night: on the following morning, give to each sheep two ounces, or four table-spoonfuls of the above mixture; (remember to shake the bottle well at the moment of pouring it out). To those which are weak and much reduced by the disease, one-half, or three parts out of four may be sufficient for a dose. Keep them from food three hours after giving the medicine; and then turn them into a dry pasture.

It will be necessary to repeat the medicine every fourth day for three times, observing the above rules. But where only half the quantity has been administered, it will be proper to repeat it every second or third day for six times. Every shepherd should be provided with a small horn, containing just the proper quantity; this will save considerable time and trouble, when it is necessary to give the above drink to a number at the same time.

The improved state of cultivation, and the draining of lands, have considerably diminished the prevalence of the rot.

SECTION. XI.

THE SCAB.

THE scab is a disease that is very common in this part of the kingdom, (Nottinghamshire) though not so prevalent as in many parts of Lincolnshire. This disorder is contagious, for if one sheep be infected with it, it will quickly communicate it to the rest of the flock; and can seldom be entirely eradicated without the whole flock undergoing a general salving.

Too much caution cannot be used by the grazier in first introducing sheep, which are purchased from other districts, among his own flocks, lest any of them should be infected with this disease. The scab requires but little description, being so well known to most persons who are accustomed to the care and management of sheep. It is first discovered by the animals rubbing themselves against every post, gate, bank, or any other convenient place suitable for the purpose, and they are frequently seen to pull off the wool with their mouths.

This disease appears to be of the cutaneous kind, and only effects the skin with a scabby eruption; but, if permitted to remain without attempting to cure, the system will become affected; and unless

great care be taken, the sheep will sink under its pressure.

Formerly, this disease was cured with a strong decoction or infusion of tobacco, in a certain quantity of water, and at the time of using, a small quantity of spirit of turpentine is added. Others have dissolved an ounce of sublimate, and two ounces of crude sal-ammoniac in one gallon of the above infusion. This medicine will cure the scab in the sheep; but being of a dry and harsh nature, it is detrimental to the fleece. The scab often remains on the afflicted part for a considerable time after dressing with this medicine in a corroded state; which entirely prevents the wool from growing, so as to be of no use for that season. The ointment is a proof of its great superiority over all washes, not only in curing the disease, but in causing the scab to shell off, and the wool to grow, and likewise in promoting their health: it is prepared in the following manner.

RECIPE (No. 117.)

TAKE—Mercury (or quicksilver), one pound;
Venice turpentine, half a pound;
Spirit of turpentine, two ounces:
Work them well together in a marble mortar until the mercury is thoroughly incorporated, which may be complete in the course of five or six

hours; then take four pounds and a half of hog's-lard, melt it over a slow fire, and when new milk warm, add it to the quicksilver, and keep it constantly stirring until it grows stiff.

The labour necessary in making this ointment, may appear to some persons very considerable; but the quality wholly depends on the perfect union of the quicksilver with the other ingredients. If requisite the person may make four times the quantity in nearly the same time by working it all together in a large marble mortar, or in an iron pan (of a sufficient capacity to hold the whole), with a wooden pestle five or six inches broad, and made suitable to the bottom of the mortar, or pan.

Shepherds in many parts of this kingdom have but little knowledge of the proper method of using this ointment, for want of which the life of the animal is often in great danger. It will therefore be necessary for every shepherd, and others having the care and management of sheep, to know the proper quantity that may be used with safety.

One pound of the ointment is sufficient to dress seven sheep of a moderate size, for the scab; and if slightly infected it will suffice from that number to ten. Many farmers and graziers are in the practice of dressing all their sheep and lambs every year, whether infected with the scab or not. They allege that it destroys filth, promotes health, and

causes them to thrive much faster. The quantity generally used for such sheep as are not affected with the scab (but merely with the view of keeping them free from that disease and from filth), is generally one pound of the ointment to ten sheep.

The ointment should be neither too stiff nor too thin; if the former, it cannot be properly rubbed on the part; and if the latter, it is apt to run off and be of no use. A moderate consistency, therefore, so as to spread freely, is preferable, which may be regulated in the following manner. If the ointment be made during the summer, when the weather is warm, it will be proper to leave out one pound of lard, and add one pound of black resin: dissolve it in the lard, and add it to the mercury: this will stiffen and make it of a better consistence.

The method of using this ointment is as follows:

Divide the wool on the back from the head to the tail, so as to expose the skin; then take a small quantity of the ointment intended to be rubbed on the sheep, and rub it well in upon the skin, from head to tail. Next divide the wool on each side, and rub the remaining part of the ointment well in. This is the general method made use of either in dressing of sheep for the scab or filth. But, different shepherds adopt various ways, some thinking it necessary to divide or furrow the

wool down each shoulder, and likewise on the thighs, or on any part that may be infected with the scab.

The most proper time for dressing sheep with ointment, is about Michaelmas, or any time in the month of October, choosing dry weather for the purpose. But, this is not always the case: the farmer often neglects to dress them at the latter end of the year, and in the spring he frequently finds his sheep infected with the scab. Now, they should not be dressed for this disorder too early in the spring, but should be allowed to gather a little strength, and if the weather be dry and fine it should not be suffered to pass.

SECTION XII.

SHEEP LICE AND TICKS.

SHEEP of every description are liable to these kinds of filth; but more particularly such as are in an unthriving state. They in every respect appear to be constant attendants on sheep that are struck with poverty. A description of them is almost unnecessary, as shepherds, and others accustomed to sheep, must have a knowledge of this kind of vermin.

The louse is of a brownish colour and a flat

make, having three legs on each side of its head. Ticks are nearly of the same make and colour, excepting that they are considerably larger. They are of great detriment to the sheep, prevent them from thriving, and cause them to scratch or tear off their wool by rubbing themselves against fences, and sometimes they will tear it off with their mouths, to the great injury of the pelt and fleece.

In order to destroy these noxious vermin, a number of different applications have been employed: but, in most parts, they have been superseded by the use of the mercurial ointment used for the scab. This on trial, is not only found more effectual in killing filth, but it enters the system, purifies the blood, and causes the animal to put on a more healthful appearance: it likewise promotes the growth of the wool. These things are considerably in the farmer's favour. There are, however, in different parts of the kingdom, persons who still practise the old method of dipping their lambs at the latter end of the year in a solution of arsenic, made after the following manner.

RECIPE (No. 118.)

TAKE—White arsenic, in powder, two pounds;
Pearl ashes, half a pound;
Soft soap, four pounds;
Put them in a large tub, and pour from fifty to sixty gallons of boiling water upon the ingredients:
This may be done over night, and it will be fit to use the next day, when cold.

The lambs or sheep may be dipped, or immersed in the solution, taking care the head be sufficiently kept above the water: the sheep must then be put into another tub, and the liquor pressed from the wool with the hands, and returned into the former tub for the remainder. By this method a considerable number may be done in a short time. But one pound of the ointment (No. 117, p. 315) will be sufficient to dress ten lambs, and if properly rubbed on will destroy all filth that may be found upon them. The ointment possesses a great superiority over all washes; the former promotes the health of the animal as well as the growth of the wool, while the latter (through its dry harsh quality) produces the contrary effect.

SECTION XIII.

INFLAMMATION IN THE UDDER OF EWES.

THIS is a common complaint among ewes, at the time of yeaning or lambing, and is similar to the downfall in the udder of cows. Those which have been well kept for some time before they bring forth, are the most liable to this complaint, as it is apt to produce an inflammatory state of the udder at that time, especially if they take cold. There is generally only one quarter affected, it being swelled, tender, and the milk curdled and diminished in quantity. The quarter of the udder seized with the inflammation is mostly lost, and the ewe is not fit to breed from again, as it cannot rear more than one lamb.

All ewes at the time of yeaning ought to have their udders well examined by the shepherd: if their milk pass freely from them, on pressure of the finger and thumb, there is but little danger of an inflammation in those parts. On the contrary, if the udder be *tumefied, sore,* and the *milk not properly secreted,* the udder is inflamed, and remedies must be immediately employed, or suppuration or gangrene will be the consequence.

Treatment. The ewe should be bled to about a pint, and the purging drink (No. 128) administered

to her, and let all the swelled part be well rubbed with the following mixture.

RECIPE (No. 119.)

TAKE—Linseed oil, eight ounces;
Spirits of turpentine, one ounce;
Spirits of sal-ammoniac, two ounces:
Mix them in a bottle for use.

After the milk has been drawn from the udder, or at least all that can be taken away at the present time, rub in the above oils on the part affected, and let this be done *twice* or *three times a day*. They will be found very powerful in subduing the inflammation, and may be resorted to whenever the udder becomes diseased. When the udder is but slightly affected, soft soap and cold spring water will be sufficient as an external application. If the tumefaction should increase and proceed to a state of suppuration, it will then be necessary to open the part with a lancet, or a sharp pointed knife, and then to dress it with the digestive ointment (No. 69, p. 231) as there directed for wounds. Or the gangrene oils (No. 130) may be rubbed on twice a day, if thought more proper. If mortification takes place and the udder is flaccid, two or three incisions should be made into the mortified part to let out the extravasated fluid, and then let it be well rubbed with the oils (No. 130) two or three times a day.

SECTION XIV.

THE FOOT HALT AND FOOT ROT.

THESE diseases in the feet of sheep appear to me always to proceed from one and the same cause: yet, if any person wishes to make a distinction, it may easily be done by considering the first stage of the disease as the foot-halt, and the last as the foot-rot. A minute description of this disease would be of little service, as all persons accustomed to the management of sheep cannot be otherwise than acquainted with it. It is first discovered by the animal walking lame; and if no attempt be made to cure, it must in time fall a victim to the disease.

The cure will be easily effected, if the following rules be observed.

Let the sheep infected with this disease in their feet, be fetched from their pastures and put in a dry fold-yard: after they have stood one hour, take a brush (such as is commonly used for cleaning teeth) and brush all the dirt from between the claws; after which take a wooden skewer and dip it in butter of antimony, oil of vitriol, aquafortis, or spirit of salts, (any one of these will be sufficient); and anoint the diseased part all over, after which let them stand dry for one hour.

If they are properly managed, once dressing is generally found sufficient to perform a cure. If either of the above articles is preferable to another it is the butter of antimony, which seems to have a more powerful effect in some cases than the others. A second dressing is seldom required except in those cases where there is some appearance of proud flesh, when it must be repeated every third or fourth day, for a few times.

If the disease be not checked by these means, but in every respect appears to grow worse, and large excrescences, or superfluous flesh, grow out betwixt the claws; the best and most expeditious way in this case will be to cut it out with a sharp knife, taking care to cut off only the superfluous parts. The operator should previously be provided with the following articles, viz. pledgets of tow, old linen, and a long piece of tape: he may then proceed to dress the wound, or place, whence the proud-flesh was taken, with the following powders.

RECIPE (No. 120.)

TAKE—Blue vitriol, White vitriol, and alum, all in fine powder, of each one ounce;
Bole armenic, in powder, half an ounce;
Mix them together for use.

The wound must be covered all over with these powders quite thick; secure them properly on

with tow, old linen, and the tape. This will stop the bleeding, and prevent the proud-flesh from rising. The dressing should be repeated every other day for three or four times, which is generally sufficient to perform a cure. If not, it will be sufficient, if dressed twice a week. Or, the following may be used, if thought more proper.

RECIPE (No. 121.)

TAKE—Blue vitriol, white vitriol, sugar of lead, and bole-armenic, all in fine powder, of each one ounce;
Honey, sufficient to make it into a paste.

In all slight cases where there is but little appearance of superfluous flesh, the part may be touched with a skewer dipped in any of the above mentioned caustic spirits, and afterwards dressed with this paste, having previously well cleaned the feet. Spread it thick upon tow, and apply it to the wound; then cover it with linen and fasten it on with a bandage. This may be repeated every other day, or once or twice a week, till the foot be well. Or, if the powders, or the paste, be well rubbed on the part affected every other day for three or four times, it will in general be found sufficient to effect a cure. Care must be taken that they stand dry for one hour after each dressing, and the drier the pasture they are put in the

better. By strict attention to the preceding method of applying the different medicines on this head, a speedy cure may be performed in the worst of cases, in a very short time.

SECTION XV.

THE SCOUR, OR THE DIARRHŒA.

THIS disease is frequent amongst sheep, and generally proceeds from bad and scanty keep during the winter season: it makes its appearance early in the spring, as soon as the young grasses begin to put forth their succulent qualities. The sheep are not able to stand against so luxurious a change, and thus many fall a sacrifice to the complaint. When ever this proves to be the case, they should frequently be removed to an inferior pasture and allowed a little hay once a day, for a short time. This method of treatment is usually sufficient to check or prevent the scour in sheep. In general this disease seldom lasts longer than a few days; but, if the symptoms should still continue to increase, and the animal be in danger of its life, the following powders may be given, which will prove effectual in most cases, though ever so bad.

RECIPE (No. 122.)

TAKE—Peruvian bark, ginger root, and prepared chalk, of each one drachm, in powder:
Mix for one dose.

These powders may be given in a little warm gruel, once or twice a day, to such sheep as appear in the greatest danger, with a small table-spoonful of gin or brandy added to it. In some cases where the disease is uncommonly severe, a tea-spoonful of tincture of opium may be added to each dose.

SECTION XVI.

TO PREVENT THE FLY.

SHEEP during the summer, and especially in hot sultry weather, are constantly teazed or plagued with flies, particularly those kept in lanes or in woody districts. They give the animal so much trouble at times, as to cause them to run into hedges and the bottoms of dikes or ditches, to the very great detriment of their pelt and fleeces. They likewise prevent them from feeding, at a time when they ought to make the greatest progress.

Numerous remedies have been offered to the public in order to prevent the fly from striking

the sheep in hot weather, few of which however have effectually and entirely answered the purpose. The following recipe was communicated to the author by a very respectable gentleman grazier in the neighbourhood of Retford: he has no doubt of its answering the purpose as far as can be expected from a composition of this kind.

RECIPE (No. 123.)

TAKE—White lead, flowers of sulphur, and white arsenic, of each one pound, in fine powder: Mix them all well together, in a marble mortar, for use.

The above quantity of powders will be found sufficient to dress or dust on sixty sheep; or, if it be weighed and folded up in small paper packets of three quarters of an ounce each, a single packet will be sufficient to dress one sheep. By this method the shepherd will not be liable to make a mistake in dusting more on one than another. It will be necessary to observe the following directions for using these powders.

First, Let one man take hold of the sheep by the head, and another have a packet of the above powders put in a pepper-box, held in his right hand, and with a stick in his left. Then draw the stick gently from the head to the tail, and with the other hand dust on the powders close

after the stick. The utility of the stick will be seen, from its pressing down the wool while the powders are dusted on, and as the wool rises, it shakes and spreads the powders. Next, take a small watering pan, or any other article that may be convenient, and sprinkle a small quantity of water from head to tail, and draw the stick backwards and forwards two or three times, by which the powders will be made to adhere to the wool. Or, the following powders may be used instead of the above, and we have no doubt but they will be found of equal efficacy in protecting the animal from the fly. And as arsenic is excluded from this preparation, it may be used in any quantity with safety.

RECIPE (No. 124.)

TAKE—White lead, flowers of sulphur, and white hellebore, of each one pound, in fine powder:

Mix them all well together in a marble mortar, then add half an ounce of the essential oil of wormwood, and rub it well in the powders.

These powders may be dusted on the sheep in the same manner as the former, but the quantity may be somewhat larger.

SECTION XVII.

SORE HEADS.

THIS is a common complaint among sheep during the summer, and especially such as run in lanes, or woody districts. They are mostly pestered with flies about their head, which cause them frequently to strike their hind feet against it, until a wound is made; and, if no remedy be applied, it will soon become dangerous. A great number of different medicines have been made use of at different times, such as oil of hartshorn, oil of coal, and spirits of tar. The following ointment has been prepared by the author for several years past for this complaint; and in all cases it has been found to produce the desired effect.

RECIPE (No. 125.)

TAKE—Black pitch, two pounds;
Tar, one pound;
Black brimstone, or native sulphur, one pound, in fine powder:
Put them all together into an iron pot, just give them a boil over a slow fire, and as soon as the sulphur begins to unite with the rest of the ingredients, instantly take the whole from the fire or it will swell and run over into the flames.

The best method of using this ointment or plaister is, first, to procure a sufficient number of leather caps for as many sheep as you intend to cap: any kind of soft leather will answer the purpose, and some farmers when short of this article make use of strong brown paper. These must all be cut in a proper shape for laying on the head. Then while the ointment is melted, take a small paint brush and spread it thick upon the leather, and when near setting, apply the cap to the head. The evening is the best time for capping sheep, as there is less danger of knocking them off, and before morning the caps in general set on fast.

Others have applied it in the following manner, and found it to answer equally as well.

Take a sufficient quantity of the above ointment, and melt it in an iron pot; after it is all melted take it from the fire, and stir it about till new-milk warm, then spread it on the sore part of the head, either with a large case knife, or a spatula; and immediately apply a little short wool upon it in the same manner as when a charge is applied to any part about a horse. In very hot weather this ointment is apt to be too thin, so as not to have a sufficient body to adhere to the part; but it may be easily stiffened by adding half a pound or a pound of black resin to the above quantity.

SECTION XVIII.

MAGGOTS.

THERE are few, if any flocks of sheep, which are not subject to this kind of vermin during the summer. They either are or ought to be well understood by all shepherds, or they are not fit to have the care of sheep. A few rules however shall be laid down, by which those sheep that are struck with the fly may be detected.

As soon as the maggots begin to make their appearance on any part of the body, the wool on that part becomes moist or wet;—they hold down their heads, shake their tails, and run about from place to place, and if permitted to continue in this state for a few days, they must unavoidably fall a victim to this kind of vermin. A great variety of different medicines have been made use of for the destruction of maggots, such as spirit of tar, spirit of turpentine, and the mercurial ointment (No. 117, p. 315) together with other articles of a similar nature. The following mixture will be found adequate for the destruction of maggots in the worst of cases: the author has prepared this also for many years, and never found it to fail in effecting a cure in any one instance: in point of

cheapness, it certainly has strong claim to the farmer's attention.

RECIPE (No. 126.)

TAKE—Mercurial sublimate, in powder, one ounce;
Spirit of sea salt, one ounce;
Boiling water, three quarts;
Put them all together in a stone bottle and when cold, add
Spirit of turpentine, one pint:
Mix and shake them well together every time they are used.

The best method of using this mixture is as follows: shake the bottle well, and instantly fill a quart bottle with it before the turpentine has time to separate; cork the bottle up, then bore a hole through the middle of the cork and pass a goose-quill cut open at both ends through the middle of it. By this means a proper quantity may be forced out on the part affected without much waste: and if an ounce of tincture of assa-fœtida be added to a quart of the mixture, it will prove a means of preventing the fly from striking the same part a second time.

SECTION XIX.

DEBILITY AND INDIGESTION.

SHEEP are frequently attacked with these complaints during the summer, which in general are brought on by fatigue through over-driving, and sometimes by over-loading the stomach with herbage. In either case, nature requires something that is warm and stimulating to rouse the stomachs to increased action, and to give fresh vigour to the whole system. The following cordial drink will be found excellent in all cases of this kind, where the digestive process appears to be defective.

RECIPE (No. 127.)

TAKE—Aniseeds, and caraway seeds, fresh powdered, of each one drachm;
Peruvian bark, and ginger, in powder, of each half a drachm;
Treacle, or sugar half a table-spoonful;
Common gin, a table-spoonful.
Mix and give it in a little warm water.

This drink may be repeated once or twice a day, if required.

Pb
Afne { Caraway seeds 1 drachm
Allspice 1 Do
Ginger ½ Do } given in a pint of gruel with Salt

SECTION XX.

INFLAMMATION.

SHEEP, as well as other animals, are liable to be attacked with internal inflammations during the hot weather in summer, particularly those which are driven a considerable distance (when fat) to the market. This disease attacks different parts of the body, as the lungs, intestines, bladder, kidneys, and other parts.

Sheep when first attacked with inflammation in any of these parts should be bled in the neck, or above or below the eye, as may appear most convenient at the time; afterwards give the animal the following purging drink.

RECIPE (No. 128.)

TAKE—Epsom salts, one ounce and a half, or two ounces, according to the size of the sheep;
Ginger, in powder, one large tea-spoonful;
Treacle, one table-spoonful;
Put them in a pitcher, and pour four ounces of boiling water on them; stir the whole together and give it when new-milk warm.

Or, the following may be given if thought more proper.

RECIPE (No. 129.)

TAKE—Castor oil, from two to four ounces, according to the size of the sheep;
Ginger, and salt of tartar, of each a large tea-spoonful;
Coarse sugar one table-spoonful:
Mix, and give it in a tea-cupful of warm gruel.

Either of these drinks will be found sufficient to purge the animal; if not they may be repeated once a day, until they have the desired effect.

SECTION XXI.

WOUNDS.

WOUNDS are not so common among sheep as other cattle, excepting those occasioned by vicious dogs, which frequently take place among the sheep kept near large towns, where dogs often do considerable damage. The following mixed oils should always be kept in readiness against accidents of this kind, by which means the lives of many will be saved.

RECIPE (No. 130.)

TAKE—Linseed oil, one pint;
Put about one fourth of it in a chamber pot,

then add oil of vitriol, two ounces, by a little at a time, keeping it constantly stirring with the other hand;

When united, add by a little at a time four ounces of spirit of turpentine, afterwards add the remainder of the linseed oil, and stir them well together; lastly add

Oil of Origanum, one ounce;

Compound tincture of Myrrh, four ounces:

Mix, and put them in a bottle for use.

The oils will effectually prevent gangrene, or put a stop to a mortification in the worst of cases, if applied in time. They are likewise proper for all kind of wounds and bruises in horses and beasts, as well as for ewes that may be torn or rent during the yeaning season. Let the parts affected be well rubbed with them once a day.

SECTION XXII.

THE DISEASES OF THE EYE, COMMONLY CALLED BLINDNESS.

THIS disease, in many instances, appears to be epidemic; whole flocks being sometimes affected with it at once; at other times it appears to be brought on by fatigue and subsequent exposure in a damp or bleak situation. It prevails most in

the North of England: in the neighbourhood of Retford, (Nottinghamshire) it has at different times made its appearance at the latter end of the year, and generally affected those in the best condition. I am induced to believe, from some late observations on the blindness of sheep, that the disease is infectious.

Treatment. Bleeding below the eye, and the purgative drink (No. 128) administered to each of the affected sheep, are in general the only remedies employed in the cure of this complaint. They will, indeed, recover in time without any medicine being given, but it is in most cases advisable to bleed and purge the animals, as the disease frequently arises from a redundancy of blood in the system. The following powders may be used to cleanse the eye, and assist in removing the inflammation.

RECIPE (No. 131.)

TAKE—Sal-ammoniac, lump sugar, and lapis calaminaris, of each two drachms; in fine powder:

Mix, and keep them in a closely corked bottle for use.

Take a small quantity of these powders on a sixpence; and while another person holds the eye open, let the powders be put in and the sheep's

head held for the space of a minute. Or, the above quantity of powders may be put in a bottle with four ounces of rose water: the bottle must be well shaken, and a small quantity poured into each eye. Or, if thought more proper, the powders may be mixed in a small quantity of honey of roses, a feather may be dipped into it and the eye thus be anointed with it. From these different methods of mixing and applying the powders, the operator may select that which appears most convenient to himself at the time.

INDEX

TO

THE PRINCIPAL MATTERS CONTAINED IN THIS WORK.

Age of cattle, observations on, 9.
Absorbents, lymphatic, what, their use, 3; lacteal, *ib.*; lacteal absorbents described, 54, 55; lymphatic, 56—60.
Anatomy, explanation of the term, 1.
Angle-berries, nature of, 249; treatment, *ib.* 250.
Animal heat, 41, 42.
Aorta, anterior and posterior, described, 29, 30.
Arteries, what, their use, 3; description of, 29—31; structure of, 34.

Bite of venomous reptiles, 226—228.
Black-leg, or Black-quarter, 166; young cattle most subject to it, 167; symptoms of, *ib.*; causes, 168; treatment, 169—172.
Black Water, see Red Water.
Bladder, inflammation of, described, 186; causes, *ib.*; treatment, 186, 187.
Blain, or fever with swelling, what, 164; symptoms of 164, 165; causes, 165; treatment, 165, 166.
Bleeding, utility of, and in what cases necessary, 92—94; proper quantities to be taken, 94, 95.
Blindness in sheep, causes of and treatment, 337—339.
Blown, or blast, in sheep, how occasioned, symptoms and cure, 305, 306.
Blown in neat cattle, see Fog Sickness.
Bones, their nature and uses, 1, 2; structure of, 5; appendages of, 6; bones of the head, 7, 8; of the trunk, 9—11; of the thorax or chest, 11; of the anterior extremities, 12, 13; of the posterior extremities, 13, 14.
Bowels, inflammation of, description, causes, and treatment, 133—135.
Brain, its operations, the cause of instinct, 4; functions of, 20, 21; anatomy of, 21—23; diseased appearances of, 24; inflammation of, described, 125, 126; causes, 126; treatment, 126, 129.

Bruises, see Strains and Bruises.
Bull, recipes to make cows take the bull, 256, 257.
Bull-burnt, symptoms and cure of, 257—259.

Calf, how to extract, when it presents itself in a wrong position, 209—212; cows how to be treated after such extraction 213, 214.
Calf-bed falling down of, what, and how occasioned 214; rules to prevent, 215; treatment, *ib.* 217.
Calves, on the proper treatment of cows that slip their calves, and causes, 218—221; observation, on the diseases incident to young calves, 263—265; method of treating the navel string after extraction, 266, 267.
Cancerous ulcers, what, and treatment of, 240—244
Canker in the mouth of calves, symptoms and cure, 276, 277.
Cartilage, its nature and uses, 2.
Catarrh, or cold, (in sheep) causes, symptoms, 300—302.
Cattle, importance of knowing their diseases, vii.; generic characters of, ix, their value illustrated, x, xi; form of, xii; on the choice of cattle for stocking farms, xiii.
Cawl, what, structure and use of, 72.
Characteristic marks of neat cattle, 1.
Choice of cattle, for stocking farms, xiii.
Cleansing, how to extract after calving when retained, 207, 208.
Clue-bound, causes and remedies for, 263.
Colds, obsevations on the treatment of, 105.
Conception, 77, 78; author's opinion of, 79.
Consumptive hoose, description, causes, and treatment of, 203—205.
Cordial drinks, directions for preparing and administering, 105, 106.
Costiveness in calves, 271—274.

Debility in sheep, treatment of, 334.
Diarrhæa, or looseness, in neat cattle, symptoms of, 139; causes of, 140; time when its attacks are most to be expected, *ib.*; treatment, 140—142. In calves, causes, symptoms, and treatment, 268—270. In sheep, how occasioned and treatment of, 326, 327. In lambs, causes, symptoms and cure, 289—292.
Digestion, process of described, 52—54.
Diseases of cattle, importance of knowing, vii. 271.
Doses, observations on the quantities prescribed in this work, iv, v, 277—279.

Downfall in the udder of cows, 152; cows when most liable to it, *ib.* symptoms described, 153; causes, *ib.*; treatment, 154—157.
Drinks, directions for preparing and dividing, 277—279; Cordial drinks, 105.
Drugs, great importance of having genuine, v.
Drying up the mik of cows, directions for, 246—249.
Dysentery, slimy flux, or scouring rot, in neat cattle, description of, 135, 136; causes, 136; treatment, 137—139.

Epidemic cold, see Fellon.
Ewes, treatment of, during the lambing season, 284—288. Inflamed udders in, symptoms and treatment of, 321, 322.
Extraction of calves when presented in wrong positions, directions for, 209—213.
Eye, inflammation of, description, causes, and treatment, 189—191.
Eye, cancer of, symptoms, causes, and treatment, 191—193. Fungous excrescence of, 193, 194.
Eye, diseases of, in sheep, causes and cure, 337—339.

Falling-down of the calf-bed, what, and how occasioned, 214; rules to prevent, 215; treatment, *ib.* 217.
Fardel-bound, what, and how treated, 262, 263. xxii, xxiii.
Farms, on the choice of cattle for stocking, xii, xiii.
Fat, 16, 17.
Fellon, catarrh, epidemic cold, or influenza, description of, 103, 104; treatment of, 105—109.
Fever, general symptoms of, 90, 91.
Fever (pestilential), see Murrain.
Fevers, on the use of purging medicines in, 97—99.
Fly, remedies for preventing, 327—329.
Fœtal calf, how nourished, 81; circulation of the blood in, 82, 83; further account of, 84, 85.
Fog sickness, hoven, or blown, described, 194, 195; causes, 195; treatment, 196—201.
Foot-halt, or foot-rot, in sheep, how treated, 323—326.
Foul in the foot, causes and symptoms of, 244, 245; treatment, *ib.* 246.
Frenzy, or Inflammation of the brain, symptoms and causes, 125, 126; medical treatment, 126—129.

Generation, organs of, 4; female, 73, 74; male, 75—77.
Gestation, different periods, in cattle and other animals, xiv.
Giddiness, in sheep, see Sturdy.
Glands, use of, 3, 4.

Goggles, in sheep, what, symptoms, and cure, 302, 303.
Guts, what, their structure, 46, 47.
Gullet, described, 43, 44.

Hair, nature and uses of, 15, 16.
Heads, sore, of sheep, treatment, 330, 331.
Heat, animal, see Animal Heat.
Heart situation and structure of, 26, 27.
Hide, nature and structure of, 14, 15.
Hoose or cough in neat cattle, description, causes, treatment of, 201—203. In calves, nature and treatment of, 274—276; consumptive, see Consumptive Hoose.
Hoven, see Fog Sickness.

Indigestion, what, and description of, 122, 123; causes, 123; cure, 124, 125.
Inflammation, neat cattle particularly disposed to, and why, 87; external, how known, *ib.*; terminations of, viz. suppuration, resolution, and mortification or gangrene, dedescribed, 88; causes of, 89; proximate cause of, 89, 90; internal inflammation, how discovered, 90; accompanied with fever, symptoms of fever, 90, 91; general treatment of inflammation, 91, 92.
Inflammation of the Brain, see Brain.
——————- of the bladder, see Bladder.
——————- of the bowels, see Bowels.
——————- of the eye, see Eye.
——————- of the kidneys, see Kidneys.
——————- of the liver, see Liver.
——————- of the lungs, see Lungs.
——————- of the shape, see Shape.
——————- in sheep, treatment of, 335, 336.
Inflammatory red water, how distinguished, symptoms of, 143; causes, 144; treatment, 144, 145.
Influenza, see Fellon.
Intestines, see Guts, or Bowels.

Jaundic, see Yellows.
Jaw (locked) symptoms and causes of, 221, 222, treatment, *ib.* 224.
Joint fellon, what, description of, 109; causes of, 110; treatment, 110—112.
Joints, wounded, proper treatment of, 236, 237.

Kidneys, description and use of, 67—69; diseases of, 70. Inflammation of, symptoms, causes and cure, 143—145.

Lambing season, proper management during, 284—288.
Lambs, on the diseases of, 288—294.
Lice in cattle, remedies for destroying, 254, 255.
Ligaments, nature and uses of, 2.
Liver, structure and use of, 48—50.
Inflammation of, described, 116, 117; causes, 117; treatment, 117—119.
Liver, sweet-bread, see Pancreas.
Locked jaw, symptoms and causes of, 221, 222; treatment, *ib.* 224.
Looseness, see Diarrhæa.
Lungs, what, their use, 4; further account of, 38; diseased appearances, 42; inflammation of, described, 116, 117; causes, 117; treatment, 117—119.

Maggots, in sheep, treatment of, 332, 333.
Mange, symptoms, 251; cure of, 252, 253.
Medicines, (purgative) use of, in the diseases of horned cattle, 96—100.
Midriff, or skirt, described, 39.
Milk, how to dry up, in cows, 246—249.
Milk fever, attacks cows of every age, 158; those most liable to it, *ib.*; description of, 159; causes, 159, 160; treatment, 160—162; prevention of, 163.
Moor-ill, causes and treatment of, 262.
Murrain, or pestilential fever, great ravages committed by it, 173; description of, 173—175; favourable symptoms, 175, 176; dangerous symptoms, 176; appearances after death, 176—178; causes, 178—180; treatment, 180—182. The less malignant species of murrain, description and treatment, 182—184; fumigation in, how prepared, 184; prevention of murrain, 185.
Muscles, their use, 2; further account. 17—19.

Names, usually given to cattle, xiii, xiv.
Navel-string, method of treating after extraction, 266, 267.
Neat cattle, names of, xiii, xiv; remarks on the ages of, 9.
Nerves, what, uses of, 4.

Ovaries, 75.

Pantas, treatment of, 263.
Paunching, operation of, explained, 199, 200.
Pancreas, or liver, sweet-bread, described, its use, 51.
Pannicle, fleshy, what, its use, 16.

Penis, or yard, 77.
Peritoneum, or rim of the belly, described, 71.
Perspiration, 66.
Pestilential fever, see Murrain.
Physiology, meaning of the term, 1.
Placentulæ, or cleansing, how to extract when retained, 207, 208; medical treatment, 208, 209.
Poisons, internal, causes and symptoms of, 224, 225; treatment of, 225, 226; external, see Bite of venomous reptiles.
Pregnancy, progress of, 79, 80.
Puerperal fever, see Milk fever.
Pulmonary artery, described, 27, 28.
Pulse, where felt, and number of, 36.
Purgative drinks, directions for preparing and giving, 108, 114, 115, 124, 134, 138.
Purgative medicines, on the utility of, in most diseases of horned cattle, 96—100; the mode of operation, 96; what purgatives used, and doses of, 97.

Red water, and black water, in neat cattle, description of 145, 146; causes, 146, 147; treatment of, 148—152; in sheep, nature, causes, and treatment of, 294—296.
Resp, in sheep, symptoms, nature, causes, and treatment of, 296—298.
Respiration, described, 40.
Rheumatism, or joint fellon, what, description of, 109; causes of, 110; treatment, 110—112.
Rot, in sheep, symptoms of, and appearances after death, 307—312; treatment, 312, 313.
Rottenness, see Diarrhæa.

Scab, in sheep, causes of, 314; treatment of, 315—318.
Scour in sheep, causes of, 326; treatment, 327.
Scouring rot, see Dysentery.
Secretion, 63—66.
Setoning, in what cases useful, 100, 101; mode of inserting 101, 102.
Shape, inflammation of, symptoms, 187, 188; causes, 188; treatment, 188, 189.
Sheep, on the diseases of, 281—283.
Sheep-lice, what, and treatment of, 318—320.
Slimy flux, see Dysentery.
Sore heads, in sheep, treatment of, 330, 331.
Sore teats, how treated, 251.
Sore udders, see Downfall.

Sough, or frenzy, See Brain, inflammation of.
Staggers, vertigo, or swimming in the head, where seated and symptoms of, 129, 130; causes of, 130; cure, 130—132.
Spinal marrow, what, functions of, 24, 25.
Spleen or milt, what its use, 51, 52.
Stomachs, description and structure of, 44—46.
Strains and bruises, proper method of treating, 237—240.
Sturdy, giddiness, or water in the head, in sheep, what, symptoms, and treatment, 298—300.
Teats (sore), remedy for, 251.
Teeth of neat cattle, observations on, 8.
Testicles, use and structure of, 75—77.
Thoracic duct, 55, 56.

Udder, what, use, and structure of, 85, 86.
——— sore, see Downfall.
——— of ewes, treatment of, when inflamed, 321, 322.
Ureters, their office, 69.

Vagina, or sheath of the womb, described, 73.
Veins, description and structure of, 31—34.
Venæ cavæ, anterior and posterior, described, 31, 32.
Vena portæ, what, 49.
Vertigo, see Staggers.

Warbles, how produced, and treatment of, 255.
Water in the Head, in sheep, see Sturdy.
Windpipe, what, structure of, 36, 37; diseased appearances of, 42.
Womb or calf-bag, 73, 74.
Wood-ill, causes and treatment of, 262.
Wounds, nature of explained, 228; proper treatment of slight wounds, general treatment of 230—235.
——— of the joints, treatment and cure of, 236, 237.
——— in sheep, treatment of, 336, 337.

Yellows, or jaundice, in neat cattle, described, 119, 120; causes of, 120; treatment, 120—122; in sheep, causes, symptoms, and cure, 304, 305.

C. Baldwin Printer,
New Bridge-street, London.

Recently Published, by Baldwin, Cradock, and Joy.

HORSES AND DOGS.

EVERY MAN HIS OWN FARRIER: containing the Causes, Symptoms, and most approved Methods of Cure, of every Disease to which the Horse is liable. With an Appendix, or Veterinary Pharmacopœia. By Francis Clater; The Twenty-fourth Edition, almost entirely recomposed; to which is now first added a Practical Treatise on the most Prevalent Diseases of Dogs. By Francis Clater, and Son. 8vo. price 9s. Extra boards.

MANAGEMENT OF BEES.

A TREATISE ON THE NATURE, ECONOMY, AND PRACTICAL MANAGEMENT OF BEES. In which the various Systems of [illegible] Apiarians are examined, with the most approved Methods laid down for effectually Preserving the Lives of the Bees. Containing also an accurate Description, illustrated by Plates, of the Hives invented by Lombard, Dieconedie, Huber, and others, and of a newly invented Hive for the Purpose of depriving the Bees of their Honey, with Safety and Expedition. By Robert Huish, Member Imp. Apiarian Soc., at Vienna, &c. With numerous Plates, in 8vo. the Second Edition, price 10s. 6d.

GARDENING.

ABERCROMBIE'S GARDENER'S POCKET JOURNAL, or Daily Assistant in the Modern Practice of English Gardening, in a concise Monthly Display of all the General Works throughout the Year, with a Description of the various Improvements. The Seventeenth Edition, Stereotypeli [illegible] Improved by a general [illegible] Forest Trees, Flowers, &c. Price only 4s.

ANGLING.

THE ART OF ANGLING, confirmed by actual Experience; with several [illegible] Discoveries. Also Prognostics of the Weather [illegible] and without the Barometer. By Thomas Best; to which is added, Noble's Complete Troller. The Eleventh Edition, very considerably improved, and embellished with a Frontispiece of the most taking Artificial Flies, price 3s. 6d. in [illegible] boards, or 4s. handsomely half-bound.

HERBAL.

CULPEPPER'S ENGLISH PHYSICIAN ENLARGED, containing Three Hundred and Sixty-nine Medicines made of English Herbs, not in any former Edition of Culpeper's British Herbal; also a complete Method of Physic, whereby Health may be preserved and cures effected by Medicines of English Growth, the best adapted to English Constitutions. By Dr. Parkins, of Grantham. With plain Plates, bound, or with the Plates coloured to Nature, 8s. boards. The Fourth Edition, corrected and improved. Nearly ready.

COOKERY.

A COMPLETE SYSTEM OF COOKERY, on a Plan entirely new; consisting of an extensive and original Collection of Receipts in Cookery, Confectionary, [illegible] Bills of Fare for every Day in the Year. To which are now added, Tables of Articles in Season, and the [illegible] Dressing Turtle (never before given in any Work of the Kind), Bills of Fare for Deserts, and a Series of Receipts and Bills of Fare of Economical Dishes, [illegible] for the most Private Families. By John Simpson, [illegible] boards.

BREWING.

THE YOUNG BREWER'S MONITOR, comprising a luminous and scientific summary of that very ancient and important Art; with a series of exhortatory Precepts for conducting, with peculiar Economy and Safety, the various critical Operations of the Brewery: containing a Body of original Information, combined with rare selected Matter from the Works and Communications of the most celebrated theoretic Writers and Practitioners on the Subject. By a Brewer of Thirty Years' Practical Experience, and Author of numerous Original Improvements in the London Brewery. [illegible] price 5s. 6d.

LAND AND TENANT.

THE LAW OF LANDLORD AND TENANT, (wherein of Leases, with an introductory View of the origin and foundation of Property in Land, and of the different Estates into which it is now divided. Also an Appendix; containing all the requisite forms of notice to quit, to repair, and of distress, &c. with practical directions respecting notices to quit, and also for making, conducting, and disposing of a distress for rent. Intended for the use of the unprofessional reader. By R. Tabram, of Cambridge, Attorney at Law. 8vo. price 5s. 6d. boards.

GRAZING.

THE COMPLETE GRAZIER; or, Farmer and Cattle Dealer's Assistant; comprehending Treatises in [illegible] useful to the Agriculturist, [illegible] Horses, [illegible] Sheep, &c. &c. [illegible] improved. With numerous Plates, price [illegible]

*** The additions and improvements to the present edition are so great as almost to constitute it a new book; and form in itself almost a complete "Farmer's Library."

LAND-VALUING.

THE LAND-VALUER'S ASSISTANT; being Tables on an improved Plan for calculating the Value of Estates. By G. Hudson. A new Edition. With Tables for reducing Scotch, Irish, and Provincial customary Acres to Statute Measure: neat pocket size, price 5s. half-bound.

TITHES.

THE PRINCIPLES OF THE LAW OF TITHING, intended not only for Professional men, but for all Persons interested in Tithes: and illustrated by References to the most leading and recent Tithe Cases. By F. Plowden, Esq. Barrister. In a large Vol. royal 8vo. Price 18s.

GAUGING.

THE UNIVERSAL GAUGER of Great Britain, and Ireland, and General Spirit Calculator: being a Practical System of Gauging, by Pen, Sliding Rule, Tables, Callipers, and Logarithms, according to the Measures hitherto legally adopted in the British Dominions; and also according to the new Imperial Gallon; and containing upwards of 80,000 Original Calculations on Gauging, Spirits, &c. By William Gutteridge. In a closely printed Volume, price [illegible] 6d. boards, or 10s. 6d. strongly half-bound.