

A practical treatise on the breeding cow, and extraction of the calf, before and at the time of calving : in which the question of difficult parturition is considered in all its bearings, with reference to facts and experience; including observations on the diseases of neat cattle generally; containing profitable instructions to the breeding farmer, cowkeeper, and grazier, for attending to their own cattle during illness ... / by Edward Skellett.

Contributors

Skellett, Edward.

Publication/Creation

London : James Cornish, [after 1868]

Persistent URL

<https://wellcomecollection.org/works/nfhu8vjq>

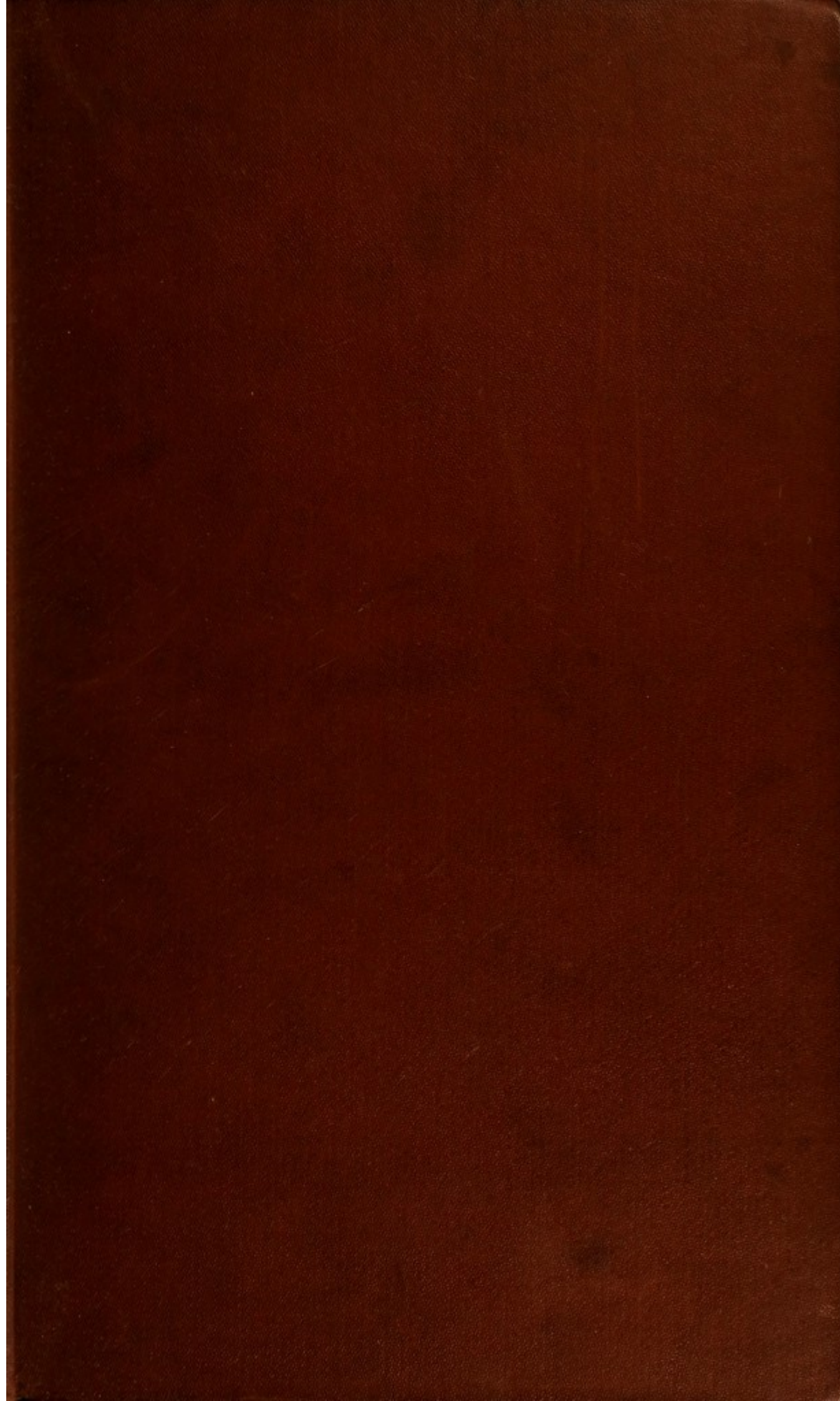
License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>



M-xxi

19/5

XWB.CA.AA8 (2)

EX BIBLIOTHECA

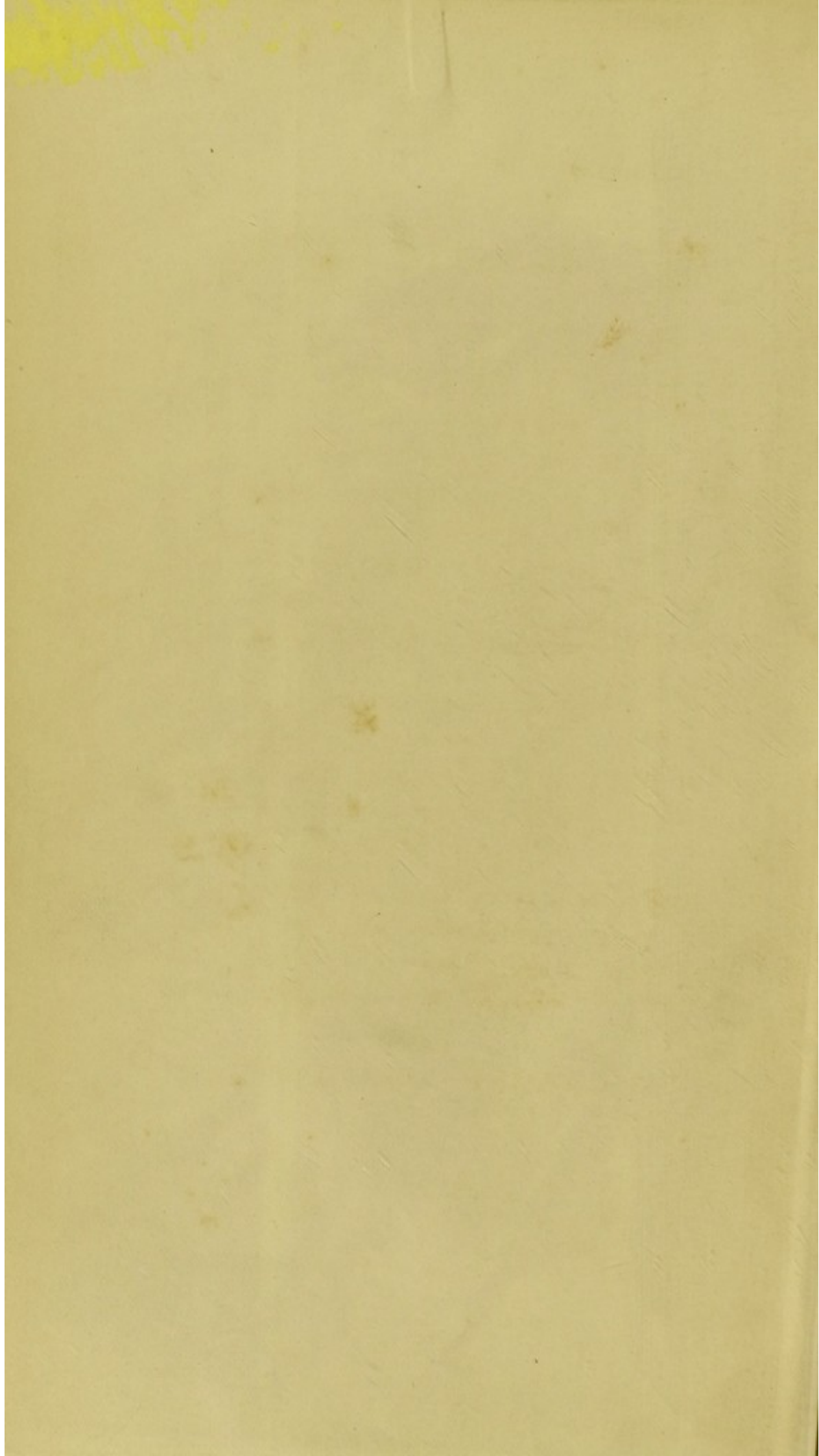


CAR. I. TABORIS.



22101896533





A
PRACTICAL TREATISE
ON THE
BREEDING COW,
AND
EXTRACTION OF THE CALF,
BEFORE AND AT THE TIME OF CALVING;
IN WHICH THE QUESTION OF
Difficult Parturition
IS CONSIDERED IN ALL ITS BEARINGS, WITH REFERENCE TO FACTS AND EXPERIENCE;
INCLUDING
OBSERVATIONS
ON THE
DISEASES OF NEAT CATTLE GENERALLY;
CONTAINING
PROFITABLE INSTRUCTIONS
TO THE
BREEDING FARMER, COWKEEPER, AND GRAZIER,
FOR ATTENDING TO THEIR OWN CATTLE DURING ILLNESS,
ACCORDING TO THE MOST APPROVED MODERN METHODS OF TREATMENT, AND THE
APPLICATION OF LONG KNOWN AND SKILFUL
PRESCRIPTIONS AND REMEDIES
FOR EVERY DISORDER INCIDENT TO HORNED CATTLE.
THE WHOLE ADAPTED TO THE PRESENT IMPROVED STATE OF VETERINARY PRACTICE.
ILLUSTRATED WITH THIRTEEN HIGHLY-FINISHED COLOURED ENGRAVINGS.

BY EDWARD SKELLETT,
PROFESSOR OF THAT PART OF THE VETERINARY ART.

London;
JAMES CORNISH AND SONS,
297, HIGH HOLBORN;
37, LORD STREET, LIVERPOOL; AND 18, GRAFTON STREET, DUBLIN;
AND ALL BOOKSELLERS.

[after 1868]

Became James Cornish & Sons in 1868

XWB.CA.AA8 (2)



WELLCOME INSTITUTE LIBRARY	
Coll.	weIMOmec
Call	
No.	

TO HIS GRACE

The Duke of Bedford.

MY LORD,

THE attention shown by the late DUKE OF BEDFORD and your GRACE to the improvement of that part of the Domestic Stock which is the subject of the present Work, has emboldened me humbly to request your GRACE's permission to address it to you, and the other Noblemen and Gentlemen who have associated for such a patriotic purpose. In doing this, I shall have the happiness of submitting it to those who are able judges.

It is the result of much experience in my professional pursuits, and solely calculated to convey practical information. I flatter myself it will not be deemed unworthy your GRACE's patronage.

I have the honor to be,

MY LORD,

With the highest respect,

YOUR GRACE's most obedient,

And very humble servant,

E. SKELLETT.

PREFACE.

THOUGH many publications have appeared of late on the Diseases of Neat Cattle, yet the subject is not treated by any of them in that regular and systematic manner, which can be useful to readers who are not themselves bred to the business. The practice also in these works is not one founded on experience, but is chiefly drawn from medical opinions, and the analogy of diseases in the human body. The following Work contains a detail of what the author has seen and done in practice himself; he does not borrow from others, because he found the opinions of others on the subject not to coincide with his own.

In the first part of the Work, which embraces the Parturition of the Cow, he has given a minute detail of all that respects the operation; and he has introduced rules of practice unknown to any other author who has published on this part of the business. The second part, which is employed in treating the Diseases of Neat Cattle in general, he has endeavoured to arrange in such a manner, as to render the view of them clear and distinct. In all the works on the diseases of cattle, it has been the great fault of other authors to bring together diseases of an opposite nature, which have no connection; on the contrary, in the present work, the diseases are so arranged, that all those of a similar nature are placed in the same class or division. One particular advantage attends this, by understanding the treatment of one the reader understands, with some slight variation, the treatment of the whole division. This is simplifying the matter in

a great degree; for on once knowing the division or class to which a disease belongs, the treatment will be immediately understood. In perusing the prescriptions in the following Work, practitioners will perhaps be struck with the fondness the author has shown for the *warm aromatic seeds*; the fact is, the cow being an animal confined entirely to vegetable food, remedies of this kind best agree with her; and where others are employed, or found necessary, they serve as the best correctors, to prevent their action on the stomach and bowels being too powerful. Another circumstance which the author must also notice here is, the largeness of his doses, compared with those of other writers: in the first place, he must observe, that the cows which he has latterly practised on are those of the dairies in the neighbourhood of the metropolis, and they are all of a large size; secondly, their mode of feeding, which is generally on grains, renders larger doses of medicine necessary. This being the case, the judgment of the practitioner must determine the exact dose suited to the strength, age, and condition of the animal, taking the dose inserted in the Work as the medium rule to go by. On the whole, the author flatters himself the present publication will be found useful, in addition to what has been written on the subject, and it will enable the cowkeeper, on most occasions, to direct the treatment of his own cattle, where he has leisure to attend to it, or where he has not an opportunity of other assistance.

EDWARD SKELLETT.

Westmoreland Street, Mary-le-bone,
London, March, 1807.

CONTENTS.

	Page
INTRODUCTION	1

PART I.

<i>Chap.</i>		
	I. Symptoms of Venereal Appetite in the Cow	11
	II. Gestation	15
	III. Conception	17
	IV. Circulation of the Blood from the Mother to the Fœtus	23
	V. Of the Liquor Amnios	32
	VI. Of the Meconium	37
	VII. Description of the fourth, or Glutinous Membrane	39
	VIII. Treatment of Gestation	41
	IX. Diseases of Gestation	50
	X. Strangury, or Retention of Urine	56
	XI. Of Casting, Slipping, or Slinking the Calf	62
	XII. Prevention of Slinking	72
	XIII. Affections of the Udder	75
	XIV. Of the Gravid, or Impregnated Womb	79
	Explanation of Table or Plate I	92
	_____ II	95
	_____ III	98
	_____ IV	102
	XV. The Extraction of the Calf	104
	Explanation of Table or Plate V	108
	Treatment of Natural Calving	111
	Explanation of Table or Plate VI	116
	_____ VII	123
	_____ VIII	127
	_____ IX	131
	_____ X	137
	_____ XI	142
	_____ XII	148
	General Observations on Preternatural Cases	162
	XVI. Consequences of Calving	172
	Flooding, or Loss of Blood	173
	Explanation of Table or Plate XIII	176

	Page
Inversion of the Womb	177
Falling down of the Vagina, or First Passage	184
Inflammation of the Womb	186
————— Shape, &c.	193
Milk Fever, or Dropping after Calving	194

PART II.

Introduction	207
Circulation of the Blood	210

I. GENERAL DISEASES.

Class	
I. Fevers	217
Inflammations	219
Frenzy	220
Inflammation of the Lungs	222
————— External Chest, or Anticor	226
————— Stomachs	228
————— First Ditto	229
————— Third Ditto	232
————— Bowels	238
————— Liver	242
————— Kidnies and Bladder	244
Red Water, or Staling of Blood	249
Garget of the Limbs, or Constitutional Rheumatic Lameness	253
Rheumatism of the Loins, or Lumbago	257
Garget, or Inflammation in the Udder	260
Blain	270
II. Bleeding from the Nostrils	278
Colds	281
Dysentery, or Bloody Ray	282
III. Staggers, or Dizziness of the Head	286
Lock Jaw, or Dead Palsy	289
Fits, or Falling Down	294
Asthma, or Short Breathing	296
Cough of long standing	297
Stomach Complaints	298
1. Grain Sick	ib.
2. Flatulence	301
3. Running of Water from the Mouth	304
Looseness, or Scowering	305
Hydrophobia, or Madness	309

CONTENTS.

xi

Class	Page
IV. Consumption, or Wasting.....	311
Black Leg, or Quarter	313
Yellows, or Jaundice	316
Dropsy.....	319

II. LOCAL DISEASES.

Introduction	322
Directions for Bleeding.....	<i>ib.</i>
———— Pegging	323
———— Tapping.....	324
———— Blistering	325
Blindness.....	327
Strains, or Sprains.....	328
Costiveness	332
Strangury.....	333
Tumours, or Swellings of various kinds	<i>ib.</i>
Snarled Bag, or Swelled Udder.....	334
Schirrus, or hard Swellings of the Fleshy Parts.....	335
Cancers	336
Warts, or Horny Excrescences.....	<i>ib.</i>
Swellings on the Joints and Bones.....	337
Soft Swellings	341
Loss of Joint Oil, or Synovia	343
Wounds.....	345
Pokes, Goring, or Wounds in Fleshy Parts.....	346
Feet Foul.....	347
Joint Foul	349
Canker.....	<i>ib.</i>
Wounds in the Soles of the Feet	351
Ulcers	352
Constitutional Diseases of the Feet	353
1. Common Ulcer.....	<i>ib.</i>
2. Ulcer, with rapid growth of Proud Flesh	355
3. Ulcer, with Callus	356
4. Ulcer of the Teats	357

PART III.

Diseases of the Bullock and Calf	359
Mange.....	362
Conclusion	364

Directions for placing the Plates.

Table or Plate	I	to face page 92
—————	II	95
—————	III	98
—————	IV	102
—————	V	108
—————	VI	116
—————	VII	123
—————	VIII	127
—————	IX	131
—————	X	137
—————	XI	14
—————	XII	148
—————	XIII	17f

INTRODUCTION.

THIS Work is divided by the Author into two parts: The first contains the various circumstances that attend the state of gestation, or pregnancy, and the parturition, or delivery, of the animal. The second part comprehends the various diseases incident to this species of cattle.

The first of these subjects is one of the utmost importance both to the farmer and grazer, whose interest is so materially concerned in it; therefore, in order that it may be fully understood, the author has entered minutely into its consideration, and brought forward such practical facts as every one concerned ought to be acquainted with. He accordingly treats, first, of the symptoms shewn

by the cow when she is inclined to coition, a point to be particularly attended to by every breeder, for on this the success of conception depends; the period when the animal is in season, or desirous of this indulgence, being very short, may be often missed, if the symptoms are not well known.

The next subject is that of conception, the manner of which is fully explained; the important subject of the circulation of the blood, between the mother and the embryo or fœtus, is next taken up, and the mode of procuring its nourishment ascertained. In doing this, the author has occasion to state the origin of the membrane or amnios, and also of the water contained within it, in which the embryo or fœtus floats. In describing these parts, he has taken the liberty of differing from other writers, and to maintain an opinion founded on his own experience and observation; this opinion is, that the embryo or fœtus receives

the whole of its nourishment from the mother, by means of the umbilical cords or blood vessels of the navel string alone; that no part of the fluid thus received ever returns, (an observation he has often made,) for the fœtus immediately dies on the umbilical cords being accidentally broken from any exertion made by it in the womb. Hence the fluid of the amnios is thus proved to be an excrementitious liquor, discharged from the body of the fœtus, and highly unfit for it nourishment; besides, this fluid, so far from decreasing, is generally found in the greatest quantity in the latter months, bearing always a proportion to the size of the embryo or fœtus, as will appear by the delineation in Plate III. To render the author's opinion more distinct on this part of the subject, plates are given, shewing the anatomy of the placentæ, the amnios or membrane, and the contiguous parts.

After elucidating this part, the symptoms

of gestation are then entered upon, and full instructions given for the management of the cow, while in a state of breeding.

The diseases which arise during this period are the next objects of the author's attention, and their treatment explained in such a manner, that every one may understand the management of his own stock. To render this explanation still more complete, the anatomy of the womb, with its contiguous parts, is exhibited in plates, particularly in order to shew the inner surface of the womb, which becomes often inverted, or turned inside out, from the last efforts of the cow in calving: for the replacement of this accident, full instructions are given, to prevent the fatal consequences which are apt to arise from it when improperly treated or misunderstood.

With these preliminary instructions the reader becomes prepared for entering upon

the principal business, viz. the subject of the cow calving. Here it is to be observed, that a greater variety prevails in the position of the fœtus in the womb with neat cattle, than with other domestic animals, except sheep, and hence calving is often as dangerous a situation as any in the human subject; the cause of this will be afterwards explained, while, to assist the directions given, for calving in preternatural cases, plates are exhibited of the various positions of the calf in the womb. That the means of extracting the calf in such unfavourable situations may be rendered also still easier, these plates shew the application of the peculiar mode employed by the author, and which he has found eminently successful in a period of no less than twenty-five years. During that time he has met with a number of the most difficult and dangerous cases that can occur in practice, and he is enabled, from an extensive experience, to afford the best instructions to the

operator how he may avoid injuring the delicate structure of the parts, on which his exertions are employed. This an unskilful practitioner is too apt to do in the business of extracting; and though he may succeed in the operation, the consequences are too often fatal, from his rude and unscientific attempts, to the poor animal.

Such is the view that the author has given of this first division of his work : his chief object is to offer practical instruction, and to convey that knowledge to others which he himself has acquired by long and patient observation in his professional pursuits.

The second division is confined exclusively to the *various diseases* of neat cattle; and here his experience enables him to speak with much decision and confidence on the nature and treatment of their different maladies, and even to propose new methods of cure, which

his success leads him to recommend ; these diseases he has also attempted to illustrate by plates.

The maladies of neat cattle, like those of the human subject, may be properly divided into the accidental and constitutional ; one part of the latter he has minutely considered, viz. the *constitutional diseases of the feet*, a subject entirely new, and of the first consequence. This part is often connected with manual operation, and forms a principal division of the surgery of neat cattle, on which full instructions are given.

Having thus exhausted all that is necessary to be known in regard to the mother, or the cow, this work would have been left incomplete, had he not bestowed an equal attention on the management and diseases of the calf ; these are treated with the same minuteness as those of the mother in the preceding

part, and their causes, symptoms, and cure investigated, so far as he has been enabled, by his own observation, to understand them.

From the nature of this work, the author has been led to pay particular regard to a subject which has claimed, of late, the fullest notice from medical men of every description, both in Britain and throughout all Europe ; the origin and nature of the cow-pock. The progress of this disease will be delineated in an appendix to the work ; the difference between the real and spurious matter accurately pointed out, and such tests given as may prevent any mistakes being made by medical men on this head. The author will also, in this part, lay before the public the result of a set of experiments made with the real small-pox matter, in order to ascertain its peculiar effect on the cow, compared with the effects of the cow-pox, and thus to determine the proximity or connection of the two diseases

with each other, a point of a curious nature, and which has never before been thought of.

Having thus offered a general outline of the work, the first subject that occurs to be treated of, is the symptoms that indicate the animal being inclined to coition.

with each other, a point of a curious nature,
and which has never before been thought of.

Having thus offered a general outline of
the work, the first subject that occurs to be
treated of, is the symptoms that indicate the
disease being inclined to continue.

PRACTICAL TREATISE, &c.

PART I.

ON THE PARTURITION OF THE COW, OR THE
EXTRACTION OF THE CALF.

CHAP. I.—*Symptoms of Venereal Appetite in the Cow.*

WHEN a cow is inclined for coition, the following symptoms will appear : she will suddenly abate of her milk, and be very restless; when in the field with other cows, she will be frequently riding on them, and if in the cow-house, she will be constantly shifting about the stall; her tail will be in constant motion; she will be frequently dunging, stal-

ing and blaring; will lose her appetite; her shape, or external parts, will appear red and inflamed, and a transparent liquor will be discharged from the vagina. In old cows these symptoms are known to continue four or five days, but, in general, not more than twenty-four hours, and at other times, not more than five or six,—therefore, if a cow is intended for procreation, the earliest opportunity should be taken to let her have the bull; for, if it be neglected then, it will often be a fortnight or three weeks before the above symptoms return. These instructions are necessary to be given only to the proprietors of a small number of cows, where a bull is not always kept with them.

A heifer should never have access to the bull before she is at least two years old, at which period nature is ripe for propagation; and when the time arrives for her calving, her parts will be strong and

open, so as to enable her to calve with strength and vigour. Sometimes yearlings shew a disposition for coition, but they should not, when so young, be suffered to have the bull; as it not only prevents their growth, but their calving is frequently attended with great difficulty and danger, even when the calf lies in a natural position, for the passage to the womb being so extremely narrow, does not admit of room for the extraction of the calf without violence. In consequence of this, those delicate parts are often injured, and frequently torn, from which cause proceeds inflammation, a mortification of the womb, and the surrounding parts, and, finally, the death of the animal. The author, in numerous cases of this description, has frequently found the vagina and the os uteri actually torn asunder, as well as the arteries and veins which supply the womb with blood, from which cause the animal has bled to death inwardly.

If a cow, after calving, shews symptoms of coition sooner than four or five weeks, (which is sometimes the case,) she should not be permitted to have the bull sooner than four or five weeks from that period, for the womb before that time is, in general, in so relaxed a state, as not to be capable of retaining the seed, consequently she seldom proves with calf, if she is suffered to take him sooner.

A cow, in general, goes only nine months, or two hundred and sixty-three days, with calf, although some instances occur when she goes a fortnight or three weeks over that time. Where it so happens, it is most commonly a bull calf; and it may be remarked, the cow generally goes longer with a bull than with a cow calf.

CHAP. II.—*Gestation.*

As soon as conception has taken place, the cow becomes perfectly calm, eats her food with a good appetite, milks well, and generally thrives in flesh ; and at the expiration of six weeks, if she shews no symptoms indicating a desire of coition, she may be considered as generally being with calf. These are the only marks which can be discovered of the cow having conceived for the first three months ; after which, she appears full in the flank on the milking side, and of course keeps daily increasing. It does not appear that the womb goes through any particular change, except the daily distending of it, in proportion as the fœtus and the fluid in which it floats increase ; nor does conception apparently incommode the animal, or cause any disagreeable change in the constitution, till the expiration of four or five months, at which time the calf quickens. From this period the mother is subject to several diseases.

Between five and six months the calf may be distinctly felt on the milking side, by gently thrusting the fist against the flank of the cow, by which means a hard lump will come in contact with the abdomen and fist; or, if a pail or two of cold water be given to the animal, it generally causes the calf to kick, which may be seen or felt by laying the open hand on the abdomen, betwixt the flank and udder; but when a bull calf, it is not so soon felt or seen as when a cow calf, for the female generally lies in the horn of the near side of the womb, (called the milking side,) and the male in the opposite horn, in consequence of which it cannot be so easily felt.

Some instances have occurred, where the author could not feel the calf till the seventh or eighth month, particularly when in a natural position, (see Plate V.) but he frequently has when on the opposite side.

CHAP. III.—*Conception.*

WHEN nature is satisfied, or the symptoms of coition disappear in the animal, conception has taken place. The neck of the womb becomes then completely closed by a glutinous substance, which nature has provided for that purpose, being perfectly transparent, and with difficulty separated from the parts.

This matter is for the purpose of excluding all external air from the os uteri, or uterine orifice, during gestation, which, if admitted to the embryo or fœtus, would corrupt the membranes, and the pellucid liquor in which the embryo or fœtus floats, and would undoubtedly cause the cow to sink, or slip, her calf. This glutinous substance also prevents the lips of the os uteri from growing together; and when the cow is inclined to coition, it becomes fluid—In the act of copulation,

serving to lubricate the parts, and prevent inflammation. This, in all probability, would be the case from the repeated friction of the bull, whose operations are generally repeated five or six times within the hour, for the first two hours, if he is suffered to remain with the cow. It also becomes fluid at the time of calving, and serves for the above purpose. This glutinous substance being found not only at the above period, but also in young calves, it evidently appears, that it is as highly necessary at one time as another, and consequently the uterus requires to be at all times kept free from external air.

In the act of copulation the male and female seed mix together, and with the assistance of the pellucid liquor, which always accompanies the seed when emitted, the whole of these form into a pellucid or globular appearance, inclosed with a fine membrane, called amnion, which will be minutely de-

scribed hereafter; in this state it is called the ovum, or embryo; but when the fœtus is distinctly formed, it has the appearance of a calf, and then assumes the proper name of the fœtus. The liquor contained within the membrane is perfectly transparent, in the centre of which floats the seed, and in the space of eight days the seed forms into a substance, which is not then larger than a small pea. From its centre springs the umbilical cords, or blood vessels; they adhere to the internal part of the membrane, or amnion, which surrounds it. These umbilical cords, or blood vessels, by degrees send off, round the external surface of the amnion, two more membranes; the centre one, which adheres to the amnion, the author calls the arterial membrane, for to it the arteries take their adherence; the external, or third membrane, is called the chorion.

While nature has been thus employed in

forming these membranes, the ends of the umbilical veins and arteries which unite to the amnion issue forth, into various directions, and compose those small veins and arteries which surrounds the two last mentioned membranes,—the arteries take their adherence to the centre membrane, and the veins to the internal part of the chorion. When nature has completely finished all the blood vessels which surround the membranes, the chorion then sends off around its external surface a great number of those spongy substances, called the placentæ, (see Plate III.) which is accomplished in about fourteen days after conception.

During the above period, the embryo and its contiguous parts are entirely nourished by the moisture and warmth of the womb, as the embryo has no adherence to the womb during the above period. At the time the spongy substances of the pla-

centæ issue out on the chorion, the glands of the womb begin to bud out, in order to meet in union with them, and they come in complete contact with each other, for the purpose of absorbing a sufficient quantity of arterial blood from the mother, for the support of the embryo. At this period it only takes its adherence in the widest part of the womb, (see Plate I.) which is between the os uteri and the beginning of the cornua, or horny parts of the womb. From this period the membranes begin to shoot out progressively, till they arrive at the very extremities of the horns of the womb, which are both completely invested by them in the course of gestation.

The placentæ and membranes arrive at their extremities in about six weeks, at which time the membranes are remarkably thin and fine, and in the widest part of them the embryo or fœtus floats. The internal

part of the membrane, or amnion, is lined with a glutinous mucilaginous substance, the appearance of which is like jelly, and is firmly united to the membrane. The use of this is, no doubt, for the purpose of preventing the embryo or fœtus injuring the membranes, whenever it floats or moves. The greatest part of this glutinous substance, at the expiration of six or seven months, becomes fluid, and takes its adherence to the fœtus; this is of the greatest use at the time of calving, and serves to lubricate those tender parts in the progress of delivery, and consequently makes the calf pass easily.

CHAP. IV.—*Circulation of the Blood, from
the Mother to the Fœtus.*

IT will be proper to give a short description of the circulation of the blood from the mother to the fœtus, but it will be more minutely explained in the description of the anatomy of the womb, placentæ, and its contiguous parts. There are four uterine arteries, which spring from the great aorta, two take their course to the uterus, the other two take their direction to the bladder and vagina, to which they unite, and are for the purpose of nourishing these parts. The two uterine arteries unite to the uterus, and branch into different divisions, which have their communication with the internal glands of the womb. There are also two uterine veins which unite to the uterus. These two veins are for the purpose of returning the

blood to the mother after the womb is supplied, which is their only office, and not to bring back the superfluous blood from the embryo or fœtus to the mother, as anatomists have in general supposed. This the author will more fully explain hereafter. The two arteries which unite to the uterus and glands of the womb, send out small branches that emit arterial blood into the cellular glands of the womb, wherein the placentæ unite; nor do they emit any more blood than what is absolutely necessary for the support of the embryo or fœtus; and when so received by the embryo or fœtus, not any part of it is ever again returned to the mother; for the author has frequently dissected the glands of the womb and the placentæ, and could never discover any blood-vessels between the placentæ and the glands of the womb, nor could he force any injection from the uterus into the anterior parts of the placentæ, or those next the womb, nor from the umbilical ves-

sels of the fœtus into the cellular parts of the glands of the womb.

The use of the glands of the womb is for the purpose of receiving arterial blood from the uterine arteries, which they emit into the cells of the glands; and from some secret and wonderful change of nature it is converted into chyle, and when so prepared, is absorbed by the placentæ, and immediately becomes blood, being conveyed to the embryo or fœtus in the regular course of circulation. Is it possible that the glands of the womb, and the spongy parts of the placentæ, can absorb at one and the same time, which must be the case, if it ever returns to the mother? The author's opinion is, it cannot, as they certainly act upon two different principles; the one emits, and the other receives; nor are the glands of the womb any ways adapted for that purpose, being of a more solid texture than the former, and of

course not so well suited for absorption: but, on the contrary, the spongy parts of the placentæ are well adapted for absorption: the arteries of the mother emit arterial blood into the deep cavities of the glands of the womb, wherein the processes of the placentæ unite, which act like suckers to the glands. As soon as the blood is emitted from the uterine arteries of the mother into the cells of the glands of the womb, it immediately becomes chyle, (as before noticed,) which may be perceived by squeezing the glands of the womb after they are separated from the placentæ, when it appears like milk; this chyle is absorbed by the placentæ, and while in the act of absorption, is, from some secret and wonderful act of nature, which the author believes is out of the power of any human being to account for, converted into blood. This blood is taken up by the veins of the placentæ, and after circulating all around the membranes, it empties itself

into the umbilical veins, and from thence is transmitted to the embryo or fœtus, by them passing into the vena portarum, and thence through the liver into the vena cava, which empties the blood into the heart. From the heart, the blood is forced into the arteries, whence it is conveyed to all, even the most minutest parts of the body of the fœtus, for its nourishment, and thence the remaining part is brought back by the veins. The placenta, and the membranes which adhere to them, are nourished by the arterial blood, conveyed from the great aorta into the two umbilical arteries, (see Plate III.) and then it takes its direction into the small arteries, which are numerous spread all over the membranes; and after circulating round, and nourishing those parts, it passes to the placenta, and is taken up by their small veins, as before described, thus mixing with the arterial blood absorbed by the placenta from the

mother, and with it is again returned to the fœtus, by the umbilical veins, &c.

After describing minutely the manner in which conception takes place, the author thinks it may not be unentertaining to his readers, to give a description of the progress of the membrane amnion, and its contiguous membranes, and the liquor amnios, in which the embryo or fœtus floats.

Nine days after conception, the embryo and pellucid liquor, and the membrane amnion which incloses the whole, is the size of a pigeon's egg; its appearance is globular. At the expiration of fourteen days after conception, it is about the size of a small pullet's egg: at this period the spongy substance on the chorion begins to unite to the glands of the womb. At the expiration of three weeks after conception, the whole forms an oval, and is then not larger than a duck's egg; at

the narrowest part of which the membranes begin to shoot out into two divisions, (see Plate III.) the one taking its course downwards into the right horn of the womb, and the other to the left; and as these membranes advance in their growth into the horns of the womb, there issue out, on the external surface of the chorion, those spongy substances, called the placentæ, which take their adherence to the glands in the horny parts of the womb, and bud out as the membranes advance. The upper and widest part of the membranes resembles a globe, and forms what is called the water-bladder, which is the thinnest part of the membranes, being the part that first presents itself in a natural calving, and is first broke, when there issues from it a large quantity of water.

These membranes, which form the water-bladder, at the expiration of eight months, become remarkably thin and fine, and the

blood-vessels which surround them are very small. At the expiration of nine months they are totally divested of blood-vessels, or they are become so small, that they are not visible to the naked eye ; nor are there at this period on the membranes any of those spongy substances, the placentæ, which at the early period of conception surround them.

Thus nature has wonderfully contrived so as to deprive these membranes of their blood-vessels, &c. at the time of calving, which is no doubt for the purpose of preventing any hemorrhage of blood from the umbilical arteries of the calf, when the water-bladder breaks ; for was the water-bladder to be surrounded with blood-vessels at the time of calving, and when it presents and breaks, which is generally one hour before the cow calves, and sometimes two or three, and were these blood-vessels to be bleeding during the

above period, the calf must inevitably bleed to death.

The horny ends of the membranes appear like two tails, (see Plate III.) and are invested with blood-vessels, and also with placentæ. As soon as the membranes arrive at the extremities of the horns of the womb, the placentæ are strongly united to them (as before described): and after the extraction of the calf, and the umbilical cords are broken, the spongy parts of the placentæ, and glands of the womb, are disunited from each other. In consequence of this, the glands of the womb immediately collapse and shut those cavities, to prevent any hemorrhage of blood from the uterine arteries, which before circulated into the cells for the absorption of the placentæ, and the nourishment of the embryo or fœtus.

CHAP. V.—*Of the Liquor Amnios.*

As soon as the umbilical cords or blood-vessels, and the contiguous membranes and placentaë, are completely formed, and the placentaë have taken their adherence to the glands of the womb, for the purpose of absorbing the arterial blood from the mother, and conveying it to the embryo or fœtus, (see *Circulation of the Blood*,) the serum, or the superfluous part of this blood, after circulating around, and traversing the body of the embryo or fœtus, and its contiguous membranes, is secreted into the kidneys, (the manner in which this water is secreted into the kidneys will hereafter be described, when the author treats on the circulation of the blood in the adult.) From the kidneys this serum passes into the ureters, or tubes, of the kidneys, (see Plate I.) and is gradually discharged into the bladder, being conveyed

between the two umbilical arteries through a fine membranous tube, which opens from the fundus, or bottom part of the bladder (see Plate III.) by which means this liquor is emptied within the membrane amnion; and as the embryo or fœtus increases in size, so in proportion does the liquor keep pace with it during gestation.

This liquor is, in its appearance and smell, similar to that of cows' urine, and is of the greatest importance in assisting nature during gestation, which will appear from the following observations : From the embryo or fœtus being surrounded with it soon after conception, it is kept daily increasing till the time of delivery ; and was not this to be the case, when the fœtus increases in size, and takes its station in the horn of the womb, as before noticed, the fœtus must undoubtedly adhere to the membranes and uterus ; and whenever it attempts to move or kick, it

must inevitably destroy the membranes, and wound the uterus, from which cause inflammation in the parts would ensue, and perhaps the death of the animal be the consequence. The want of this liquor would also prevent a free circulation of the blood from the mother to the fœtus. This liquor amnios is not only for the above purpose, being of a mucilaginous nature, and serves, as it were, to moisten the membranes, and greatly assist in extending the womb during gestation; but is also of the greatest utility to the operator at the time of extracting the calf when in a preternatural position, and likewise in a natural calving, when the animal wants no assistance but nature, for it serves to lubricate those tender and delicate parts, the os uteri and vagina, as the calf advances, and consequently prevents inflammation.

On this subject of the waters, even some of the first anatomists have delivered opinions

highly erroneous. In his Comparative Anatomy, the late Dr. Monro observes, in p. 70, that the amnios liquor at first is in a small quantity, afterwards increases for some months, then again decreases; and in a cow near her time, the quantity of this liquor is not above a pound. This assertion is directly contrary to what the author has advanced, and to what every one conversant with the management of cows well knows, viz. that so abundant is this liquor at the time of calving, that not less than two or three pails full generally come away in the whole: he has been led, therefore, from very accurate observations, to state, that the quantity of this liquor bears always a proportion to the size of the fœtus, and is in the greatest quantity, instead of being least, in the latter months.

Another remark may be made on Dr. Monro's assertion, that the amnion membrane

does not extend into the horns of the womb; the author has made innumerable dissections of those parts, and has uniformly found this membrane pervade every part of the horns, as well as the womb; and it is only for want of sufficient opportunity to know the real fact, that such mistakes are made by authors, and continued to be copied by others that follow them.

CHAP. VI.—*Of the Meconium.*

IN describing the membranes and fœtus, one part belonging to the latter has been hitherto omitted, or that particular substance known by the name of meconium : this substance is properly the excrement of the fœtus ; and though perhaps it is secreted from a very early period of conception, yet it is not distinguished in its natural form till the period of quickening arrives. From the strength of the fœtus at this time, the peristaltic motion of the intestines is vigorous, and part of it comes to be discharged into the amnios liquor, which gives it a yellow tinge. The greatest part of this meconium is found in the horn of the womb, when the fœtus lays in a natural position, and is of a dark yellow colour, and of a glutinous nature. The meconium in the intestines of the fœtus is of the same substance and colour as that found in

the horn of the womb. From the fact of this excrement being mixed with the amnion liquor, it is perfectly clear that the latter can never be intended for the nourishment of the foetus, and that the umbilical vessels form the medium by which sustenance is conveyed from the mother to the young : the arguments supporting this latter opinion will be recited at full length, when treating on the anatomy of the womb. It is only necessary to notice here this circumstance, as being so very striking and apposite from the excrementitious nature of the liquor, which contains such meconial matter in it.

CHAP. VII.—*Description of the fourth, or
Glutinous Membrane.*

THE author has here to observe, that since giving the description of the three membranes, namely, the amnion, arterial membrane, and chorion, which has already been described, (see *Conception*,) he has, from a more minute investigation, in dissecting those membranes, discovered a fourth one; this is of a more delicate texture than any of the others, and is very easily broken. Each side of this membrane is lined with a glutinous substance, for which reason, he thinks it will not be improper to give it the name of Glutinous Membrane. The use of this glutinous substance, there cannot be a shadow of doubt, is intended for the purpose of preventing the arterial membrane and arteries which adhere to it being injured whenever the foetus moves or kicks. This membrane,

or glutinous substance, is not found at the early period of conception, at least the author has not discovered it, though he has very minutely dissected the parts; nor does he conceive this glutinous membrane can be of any utility till the embryo becomes a fœtus; for before that time it is generally supposed the embryo never moves, except by the exertions of the mother; but, on the contrary, when the embryo quickens, which is then called the fœtus, from this period it frequently kicks and moves, which clearly proves the utility of this glutinous substance in the latter months of gestation, which nature has so wisely prepared.

CHAP. VIII.—*Treatment of Gestation.*

HAVING in the preceding part of the work given a full description of the anatomy and use of the different parts of the animal connected with conception, the author comes now to consider the consequences which arise from that process, and which constitutes what is termed the diseases of gestation. Every domestic animal like the cow is to be considered as by no means living in a state of nature. Like man himself, she partakes of civilized life, and of course is subjected to similar infirmities with the human race. The time of gestation is with her a state of indisposition, and every manager of cattle should be aware of this, and treat her with every attention and care during this time. The actual diseases of gestation are not indeed numerous, but they are frequently very severe, and they occasion always a tendency

to slinking, or the cow slipping her calf: as every means should be employed to prevent this accident, we shall therefore direct, first, the management during gestation, and then the diseases to which it gives rise.

Management.

When a cow has once conceived, which will be known by the symptoms given in a former part of this work, little alteration will be necessary for some time in the ordinary course to which she has been accustomed; but as the weight of the calf begins to increase, it will then be necessary to take some precautions; and these precautions will consist in an attention to her diet, air, and exercise.

Diet.

The diet of the cow should be of a mild, lenitive, emollient nature, and, along with her ordinary food, a mixture should take place

of articles of a relaxing kind, such as potatoes or turnips, and any other vegetables which have a similar effect: if these should not prove sufficient to keep her bowels regularly open (the great point to be always aimed at), then medicines must be given that will answer this intention: the best the author has experienced in these cases are the following; and they may be repeated as occasion may require.

Take of Epsom Salts, one pound,
 Nitre, two ounces,
 Cream of Tartar, one ounce,
 Anise and Coriander seeds, of each one ounce,
 Fennigreek, one ounce.—Mix well together.

This medicine is to be given to the cow in two quarts of whey, or water gruel, with a pint of mild ale, and half a pound of treacle: should this not open the body sufficiently in twenty-four hours, it may be repeated. During the operation of these medicines, the animal is to have warm water, or thin gruel. If the cow should show any

symptoms of fever, bleeding will be proper before the drink is given her.

Treatment in the eighth and ninth months.

These being the two last months of gestation, and the most critical time with the animal, consequently she requires, during it, the greatest attention. From the weight and bulk of the foetus at this period, it causes a number of disagreeable sensations to the cow, and frequently produces feverish symptoms; in consequence of which, the body becomes very costive. Whenever these symptoms appear, bleeding must immediately take place, and that in proportion to the strength and size of the animal, or the violence of the disease; then give the before-mentioned laxative drink, to be repeated, if necessary, as before directed. Bleeding and purging are absolutely necessary to be performed once or twice while in a state of gestation, particularly with those cows which are fat and in high

condition ; and it should be adopted in the latter months, except circumstances should occur to forbid it, such as violent purging, or any other diseases which may require a different mode of treatment : nor does the author recommend it to cows which are very weak, low in flesh, and empoverished in blood, from poor feeding, &c. ; should this be the case, the cow should have good and nourishing food ; a mash may now and then be given her made of malt, bran, or pollard, mixed with some oats, which will be of great service to the animal, in giving strength and vigour, so highly necessary at the time of calving. For at this period, a cow should not be too fat or too lean, either of which states is attended with danger ; a medium, undoubtedly, is the best. These instructions are chiefly adapted for the cowkeepers in the metropolis, or in large cities, from the different mode of feeding which they have : the country farmers or graziers are particular in their feeding

in the latter months of gestation, and generally give such food as is most suitable to prevent disease during the time they are in calf. If these instructions are duly attended to, the author has no doubt the cowkeeper or farmer will soon be convinced of the benefit arising from them, which would generally prevent that dreadful disease, called dropping after calving, or the milk fever, which is so prevalent in and about the metropolis.

Air and Exercise.

Having thus regulated the diet during gestation, the air and exercise are the next points to be considered. Air and exercise are absolutely necessary during gestation, and are, indeed, of such importance to the animal, that no cow can continue long in a state of perfect health without fully enjoying them; they wonderfully assist nature in its operations, by promoting the necessary secretions and evacuations, which are always useful to

the preservation of health; they convert the food into good and wholesome nourishment, assist the circulation of the blood, promote insensible perspiration, and increase the action of the stomach, by which means they help digestion; they make way for a fresh supply of aliment, and of course create appetite; in short, they invigorate the whole system.

What the author means by the cow having air and exercise, is to turn her into the layer, or fold yard, daily, for three or four hours, when the weather will permit; for he does not conceive it prudent to turn a cow out in a hail storm, as no animal could feel any pleasure in being in it, nor would it be of any service to the constitution. The morning being the most healthful part of the day, is of course the most proper time for it. During the time they are in the layer, they lick and rub themselves against the posts (which are put there for that purpose); in

this they feel a pleasure, and this operation is besides highly conducive to their health, from the cleanliness it promotes.

But when they are far advanced with young, viz. five or six months in calf, they should be turned out into the layer, or fold yard, by themselves, for fear they should ride any of the other cows that may be a bulling, which they are very apt to do; in consequence of this, the calf may be turned to a preternatural position, from the violent exertion of the cow, and also the cow may be liable at the same time to be poked or gored by the other beasts, from which cause the calf may be killed; and this would undoubtedly cause the cow to slink, or slip, her calf; nay, the author can farther say, that he has known several instances wherein this conduct has been the death of both the cow and calf.

The most proper time to turn cows in calf, or pregnant cows, into the layer, will be when the milking cows are taken up into the cow-house to be fed and milked, which is generally between eleven and twelve o'clock in and about the metropolis.—These instructions, respecting air and exercise, are merely for the information of the cowkeepers in the vicinity of the metropolis, as the farmers and graziers in the country generally give their cows in calf plenty of air and exercise, by allowing them to remain in the field, or in a straw-yard, till they calve, or they see symptoms of calving.

CHAP. IX.—*Diseases of Gestation.*

THE Diseases of Gestation are confined mostly to the advanced period, as formerly observed; they are not numerous, and may be considered under the head of colds, affections of the bladder, or strangury, and miscarriage, or slinking.

Cold

Is a disease to which cows are subject during gestation; and proceeds from obstructed perspiration. This disease is most prevalent in north-east winds: those cows which are stall fed, and kept up for twenty-four hours at a time in the cow-house, are more liable to colds than those cows that continually lay in straw-yards, from the different mode of feeding the cowkeepers have in and about the vicinity of London; for their food con

sists chiefly (in winter) of hot grains, which, from their warmth, promote perspiration, and, in a short period afterwards, the cows being turned into a cold layer, there to drink as much water as nature dictates them to do, and perhaps exposed at the same time to a north-east wind, their whole system must immediately be chilled, from which cause a violent cold is frequently produced.

Symptoms.

The most predominant symptoms of this complaint are, a violent shivering, or shaking, of the extremities, similar to an ague fit, the hair of the animal standing of an end, a sudden loss, or deficiency of milk ensues, with want of appetite, and a purging immediately takes place, which soon stops. In a short period afterwards the animal generally becomes very costive; the ears, horns, and extremities are cold, the pulse feels feeble, and the

cow appears low and languid, not having any inclination to move or stir; but as the disease advances (if not checked) the pulse will beat quick and strong, and the body becomes hotter than usual, the mouth is frothy and clammy, attended with thirst, and there is an inclination frequently to drink. A heaving, or quick motion in the flank, and, if the lungs are affected, a cough is often the consequence.

Method of Cure.

On the appearance of the first symptoms, or in the early part of the disease, if the cow is in good condition, three pints or two quarts of blood may be taken from her; but if she is low, and lean in flesh, one quart will be sufficient: should the disease be far advanced, and the pulse beats quick and strong, three or four quarts of blood will not be too much, from strong large cows, but in smaller cows the quantity of blood must of course be in

proportion. After bleeding, give the following medicine:

Take of Epsom Salts, one pound,
Nitre, one ounce,
Cream of Tartar, one ounce,
Salt of Tartar, one ounce,
Powdered Ginger, one ounce.

Mix together, for one dose, in two quarts of water gruel, to which add half a pound of treacle, and one pint of warm ale ; then give it to the cow, new milk warm. This drink is diuretic and cooling, it acts as a gentle stimulus, and causes the bowels to be laxative, which is highly necessary in this case, to prevent costiveness and fever, or, if fever has taken place, it will be a means of stopping the progress thereof.

Regimen.

The diet should consist of diluting liquors, such as warm water, and water gruel, which ever they seem to like the best; a mash made of malt and bran will also be very serviceable. Six or eight hours after the above

laxative medicine has been given to the cow,
give the following powders, viz.

Take of Nitre, half an ounce,
Salt of Tartar, one ounce,
Camphor, two drachms,
Valerian, in powder, one ounce,
Liquorice powder, and Anise seed, each one ounce.
Turmeric powder, one ounce,
Juniper Berries, pounded, one ounce,
Mustard, two ounces.

The camphor is first to be rubbed to powder in a mortar, with a little spirits of wine, then add the other ingredients. These powders are to be mixed in a quart of water gruel, with one pint of ale, for a dose, and they may be repeated once or twice a-day, if necessary, till the disease is removed.

If after the expiration of twenty-four hours the cow should be costive, her dung appears black and dry, and the animal is very feverish, the laxative drink may be repeated, and the following medicine given her as a glyster:

Take of Epsom Salts, two ounces,
Thin Water Gruel, three pints,
Sweet Oil, half a pint,
Common Salt, a handful.

Mix them together, and when new milk warm, give them to the cow by way of a glyster. This glyster acts as a gentle stimulus, and removes the obstruction in the rectum, and its contiguous parts, by discharging the contents thereof; by which means it gives room for the fæces to advance, and also assists the peristaltic motion. If the animal, after the disease is removed, becomes extremely relaxed, or appears low, with little appetite, which sometimes is the case, a dose of the restorative mixture should be given once or twice a-day, (see Formula of Medicine in the latter part of this work,) which will soon restore the relaxed system to its former strength and vigour, if joined with proper attention to good feeding, air, and exercise. But this subject will be resumed in the second part of this work.

CHAP. X.—*Strangury, or Retention of Urine.*

THIS is a disease which sometimes occurs, and proceeds from several causes; the animal is more subject to this disease when she is seven or eight months gone with calf, from the pressure of the womb on the neck of the bladder, (see Plate V.) in consequence of the bulk and weight of the calf, which frequently produces spasm and inflammation in these parts, &c. A retention of hardened fæces, or dung, lying in the rectum, will also cause the same disease, but is not so violent. When a cow is heavy in calf, particularly in the latter months, some of the cowkeepers in and about the vicinity of the metropolis are very apt to keep her up in the cowhouse day after day, and some for weeks together, which is a very bad practice, and generally produces costiveness, and the above complaint is too frequently the consequence of it.

Symptoms.

The cow will more frequently get up and lay down than usual, and when up, her tail will be elevated, which she keeps continually in motion, with a frequent inclination to make water, but without being able, or, if she passes any, it is in a very small quantity, and that with visible pain, as she groans very much at the time; is very costive, the excrements appearing black and dry; and, if the disease is far advanced, the pulse will beat quick and strong; a white froth in the mouth may be perceived, which indicates fever with loss of appetite, &c.

Treatment.

In all these cases bleeding is absolutely necessary; from three to four quarts may be taken, more or less, according to the violence of the disease, or strength of the animal; then give the following medicine, viz.

Take of Epsom Salts, one pound,
Nitre, two ounces,
Anise and Parsley seeds, of each one ounce,
Juniper berries, one ounce, all in powder.
Then add, Tincture of Opium, two drachms.

This medicine is to be given as soon as possible, in two quarts of smooth oatmeal gruel, wherein one ounce of common soap has been previously dissolved, with a quarter of a pint of double distilled anise seed. This drink wonderfully assists nature, by unloading the intestinal channel; it gradually relaxes the body, acts as a gentle diuretic, and allays the impetuosity of the blood, by which means it gives ease to the obstructed parts, and by degrees eradicates the disease. This drink may be repeated in eight hours, should the first dose not succeed. The hard excrements are to be taken out of the rectum, by introducing a small hand into the fundament, being first well supplied with hog's lard or sweet oil, and the nails of the fingers close pared, to prevent injuring the parts during the operation (this is what is commonly call-

ed raking); then give the following emollient glyster :

Take of Water Gruel, three pints,
Sweet Oil, half a pint,
Common Soap, one ounce,
Tincture of Opium, half an ounce.

The soap is to be boiled in the gruel; then add the sweet oil and opium, and inject it into the rectum, by means of a glyster-pipe and bladder, new milk warm. As soon as the glyster is given to the cow, a wisp of hay is immediately to be applied under the tail, and the hand instantly to be put on the back part of the tail, so as to cause the tail and fundament to come in complete contact with the wisp, (which should be held there for ten minutes or a quarter of an hour, at least,) which will prevent the glyster being too soon returned, before the medicine has the desired effect. This emollient glyster has also its peculiar effect, by softening and relaxing those delicate parts, acting similar to a fomentation, and assists the operation of the

laxative drink. The glyster may be repeated in eight hours, if necessary.

Regimen.

The cow should have plenty of diluting liquors, such as warm water, gruel, &c. and mashes made of bran, or pollard, with a little malt. In two or three hours after she has had the drink and glyster, it will be necessary to drive her gently about for a quarter of an hour, as it greatly assists the operation of the medicines, and generally causes an evacuation of both urine and dung, and consequently removes the disease. This treatment the author has never known to fail; nor has he ever found it necessary to repeat the drink and glyster more than twice.

To prevent this disease, the animal ought to have air and exercise daily, and such food given her as is of a laxative nature, in order to keep the body gently open, which is of

the greatest utility in her latter months of gestation (see observations on diet, air, and exercise).

Strangury, or retention of urine, proceeds from a number of causes; inflammation in the womb, from the violence of extracting of the calf, ulcers in the neck of the bladder, &c. which will be treated of in the second part of this work, under their proper heads.

CHAP. XI.—*Of Casting, Slipping, or Slinking
the Calf.*

THOUGH the cow and other animals are not so subject as the human species to casting, slipping, slinking, or miscarriage, yet it is an accident to which cows are very liable, and it requires great care in those which have the management of them to prevent its repetition in the same animal, when it once takes place.

The general causes of this accident may originate from violent exercise, as already observed, when cows are turned out into the layer; or it may be the effect of frights, knocks, or bruises which they may receive in divers ways: but a more common cause of slinking than any of these, and which is peculiar in its influence on this animal, is a disagreeable nauseous smell: the cow is re-

marked to prepossess a very nice and delicate sense of smelling, to that degree, that the slinking of one cow is apt, from this circumstance, to be communicated to a great number of the same herd: it has been often known to spread like an infectious disease, and great losses have been suffered by the cowkeepers from the same.

Whenever a cow shows any symptoms of slinking, the first step should be to separate her from the rest of the herd, and to cut off all communication that may endanger this accident spreading.

The first symptoms of slinking are known by the udder suddenly filling, giving a flush of milk, by the shape showing a red appearance, and turning loose and flabby, and the ligaments or cupples on each side the rump giving way to a certain extent. When these appearances take place, the cow, after

removing her to a place by herself, should be narrowly watched, in order to give every assistance, as well as to prevent the accident, if possible.

One of the chief means in the way of prevention is blood-letting; and as it is perfectly clear that a fulness of blood takes place in all animals during gestation, and that this fulness occasions the circulation to be easily hurried, no time should be lost in performing it, though the symptoms of sinking have advanced some way. This operation should be followed by the same laxative medicine mentioned under the head of diet during gestation. This plan may be even repeated two or three times, if circumstances should require; and it will be found in the whole the most successful method to prevent this accident ensuing.

But where the cow either suddenly drop

ped ner calf, or the symptoms of slinking have made too rapid progress for allowing the above treatment being effectual, then the management of the placentæ, or cleansing, requires particular attention. As the parts concerned in the nourishment of the young want, at this period, their proper maturity, and are not disposed to separate from each other in the same ready manner as at the full time of calving, so the cleansing is apt to be retained for some time after the slinking has taken place, or the other parts of the birth are come away: this circumstance is both dangerous to the animal herself, and is also attended with disagreeable effects to the other cows that may be near her. With respect to the first, there is always a risk of the same accident being repeated; for a cow being once in the habit of slinking her calf, will continue to do so in every future gestation, unless great care is taken. In regard to the second, or its effects on the other cows, from the

retention of the cleansing, a certain degree of corruption is apt to take place, which excites that nauseous smell, which, we have already observed, is so very ready to cause this accident of slinking extend to a whole herd. On this account, too great a nicety cannot be observed in what regards the cleanness of a cow while in this situation; and both the fodder and housing should have every attention in this respect.

In cases where the cleansing does not readily come away, it is proper to assist the efforts of nature by medicine; by this means both its discharge will be forwarded, and also the system of the animal will be freed from any impurities or extraneous matter which may be connected with the accident, or have been the cause of the slinking taking place.

One of the best forms of medicine for

assisting the cleansing, the author has found to be the following :

Take of Juniper Berries, three ounces,
 Bay Berries, two ounces,
 Nitre, one ounce,
 Anise seed, one ounce,
 Gentian, half an ounce,
 Gum Myrrh, half an ounce,
 Asafoetida, half an ounce.

These are to be well pounded together into powder, which is for one dose, to be given in a quart of mild ale, made warm, or one quart of pennyroyal tea. This drink should be given fasting, and may be repeated once every day till the cleansing is evacuated.

Regimen.

The cow should have plenty of warm diluent liquors, such as warm water, or thin gruel, and mashes made of malt, with bran or pollard, so as the body may be kept gently open, which is of great importance to the animal, and should at all times be attended

to. If this regimen is not sufficient to keep the body open, and feverish symptoms appear, recourse must be had to remedies for this purpose ; one of the best of which is the following, viz.

Take of Epsom Salts, one pound,
Nitre, two ounces,
Anise seed, in powder, one ounce,
Cumin seeds, in powder, one ounce,
Ginger, half an ounce.

Mix together for one dose, which is to be given in two quarts of water-gruel, with half a pound of treacle. This drink may be repeated, if the first dose should not have the desired effect in ten or twelve hours.

In all cases where the cleansing is retained beyond a proper time, it is to be laid down as a general rule, that it is a circumstance attended with much danger ; and the unavoidable consequence will be to produce irritation and inflammation of the womb. In some rare instances, the cleansings have

been entirely shut up in the womb, and, in spite of all the remedies above enumerated, it has been found necessary to have recourse to manual assistance. This consists in introducing the hand, well lubricated with hog's lard or goose grease, in a conical form, through the passage or vagina, to the mouth of the womb, which must be gently opened, by insinuating the fingers gradually into it till part of the cleansing is reached. An attempt is then to be made to grasp part of it in the hand, particularly the umbilical cords, if they can be found, and to bring them down into the vagina or passage. If, when thus brought down, and you endeavour to pull, the cleansing does not readily give way, it would be improper and dangerous to use much force. Instead of this, a ligature must be passed and fixed on that part (which is brought down) in the passage or vagina. When this is done, the hand is to be removed, and a weight tied or suspended to the end of

the ligature or cord, of a sufficient power (generally two pounds) to occasion a gradual separation and exclusion of the whole cleansing. The time when this is completed varies in different cases; in some it takes place in a few hours, though it most commonly extends to days, and the author has known it frequently happen so late as six or seven. During this period, the cow must be attended to, as the womb continues very much in action, and violent strainings, or efforts to exclude its burthen, occur, which may bring on inflammation, and all the bad consequences that arise from it: but this subject will be treated of more at large under the article Inflammation in the Womb.

It is proper that every cowkeeper should know the great danger that attends the retention of the cleansing. By the removal of the calf, the placentæ and other parts connected with it become lifeless, and are there-

fore a mass in the womb, which soon becomes putrid, from heat and stagnation, and thus irritates and inflames all the surface of the organ. This gives rise to an acrid discharge, which even excoriates the passage as it flows away. If continuing, it occasions acute fever, the inflammation extends to every part of the womb, and mortification will be the unavoidable consequence, provided relief is not afforded to the animal.

CHAP. XII.—*Prevention of Slinking.*

As slinking, we have observed, is often attended with severe loss to the cowkeeper, it is of much importance that this accident should be prevented; and the means of doing it will depend much on knowing the cause from which it arises: but whatever the cause may be, it will be of much consequence to regulate the treatment so as to prevent a fullness of blood, on the one hand, and too slow an action of the bowels, on the other. When a cow has therefore slipped her calf, in the next gestation she should be very early bled, her body should be kept open by cooling physic, she should not be forced to take any more exercise than what is absolutely necessary for her health, and her interfering with other cattle guarded against, by keeping her very much by her-

self. At the same time, it must be observed, that though it is necessary to preserve a free state of the bowels, a laxity of them will often produce this accident: thus cows fed very much upon potatoes, molasses, and such other watery food, are very apt to sink, from their laxative effects. In the food of the cow at this period, a proper medium should be observed, and it should consist of a due proportion of other vegetable matter mixed with the fodder, so as the bowels may be kept regularly open and no more.

Many writers have recommended certain remedies for preventing this accident; the author does not see where they can be very useful. If, indeed, the cow is low in condition, strengthening medicines will be of service; and where, also, this accident is the effect of any peculiar nauseous smell, this may be counteracted by producing a stronger and opposite smell to that which gives offence.

One of the best means of doing this is contained in the following recipe, which was used by the author's father with uncommon success for a number of years :

Take of Barbadoes Tar, three ounces,
Balsam of Sulphur, three ounces,
Rectified Oil of Amber, one ounce,
Fine Oil of Thyme, one ounce,
Animal Oil, half an ounce.

To be well mixed together, and, in using it, a little is to be rubbed upon the parts where the cows commonly smell each other ; to be repeated occasionally as it wears off the parts.

It was formerly observed, that this delicate sense of smell is peculiar to the cow. Of what nature that odour is which gives offence, we cannot altogether be certain ; but the author has remarked that its effects occur at one season more than at another, and particularly when the weather has been wet, and the cows have long been kept at grass. From this fact it will appear, that the smell is of a vegetable nature, and connected with their feeding at that time.

CHAP. XIII.—*Affections of the Udder.*

DURING the last months of gestation, from the sympathy that is known to exist between the womb and the udder, a greater quantity of fluids are directed to this organ, which nature has wisely intended should serve for the future nourishment of the young when it is separated from the mother. Though the udder begins to swell in the last months of gestation, it is not till towards the period of calving that a great accumulation of fluid, or milk, is in it. Sometimes it becomes troublesome, and this accumulation is a proof that nature has finished her business in the womb, and that the growth of the calf is nearly completed. This accumulation of milk in the udder often proceeds to such a length, that the vessels become ruptured, a circumstance which is also favoured by the depending si-

tuation of the part, which gives to the circulation, when increased by any cause, a greater force and fullness. It is of material importance that this accumulation be prevented from going to excess, both as occasioning very uneasy sensations to the animal, and also where it proceeds so far as to produce a rupture of the vessels, by its injuring the future secretion of the milk.

Though this accumulation does not in general proceed so far as now stated, yet it is proper that every cowkeeper or farmer should be aware of the consequences to which it may lead ; and the first step, therefore, as soon as the udder appears tense, full, and highly extended, and the vessels under the belly, or the milk veins, ready, as it were, to burst, is to lessen the general fullness of the system by bleeding and purging. The quantity of blood to be taken at a time should not be less than three or four quarts ; but

this must be regulated by the appearance and condition of the cow. The purge the author generally prefers on these occasions is the Epsom salts, in the following form :

Take of Epsom Salts, from one to two pounds,
Nitre, two ounces,
Turmeric Powder, half an ounce,
Ginger Powder, one ounce.

Mix the whole together, to be given to the cow in two quarts of oatmeal gruel, with half a pound of treacle ; and to be repeated as circumstances may require.

Though this accumulation is troublesome, it is a favourable sign, both of the health of the animal, and that she promises to be a good milker : but to prevent this inconvenience altogether, the diet of the animal should be restricted in the latter months, and she should be confined solely to an inferior feeding. This will be more necessary to be observed where a cow has suffered from this

inconvenience in her former gestation ; for the same circumstance may always be expected to happen in a similar situation, and accordingly should be guarded against.

The rupture of the smaller milk-vessels, which takes place in violent distentions of this kind, can only be known after calving ; for the milk, when first drawn, will appear bloody, containing that portion of blood which filled the small vessels at the time of the accident, and which is retained in the udder, along with the secreted fluid, till the latter begins to flow, or is drawn off by the hand of the milker.

CHAP. XIV.—*Of the Gravid, or Impregnated Womb.*

HAVING now finished with the diseases of gestation, what may be termed the preliminary subjects of this work, before proceeding to the operation of calving, according to the plan laid down, it will be useful to give a view of the anatomy of the gravid womb, or the structure of that organ where this operation of calving takes place, and the contents of which have been already described. It is by understanding this structure that the operator is enabled to save the life of the animal under those unfavourable circumstances of calving which too often occur; and for want of this knowledge the cowkeeper is subjected to the loss of many animals which might otherwise be readily saved. This the author has witnessed innumerable times in

his own practice; and though it may seem like a reflection on many of his professional brethren, yet he will maintain, that in the exercise of no business is science more necessary, or an accurate knowledge of the parts required, than in that which regards the extraction of the calf, or the delivery of the cow.

General Structure of the Womb.

The womb of the cow is particular in its structure. It forms a large oval, having two extensive cornua, or horns, appended to it. It consists almost entirely of muscular fibres, with a large proportion of blood-vessels, and a corresponding quantity of cellular matter, which allows its more ready increase or extension. The internal part of its surface is every where beset with a number of spongy bodies of a glandular texture, to which the placentæ of the calf are fixed, and from which a mucilaginous or milky liquor can be press-

ed, which, as described in a former chapter, serves for the nourishment of the calf, and is conveyed to it through the medium of the umbilical cords. These spongy bodies every where surround the inside of the cornua, or horns, as well as the womb itself; and thus nature has provided that the calf should derive its nourishment from an extended surface, proportioned to what its wants require.

Extent of the Womb.

The length of the womb in the natural state generally measures, from the shape, or entrance into the vagina, to the end of the horns, two feet eight inches: in the latter months of gestation its length is extended from two feet eight inches to six feet and a half, or seven feet. The horns are subject to the same changes as the other parts of the womb; and, at the time of extracting the calf, the one where it lies will often measure no less than six feet.

Observations on the Gravid Womb.

No subject is perhaps more wonderful than this of the changes produced by impregnation. That a body originally so small should acquire so extensive a size, and should return again to its former state, without much inconvenience or derangement of the animal, and without any part of its structure being weakened, is what must excite surprise. On the contrary, with its enlargement its powers are increased, and it is capable of the strongest resistance, as is known to every operator, when he is obliged to employ manual assistance in attempting to extract the calf.

Muscular Structure of the Womb.

The muscular fibres of the uterus, or womb, run in different directions in the several divisions of it; towards the bottom they take a spiral direction, by which means, when they act, the bottom of the womb is drawn towards the mouth, and thus its contents are

thrown forwards in order to be expelled. At the neck the fibres, on the contrary, observe a circular course, and thus they prevent the escape of the contents of the womb, unless the action of the bottom is so great as to overcome their resistance, which nature has provided shall not take place, without some extraordinary cause, till the time of delivery, when they are so much weakened by extension as to be easily overcome by the action of the other parts.

General Thickness of the Womb.

In its natural state, the thickness of the womb is not more than half an inch; but when pregnant, it acquires, along with its increased vascularity, an apposition of new matter, which gives it additional thickness and strength. Hence its rupture is a rare circumstance, either during gestation or in the time of delivery; though it is often known to take place at the latter period, from the

rude attempts of ignorant operators. A remarkable case of this kind lately came to the author's knowledge, where an eminent veterinary surgeon was concerned, and where the poor animal fell a victim to this accident, in consequence of improper management.

In thus describing the anatomy of the womb, we must attend to those parts more immediately connected with the extraction of the calf. In this view, its neck and mouth are the parts that require principal attention, and from the state of which an opinion is formed of the disposition to delivery, and of the progress of this operation.

Mouth of the Womb.

In its natural state, before impregnation, the mouth of the womb, when touched by the finger introduced into the vagina, or sheath, resembles the mouth of a tench, or young puppy, being divided into two lips,

between which the opening of the womb is placed. This opening, in the natural state, is not larger than a goose quill, but it receives some degree of expansion at the time of copulation, a proof of its muscular nature; and at the time of delivery, this expansion becomes so great as to admit the passage of the calf and its containing membranes. It is in the resistance given at this part to the efforts of the operator, in preternatural cases, that the chief danger arises to the animal, from the womb being frequently lacerated, which shows the necessity for a proper acquaintance with the parts on which such exertions are to be made.

Neck of the Womb.

The neck of the womb is generally in length about two inches, and is occupied by the bull in copulation, the success of which process will be much influenced by the penis reaching this part. The neck is also the division of the womb which becomes last ex-

tended in gestation ; and, indeed, no change is perceptible on it till towards the end of the seventh or eighth month. Towards the end of gestation these parts acquire a soft slippery state, from an increased discharge of the mucous glands, which lubricate their surface, and that of the vagina, being intended by nature as a means of preparing them for yielding to the efforts of the calf in forcing its way to delivery ; and this means which nature employs should in all cases be imitated, by the use of lard, milk and water, or other emollient substances, where the usual mucus is deficient.

The chief extension of the womb arises from its fundus, or bottom ; and in the cow, as already noticed, it possesses a strong muscular texture ; and these muscles, by having no fixed points, and not being tied down, can be brought to contract, by their own powers, to any degree or extent, which is

necessary to expel the contents of the womb, where the latter are placed in a direction fit for delivery. In this view, the larger the womb of the animal, the more extensive will be the power of its muscles: and the size of the womb, it is to be observed, is not always in proportion to the size of the cow. It is chiefly round this part of the cavity of the womb that the cotilydons, or papillæ, forming the placentæ which nourish the calf, are placed. These cotilydons are in very great number, often to the extent of fifty or sixty: they are easily separated from the womb without laceration, but it requires to be done in a particular manner; and when this separation is properly made, there immediately issues a milky liquer from the papillæ, or glands of the womb; and this part of the surface of the womb may be compared, when deprived of the cotilydons, in appearance to a honey-comb. (See Plate IV. Fig. 2.)

The womb is, perhaps, more than any other part of the animal, supplied with blood-vessels; and this is absolutely necessary, in order to the extension it receives from gestation, which can only be produced by an increase of circulation to it, and by no other means. This the author has made apparent, by delineating a part of the vessels of the womb, (as in Plate III.); but though the vessels of the womb are considerably enlarged during gestation, cows are not subject to floodings at this period, and that arises from the different structure of the placentæ, compared to that of the human subject, and also from the different posture of the animal.

Horns of the Womb.

The last part of the womb is the cornua, or horns, which, in their shape, when inflated, resemble entirely the horns of the ram (see Plate I.) Like the other parts of the womb, they become expanded by gestation; and they would seem as intended by

nature for appendages to the womb, that as the calf increases it may be more easily stowed, and prove, by its position, less cumbersome to the mother. This conclusion is rendered farther probable by their surface being covered with placentæ as well as the womb, and consequently supplying nourishment to the calf in the same manner.

The extremities of the horns, or cornua, terminate in the Fallopian tubes, which are a passage in each horn, leading to the ovaria, or what are termed the female testicles, (see Plate III.) The size of this passage is very small, and the length very considerable: the extremity of each passage at the ovaria has a particular fringed appearance, which, in the time of copulation, becomes erected, and embraces the ovaria, from which a something is derived, that is carried through this passage into the womb. This something is clearly proved by the appearance of the

ovaria when a cow has once calved ; for on opening the ovaria, there is found a cicatrix, or scar, from which a yellow liquor can be pressed ; and this appearance takes place after every impregnation, and is never visible where a cow has not conceived. Indeed, so regular is this appearance, that the number of calves can be traced that the cow has had : the only matter that admits of dispute is, whether impregnation actually takes place in the ovaria, or Fallopian tubes, or whether it is not completed till it reaches the womb ? The latter is the opinion of the author ; and he judges of it from the first appearance of impregnation being discovered in the womb, and from it also being doubtful whether the male semen reaches the ovaria : indeed, he is confident that *the matter*, or *that something* necessary from the female to conception, descends from the Fallopian tubes into the womb, as before explained, and meets with the male seed in the middle of the womb,

where impregnation immediately takes place. The process being finished, the semen, by its continuance, proves a necessary stimulus, and thus induces all the changes that afterwards occur in the formation of the calf, and the enlargement of the organ. From this view, the author is farther of opinion, in order to copulation being prolific, it is absolutely necessary that the semen should be retained, and that the penis of the bull should be within the uterus at the time of emission.

In concluding this subject, the author will here give an explanation of the Plates of the Gravid Womb.

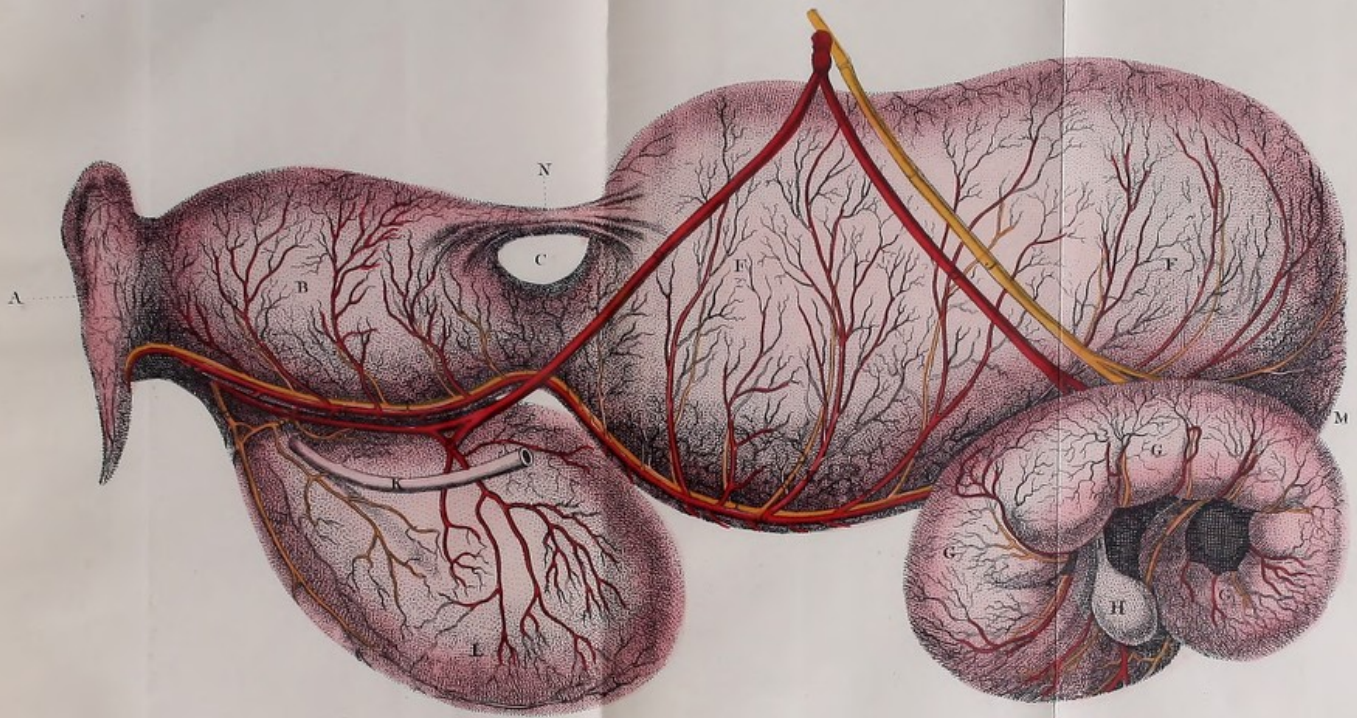
Explanation of the Plates of the Gravid Womb.

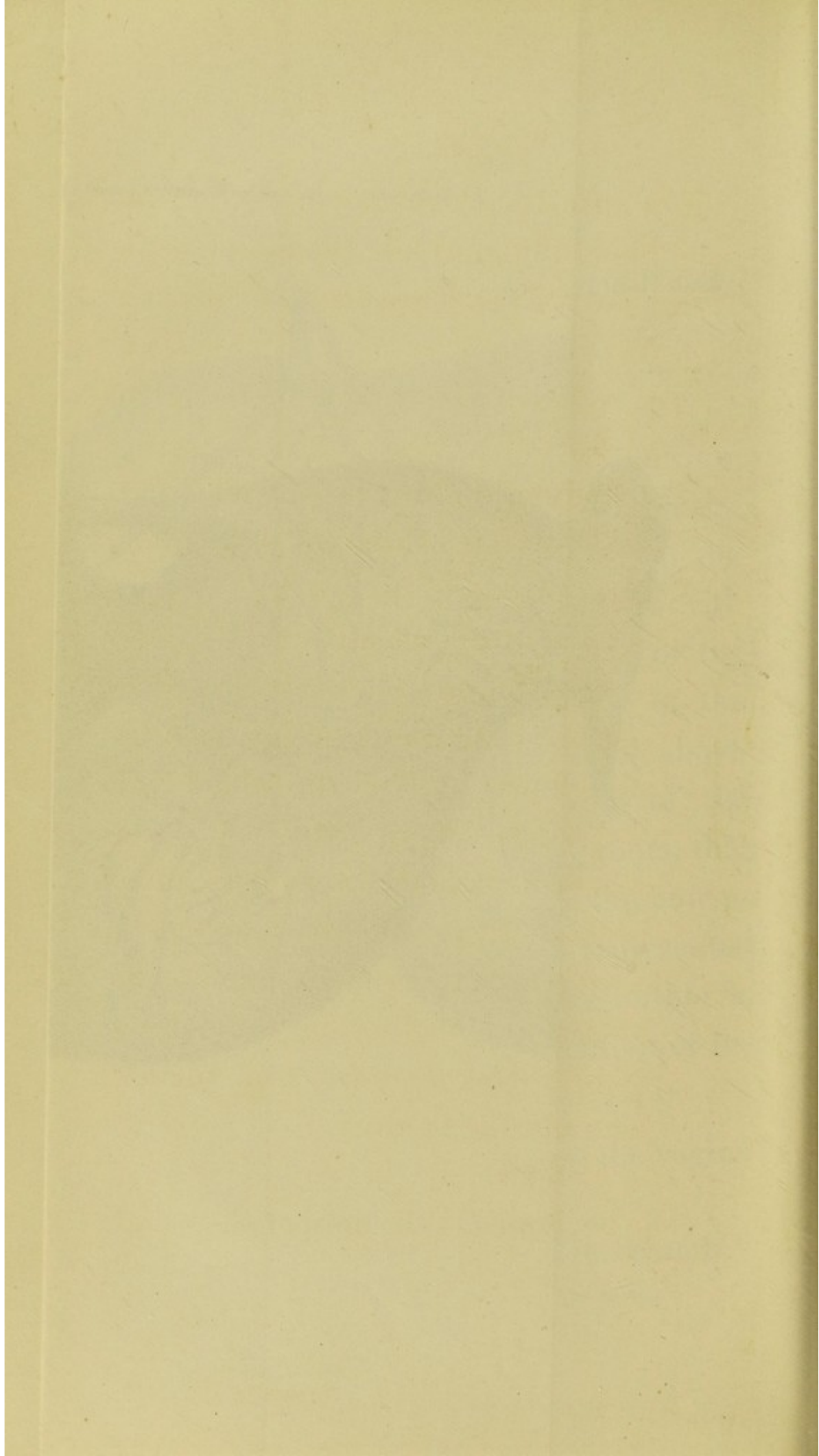
TABLE or PLATE I.

This Table or Plate represents a side view of the womb, and bladder inflated, with the muscular parts cut off, in order to show the numerous quantity of veins and arteries with which it is invested. The regularity of the figure is very striking, and the size of the cornua, or horns, is very conspicuous, showing them to be proper appendages of the womb, for the purpose of allowing room, that the calf may lay conveniently for the cow as it increases in size. The womb represented in this Plate was dissected by the author in twenty-four hours after the extraction of the calf.

- A The shape, or entrance into the vagina.
- B The vagina.
- c The os uteri, or mouth of the womb.

A side view of the Womb inflated. See Table 1.





- D D The arteries which convey the arterial blood to the womb, bladder, and vagina, for the nourishment of the calf, &c.
- E The arteries which unite to the great aorta.
- F F The body of the uterus, or widest part of the womb, where conception first takes place.
- G G G The horn of the womb.
- H The ovarium, or female testicle.
- I I The large vein which brings back the superfluous part of the blood from the vagina, bladder, &c.
- J The great vein which conveys the blood back after the womb is supplied.
- K The ureter, or tube which unites to the kidney and bladder, for the purpose of conveying the water from the kidney into the bladder.
- L The bladder.
- M The beginning of the horn of the womb.

- N** Part of the muscular fibres, left in order to show the contraction of the os uteri after the extraction of the calf.
- o o** The small veins which bring back the blood after the glands of the womb are supplied.
- P P** The veins which convey back the superfluous blood from the bladder.
- Q** The artery which supplies the bladder.
- R** The small arteries which nourish and supply the internal glands of the womb, for the nourishment of the calf.
- s** The large artery which conveys the blood to the vagina for its nourishment, and is at times ruptured by an unskilful operator in extracting the calf, in consequence of which the animal bleeds to death inwardly.

The Vascular Structure of the Womb.

See Table II.



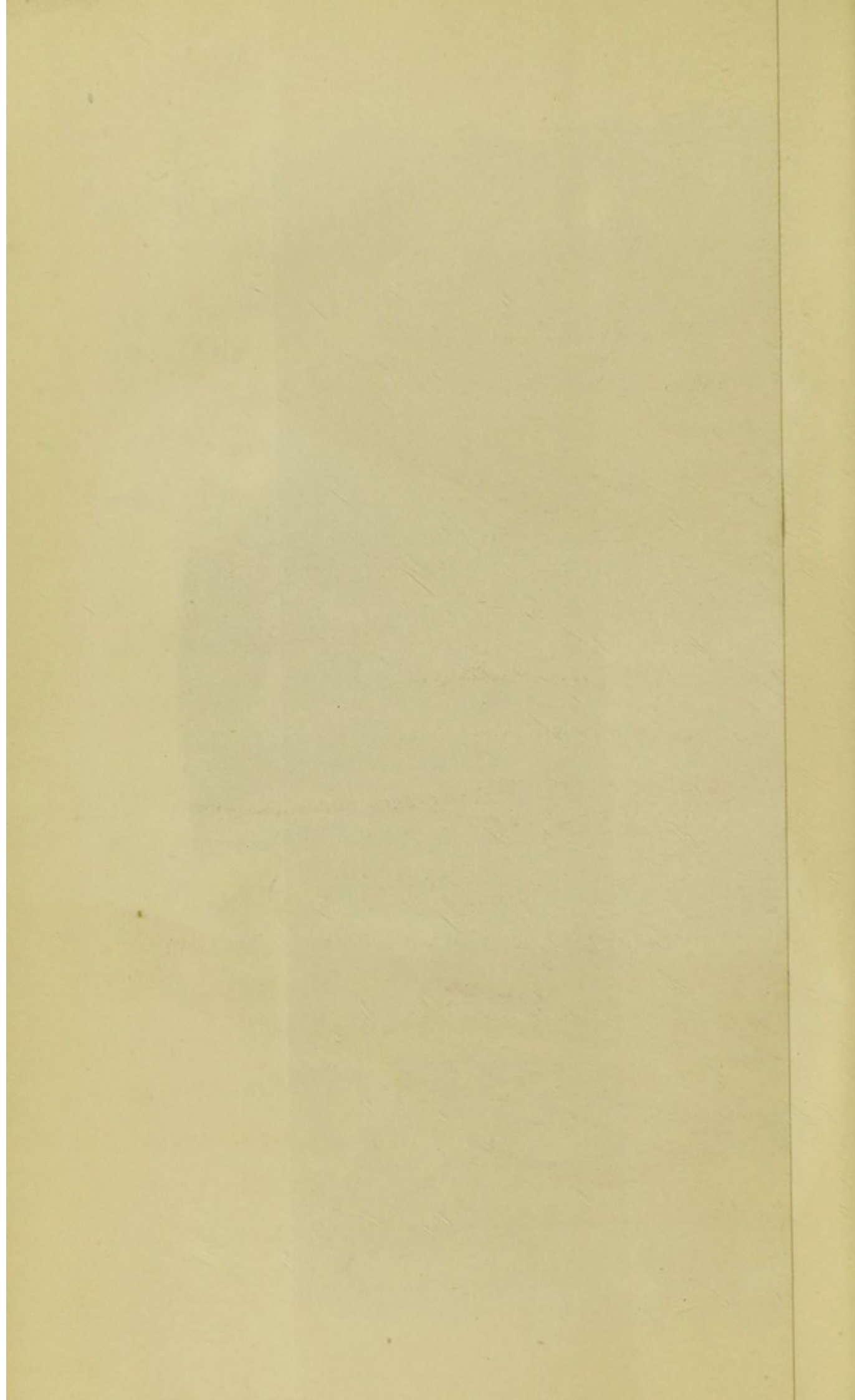


TABLE or PLATE II.

Represents the vascular structure of the womb ; the internal part of the womb is cut open, and its integuments removed, in order to show its vessels every where ramifying or branching out over its surface. The vessels of the womb are derived from two sources, and consist of branches of the spermatic and hypogastric arteries.

A A Shows the vagina, with its internal rugose structure. The size of this part is larger in proportion to the rest of the genital system, and this is necessary, as it is particularly acted upon both by the bladder and rectum in their different operations. The size of this part, in the natural state, is about a foot and a half, and therefore exceeds even the size of the uterus.

B B The mouth of the womb, or uterus, in

order to show its thickened and tench-like appearance before impregnation.

- c The center of the uterus, where conception first takes place, and where there appears less vascularity than in the other parts of its surface.
- D D The commencement of the cornua, or horns of the womb, where they separate and branch off in two divisions; the size of which is different after impregnation, according as the fœtus occupies one division or the other.
- E E The Fallopian tubes, proceeding from the cornua, or horns of the womb; and advancing in a waving direction till their extremities reach the ovaria, the fringed ends of which are spread upon the ovaria, and in copulation are said to carry down the female germe to the womb.
- F F The ovaria, or female testicles, where the rudiments of the calf are said originally to exist.

- GG The branches of the spermatic arteries, which principally go to the ovaria and parts adjacent.
- HH The vermilion appearance of the small branches of the spermatic arteries, which are woven together like a bundle, as they proceed to the ovaria.
- II The corresponding veins of the spermatic vessels, which are distributed in the same irregular manner.
- JJ The hypogastric arteries, which convey the principal supply of blood to the womb, and of course contribute most to the nourishment of the fœtus.
- KK The corresponding veins, by which the blood is returned from the womb, as well as by the spermatic veins, into the general circulation, or vena cava.

TABLE or PLATE III.

Fig. 1.

Represents the fœtus floating in the liquor amnios, surrounded with the membranes, placentæ, and blood-vessels, as it appears at the expiration of four months after conception.

AAAA The upper and widest part of the membranes, which resembles a globe; for the explanation of these parts, see Conception, Chap. III.

B The part of the membranes which unites to the unimpregnated horn of the womb. The placentæ here appear very faint, nor is it much extended with the liquor amnios, on account of the fœtus not taking its station in this horn of the womb.

c The part of the membranes which unites to the horn of the womb wherein the fœtus takes its station, in the latter

The Calf.

Placenta and Gland of the Womb.

See Table 3.

Plate 4.

Fig. 1.

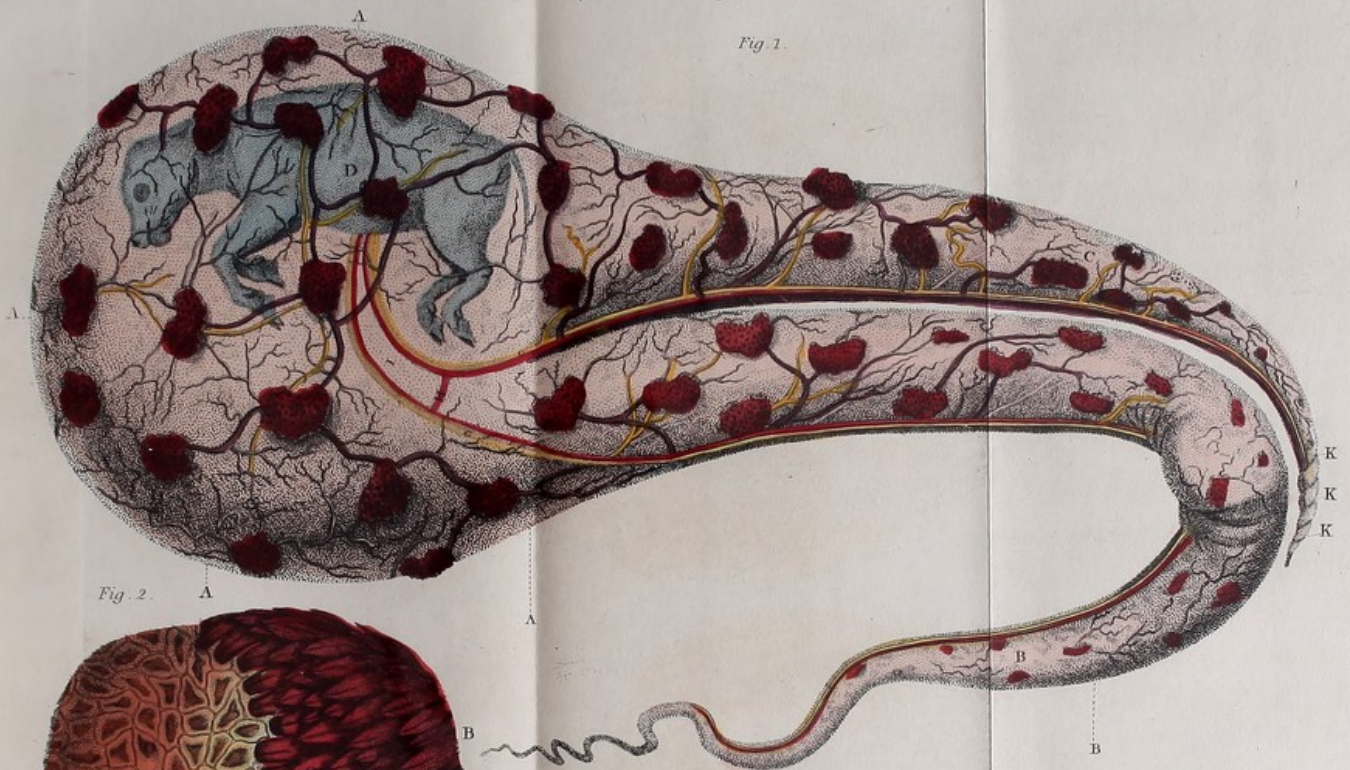
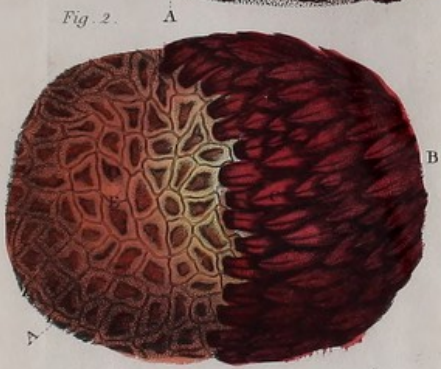
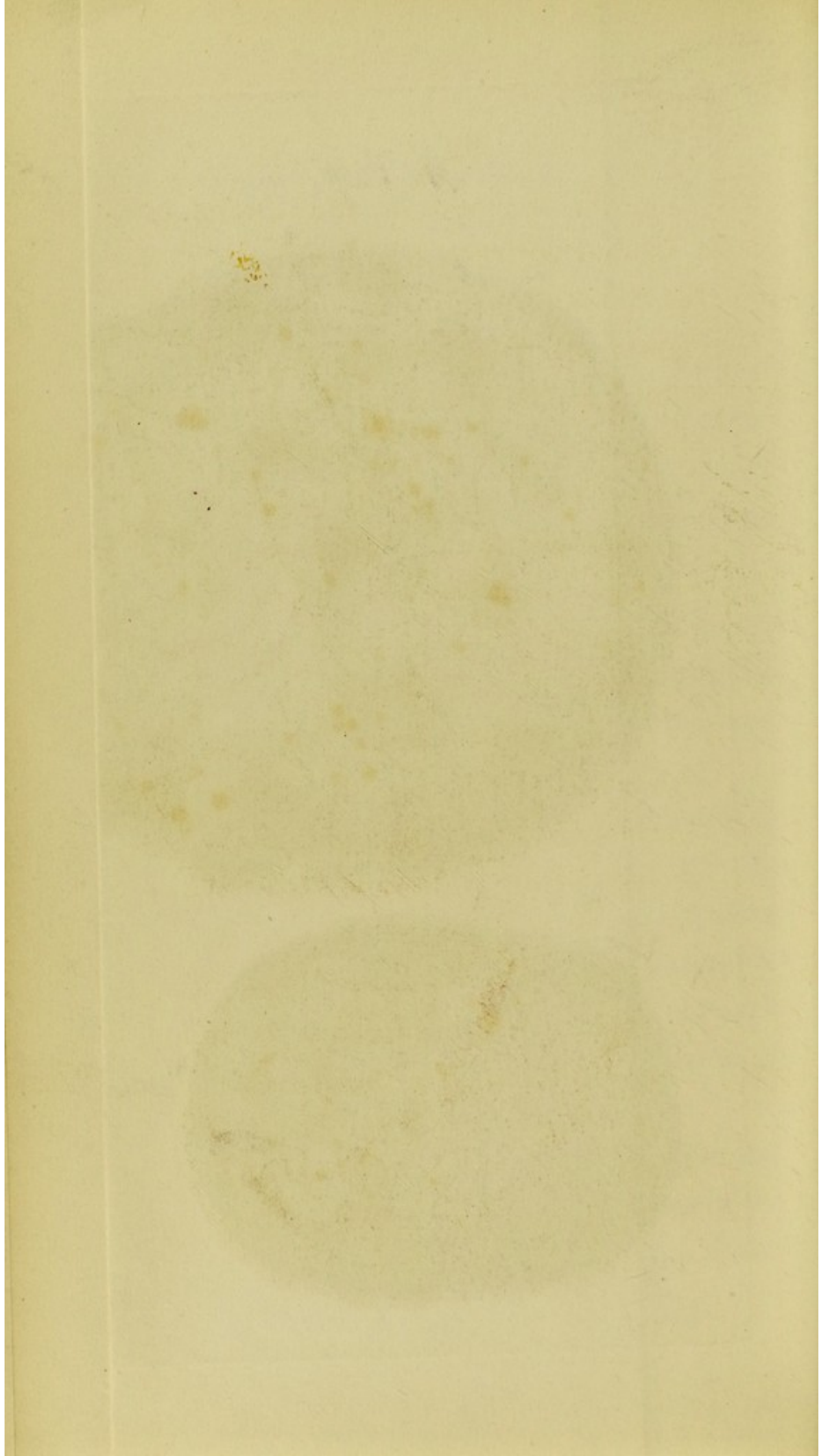


Fig. 2.



T. Wedderburn del.

J. P. H. Sc.



- months of gestation, and is much extended with the liquor amnios.
- D The fœtus floating in the liquor amnios.
- E The spongy parts of the placentæ which unite to the glands of the womb.
- F F The arteries which convey the arterial blood from the fœtus to the membranes for their nourishment, after which the superfluous part is taken up by the veins, and conveyed back to the fœtus.
- G The veins which convey the arterial blood to the fœtus, after being absorbed by the placentæ from the glands of the womb; see Circulation of the Blood, Chap. IV.
- H The artery which unites to the two great arteries that convey the blood from the fœtus for the nourishment of the membranes.
- I The passage or tube which conveys the liquor amnios through the bottom of the bladder.

*** The end of the membranes which unites at the very extremities of the horns of the womb, and which appears as if a ligature was coiled round it in five places. This nature has formed, for the purpose, no doubt, of preventing any of the liquor amnios getting betwixt the chorion membrane and the uterus, which would be attended with very dangerous consequences; for was this liquor amnios to get betwixt the chorion and uterus, the membranes would immediately come in contact with the fœtus, and when the fœtus attempted to move or kick, in all probability it would destroy the membranes and blood-vessels, from which accident it would cause the cow to slink.

Fig. 2.

Represents one of the glands of the womb, and one of the spongy substances of the placentæ, half separated from each other, so as to show the honeycomb appearance of the former.

- A The glands of the womb.
- B The placentæ.
- C The pointed processes which unite in the cavities of the glands of the womb, for the purpose of absorbing the arterial blood from the mother for the nourishing of the fœtus.
- D The cavity of the glands of the womb, wherein the pointed processes of the placentæ unite.
- E The blood-vessels which surround the glands of the womb for its nourishment.

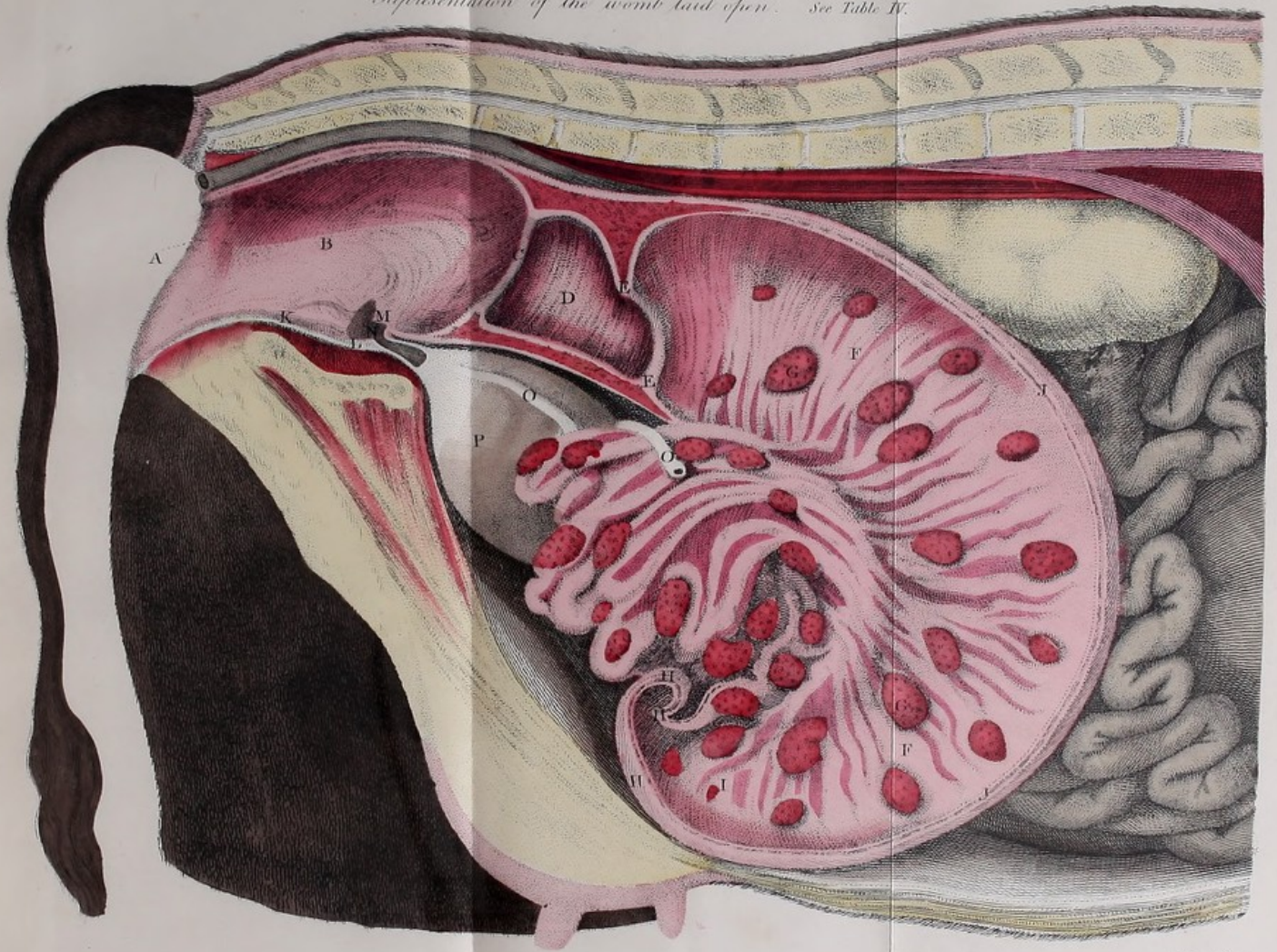
TABLE or PLATE IV.

Represents the womb laid open, in order to show its internal structure and appearance after the extraction of the calf; and also to point out to the operator the parts which are liable to be injured during the operation of extracting the calf; with a representation of the urethra, or water-passage, into the bladder.

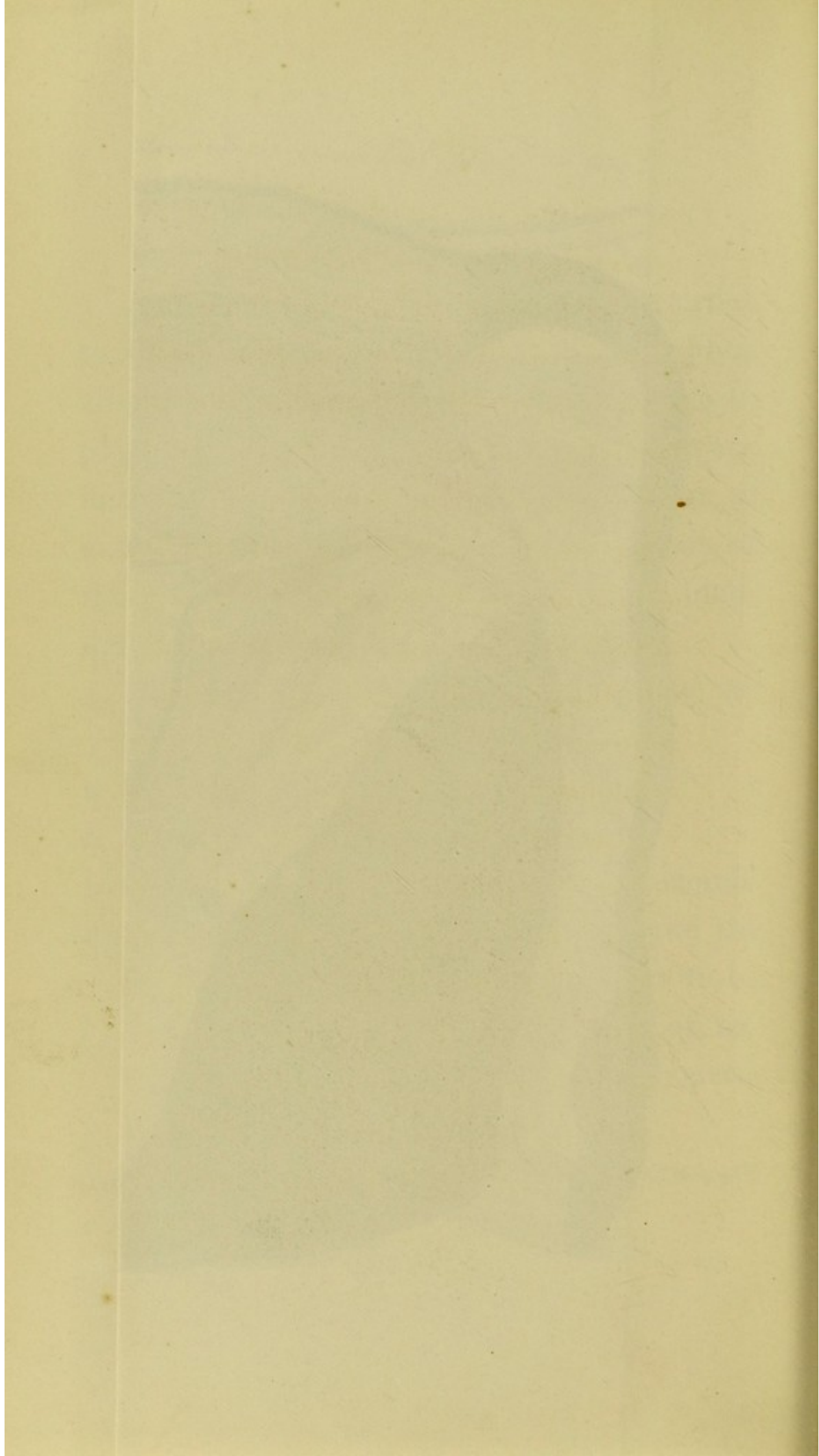
- A The shape, or first entrance to the vagina.
- B The vagina.
- C The mouth of the womb.
- D The os uteri, or passage into the womb.
- EE The internal projecting parts round the os uteri, which are most liable to be injured during the operation of extracting the calf by unskilful operators.
- FF The internal surface of the uterus, or womb.

Representation of the womb laid open. See Table IV.

Plate II.



Swine sculp.



- Г Г** The glands of the womb, with which the
 processes of the placentæ unite.
Н Н The extremities of the horns of the womb.
І The body of the horns of the womb,
 with its glands, the same as the sur-
 face of the uterus.
Ј Ј The cut edges of the uterus.
К The passage to the orifice of the urethra
Л The bottom of the passage.
М The orifice of the urethra.
Н The urethra.
О The ureter.
Р The bladder.

CHAP. XV.—*The Extraction of the Calf.*

THE Extraction of the Calf is the next subject to which the author will direct the attention of the reader. At the end of nine months, or two hundred and seventy-three days, as formerly noticed, the period of gestation is complete, and symptoms of calving begin then to appear; previous to this about a fortnight or three weeks, what is termed springing takes place. Thus the space between the shape and udder becomes redder and more florid than usual; the udder, as formerly observed, is gradually distending, and the ligaments, or joinings of the bones, termed the couples, on each side the rump, are by degrees giving way, till an yielding, or something like a separation of them, is felt. When these appearances all show themselves, the cow is at her full time, and should be narrowly watched, as she may hourly be ex-

pected to calve. In some cases, the period of these appearances approaches nearer to the actual time of calving; and in other instances they begin much earlier, even at the distance of several weeks, particularly with young cows in their first calf.

Symptoms of Calving.

When the operation of calving actually begins, then signs of uneasiness and pain appear; a little elevation of the tail is the first mark; the animal shifts about from place to place, frequently getting up and laying down, not knowing what to do with herself. She continues some time in this state, till the natural throes or pains come on; and as these succeed each other in regular progress, the neck of the womb, or os uteri, gives way to the action of its bottom, and of its other parts. By this action the contents of the womb are pushed forward at every throe, the water-bladder begins to show itself beyond the

shape, and to extend till it becomes the size of a large bladder, containing several gallons; it then bursts, and its contents are discharged, consisting of the liquor amnios, in which, during gestation, the calf floats, and which now serves to lubricate the parts, and render the passage of the calf easier. After the discharge of the water, the body of the womb contracts rapidly upon the calf; in a few succeeding throes, or pains, the head and feet of it, the presenting parts, are protruded externally beyond the shape. (See *Natural Position*, Plate V.) The body next descends, and in a few pains the delivery of the calf is complete.

This finishes the most important part of the operation; and in a little time afterwards some trifling pains occur, which separate the placentæ, or cleansings, and thus the whole business becomes finished. Such is the usual course of what may be termed a natural

calving; and the time of it seldom exceeds two hours in the whole, though at times it is protracted to five or six; and the author has even known it so long as twelve hours, particularly when the water has been early evacuated, or the water-bladder has broken before being protruded beyond the external shape.

TABLE or PLATE V.

This Plate represents the calf advancing in its natural position, with a complete view of the placentæ and blood-vessels which surround it; the water-bladder is also seen advancing, the bladder of urine turned a little to a side, and the unimpregnated horn of the womb.

A The vagina.

B The water-bladder.

CC The feet of the calf.

D The head of the calf.

EE The placentæ.

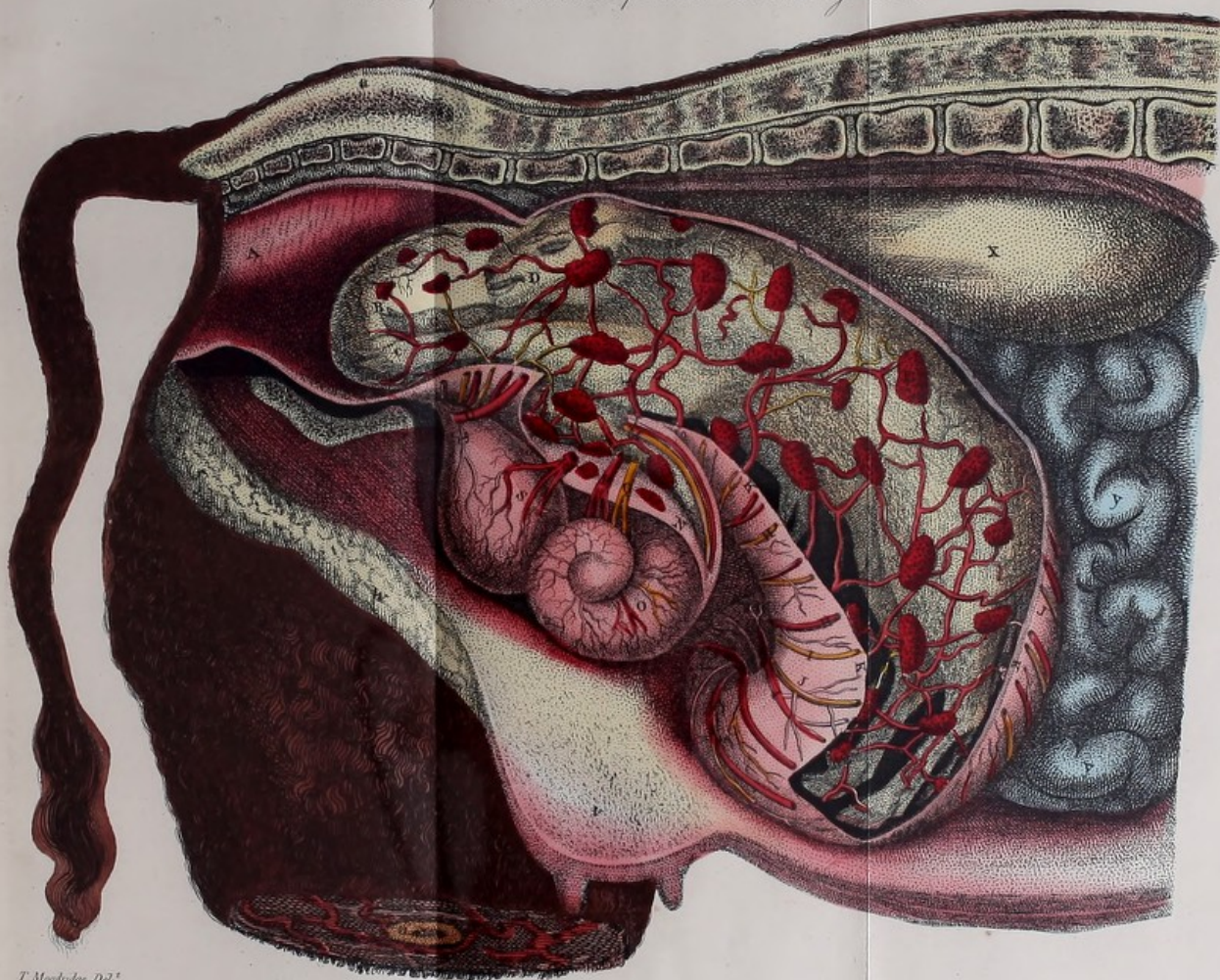
FF The arteries which convey the blood to the membranes for their nourishment.

GG The veins which convey the blood from the mother for the nourishment of the fœtus.

HH The arteries which convey the arterial blood to the womb for the nourishment of the fœtus.

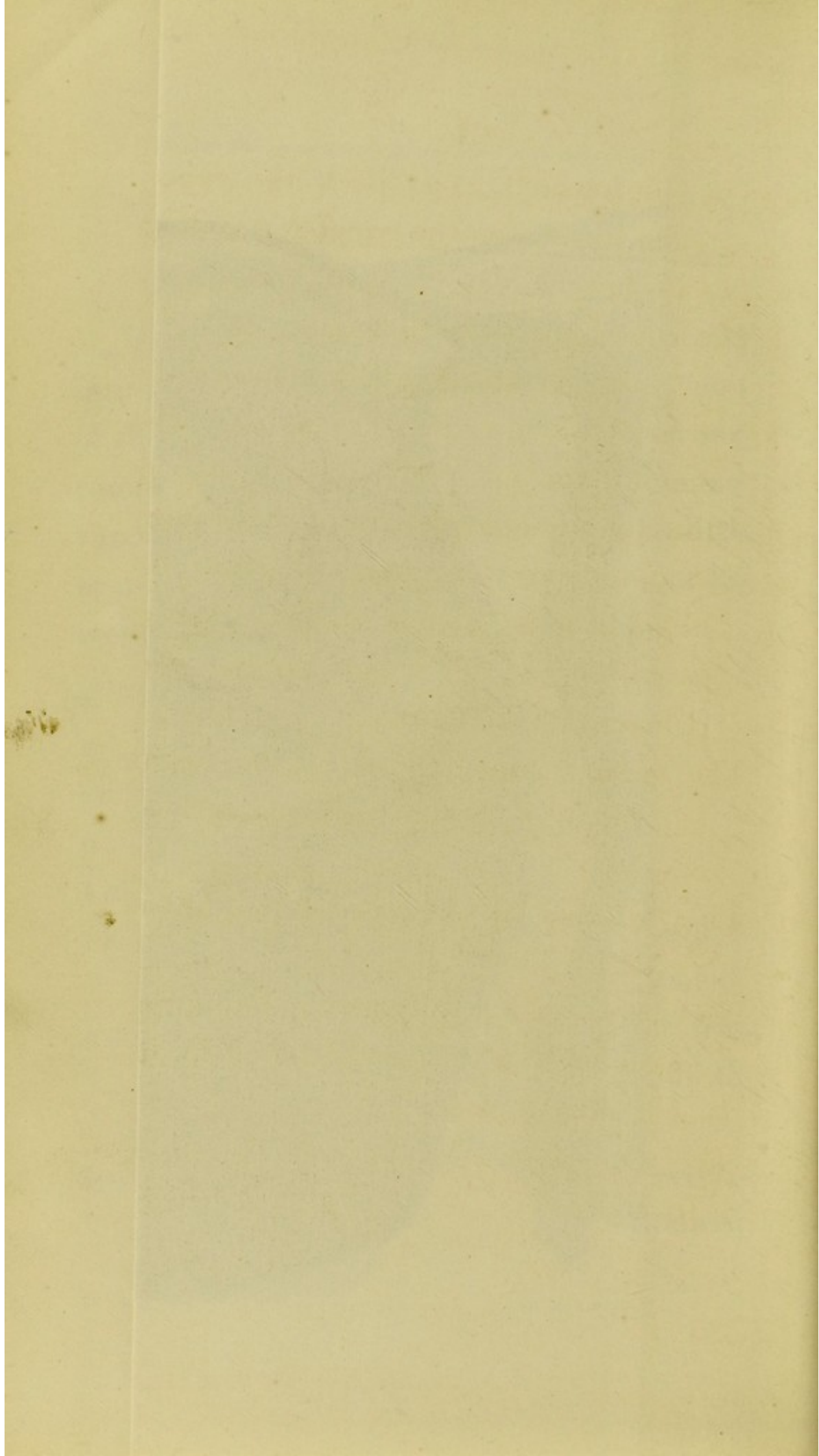
The Calf in its natural position advancing see table V.

Plate 5.



T. Monro del.

Pub. scalp.



- II The veins which bring back the superfluous blood after the womb is supplied.
- JJ The uterus.
- KK The cut edges of the uterus.
- L The umbilical artery which conveys the arterial blood from the fœtus to the membranes for their nourishment in the unimpregnated horn of the womb.
- M The umbilical vein which conveys the blood from the glands of the unimpregnated horn of the womb for the nourishment of the fœtus.
- N The unimpregnated horn of the womb laid open, to show its internal surface, &c.
- O The external appearance of the blood-vessels.
- P The artery which supplies the unimpregnated horn with arterial blood for its nourishment, &c.
- Q The vein which conveys back the superfluous blood.

- r The artery which supplies the bladder, &c.
- s The bladder.
- t The vein which conveys back the superfluous blood.
- u The ureter, which conveys the urine from the kidneys into the bladder.
- v The udder.
- w The cut edges of the thigh, or fat-like appearance, which joins to the udder.
- x The kidney, as it appears before the fat is taken off.
- y y The intestines.
- a The internal appearance of the rump-bone.
- b The haunch-bone.
- c The great aorta, or artery, cut open.

Treatment of Natural Calving.

The treatment of natural calving is very simple, and requires only that the natural throes or pains should be allowed to go on without any interruption on the part of the operator, till the expulsion of the calf takes place. By a natural calving is understood, that position of the calf delineated in Plate V. where the head and fore feet are the first presenting parts on the breaking of the water-bladder; previous to which, the operator, in order to satisfy himself, may examine or search the cow, in the manner formerly recommended in Chap. XI. page 69, that the position, whether natural or not, may be fully ascertained, and the business left to the regular efforts accordingly.

Where the water-bladder breaks early in calving, and before the mouth of the womb is sufficiently expanded, the process is often slow, and it is a considerable time before any

part of the calf makes its appearance. In that situation, it will be necessary to give some assistance, which consists in introducing the arm into the womb, and laying hold of the fore legs till they are brought into the passage, gradually assisting at every pain or throe: this being accomplished, the rest of the business is brought easily to a conclusion. This assistance of the operator is rendered the more requisite, as in such slow cases the couples are found so extremely narrow, that the cow is unable, by her own efforts, to expel the calf; this circumstance is most apt to happen with her first calf.

Though the operation of calving has been mentioned as quick or rapid on the whole, yet the exact time when it will be finished, after the breaking of the water-bladder, cannot be so readily determined, and the cow should never be left till the operation of calving is finished.

This operation is certainly a natural process ; and the author particularly wishes to caution against any interference where it can be avoided ; nature points out to the animal herself what is fittest to be done ; for when the pains commence, she moves about for some time, and occasionally, in the intervals, lays down. As the business proceeds, and the pains increase in strength and rapidity, she confines herself to a lying posture, and in this posture she is delivered of the calf.

When we reflect on this conduct of the animal left to herself, we cannot too much reprobate the advice of those who recommend the driving her while in the act of calving, or immediately before it takes place. This proceeds from an erroneous idea that she will calve much easier, and with less danger ; but so far from this being the case, the author has known a great many instances where the driving has proved the death of the animal, by overheating her, and thus producing in-

flammation, and all its bad consequences. Indeed, so far has this cruel practice been carried, that the author has seen several cows driven from Islington to various parts of the town, with the fore feet, or other parts presenting, out of the cow, while every ten or twenty yards she would make motions for calving, which were only interrupted by the driver beating her and hurrying her on. In one instance, the author saw a cow, coming along the New Road towards Paddington, which, in spite of all the cruel attempts to get her forward, lay down, and would not get up again till she had actually calved, which happened in ten minutes. In this case, it must appear perfectly clear, that if the position of the calf had not been a natural one, it might have been the death of the animal; or, if the weather had been unfavourable, she might have suffered so much as to have prevented her recovery. Every rational man will agree in opinion with the author, that the above practice is both cruel and incon-

sistent in the extreme; and this is confirmed by what he has already noticed, that the animal herself, as soon as the pains of calving come on, immediately leaves the rest of the flock, and retires to some corner of the field, or under a hedge, in order to prevent the other cows, or any thing else, coming near that may disturb her in bringing forward her young.

This plan, which nature herself dictates, should be allowed on all occasions to take place, and no interference ever made, unless absolutely necessary, from certain unfavourable circumstances occurring, for the preservation of the animal. The above directions will perhaps be sufficient in what regards natural calving; the chief object that the author has in view, is to guard against any attempts of giving assistance where none are necessary; for by leaving every thing to the natural efforts, the calving will be successful, and the recovery of the animal much speedier, than where any undue interference has taken place.

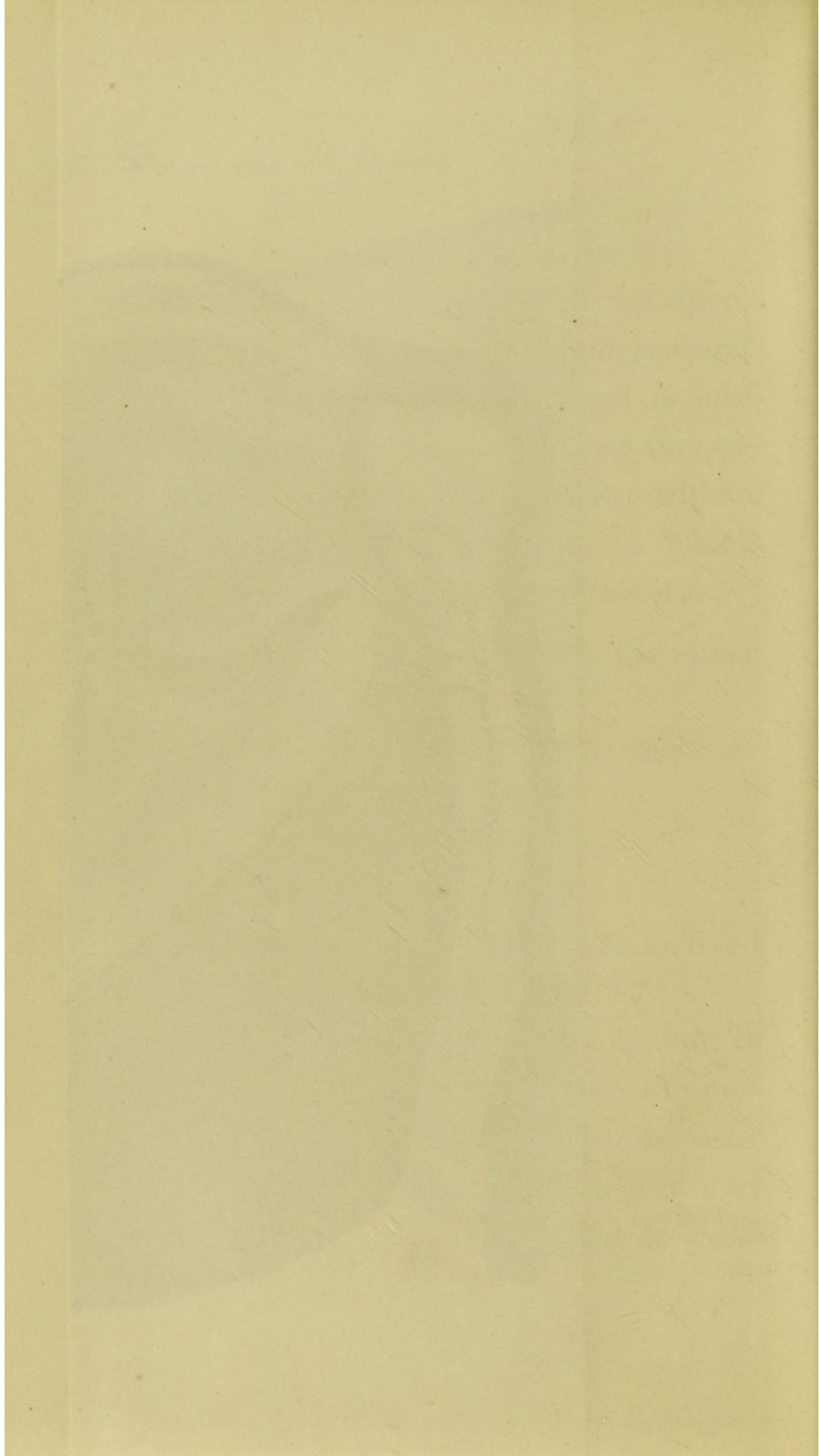
TABLE or PLATE VI.

This Plate represents the womb cut open, in order to show the calf in a preternatural position. In this position the head is only advanced through the os uteri into the vagina, its fore feet under its brisket; with a view of the cords, and the parts to which they are to be fixed, in case of necessity.

- A The cord which is fastened to the under jaw.
- B B The cords which are fixed to the fore legs.
- c The under jaw.
- D The vagina.
- E The part where the cords are to be fixed to the fore legs.
- F The part where the skin is to be cut, in order to skin the head, for the purpose of taking it off in desperate cases.
- G The knee of the calf, where a cord may be put round and fastened in cases

The Calf in a preternatural position. See Table 6.





where the feet are too far under its belly to be reached by the operator, by which means the leg may be brought forwards so as to enable the operator to move the cord down to letter E.

- H The extremities of the horn of the womb.
- I The haunch-bone.
- J The rump-bone.
- KK The cut edges of the uterus.
- LL The vertebræ of the back and loins.
- M The horn of the womb.
- N The great aorta, or artery, laid open.
- OO The external parts of the uterus.
- PP The contractile part of the os uteri.
- Q The rectum, or last gut.
- R The back bones.
- S The cut edges of the thigh, &c.
- T The udder.
- U The thigh of the cow.
- V The cut edges of the abdomen.
- WW The hoofs of the fore legs, which are to

be inclosed in the operator's hand till they are brought up into the vagina.

x The kidnies.

y y The intestines.

PRETERNATURAL POSITIONS.

ALL positions different from the natural one already described in Plate V. are named preternatural, and the latter positions are of considerable variety.

POSITION I. (See Plate or Table VI.)

This position is when the head of the calf presents itself without the fore legs making their appearance, and its legs under its brisket, with its knees pressing down on the uterus under the haunch-bone (See Plate VI.) In this situation it is impossible to draw it away without endangering the animal's life,

consequently it should never be attempted. To put the calf in a proper position here, a cord must be put on its under jaw, (See Plate VI.) which will assist the operator in bringing back the head into the vagina: the head is then to be gently pushed back into the womb, by putting the hand against the head or brisket; when so done, search for the knees, or knee, and from thence gradually slip the hand to the hoofs of one of the fore legs; grasp it tight, when it must be carefully brought up into the vagina. The other fore leg is to be adjusted in the same manner; the head is also to be brought up into the vagina with the legs, as represented in Plate V. When all this is completed, the operation of calving will soon be finished, by gradually pulling at the feet of the calf, whenever the throes or pains of the cow come on, which should at all times be particularly attended to, as it is the most proper moment to assist the efforts of nature.

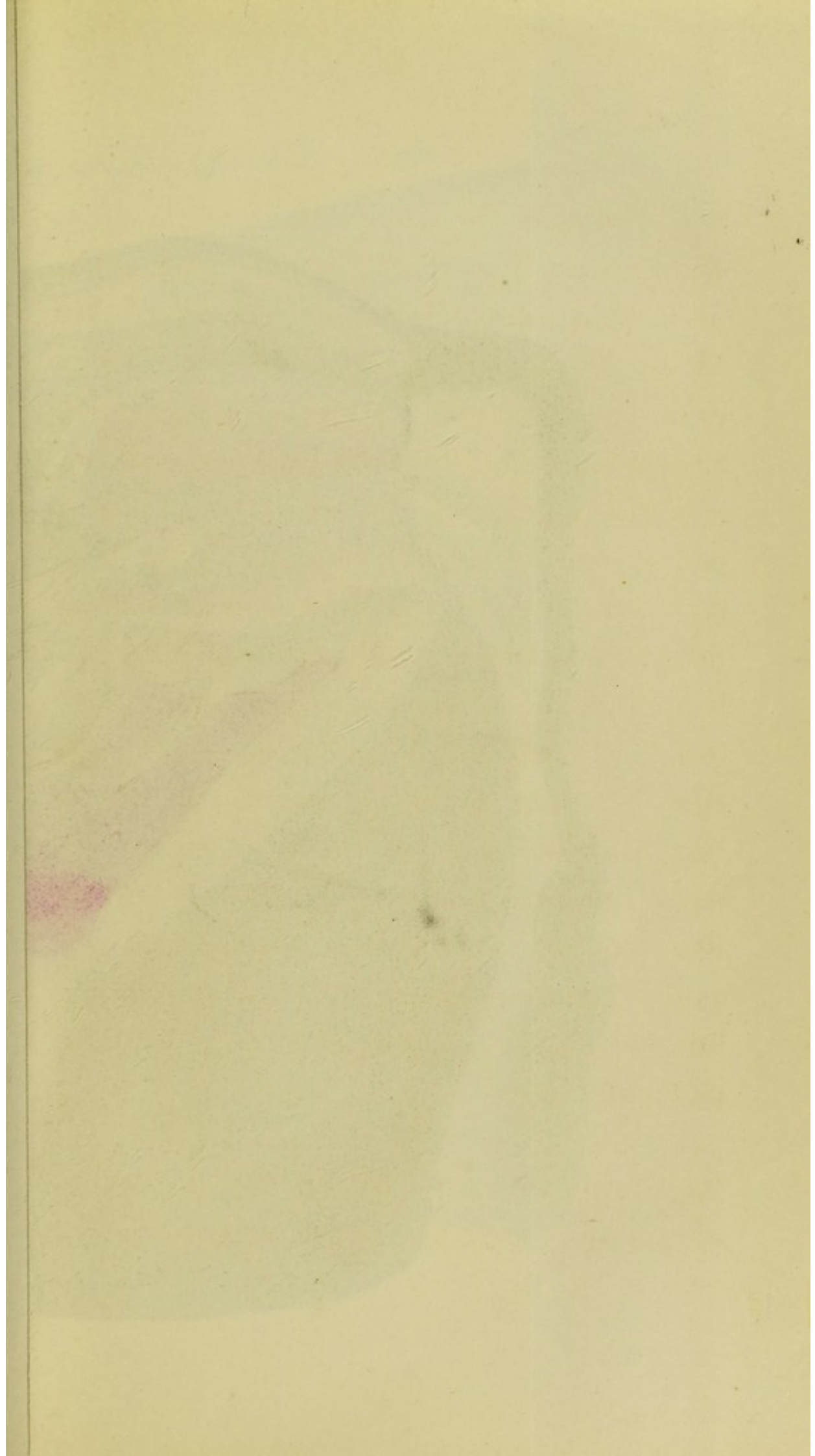
But if the passage to the calf is narrow, and the pains or throes of the cow are violent, from which cause the operator's arm, while endeavouring to get up the feet, frequently becomes cramped, and makes the process of delivery tedious and unpleasant, the author has always made it his practice in such cases to fasten a cord on each fore leg, (See Plate VI.) and by gently pulling the cord with the left hand, while the right has hold of the hoofs, to prevent them injuring the uterus as they pass into the vagina, the extraction may be executed with ease and safety to the animal.

It frequently happens, when the head of the calf only presents itself, and has perhaps been in that situation for some hours before any assistance has been procured, during which time the pains or throes have been very violent, that the calf has been strangled. From this accident the head becomes amaz-

ingly swelled, as well as the vagina and os uteri, from the irritation produced by the situation of the calf, and violent throes of the animal, by which means the passage becomes contracted. Thus situated, it would be very improper, as well as difficult, to put the head back into the womb to get up the feet, as it would certainly cause an increase of inflammation and swelling in the parts, and most likely be the death of the animal. In this case, the head of the calf is to be skinned and cut off with a sharp knife (the form of which will be hereafter explained). The skin is to be cut from the poll of the head right down the front part, till opposite the eye (see letter E); then cut across on each side the head till it is cut all round. The upper part of the head is to be skinned and forced back over the neck; the head is then to be cut off; after which, the skin is to be pulled over the naked bones of the neck, and a cord is to be tied round it to prevent the

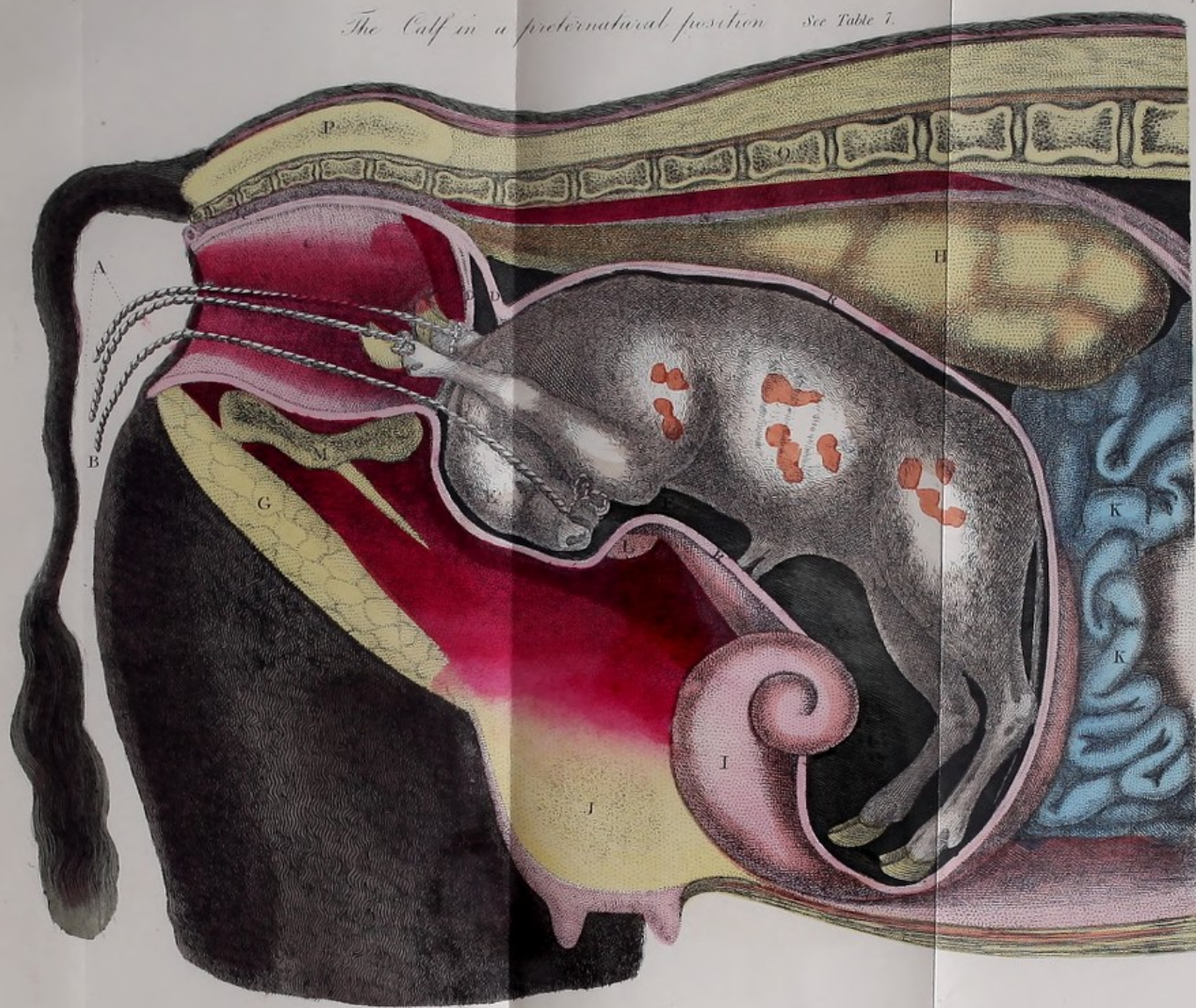
bones injuring the cow, and also to assist in extracting the calf. After this operation is performed, there will be found sufficient room to get the hand to the brisket, in order to push back the calf, and thus to get at the feet, which must be raised up and brought into the vagina, with the assistance of cords, &c. as before described. After all is completed in putting the calf in a proper position for extraction, the operator and assistants are to pull at the cords which are fastened to the fore legs, whenever the throes or pains of the cow are upon her; the operator is at the same time to keep steadily and gently pulling at the cord which is fastened to the skin that covers the neck bone, in order to prevent it injuring the os uteri, or obstructing the delivery of the calf, as well as to assist in the operation.

During the extraction of the calf, the vagina and os uteri are to be well lubricated



The Calf in a preternatural position See Table 1.

Plate 7.



Dark red.

with hogs' lard and milk and water, and a little hogs' lard is to be used to the external parts on each side the rump, called the cuples, which will be of great service in relaxing those parts, and prevent them getting dry, and consequently will make the calf pass much easier.

TABLE or PLATE VII.

This Plate is a representation of the calf in the uterus, with its head under its brisket, pressing hard on the uterus, and its fore legs over its neck, the feet of which are passed through the os uteri into the vagina.

- A The two cords which are fastened to the fore feet.
- B The cord which is fixed to the under-jaw.
- c The vagina.

- D D The os uteri.
 E The situation of the head in the uterus.
 F The part of the uterus to which the
 fore feet are to be put back, so as to
 enable the operator to raise up the
 head into a proper position for ex-
 traction.
 G The fat-like appearance of the thigh of
 the cow.
 H The kidneys.
 I The horn of the womb.
 J The udder.
 K K The intestines.
 L The situation of the bladder.
 M The haunch-bone.
 N The great aorta or artery.
 O The back-bones.
 P The rump-bone.
 Q The rectum.
 R R The cut edges of the uterus

POSITION II. (See Plate or Table VII.)

This position is when the fore feet have advanced through the os uteri, with the head under its brisket, as represented in Plate VII. This is a dangerous situation for the calf; and if it remains long in that posture before any assistance is procured, its death is generally the consequence. In this case, therefore, assistance should be given as early as possible to adjust the situation of the head, which may be done in the following manner: Take two cords, which are to be fastened to the fore feet, (represented in Plate VII.): when this is done, the feet are to be put back into the uterus, as far as letter f. A cord, with a running noose, is then to be put over the fingers, held in a conical form, so as to be able to slip it off with the thumb at pleasure, (the form of which will be hereafter represented); the hand is then to be introduced into the uterus with the cord, which is to be

slipped on the under-jaw, and is there to be firmly fastened on. The operator's assistant is to hold the cord tight, while the operator himself pushes back the calf farther into the uterus, by placing the hand against its neck: when so done, the head will be easily raised up into a proper position, by grasping with the hand the upper-jaw, and at the same time pulling at the cord. When the head is adjusted, the fore feet are then to be brought up, by pulling at the cords fastened to them; during which time the hoofs are to be held in the hand, to prevent them injuring the uterus, as before noticed. When the calf is put into a proper position, the extraction may then be attempted.

The Calf in a preternatural position. See Table 8.

Plate 3.



T. Meadwell del.

Engr. color.

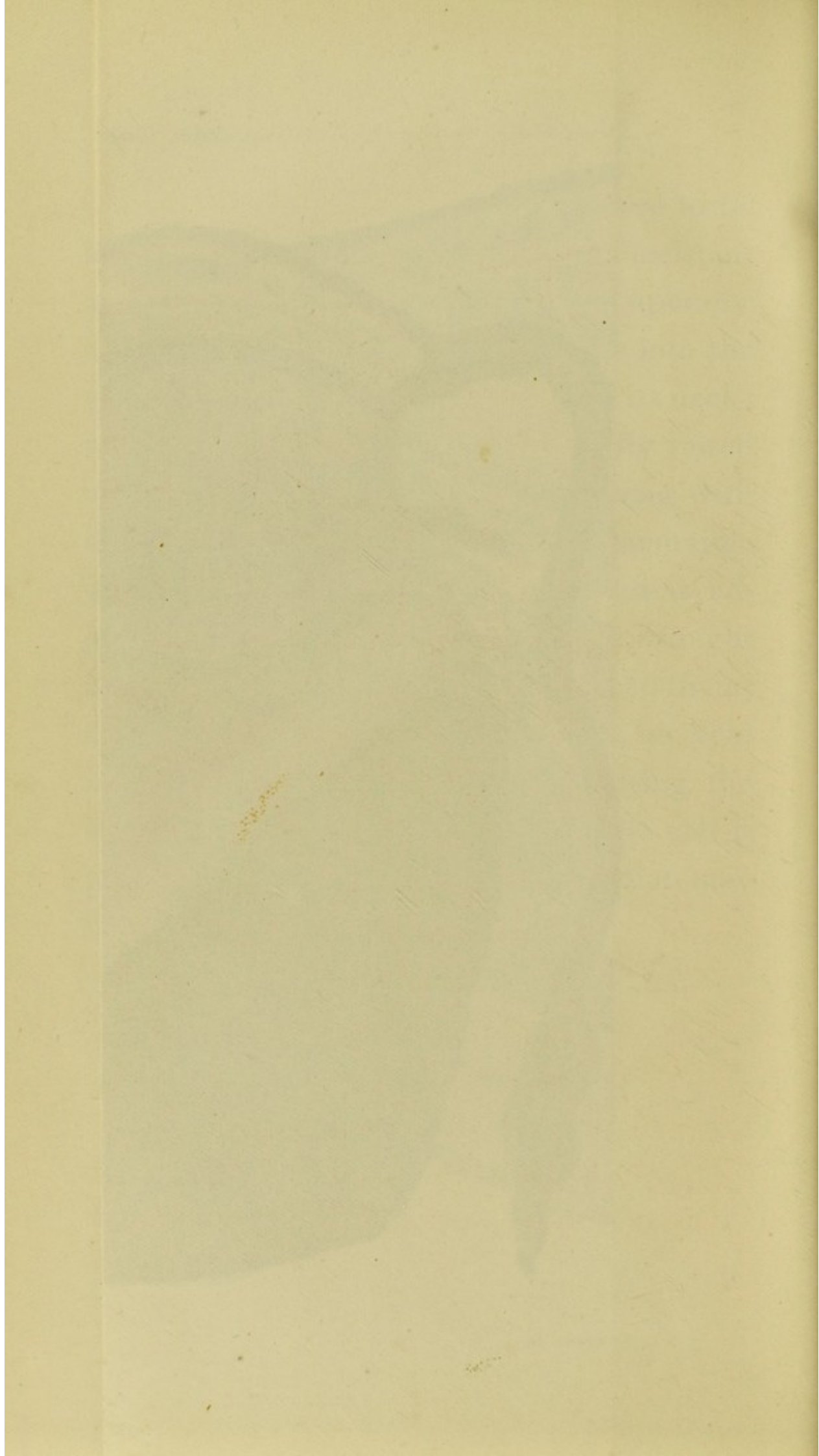


TABLE or PLATE VIII.

This Table or Plate represents a view of the calf in the womb, with its hind legs under its belly, the head and fore feet down in the horn of the womb, laying in a complete reverse position to that of the natural one.

- A The tail of the calf, the only part which has presented and passed through the vagina to the external surface of the shape.
- B The vagina.
- C The os uteri.
- D The cords which are fastened above the hock, for the purpose of assisting the operator in extracting the calf.
- E The hock of the hind leg.
- F The hoofs of the hind feet.
- G The thigh cutoff, showing its cut edges, &c.
- HH The cut edges of the uterus.
- II The horn of the womb.

- J The cut edges and fat-like appearance of the thigh.
- K The haunch-bone.
- L The udder.
- M The kidneys.
- N The intestines.
- O The thigh.
- PP The rump-bone, &c.
- Q The rectum, or last gut.
- R The parts to which the cord is to be slipped down : this can be easily done after the calf is pushed forwards, and the houghs, or hocks, are brought up towards the os uteri.



POSITION III. (See Plate or Table VIII.)

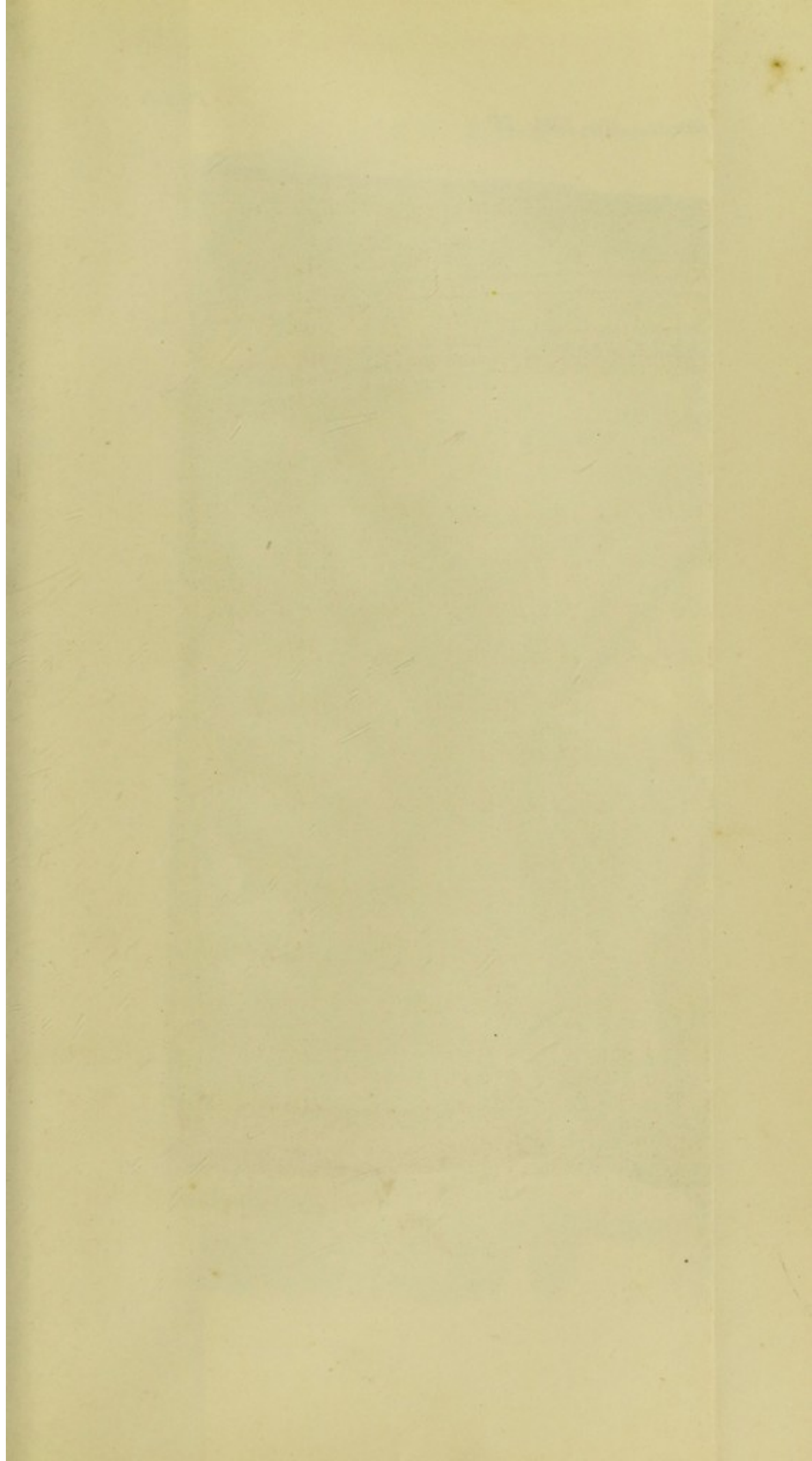
This position is when the tail of the calf is the only part which presents itself beyond the external shape of the cow, with its hind feet under its belly, its hocks pressing down on the uterus, and its head and fore feet in

the horn of the womb, as represented in Plate VIII. When the calf is thus situated in the uterus, all the efforts of the cow herself to calve will be fruitless; in consequence of which, the animal must have assistance as soon as possible. To put the calf in that position which is most eligible for its extraction, and least dangerous to the cow, the operator is to introduce a cord with a running noose, to be put on a little above the hock; the hand is then to be gently drawn out of the uterus, with the noose, in order to enable the operator to put the end of the cord through it, which must be slipped down to the hock, (as in Plate VIII.) When so fixed, the hand is to be put against the breech of the calf, in order to enable the operator to push it forwards. During this time, the cord is to be gently pulled, and by so doing, the hock will be brought up to the os uteri; the cord is then to be slipped over the hock to letter κ, and there to be tightly fixed.

When this is accomplished, the operator is to hold the hoofs in his hand, (see letter F) to prevent them injuring the uterus as they pass; the cord is then to be pulled, which will soon enable the operator to get up the feet into the vagina. The other hind leg is to be brought up with another cord, &c. as before described: when both the hind feet are brought up into the vagina, the calf will be soon extracted, by pulling at both the cords, whenever the pains or throes come on; the vagina, &c. being first lubricated with hogs' lard, as before noticed.

Caution.

Whenever the calf is found in the situation above described, the operator should never attempt to turn it into a natural position, but always extract it in the manner already recommended. This may be done with ease and safety to the animal, if proper attention is paid to the instructions laid down; for, was



The Calf in a preternatural position. See Table IX.

Plate IX.



C. Kirtland del. et sculp.

the operator to attempt, and even succeed, in turning the calf in the uterus, which is seldom the case, it is a hundred to one but the death of the animal would be the immediate consequence, from the bruises and irritation produced during the operation. The author has known a number of cases wherein it has fatally terminated, from the above rude attempts.

TABLE or PLATE IX.

This Table or Plate gives a view of the calf with its head inclined to the side of the abdomen, or belly, and its fore feet advanced into the vagina. It also represents the parts to which the cords are to be fixed for its extraction, in cases of necessity.

- A The two cords which are fastened to the fore legs.
- B The cord which is fixed to the under-jaw.

- c A cord round the calf's neck, which is only to be used in desperate cases.
 - D The under-jaw.
 - E The front part of the neck where the hand is to be put to push back the calf, in order to get up the head.
 - F The eye, into which a hook is to be put in case of necessity.
 - G The part of the uterus to which the fore feet are to be put back, before the head is attempted to be brought out.
 - H The rump-bone.
 - I The haunch-bone.
 - J J The cut edges of the uterus.
-

POSITION IV. (See Plate or Table IX.)

This position represents the calf in the uterus, with its fore feet advanced into the vagina, and its head inclined to its side (see Plate IX.) Whenever it is found in this si-

tuation, it is generally dead, from some accident or other, such as the umbilical cords, or blood-vessels, being broken, or the cow accidentally receiving a blow, &c. either of which will cause its death. When this accident happens, its head of course becomes useless; and when the pains or throes of the cow come on, as it meets with obstruction in advancing through the os uteri, it will be gradually forced back to its side, as represented in Plate IX. On examination, if the calf is found in the situation above described, and discovered as soon as the water has been evacuated from the cow, and the passage is wide and open, there will be very little difficulty in extracting it; and this may be done in the following manner; viz. A cord is to be fixed to each fore leg; the feet are then to be put back into the uterus, to letter G, so as to give room to the operator to search for the head, and to convey a cord to the under-jaw, which is to

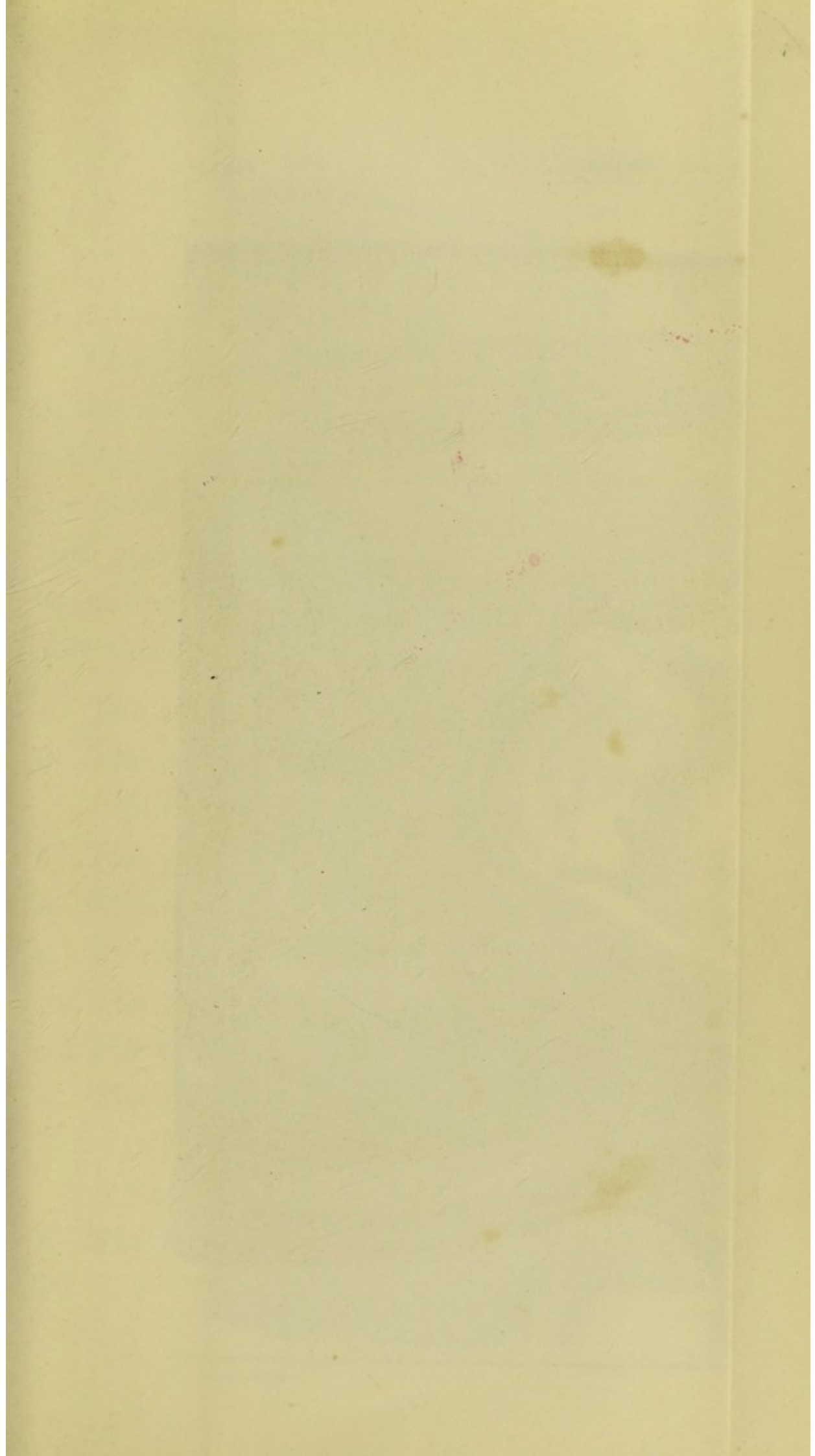
be fixed on it, as before described. The operator's assistants are to lay hold of the cord, and pull gently and steadily, while the operator puts his hand against its neck (see letter E.) in order to push back the calf. If this should not succeed to bring up the head to the os uteri, the hand must be conveyed to the head itself, and the fore finger put into the socket of the eye which lays next to its side, grasping the under-jaw at the same time with the other three fingers. While the operator is thus endeavouring to raise up the head, the assistants are to pull at the cords; by this means, if persevered in, the posture of the head will be soon adjusted; after which, the fore feet are to be put into a proper position for extraction. When all is thus completed, nothing more is required than the regular efforts to deliver the calf.

But where the cow has been long in the above situation, with the water evacuated,

while the throes or pains have been violent, or an unscientific operator has been attempting to extract the calf, so that the parts become highly inflamed, and the passage very much swelled and contracted; in these circumstances, the greatest skill and steadiness is requisite to procure the extraction. It must be done by proceeding regularly in the following manner: first, endeavour to lubricate the vagina and os uteri with hogs' lard, to cool and relax the passage; it is also necessary to apply the same to the external parts, the cuples, &c. and it should be frequently repeated during the operation of extracting; nor is the hand to be introduced at any time into the cow without being previously anointed with hogs' lard, or dipped in warm milk and water. After this preparation, the fore feet are to be put back into the uterus: a cord is then to be put round the neck of the calf, which may be accomplished in the way as directed in putting it

on above the hock, in Position III. page 129. A cord is next to be fixed to the under-jaw, and a hook placed in the socket of the eye, (see letter *r*). When all this is done, the cords fixed to the head and neck may be pulled, and, with the assistance of the operator adjusting any part that may require it, the head may be brought into a proper position. This being done, the feet are next to be adjusted, and the extraction of the calf will be soon completed, by using the exertion already described.

The author has had several cases in which he has been under the necessity of cutting the calf away ; the manner of performing this operation will be hereafter described.



The Calf in a proternatural position—see Table X.

Plate 10.



Forland del.

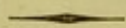
W. J. White sc.

TABLE or PLATE X.

This Table or Plate shows the calf laying in the uterus on its back, with its feet towards the cow's back, and the back part of the head pressing on the uterus and bladder; with a representation of the cords fastened to its under-jaw and fore feet, in order to enable the operator to turn its back upwards.

- A The two cords fixed to its fore feet.
- B The cord which is fastened to its under-jaw.
- C The vagina.
- D The os uteri.
- E The situation of the head of the calf.
- FF The fore legs.
- GG The hind legs.
- H The situation of the hand, with the cord in it, in order to raise up the calf's back into a proper position.
- I The horn of the womb.

- J J The cut edges of the uterus.
- K The rump-bone.
- L The haunch-bone.
- M The bottom of the uterus, where the fore feet are to be brought down to.
- N The cord fastened to the fore leg, for the purpose of turning the calf.



POSITION V. (See Plate X.)

This position represents the calf in the uterus, on its back, with its fore feet against the top of the uterus, &c. In this position it is impossible to extract it without endangering the cow's life, as well as the calf; therefore our first object must be directed to the adjusting the calf, which should be done as soon as possible after the expulsion of the water, at which time the parts are generally open, and free from inflammation. In performing this operation, a cord is to be fastened to each fore leg, and one to the under-jaw, (as represented in Plate X.) When the

cords are fixed on, the first endeavour must be to turn the nose and feet downwards as much as possible ; the operator is then to take hold of the cord fixed to the leg (see letter *κ*), which is to be brought under its brisket and back, to letter *μ*, at which situation the cord is to be grasped and pulled tight, so as to bring the foot in contact with its brisket : then move the hand which has hold of the cord to letter *η* ; when so done, an endeavour must be made to raise up the back, which will bring the calf on its belly. When this is accomplished, the feet and head are to be put into a proper position for extraction : this may be done in the usual way, as before described. When all is completely adjusted, the extraction may be attempted, by using the precautions before noticed.

Observations.

There are other methods of extracting the calf when in this situation, which the author has made use of during his practice, and suc-

ceeded in, though he gives the preference to that already recommended ; but as he wishes to give every information that lies in his power on the subject, he will relate them. They are as follow : Cords are to be put to the fore legs and under-jaw, as before described ; the fore feet are to be gently put down to the bottom of the uterus, as far as the case will admit of ; the assistants are to gently pull at the cord fastened to the under-jaw, while the operator endeavours to adjust the head, so as to bring it up into the os uteri : when this is completed, the hand is to be slipped down to the under-shoulder of the calf, and by gently raising it up, while the assistants are gradually pulling at the cords, it will bring it on its knees : the fore feet are then to be brought up into the vagina, by pulling at the cords which are fastened to them. The extraction may then be attempted in the usual way.

It sometimes happens when it lies on its

back, that the fore feet are advanced into the os uteri, and the ball of its head at the mouth of it; when this is the case, it has always been the author's practice first to fasten a cord to each fore foot, betwixt the dew claws and hoofs, and another cord to the under-jaw; when this is done, pull the nose of the calf into the os uteri. The hand is then to be conveyed to the under-shoulder, in order to raise it up into a proper position. During this time the cords are to be kept tight by the operator's assistants, by which means the calf will be adjusted, and the extraction of it will be soon accomplished, by assisting the regular efforts of nature.

Though this position may appear a very difficult operation to adjust, yet if the instructions laid down are properly attended to, the operator may succeed in every instance; as the author has not had one case of this kind come under his hands (and there have been

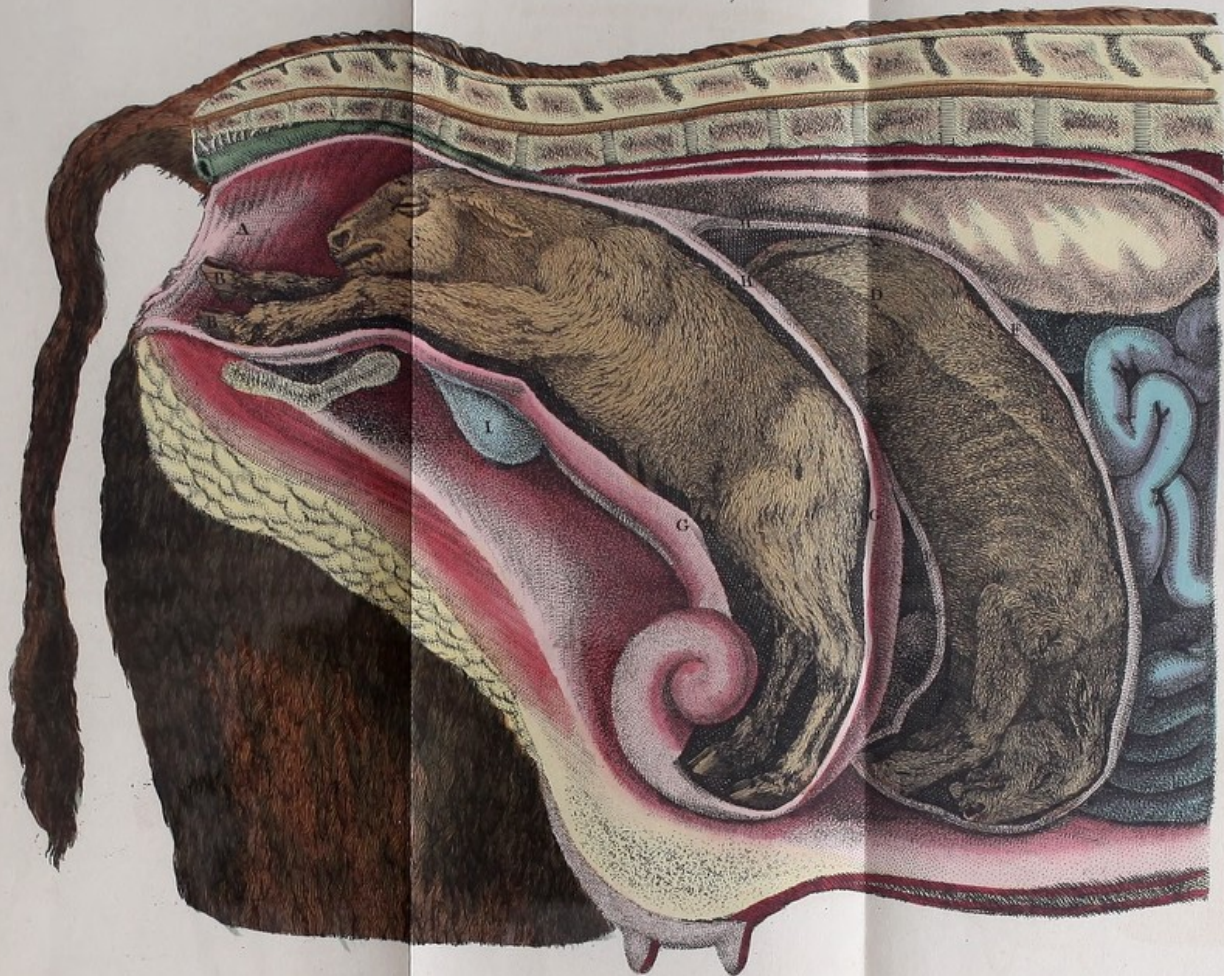
some hundreds) in which he has not been successful, even though the parts have been amazingly swelled, and highly inflamed, from the rude attempts of unskilful operators.

TABLE or PLATE XI.

This Table or Plate represents a view of twin calves as they lay in the uterus. In this case, the one in the right horn is placed in a natural position, the head and feet of which are advanced into the vagina; the other, in the left horn, is placed in a preternatural position, with its head downwards (see Plate XI.)

- A The vagina.
- B The fore feet of the calf in the vagina.
- c The head of the one in a natural position.
- D The breech of the calf in a preternatural position.

Twin Calves, one in a natural and the other in a preternatural position. See Table XI.





- E The situation of the head of the calf in a preternatural position.
- F F The cut edges of the uterus wherein the calf lies in a preternatural position.
- G G The cut edges of the uterus where the calf lies in the natural position.
- H The beginning of the horn of the womb.
- I The situation of the bladder of the cow.

POSITION OF TWINS. (See Plate XI.)

This Position shows two calves, one in each horn of the uterus, &c.; the one in a natural situation, and the other in a preternatural, as before noticed. When thus situated, the cow seldom or ever wants any assistance. Though the one may come backwards, it may be calved as easy as that in the natural position, provided the hind feet pass through the os uteri into the vagina: but, on the contrary, should the passage be narrow, and the calves very large, it will be necessary

to give some assistance. Thus, if the hind feet should be any ways obstructed at the entrance into the os uteri, or be pushed under its belly, and the tail only presents itself through the vagina to the external shape of the cow, as represented in Plate VIII., then the same plan is to be pursued to extract it as directed in Position III.; but should either of them be in a preternatural position, such as represented in the foregoing Plates, the operator must pursue the same plan as there recommended, which will soon enable him to accomplish his object.

Caution.

In twin cases, it will sometimes happen that the fore feet of one calf will present themselves into the vagina, with its head under its brisket, and the head of the other will advance with the feet of the former; and at other times the head of one, and the hind feet of the other, or the head and feet of one, and

the fore feet of the other. In either, or all of these cases, the operator should be very particular and careful to find out the real situation of the calves; for was he to attempt to extract them in the above posture, he would not only find it impossible, but it would be a means of destroying the calves as well as the cow. Whenever these circumstances occur, our first attempt must be to adjust the calves, before any attempt is made to extract either the one or the other; which is to be done in the following manner:

If the fore feet of one and the head of the other presents, the head is to be put back into the uterus, so as to enable the operator to get up the head of the other from under its brisket, which must be done in the same way as described in Position II. After which, the extraction of the one calf may be soon completed, and will give room for the other

to advance, which, if not in a proper position for calving, must be adjusted.

If the hind feet of one and the head of another appear, without its fore feet presenting, the hind feet of the one are to be put back, and the fore feet of the other got up, as directed in Position I.

If the head and fore feet of one, and the fore feet of the other, should advance, the latter must be pushed back, and the one in the natural position be extracted. After which the other may be adjusted, if required.

If the calf should be found in the uterus with its fore feet under its brisket and its head inclined to its side, which is sometimes the case, the head is the first part which is to be put into a proper posture, and then the feet, as directed in Positions I. and IV. This being done, the extraction will not be at-

tended with any difficulty.—If one hind leg or fore leg should only present, the other must be adjusted.

If the calf should lay in a cross position in the uterus, that is, with its head and fore feet in one horn of the womb, and its hind feet in the other, in this posture the side or back of the calf can only be felt. In this case, the operator is to rectify and extract it backwards or forwards, which ever can be accomplished with the least trouble or danger to the cow and calf. When it is thus situated, a search should be made in order to ascertain which will be the best method to rectify it, either by bringing forwards the fore feet and head, or hind feet, into the os uteri ; in doing which, cords may be fastened to the fore or hind feet, which ever is found most convenient to the operator.

These preliminary instructions which the

author has given are all that is necessary for the extraction of the calf in every unfavourable situation that may occur, excepting in a few monstrous and dropsical cases, which are here subjoined.

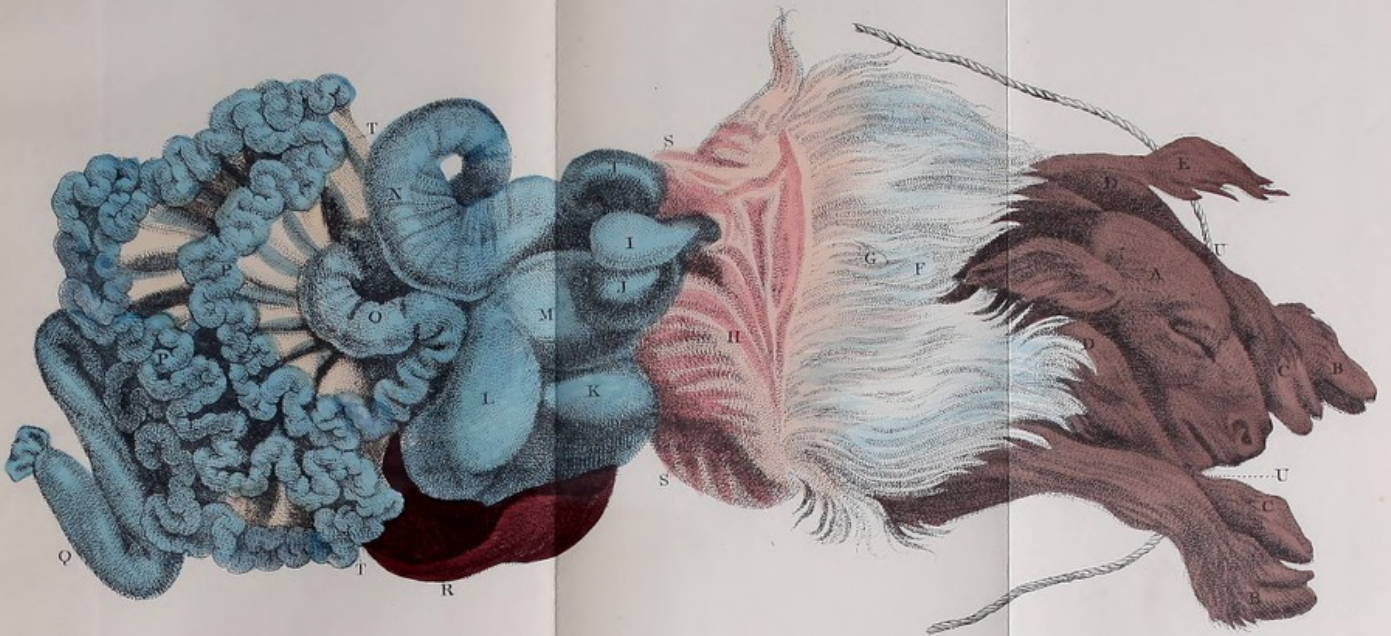
TABLE or PLATE XII.

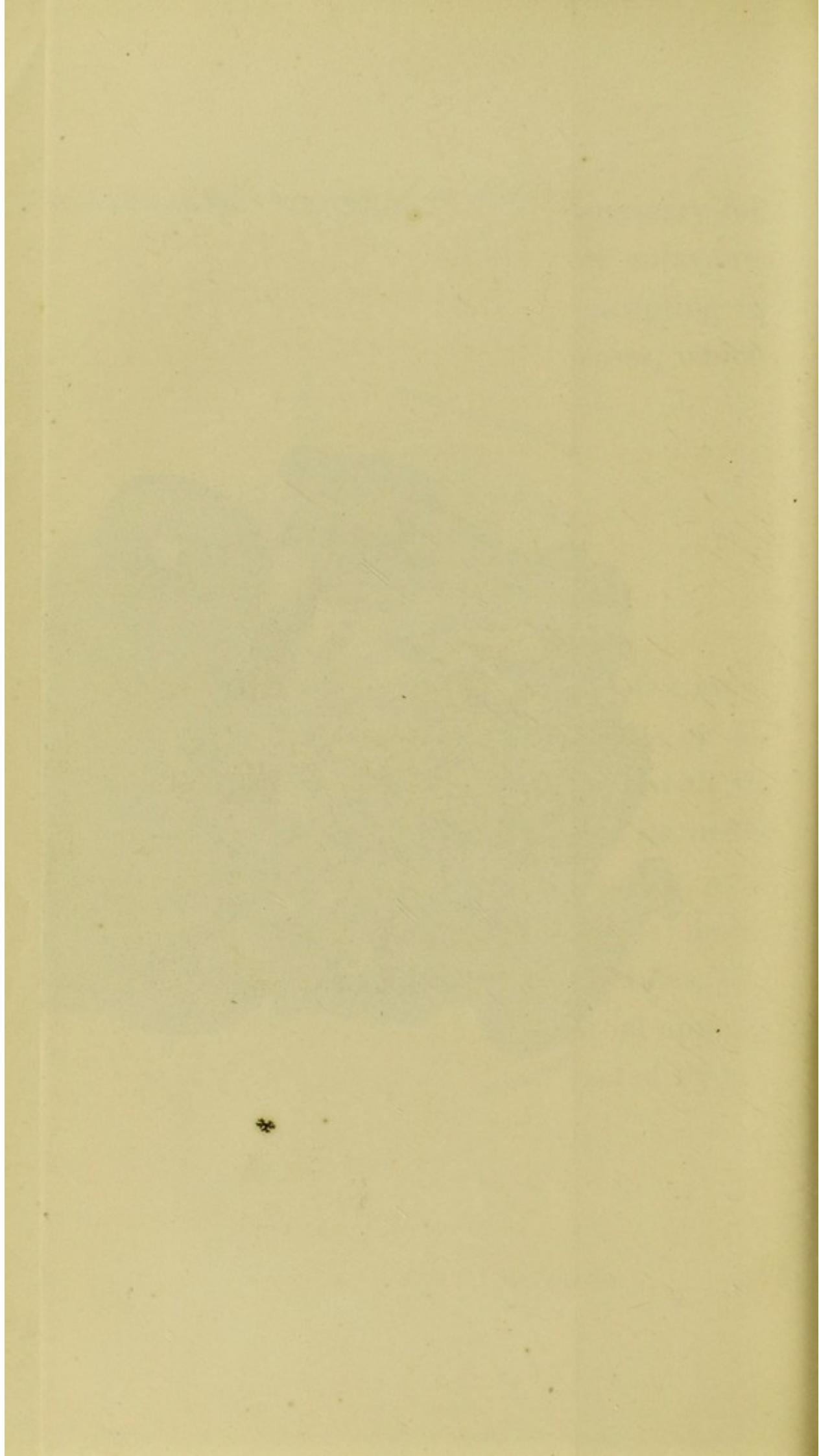
This Plate represents a view of a monstrous calf, in which the integuments or coverings of the belly are wanting, with its hind legs turned over on each side its neck, which brings all its four feet in contact with each other, as well as its rump to its shoulders : also a view of its bladder, kidneys, stomach, liver, intestines, and internal appearance of the ribs; which was extracted by the author in the year 1801.

A The head.

B B The fore feet.

A distorted Calf in which the integuments or coverings of the Belly are wanting. See Table XII.





- cc The hind feet.
- dd The hind hocks.
- e The tail.
- f The testicles.
- g The penis.
- h The internal surface of the ribs.
- i The situation of the bladder.
- jj The kidneys.
- k The first or large stomach, called the tripe, or paunch.
- l The second stomach, called the honeycomb, bonnet, or king's-hood.
- m The third stomach, called the feck, or manyplies.
- n The fourth, or last stomach, called the red, which is formed like a Scotch bag-pipe.
- o The end of the last stomach, which unites to the small intestines.
- pp The small intestines.
- q The rectum, or last gut.
- r The liver.
- ss The parts which had 'presented through the os uteri into the vagina.

т т The small intestines, which had passed through the vagina to the external shape of the cow, which were cut off.

у у The cords which are fastened to each hind leg.

CASE I.

Plate XII. contains a representation of a monstrous calf, in which the integuments or coverings of the belly are wanting, (as before explained,) being one of the extraordinary cases. On January the 25th, 1801, the author was sent for to calve a little Welsh cow of Mr. Austin's, Kentish Town. The first thing which presented to his view was the small intestines of the calf; and, on examination, he found the stomach, liver, &c. advanced through the os uteri into the vagina. On examining farther, by passing his hand through the os uteri, the first thing that he felt was the ribs (see letter H.) In advancing still farther, he felt the four legs in con-

tact with the head, particularly the hind hocks, which pressed against its ears. 'Thus it presented the most singular case that he ever met with. Though the author had ascertained the real situation of the calf in the uterus, it took him some time to reflect on the best method of extracting it, and the one which would be the least dangerous to the cow. He proceeded accordingly in the following manner, viz. The small intestines were cut off from τ to τ , the passage being very wide and open to the uterus, and he being desirous to preserve as much of the calf as possible, for its curiosity. The liver, stomach, &c. were put back into the uterus: a cord was then conveyed and put round the hocks of each hind leg, in the manner described in Position III. (see Plate VIII.) which was afterwards slipped down to letter υ ; the cords were then pulled by the assistants, while the operator was pushing his hand against the back part of the neck of the calf, for the pur-

pose of dislocating the vertebræ of the loins, as it was impossible to extract it in that form, with its head and its fore and hind feet together. This experiment the author tried for a number of times without success, and he had a great mind to have given it up; but by the persuasion of Mr. Austin to make another trial, he was then determined to attempt a different method; which was, to fix a cord to each fore leg, and one to the under-jaw, in order to turn the calf. This was at last accomplished, after a laborious and tedious process, when the head and feet were brought to the mouth of the os uteri. An iron hook was then fixed in the socket of one of the eyes. He next ordered the assistants to pull at the cords and hook; during which time the operator, with his hand, grasped both the hind legs, and pushed them back with all his force: this had the desired effect; it dislocated the loins, and by continuing to pull at the cords, the head and fore feet were soon brought into the os

uteri ; after which, the calf was soon extracted. The operation took no less than four hours. Though the time was tedious and laborious, as well as the operation a very difficult one, from which it was natural to suppose the womb must be very much lacerated, yet on examination he did not find any portion of it torn, which he was surprised at, notwithstanding the parts in general were very much swelled, and highly inflamed ; but with proper attention the cow soon recovered : For the treatment of which, see Inflammation of the Womb.

CASE II.

March 8, 1797. The author was called on at three o'clock in the morning to attend a cow of Mr. Lowndes's, Pond Street, Hampstead, which had been calving all the night and day before. On inquiry, he was informed that they had been attempting to calve her

from six in the evening to twelve that night; but all their efforts to extract the calf proved fruitless. In the course of this time there had been called in an eminent cow doctor in the neighbourhood, who, after trying for some hours, declared it was an impossibility to extract the calf. On examination, the author found the fore feet had passed through the vagina to the external shape of the cow: by examining farther, he found its head inclined to its side (as represented in Plate IX.) In this situation various attempts had been made to extract it. In consequence of the bruises which the cow had received by these rude efforts, the parts were become very much swelled and highly inflamed; and the animal was so much exhausted that she could not get up. Before any efforts were made to adjust the calf, the cow was placed in the most favourable situation for its extraction, so as to raise up the hind parts, which were laid upon a truss or two of straw; by which means it prevented the animal having the power of

straining so violently against the operator, while endeavouring to replace the calf. The vagina, &c. was then well relaxed with hogs' lard; after which, the fore feet were put back into the uterus. An attempt was then made to bring up the head into the vagina, which was at last accomplished, with the assistance of the hook and cords, by proceeding in the same regular manner as directed in Position IV. (see Plate IX.) From the tedious time it had taken to bring up the head into the vagina, and the friction it had occasioned in doing it, the parts were so much swelled, and the passage had become so extremely narrow, that there was not room for the feet and head to advance together; in consequence of which, the head was skinned and cut off. The calf was then pushed back, so as to enable the operator to bring up the fore feet. In performing these last operations, the same precautions were necessary as given in Preternatural Position I. When all was adjust-

ed, the calf was extracted with the greatest difficulty, from the narrowness of the passage, and for want of the regular efforts of the cow, by her being so much exhausted that she was not capable of giving them. This operation took between four and five hours. Though this animal was so bruised with the operation of calving, she completely recovered in four or five weeks: For the treatment of which, see Inflammation of the Womb.

CASE III.

September 27, 1805. The author was called in to calve a cow of Mr. Kendall's, New Road, Mary-le-bonne. On examination, he found its fore feet under its brisket, with its head inclined to its side. The parts being wide and open, the head and feet were soon brought up into a proper position for calving, which was performed in the usual way.

When the calf was thus situated, he had no doubt but it would have been extracted with ease; but when the fore parts had advanced through the os uteri into the vagina, it stopped advancing all of a sudden. Three or four more efforts were used to bring it forwards, but without effect. He now was well convinced in his own mind the calf was dropsical, and the difficulty of the extraction proceeded entirely from that cause. He then endeavoured to put back the calf, in order to perform an operation, and let out the water; but the calf was so completely fixed in the passage, that all his strength to put it back into the uterus proved fruitless. Being thus situated, he was then determined to procure more assistance, to extract it in the way he had first proceeded in, which had the desired effect; for when the calf began to advance a little, the water came out of its mouth and nostrils in full stream: after which, the extraction was soon accomplished.

The cause of its death was a collection of water. On opening the calf, all the internal parts of the abdomen were nearly full of water, as well as the intestines and stomach, which was of a bloody appearance. On examining farther, he found the back-bone opposite the kidneys dislocated, in consequence of which the kidneys were mortified, and become a mere mummy. This accident the author has not the least doubt proceeded from the poke or thrust of another cow, with its horn coming in contact with the abdomen and calf's back, which was the cause of its death, and the collection of the water, &c.

Dropsical cases are not very numerous, as the author has not met with more than five or six during an extensive practice of between twenty and thirty years. Whenever those circumstances occurred, his method was to convey a short-bladed knife, with a sharp point, and thrust it into the belly of the calf,

so as to make a large orifice, which will let out the water; after which, the extraction may then be accomplished



CASE IV.

April 4th, 1805. The author was sent for to calve a cow of Mr. Bonner's, cow-keeper, Westminster. On examining the situation of the calf, he found it lay in a natural position, with its fore feet advanced through the vagina and shape of the cow; but the shape was so much contracted that it would not admit of the head to pass, though there had been the strength of five or six men pulling at the head and feet. In such cases as these, it requires nothing more than to take a sharp knife, and cut up to the fundament, or as far as is necessary to give room for the calf's head to pass with ease.

CASE V.

The author has met with some cases wherein the fore feet, and even the hocks, had advanced through the os uteri, by pulling violently at the fore feet by unskilful operators, though the head of the calf has been at the same time inclined to its side, with an idea of extracting it in that position; in consequence of this, the passage has been highly inflamed and contracted. The fore legs being so far advanced, he has thought it most prudent to take them off, which was performed in the following manner: Take a sharp knife, and cut from the point of each shoulder of the calf to the muscular or thick part of the fore leg; then cut round it so as to enable the operator to skin the upper part of the shoulder. A knife is then to be conveyed between the shoulder and brisket, so as to cut the muscles which unite them. When so done, the leg and shoulder may be easily pulled off

from its body. The other fore leg, &c. is to be taken off in the same way. When these operations are completed, a cord is then to be conveyed and put round the neck, and one to the under-jaw, and a hook put into the socket of one of the eyes, if found necessary. By these means the head will be got up into a proper position, by adhering to the rules laid down in Position IV.; after which, the extraction will be soon accomplished.

To relate every difficult case which has occurred during the author's extensive practice, would be too numerous to be inserted in this work, as well as occasion a repetition. These being some of the most difficult cases which has occurred in his practice, will give the reader sufficient information to proceed in every case that may happen with success.

The author does not pretend to say that

he has preserved the life of every animal in these desperate extractions; though he has been very successful, and generally saved eight animals out of ten.

General Observations on Preternatural Cases.

It may seem to some who have not had much practice in the operation of calving, that the cords are used oftener than what is necessary, as it will appear the author has used them in every preternatural case. It is true, there are some of the preternatural positions where the calf might be extracted without the use of them; but on consideration of the time it takes in adjusting and extracting it, to what it does with the use of the cords, the latter is preferable; and the author could always perform it in half the time, compared with the former method, and with less danger to the cow: nor will it any ways injure the calf, except in desperate

cases, where violence is obliged to be used. The cords are not intended to be violently pulled, but are merely to keep the head, or any other part the operator has already adjusted, in a proper position, till the extraction can be accomplished. The cords which are most proper to be used are those which are flat made; they should not be too small; they are not so apt to cut as a round one. It sometimes happens that when the operator has adjusted the head without the assistance of a cord, and while attempting to place the feet in a proper position, the head has slipped back into its former situation; then of course he has again to replace it, which makes it a second process, and sometimes a third and fourth one. By these repeated operations, the internal surface of the womb becomes bruised and highly inflamed; but by the use of the cords, those unpleasant accidents may be avoided, which clearly points out the utility of them.

It was an old practice, which cannot be too much reprobated, in desperate cases, where a calf could not be extracted by the usual methods, to fix a rope to the head, or fore feet of the calf, which ever advanced first, to which a horse has been hooked, and the extraction accomplished by main force. It has been the object of the author to cause all such cruel modes of proceeding to be laid aside; and he hopes, for the sake of humanity, they will never again be resorted to, particularly when the rules laid down will be found to answer every case that may occur; and even this savage practice did not always answer the purpose in completing the extraction, though it never failed to be the death of the animal.

In all preternatural cases, the calf will be more easily and sooner adjusted while the cow is in a standing posture; but should circumstances occur wherein she is not capable

of getting up, from a laborious calving, before any attempt is made to put the calf in a proper position, her hind parts should be raised up, by laying them on a truss of straw. This will prevent her, in a great measure, from straining, as well as give more room to the operator in adjusting the calf; but when it is put in a proper position for extraction, she must be taken off the straw, and her hind parts laid a little on the descent, which will give her power to exert herself in order to get rid of her burthen.

Cleansing.

The author has known a number of instances where three parts of the cleansing, or the whole of it, have come away before the calf has made its appearance. Whenever this happens, the calf will be dead, and be found in a preternatural position. This circumstance generally proceeds from neglect, by not paying proper attention to examine

the cow as soon as the water-bladder breaks. Perhaps the cow has been straining for three or four hours before any assistance is procured, in consequence of which, by the calf struggling in the uterus, it has broken through the cleansing, which has been the cause of its being evacuated before the calf makes its appearance. From this circumstance, its death must inevitably follow ; for as soon as the placentæ are disunited from the uterus, or, in other words, the calf disjoined from the mother, in order to preserve its life, respiration should immediately take place, to stimulate its lungs, in order to carry on a free circulation of the blood.

When the pains or throes of calving are defective, from the cow being too much exhausted by a tedious and laborious calving, in this case she should have now and then given her two or three quarts of water-gruel, with a pint of ale in each draught, which

may be repeated two or three times, if found necessary. This will give fresh strength and vigour to the drooping spirits of the animal, which will cause her to make fresh efforts to get rid of her calf, as well as to assist the operation.

The author has already noticed, in treating of calving, that a cow, when left to herself, generally prefers laying down during this operation. If she calves within doors, it should be particularly attended to that the place in which she lays down is not too much on the descent; for if that is the case, from the weight of the womb containing the calf being brought forwards too soon, by this position she is forced to strain, from the pressure and irritation it occasions, before the parts are sufficiently opened by the water-bladder to allow the passage of the calf. This is a cause of tedious calving, or, at least, the cow is forced to exhaust her strength be-

fore the parts are in a state fit for allowing the passage of the contents of the womb. For want of attention to this circumstance, many ignorant pretenders have recourse to manual assistance, where it is not necessary. On introducing the arm, the os uteri will be found tight and contracted, but there will appear no other cause to account for the delay of the calving: in this case, all that is necessary is to change the place where the cow lies, and by taking off the weight or pressure of the calf from the parts, the irritation will cease, and the process be regularly and speedily completed.

Another cause of difficult calving, as mentioned by some writers, is what is called a horning of the eye, or os uteri, when the passage is contracted into a very small circumference, in so much that at the full time of calving it will not admit the smallest hand, and is, at the same time, so sinewy or horned,

as to render it impossible for the calf to pass without assistance. This cause the author did not wish to introduce before, as it is difficult to know when it really exists; and presuming upon it being a frequent cause of difficult calving, ignorant operators may conceive it takes place when no such circumstance exists. The author must say, he has very rarely met with a case of it; and in his whole practice they do not exceed more than three or four. The cause of this state of the os uteri must have arisen from some injury it had received in a former calving, on the healing of which the part had become thus contracted. When once the operator has fully established, to his own conviction, that this cause prevents the calving, then an attempt must be made to remove this contraction of the part by an operation. This operation consists in endeavouring to force the end of the fore finger within the os uteri; if admitted an effort should be made to force in another

and so on successively, till an opening is attained : but if this cannot be procured, and the resistance is too great to admit more than one finger, then a small knife must be introduced upon it, the blade of which should not be above an inch and a half in length, and very sharp, with a hollow on the back part of the point, for the end of the fore finger to guide it when cutting, and to cover the point and edge when introduced ; its handle ought to be short, and the foremost finger of the operator should always be kept on the knife, to prevent any danger from the edge of the instrument. In doing this operation, the callous part of the os uteri should be divided in a slow and cautious manner ; and as the horny part generally extends round the whole circle, that part is to be chosen for making the division which is least dangerous : the upper surface is the fittest place ; on that account, when the division is once made, which should go no farther than to cut

through the horny part, the obstruction is then taken off, and the process of calving will proceed without interruption, and the parts be found to dilate or expand at every throe. As the cow is generally exhausted before the operation is performed, her efforts should be assisted by endeavouring to relax the passage as much as possible by the use of hogs' lard, or other emollients, to hasten the progress of the business.

CHAP. XVI.—*Consequences of Calving.*

HAVING now fully explained the various methods of extracting the calf in every variety of situation that can occur, and thus enabled the cowkeeper, farmer, &c. to judge of the propriety of conduct observed by any operator they may employ, the next object is to consider the consequences which arise from calving; and in many of the situations described, cannot fail of being productive of serious complaints. These the author will next treat, under the heads of, Flooding, or Loss of Blood; Inversion of the Womb; Relaxation of the Ligaments, or Falling down of the Womb; Inflammation of the Organ; Inflammation also of the External Shape or Parts: to which may be added, the Milk Fever, or Dropping after Calving.

Flooding, or Loss of Blood,

Of which, after the extraction of the calf, and the evacuation of the placentæ, though this seldom happens, the author has known some instances. These proceed from labourious calvings, when nature has been too much exhausted ; thus the vessels of the womb are prevented from collapsing as they would otherwise do ; but the operator need not be any ways alarmed at this circumstance, for by using the following application, the inconvenience and danger arising from it is soon removed :

Take of Spring Water, one gallon,
Strong Vinegar, one quart.

Mix together, in which linen cloths are to be dipped, and frequently applied to the loins, rump, and shape of the cow. This application will soon stop the hemorrhage of blood. At the same time the animal may have

given her a draught of two quarts of cold spring water, to which one pint of ale has been previously added ; this will very much revive her, and assist the efforts of nature. But should the flooding proceed from laceration of the womb, in consequence of extracting the calf, which is sometimes the case, vinegar itself must be applied to the loins, &c. ; and if this should not immediately succeed in stopping it, an astringent liquid is to be conveyed into the uterus or womb by means of a glister-pipe, or a very large syringe, which must be repeated as often as circumstances demand it.

Take of Alum, one ounce,
 Spring Water, one pint.
 Vinegar, a quarter of a pint.

Mix, and apply as above, not omitting, at the same time, to embrocate the external parts with the vinegar. The following medicine may also be given internally :

Take of Crude Opium, half an ounce,

which is to be made into a ball with linseed

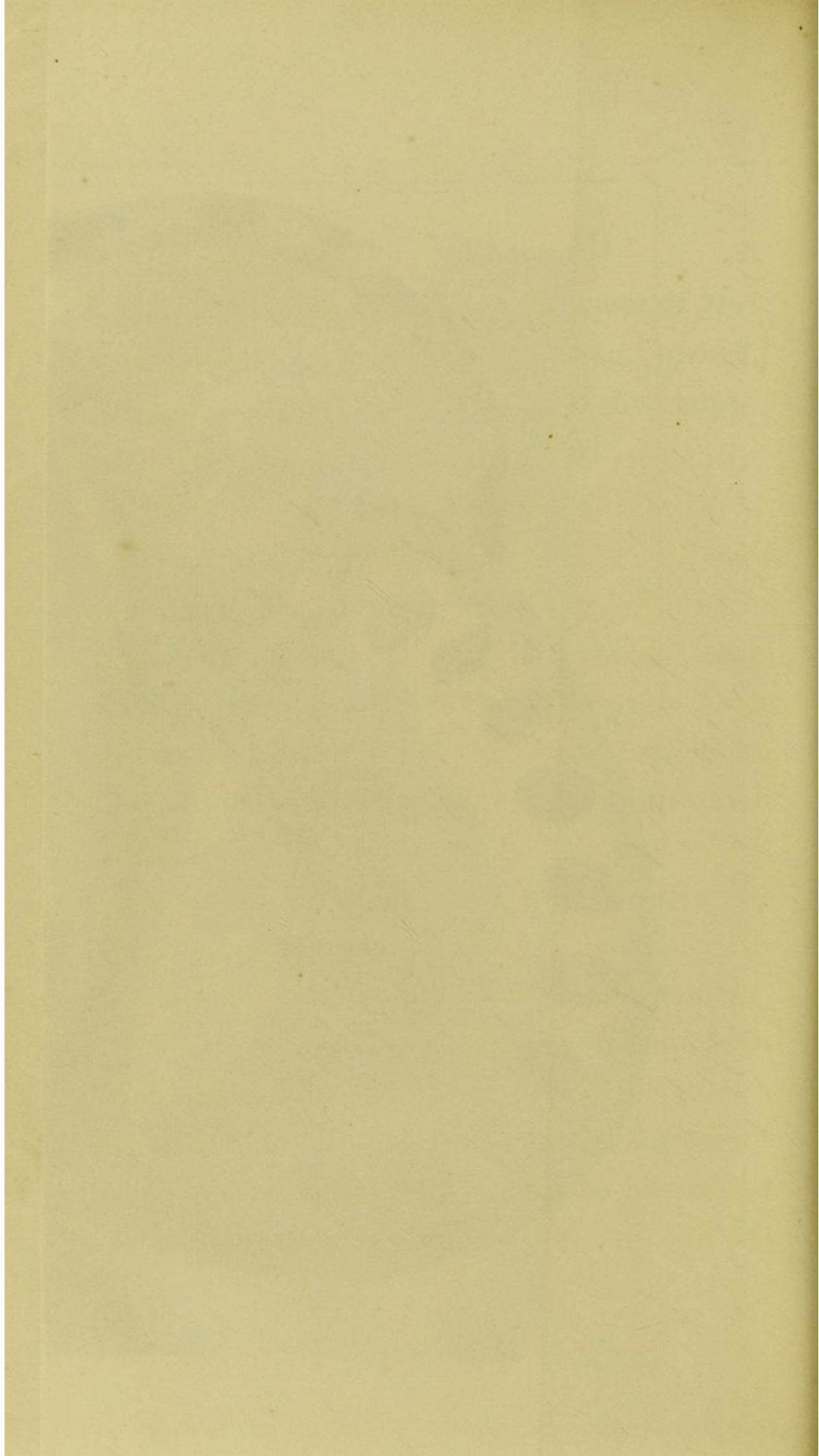
meal and treacle. This medicine will compose the cow, and take off the irritation of the womb, and prevent straining. If the throes should continue, it may be repeated in two hours. The cow should in this case lay with her hind parts a little elevated, in order to prevent straining, which is generally the case if the cow lays too much on the descent, as in this position it never fails to cause a bearing down of the womb, as well as to favour the discharge of blood; but, on the contrary, when the hind parts are elevated, it gives the womb an opportunity of collapsing, and consequently tends to stop the hemorrhage of blood. If the large veins or arteries are not divided, the above method will soon succeed; but if the latter is the case, the death of the animal will be the consequence, as she will bleed internally; nor is it possible to render her any assistance in this dreadful situation.

TABLE or PLATE XIII.

This Plate represents a side view of the cow, with the uterus, or calf bag, turned inside out, where may be observed the glands of the womb, and also the os uteri.

- A The shape of the cow.
- B The os uteri.
- c The womb, or uterus.
- DD The glands of the womb, to which the
placentæ unite during gestation.
- EE The bottom part of the uterus, which is
to be supported with a linen cloth dur-
ing the operation of putting it up.
- FF The part at which the operator is first to
begin in turning it.
- G The ligaments which confine the womb.
and where also the great veins and ar-
teries run.
- H The top of the uterus, or upper surface.
where the chief attempt is to be made
in putting it up.





Inversion of the Womb.

This accident, represented in the above plate, occurs sometimes immediately after the extraction of the calf. It proceeds from various causes, such as relaxation of the ligaments of the womb, and the violent pains or throes of the cow in the progress of calving, or from the parts being injured in desperate cases ; it may also happen from the cleansing remaining in the womb after delivery, which generally causes her to lay down and strain, in order to get rid of this troublesome burden. An inversion is thus produced, particularly when the cow lays too much on the descent; therefore it is of the greatest consequence for the cowkeeper to attend to the position of the cow, in order to guard against this accident: for this purpose, as soon as the cow shows symptoms of calving, if the cowhouse where she is situated be placed too much on the descent, she should be immediately re-

moved into another, where, on laying down, she comes as near as possible on the level. An attention to this circumstance will be a means of preserving the life of many of these useful animals; for the author has known a number of cows which have been lost for want of this timely caution.

When, from the above causes, an inversion of the womb takes place, its appearance is like that of a fleshy bag, having its surface every where unequal, and beset with glandular substances, which, as before described, serve for the purpose of receiving and preparing the arterial blood from the mother, for the nourishment of the calf.

If the womb has been long reversed before assistance has been procured to replace it, the parts, in consequence of their long exposure to the external air, and from the bruising and restlessness of the cow, become

amazingly swelled ; where this is the case, no time should be lost in attempting to reduce the womb to its proper place, for the longer it remains reversed, there will be more difficulty and danger in the operation.

Manner of replacing the Womb.

Before any attempt is made to reduce the calf-bag, if the cleansing is united to it, which it frequently is, this part must be gently separated from the womb ; and it may be performed in the following manner, without the least danger to the animal, where proper attention is paid to the instructions now given : The operator is gently to grasp one of the glands of the womb with one hand, while the other separates the cleansing from it : this operation is to be successively repeated till the whole mass is separated. When this process is completed, the womb is then to be fomented with warm milk and water, till a general and kindly heat is produced in the

parts. During these operations, a linen cloth should be put under the womb, with a view to prevent dirt or filth getting upon it; but if it is already in that state, the filth must be washed off before any attempt is made to reduce the part: when this is accomplished, in order to support the womb, two assistants are to take hold of the linen cloth; the cow is then to be made to rise, if possible, a standing posture being undoubtedly best for the operator, as well as the least dangerous to the animal, for she has not then the power of straining, which she possesses when lying. When the womb is supported by these two assistants, another person is to grasp the cow on the back, a little behind the shoulders, to prevent her straining. And in replacing the womb, the operator is then to proceed in the following manner: He is to grasp the os uteri with both hands, from F to F, which will enable him, by gently pushing forwards, to force that part into the

body of the cow; when so returned, one hand is to be immediately withdrawn, while the other remains in its position, in order to prevent the os uteri from returning; the other hand at liberty is then to be applied to grasp another portion of the womb not yet returned, beginning with that portion of the upper part of the uterus near the shape; and this portion is to be introduced into the body of the cow in the same manner as the former; that is, as soon as it is pushed into the entrance of the shape, the other hand is to be withdrawn gently from retaining the former portion, and both hands to be applied at once to push up the whole already brought up into their proper situation; and this mode of proceeding is to be continued successively till the calf-bed is entirely replaced. In grasping these different portions of the uterus, it is to be particularly observed, that it must be done by its upper surface, or that lying next the back or shape of the cow; for if grasped at the under part, it would be impossible to

return it, and there would be danger of rupturing some large blood-vessels, which would infallibly kill the animal. During the operation, the assistants must be particularly careful to support the womb from hanging down, which will give great ease to the operator, and second his attempts in returning it.

Though the erect posture is the one most favourable for the operation, yet if the cow is incapable of standing, she must then be placed in such a situation, as to allow the operator to make his efforts properly: the best situation for this purpose is to raise her on trusses of straw, till her hind parts are elevated at least one yard and a half, and her head proportionably low. This position will prevent her straining, and much assist the operation. The first step in doing it is to place a sack under her, which is to be held by several assistants, and on this she is to be raised till trusses of straw are introduced to support her hind parts, and till she is elevat-

ed to a sufficient height. In performing this operation, it is sometimes necessary to fix cords to the ends of the sack, and to draw her up by means of these till she is of a proper height for the trusses of straw to be placed under her. When this is done, the operation is then to be begun in the manner already directed.

When the operation is finished, the hand retained is to be thrust gently up to the bottom, or as far into the uterus as possible, and there continued till the parts have completely regained their natural state, which will be known by moving about the hand, and the throes or motions occurring, but not so dangerous as to produce any relapse. There is seldom much danger of the part returning when properly replaced; but to avoid the smallest chance of this disagreeable circumstance occurring, we have it always in our power, by making a few stitches, entirely to prevent it: these stitches are to be made

through the shape and the neighbouring skin; three will be sufficient in the shape, and one through the skin, on each side.

With respect to the rest of the treatment, the bowels must be immediately opened by a saline purge; a dose of opium should also be administered, in order to prevent straining and allay the pain. The parts themselves should be well fomented with a warm fomentation, and every thing done as directed under the head Inflammations of the Womb, as requiring a similar treatment.

Falling down of the Vagina, or First Passage.

THIS is a complaint which, in cases of weakness, both precedes and follows calving; the womb and calf's head pressing upon the passage, makes the latter fall down, which it does to a certain extent. Before calving, little can be done to remedy it; but when it ap-

pears after it, it admits of a certain method of cure. When the parts are replaced, which is easily done, in order to retain them in their situation, a stitch or two should be passed through the sides of the shape, by means of a packing needle threaded with common tape. The parts are to be embrocated with a decoction of bark, with alum, and every thing done to strengthen the general habit of the animal; for as soon as the cow is in health and vigour, this displacement wears off.

Before calving, the appearance of this complaint generally alarms those who have the management of cows, and they conceive that the womb will be entirely protruded: it is only necessary here to keep the animal in a position least favourable for the descent, and to give a stitch in the manner directed, which will prevent the protrusion going farther, till the operation of calving commence, when the parts are generally retracted, or go up of themselves.

Inflammation of the Womb.

THIS is a disease to which cows are occasionally subject after calving, and more especially if it has been attended with much difficulty, and if any violence has taken place.

Symptoms.

This complaint generally comes on very rapidly ; and the symptoms of it are, a constant desire to strain on the part of the animal, accompanied with a disagreeable foetid discharge from the parts ; along with this, there prevails a high degree of fever, attended with a deficiency in the secretion of milk ; and in the progress of the disease, the cow sometimes entirely loses the use of her limbs, and not unfrequently it proves her death : in other cases, matter forms, which checks the disease, and produces a termination of the malady.

Cause.

The cause of this inflammation proceeds most frequently from injuries in calving : it

may happen also from sudden exposure to a draft of cold air, while the womb is in the open state, unavoidable after calving. The same effect will arise from giving a quantity of cold water at this time. Retention of the cleansing, where it acquires a degree of acrimony, will create the same complaint.—The treatment of this affection must be the same with that of other inflammations ; only here, from the previous discharge weakening the animal, it is seldom proper to bleed her: the chief attention necessary in the commencement of the disease is to the state of the bowels ; and the use of saline purges will be found the most effectual means of relief, even though some degree of looseness should at the same time prevail. The form of purge which the author prefers is as follows :

Take of Epsom Salts, one pound,
 Nitre, two ounces,
 Camphor, half an ounce,
 Coriander and Cumin Seeds, of each one ounce.

Mix the whole into a powder, to be given in two quarts of water gruel, and half a pound

of treacle. In the above prescription the combination of camphor with the purge may, by some, be thought improper; but without reasoning upon the matter, the author has found it the most successful practice; for the action of the camphor seems to be independent of the salts, and, after their operation, seems to produce its full effect on the surface or skin, as well as to lessen the general irritation of the system.—After the bowels have been thus cleared by the operation of the salts, and there seems to exist much uneasiness, pain, and irritation, by the straining of the animal continuing, antispasmodics become the proper remedies. The most successful form of which is now subjoined:

Take of Crude Opium and Camphor, each half an ounce,
Nitre, two ounces,
Asafœtida, two drachms,
Aniseed, two ounces.

Mix up the whole into a powder, which is to be given in one quart of gruel, and one pint of ale. In the above prescription the author has introduced a proportion of nitre, on ac-

count of the symptom of strangury which frequently attends this complaint, from the known power of diuretics in lessening this symptom, as well as from the cooling quality of the nitre in abating the fever.

Besides the above medicine, the author has often found the greatest benefit in the same disorder from the use of oil of amber ; and the following is his manner of employing it :

Take of Oil of Amber, half an ounce,
 Asafoetida, two drachms,
 Aniseed, two ounces,
 Bark, one ounce,
 Nitre, two ounces.

Mix, and give as above, which may be repeated once or twice a-day, if found necessary. The above prescription he has chiefly used in those cases where there appeared a tendency to mortification ; and on that account he has introduced the bark as one article of it. These medicines must be repeated according to the urgency of symptoms, though it will rarely be necessary oftener

than twice a-day ; and during their use it will be necessary to pay attention to the bowels in the first instance.

In this complaint, much assistance may be given to the operation of the internal medicines by external applications ; a fomentation, applied largely to the shape and rump, will be of the greatest benefit. This fomentation may be composed of the following ingredients :

Take of Camomile Flowers, a quarter of a pound,
 Wormwood, a large handful,
 Bay and Juniper Berries, of each four ounces,
 Beer, or Ale Grounds, six quarts,
 Vinegar, one quart.

The whole is to be boiled for a quarter of an hour, and then to be applied, by dipping in it large pieces of flannel, and fomenting the animal with them. As the success of a fomentation depends on the heat it contains, it will be necessary to keep it hot by means of a chaffing-dish in the cowhouse, for this purpose. When the fomenting is finished, the cloth should be allowed to remain, and the

animal covered up, so as to avoid catching cold. This process may be repeated twice a-day, so long as it is found necessary. When the complaint is very severe, in addition to the fomentation, the application of stimulant oils will give great relief, and they should immediately succeed it: the best form of them, according to the author's experience is.

Take of Linseed Oil, eight ounces,
Oil of Turpentine, two ounces,
Oil of Vitriol, one ounce.

The last article is to be gradually mixed with the two former. A little of this mixture is to be rubbed on the shape, rump, and crouples, once or twice a-day, particularly in those cases where there appears a tendency to mortification.

Of the number of cows seized with this complaint, few die, where assistance is early given, and where a proper method of treatment is resorted to; but from the severity of the disease, though not mortal, the cow

is often left in such a low languishing state, that it requires every invigorating means, both in diet and medicine, to reinstate her in health. The strengthening medicine used by the author for this purpose is as follows :

Take of Valerian, Gentian, and Bark, of each one ounce,
Long Pepper, half an ounce,
Coriander and Cumin Seeds, of each one ounce.

Let the whole be reduced to powder, which is to be given in a pot of ale, wherein a handful of rue, chopped small, has been previously boiled. This dose should be regularly repeated once a-day till the appetite is found to mend, and other signs of the return of health begin to appear.

Regimen.

During the above disease, while the inflammation continues, the drink of the cow should consist chiefly of warm diluent liquids, but when the disease departs, warm mashes, and other diet of a nourishing kind, should be thrown in to second the use of the strengthening medicines prescribed.

One important observation the author shall make here, and which applies to the diseases of cattle in general, (derived from much experience) That he never found any difficulty in the cure, where, in any illness, the animal could be brought to drink ; and one chief aim in prescribing medicine should be to combine them so as to produce this effect.

Inflammation of the Shape, &c.

This is connected with the former complaint, and arises from injuries in calving : It is easily discovered by inspecting the parts. It is not so dangerous as the former complaint, and the same remedies and the same treatment applies to it, as detailed above.

Milk Fever, or Dropping after Calving.

This is one of the most dangerous diseases that can attack the animal, and unless timely relieved, very soon proves fatal. The symptoms of it begin the first, second, or third day after calving, but most frequently the first day, and that so early as two hours after the operation.

Symptoms.

The symptoms are known by the cow shifting about from place to place; she frequently lifts up her legs and sets them down again, discovering a wild appearance in her eyes, and sometimes blaring, as if wanting her calf: at this time she is very ready, on a person going up to her, to attempt to poke him. In the progress of the disease, there ensues a quick motion in the flank, and if confined in the stall, she begins to stagger from side to side, with her mouth open, from which there issues a clear water, and her tongue is at the same time thrust out of her

mouth. After staggering some little time, she falls down, but recovers herself again, and continues to do so for several times, till she is no longer able to get up, and seems to lose entirely the use of her limbs: she then throws herself on her side, with her head inclined to her fore ribs. The body at this period sometimes begins to swell; and when the disease is still farther advanced, the extremities, and the roots of the horns and ears, feel cold, and the latter are covered with a clammy moisture. What passes through the animal is black and dry; she strikes frequently with her fore and hind legs, her eyes appear dull and heavy, and her breath emits a faint and sickly smell. Her restlessness gradually increases; her extremities are seized with a shivering, she is covered with cold sweats, the pulse becomes irregular, and death terminates the scene.

Cause.

The cause of this disease is whatever obstructs perspiration, and accumulates the

blood internally; hence it may be produced by the application of cold air, by laying on the cold ground, or by giving cold water immediately after calving; and these causes will naturally produce this effect, from the open state of the pores at this time, and from the external parts being so wide and relaxed after the operation. Cows in high condition are more subject than others to this complaint, and especially if they have been kept up for some weeks before calving.

Cure.

From this circumstance, evacuations are clearly pointed out as the proper remedy: the cow should be first bled, to the quantity of three or four quarts, if she can bear it, and then the following drink given as soon as possible :

Take of Epsom Salts, two pounds,
 Althea Ointment, four ounces,
 Nitre, one ounces,
 Powder of Fennigreek, two ounces,
 Powder of Mustard, two ounces.

Mix all for one dose. As soon as this medicine is given to the cow, she should be raked,

or the dung taken from the rectum, and a glyster is then to be given her.

Take of Water Gruel, two quarts,
Common Soap, one ounce,
Salt, one handful,
Sweet Oil, half a pint.

The soap being first dissolved in the gruel, mix the whole together, and inject with a common glyster-pipe and bag into the rectum. As soon as the drink and glyster are given, the animal, if she lays on her side, must be turned on her belly, and well bolstered up with straw, to prevent her getting into her former situation; for by laying in that posture the swelling of her body will increase, nor will the medicine operate so soon as when laid on her belly: nor even in this posture should she lay too long, but be turned over occasionally, to prevent her limbs getting cramped. This change of position will also assist in expelling the wind, as well as in promoting the operation of the medicine. It will likewise be useful to rub the limbs and body of the animal two or three times a-day.

Whatever is given to the animal in this disease, should be administered with caution, for she swallows with some difficulty, and is in danger of being choaked; in consequence of which, there should be a proper interval betwixt each hornful of medicine. In six or eight hours after the above medicine is taken, the following may be given, and repeated every six hours till she is somewhat better :

Take of Gum Myrrh, one ounce,
 Valerian Powder, one ounce,
 Asafœtida, half an ounce,
 Saffron, half an ounce,
 Camphor, one drachm,
 Opium, one drachm,
 Mustard, one ounce,
 Nitre, one ounce.

Mix for one dose ; to be given in a quart or three pints of ale, with a little allspice. When the disease is turned, and the cow begins to eat and drink a little, which is always a sure sign of her recovery, and generally occurs in twenty-four hours after the attack, (if she lives,) and sometimes sooner, for the author has known several instances wherein

the cow has got up in the course of five or six hours ; in that case, give the following medicine :

Take of Camphor, one drachm,
Saffron, half an ounce,
Nitre, half an ounce,
Gentian, one ounce,
Valerian, one ounce,
Bark, one ounce.

Mix for one dose, which is to be given in a pot of mild ale, or a strong decoction of camomile tea ; and it may be repeated once or twice a-day, if found necessary, till the cow is recovered. After two or three doses are given, if she mends very fast in her appetite and strength, one every other day may be sufficient. If great debility should remain after the fever has disappeared, which is frequently the case, an ounce of isinglass, boiled in skim-milk, may be given once or twice a-day ; and will be found extremely useful in assisting to strengthen the relaxed system. If, after forty-eight hours, the cow should be still incapable of getting up, although her appetite is good, and she appears

lively, then the following charge should be laid on her loins, as the weakness appears more in that part than any other; for she can generally raise her fore parts, though the hind parts seem useless :

Take of Black and Burgundy Pitch, one pound,
Oxyroceum and Paracelsus, four ounces,
Bole Armenian and Dragon's Blood, two ounces.

Which is to be melted over the fire. This should be spread while hot, but not so hot as to scald, all over her loins and rump. Some wool, or sadler's stuffing, should be stuck on it, in order to keep it on. As soon as this is completed, the cow must be got up, and put in a sling, made of sacks and ropes, so that the animal may feel her legs, which are to be well rubbed two or three times a day. She must remain in this situation till she can stand of herself, and get up without the assistance of the sling, which is generally in the course of two or three days.

But if the cow should, on the first attack of the disease, be in a laxative state in her

bowels, half the quantity of the purging medicine will be sufficient, and it may be repeated occasionally, if the animal becomes costive, from the continuance of the fever: nay, the author has in some instances been obliged to repeat the dose for two or three days together, at proper intervals, before a passage could be procured; and as long as the cow remains costive, the fever will continue; therefore it is of importance to keep the body in rather a laxative state, the animal being always in that way when in health.

Purgatives are of the greatest utility in the first stage of this disease, particularly those which are of the saline kind, such as the prescription already inserted; and the author can farther say, he has seen the most happy effects from their being given in the early stage of the disease, by its progress being totally stopped, and thus the cow prevented dropping. If the animal should have

lost, in the act of calving, a great quantity of blood, which is sometimes the case, she must then be bled more sparingly. Bleeding and purging, before calving, with proper regimen, will generally prevent this disease.

It evidently appears, that it proceeds from a fullness of the vessels, which impedes the circulation of the blood; and, by these evacuations, nature being once relieved from its burthen, the regular circulation is carried on without obstruction. Though this disease is attended with an incapability of standing while its rage continues, it cannot be with propriety supposed to proceed from debility in the system, when the cow is high in condition, and appears, a few hours before the malady takes place, vigorous and in perfect health; but merely from a fullness of the vessels, by which means a greater accumulation of blood is directed towards the brain. Hence that giddiness or staggering which

appears in its first attack, and is the reason of the animal falling down.

Regimen.

During the continuance of the fever, the cow requires little or no food, but if any is given her, it should consist of water-gruel or warm water, a hornful of which may be supplied her occasionally if she will not drink it herself; and when she seems inclined to eat, bran and malt mashes are most proper, and now and then a little sweet hay, or clover, in a small quantity at a time, which should be gradually increased, till she can eat her usual allowance, and the stomach is more capable of bearing it; for overloading the stomach immediately after the disease has in a great measure ceased, though she may be inclined to take it, has frequently been attended with disagreeable consequences. This practice should, therefore, at all times be avoided. Should an inflammation of the womb take

place during the progress of this disease, which is sometimes the case, it must be treated as before directed. (See Inflammation of the Womb.)

Affections of the Udder.

The swelling of the udder before calving was formerly treated, and the inflammation of it after calving, as well as sore teats, will fall to be properly noticed under the division of Local Diseases, to which the reader is referred

PART II

OF THE

DISEASES OF NEAT CATTLE.

- I. OF THE GENERAL OR CONSTITUTIONAL DISEASES.
- II. OF THE LOCAL OR ACCIDENTAL DISEASES.
- III. OF DISEASES OF THE BULLOCK, CALF. &c.

PART II

INDEX OF NEW CASES

- I. OF THE GENERAL AND CONSTITUTIONAL HISTORY
- II. OF THE COURSE OF THE CONSTITUTIONAL HISTORY
- III. OF THE HISTORY OF THE CONSTITUTIONAL HISTORY

PRACTICAL TREATISE, &c.

PART II.

ON THE DISEASES OF NEAT CATTLE.

INTRODUCTION.

THE former division of this work has been occupied by the consideration of what regards the cow in the state of gestation, and also the extraction of the calf. In the remaining part of the treatise, it is intended to give a detail of the diseases to which the animal is subject; and this will be properly introduced by an observation or two on the structure and economy of the animal.

The cow is an animal of a slow and inactive nature, and not formed for that power-

ful exertion which distinguishes the horse. She takes her food also in a different manner, and both requires and takes in a greater quantity of nourishment ; which is wisely designed that she may give that supply of milk which distinguishes her so much from other animals, and renders her so useful to man.

In tracing the economy of the cow, the stomach and bowels claim particular attention. The stomach is divided into four parts: the first, or the paunch, is the general receptacle of the food, and is therefore the largest division, that a sufficient quantity may be taken in, in a given time, and the animal not fatigued by constantly eating. When this receptacle is filled, the animal generally lays down ; and she possesses the power of bringing back the food in its crude state, as received into the mouth, where it undergoes a complete mastication, by what is termed chewing the *cud*. This being done, it is returned again in a condition fit for nourishment, and is thus

prepared for passing on to the second stomach, or the honey-comb. In the second it undergoes a little alteration, and still more in the third, or many-plies; and through both these small stomachs it passes slowly, and in small quantities at a time, into the fourth, or red stomach, which, like the first, is very large, and contains the food in a finished state, fit for all the purposes which the body requires; and from it the nourishing part is taken up, as well as by the bowels, into which it next passes, and through their track it descends, in order that the useless part may be carried away.

The bowels of the cow are also particular in their structure; they consist of an immense length, coiled up in a curious manner in different parts, by which nature intends that the food should be long detained in them, as the vegetable aliment she takes in requires a long and tedious process to give out its full proportion of nourishment.

This complex structure of the stomach and bowels renders the animal more subject to diseases of these parts, from the facility with which obstruction is apt to take place ; and in all complaints of the cow, this cause is always to be held in view, and our inquiries directed accordingly.

Circulation of the Blood.

Before dismissing this subject, as a derangement in the circulation of the blood is one of the chief marks of disease in all animals, it may be useful to give some general view of it here, for the information of the reader.

Opposite to the heart, the trunks of the largest vein of the body, termed the *vena cava*, unite and carry the blood into a cavity, known by the name of the right ear, or auricle of the heart; and at the place where they open there is situated a small protuberance, which allows the blood of each trunk to pass

in without interfering with each other. The blood thus received distends the ear or auricle, and by its contraction (for every part of the heart is of a highly-muscular or elastic nature,) it is pushed forwards into another division, which is named its belly, or ventricle: by the same action of the ventricle it is next driven forwards into another vessel, connected with the ventricle, consisting of two branches, termed the pulmonary arteries, or large vessels of the lungs, by means of which it circulates through the lungs, and there receives a certain change, imparted to it by the process of respiration, or breathing, which fits it for the different purposes of animal life. From the branches of the pulmonary arteries it is received into the pulmonary veins, which, uniting in two great divisions, carry it back to the opposite side of the heart from which it is transmitted, the end of the pulmonary veins being connected for that purpose with the left ear, or auricle of the heart. When

received into this part, the structure of both sides of the heart being the same, it is next pushed in a similar manner, by the contraction of this auricle, into the left belly or ventricle, which, being connected in its turn with the largest artery in the body, or the aorta, it is then transmitted into this vessel, and by means of it circulates through the rest of the body, or passes into its various branches; and after circulating through these, it is received into the veins which correspond with them: these veins all unite into one large trunk, already described, named the cava, and it is thus brought back to the heart in the manner pointed out.

In this passage of the blood through the heart described, the return of it is especially prevented by the structure of the organ; for every division of the heart we find surrounded with a set of valves, which, similar to flood-gates, prevent the blood, when it once gets in, returning the same way. By the

circulation of the blood nourishment is conveyed to every part of the body in a regular and uniform manner ; for the stomach having first received the food, prepares it, by the process of digestion, to undergo certain changes : these changes consist in the formation of part of it into a milky liquor, called chyle, while the rest of it passes on through the bowels, and is discharged as useless. This chyle, or nourishing part, is every where taken up or absorbed by a set of vessels, termed the lacteals, which all unite into one large branch, or trunk, named the thoracic duct ; and this trunk becomes in the end connected with the vena cava, or large vessel, which transmits the blood to the heart.

Thus the heart may be considered as the center of life and motion, and as giving a supply of what is necessary to every part of the system ; by means of it, the blood pass-

ing through the kidneys is formed, by the peculiar secretion of that organ, into a watery fluid, termed urine: in the same manner, by the blood circulating through the liver, goes to a certain proportion to the formation of bile; and in the same way are all the several secretions supplied, and the different and wonderful purposes of the animal economy carried on.

DISEASES OF NEAT CATTLE.

THE diseases of the cow, like those of every animal in a domestic state, are numerous; and, for more clearly comprehending their nature, they may be treated under two divisions, viz. the constitutional, or general maladies, and those of a local or accidental nature.

ARRANGEMENT.

I. GENERAL DISEASES.

The General Diseases may be classed in the following order.

1. Diseases of increased action, as,

Fevers.

Inflammations.

———— of the Brain, or Frenzy, vulgarly called Slough.

———— of the Lungs, termed Fog Fever.

———— of the External Chest, or Dewlap, termed Anticor.

———— of the Stomach.

———— of the third ditto, termed Lakeburn.

———— of the Bowels.

———— of the Liver.

———— of the Kidnies and Bladder.

———— of ditto, termed Red-water.

———— of the Joints and Limbs.

Rheumatism of the Loins, or Lumbago.

Inflammation of the Udder, or Elder.

———— of the Body in general, termed Blain.

2. Diseases attended with a discharge.

Bleeding from the Nostrils.

Colds.

Bloody Flux, or Ray.

3. Nervous Diseases, in which the powers of feeling and motion are chiefly affected.

Staggers, or Dizziness of the Head.

Lethargy, or Dizziness, called Dropping after Calving.

Lock Jaw, or Dead Palsy.

Fits, or Falling Down.

Asthma, or Short Breathing.

Cough of long standing.

Water running from the Mouth.

Indigestion, or Grain Sick.

Looseness, or Scouring.

Madness, or Hydrophobia.

Fog Sickness.

4. Diseases from bad Habit of Body.

Consumption, or Wasting.

Black Leg, or Quarter, called also Hyan Striking, by some, Murrain.

Yellows, or Jaundice.

Dropsy in the Chest.

II. LOCAL DISEASES, or those in which only a part of the Body is affected.

Blindness.

Strains, or Sprains.

Costiveness.

Strangury, or Difficulty of making Water.

Tumours of various kinds.

Swelled Udder, or Elder.

Scirrhus, or Hard Swellings.

Cancers.

Warts, or Horny Excrescences.

Swellings on the Joints and Bones.

Wounds of various kinds, spontaneous and accidental, viz. Feet foul,

Joint foul, Pokes, or wounds from goring.

Ulcers of various kinds.

FEVERS.

THE first disease in the above arrangement is fever, to which cattle are not so generally subject as the human race. It arises in them from similar causes, as extremes of heat and cold, excess in feeding; and often the origin of it cannot be accounted for.

Symptoms.

The symptoms which distinguish fever here are, the animal is seized with a trembling over the whole body; she then becomes hot and restless, and does not care for food, but is continually desirous of drink; the eyes look dull and heavy, the head hangs down, and a foam, or froth, issues from the mouth; the animal seems, at the same time, oppressed, and utters, at times, a heavy and mournful groan.

Cure.

On examining the pulse at the neck, as

the circulation of the blood will be found very much hurried, the first step, in order to lessen this, is to let blood of the animal, in a quantity in proportion to the violence of the fever, and this should not be less than two quarts or five pints at first. If the symptoms do not appear relieved in the course of twenty-four hours, but rather seem to increase, it may be again repeated. After bleeding, the animal should be placed in a situation moderately warm; and she should not be tempted to eat till there appears a real desire for food. In the mean time, she should be allowed the use of warm diluent drinks, such as gruel and warm water; and, along with these drinks, a dose of Epsom salts and nitre may be given, to keep the body open, according to the form prescribed under the article Colds, in the preceding part of this work. These means are to be followed up by the use of medicines, which tend to open the skin; and the prescription which will answer this purpose best, is a combination

of nitre and camphor, in the form set down in page 198. These means are to be regularly continued, according to the judgment of the practitioner, till a turn of the fever takes place, which will be known by the appetite of the animal returning. The diet most suitable for her recovery should consist of sweet hay, malt mashes, and every thing else of a restorative nature, as pointed out in the article of Dropping after Calving, in page 203.

Fevers in cows are never to be accounted fatal, and will always yield to the above treatment, if timely attended to.

INFLAMMATIONS.

Inflammations, the next class of diseases, are those that require the greatest attention in their treatment; they are generally vio-

lent in their attack, rapid in their progress, and must be opposed by the speediest and most powerful means of relief.

The first disease of this class is Inflammation of the Brain, or Frenzy.

FRENZY.

THIS disease, named also the Slough, is distinguished by the following symptoms: there prevails a constant watching and raving, the respiration is slow, the countenance appears much disturbed, and all the marks of madness are conspicuous in the wild look and fierceness of the animal. On examining the pulse at the temporal artery, the pulsation is felt strong and rapid, and sometimes irregular. Along with this may be observed a peculiar redness of the eyes, the urine, when examined, is always high coloured, and she is occasionally seized with profuse perspi-

rations and convulsed motions, when disturbed or agitated.

Cause.

The cause of this disease may proceed from the suppression of natural evacuations, from exposure to extreme cold or heat, injuries of the brain, &c. This disease, unless taken at the commencement, is apt to terminate in suppuration of the brain, and not unfrequently in mortification.

Treatment.

In the treatment of the disease, bleeding is the principal and only remedy to be depended on. Large and repeated bleedings should be immediately had recourse to, as soon as the malady shows itself; the blood should also be taken from a large orifice, if a vein is preferred; but the best situation for bleeding here is the temporal artery.

Next to bleeding, purging will be found a useful remedy, in order to procure a revulsion of the blood from the head; and the doses for this purpose should be strong and speedy in their operation; thus,

Take of Epsom Salts, from two pounds to two pounds and a half,
Nitre, two ounces.

Mix for one dose; to be given in two quarts of thin gruel, and half a pound of treacle. When this has operated, and bleeding has taken place to a sufficient extent, small doses of nitre and camphor are then to be begun, in the manner recommended in the former disease; and in general the same regimen and after treatment apply here as directed in fever.

Inflammation of the Lungs.

THIS disorder, known by the names of Fog Sickness, and Rising of the Lights, is a disease to which cattle are very subject.

Symptoms.

It is known by great difficulty of breathing, attended with a cough, or hoarse; the animal opens her mouth wide, the tongue is thrust out, the nose and mouth run out a ropy slime, the eyes appear dull and heavy, the pulse is hard, and the animal is unwilling to lay down, feels uneasy when moved, and in giving her drink seems as if she would be choaked in attempting to take it: she is generally also costive; the external surface or skin feels cold, particularly the legs, ears, and roots of the horns; and, as the disease proceeds, the animal becomes very restless and unmanageable.

Cause.

The principal cause of this disease is whatever occasions obstructed perspiration. Hence it is brought on by dry cold winds; it will also arise from drinking too much cold water when overheated, or being kept too

long from water. It is also occasioned frequently by turning out cattle into a pasture that contains much dew, or is covered with hoar frost.

Cure.

Bleeding is here, as in the former disease, the principal remedy. She should be bled freely, and from a large orifice; and a timely bleeding will often do much to check the disease at its commencement. After this, the best practice is to peg the cow in the dewlap with the following :

Take of Bearsfoot leaves, green, well bruised, two drachms, or half an ounce,
Hogs' Lard and Salt, a small quantity.

Or,

Take of Corrosive Sublimate, one drachm,
Euphorbium, half a drachm,
Hogs' Lard, one ounce.

An incision is to be made in the dewlap; the skin is then to be separated from the flesh, sufficiently to admit of either of the above quantities of medicine being introduced into the wound. As soon as the swelling and inflammation of the dewlap has taken place, relief will be given to the lungs, and the in-

flammation begin to lessen. In the mean time, till this takes place, the bowels should be opened, by a moderate dose of the Epsom salts and nitre, as in page 43 ; and after that, an attempt should be made to open the skin, and to remove the general contraction of the surface, by the following form :

Take of Tartar Emetic, two drachms,
 Camphor, two drachms,
 Calomel, eight grains,
 Nitre, one ounce,
 Opium, one drachm.

To be made into a ball with treacle and fen-nigreek powder. This medicine may be repeated twice a-day till the skin is rendered free and perspirable, and the more alarming symptoms of the disease depart.

Regimen.

The regimen, and other parts of the treatment, correspond exactly with the other inflammations already detailed.

*Inflammation of the External Chest,
or Anticor.*

THIS is a species of inflammation which often attacks the dewlap. The symptoms of it are, a sudden swelling of the part, which gradually advances towards the head, and it is attended with much heat and hardness.

Cause.

The cause of this complaint is the same as other inflammations; but in the cow it is particularly connected with improper feeding, and the treatment must proceed on the same principles as in other inflammations. In directing the purge, the author has found sulphur most serviceable here, and he gives it in the following manner:

Take of Flour of Sulphur, twelve ounces,
Nitre, two ounces,
Grains of Paradise, half an ounce.

Mix for one dose; to be given in two quarts of water-gruel, and half a pound of treacle.

This complaint admits also of being much relieved by external applications, in the form of liniment, or embrocation ; as,

Take of Oil of Vitriol, one ounce,
 Linseed Oil, eight ounces,
 Spirit of Turpentine, two ounces.

Mix together, and anoint the dewlap with it twice a-day, having first made two or three incisions with a fleam on the most depending part, which will produce a discharge, and thus powerfully assist the other means of relief.

After the operation of the medicines detailed, the alterative plan is next to be adopted, consisting in the use of the following :

Take of Nitre, two ounces,
 Camphor, one drachm,
 Flour of Sulphur, four ounces,
 Long Pepper, one ounce,
 Gentian, one ounce.

Mix the whole, and give it in three pints of warm ale, for one dose ; and this is to be repeated once a-day, or once every other day, according to circumstances.

The above treatment will be found to cure in most cases, if the disease is taken at an early period ; but if neglected, it is then apt to terminate in gangrene, or mortification of the part.

A soft swelling sometimes appears in this situation, which is of a different nature from the anticor ; it will fall to be noticed under the article Dropsy.

Inflammation of the Stomachs.

THIS is an affection of much importance ; and from the complex structure of this part of the animal, formerly described, it cannot fail to be frequently the subject of disease, as the cow has no less than four stomachs for the preparation of her food, and each of these may be occasionally disordered ; but the first and the third are more the seat of its attack than the other two.

Inflammation of the First Stomach.

THIS disorder is often difficult to ascertain ; it is slow in its progress, and is therefore the more alarming, as the danger may proceed too far before it is discovered.

Symptoms.

Its first symptoms are a swelling and heat; the animal walks, or, indeed, moves with uneasiness and fear; the breath is hurried, and smells strong; the skin sits tight to the ribs. To this may be added, that the animal will feel much pain on pressing down, or pinching the fore part of the back with the hand.

Cause.

This disease generally proceeds from the food not undergoing a proper rumination, by which the process of digestion is interrupted, and it does not pass on as it should. By this means, too great a distension of the

organ takes place, and the contents being acted upon by heat and fermentation, inflammation necessarily ensues. This disorder is more common in winter than in summer, when dry food is used, which is so apt to lay long in the stomach.

Cure.

In curing this disease, the first object is to clear the stomach of its contents ; and this will be best done by Epsom salts and nitre, as formerly recommended, in page 43 ; adding to that prescription a pint of linseed oil, with half an ounce of laudanum ; and before this operates, in order to excite the action of the bowels, a laxative glyster may be given, as formerly directed, in page 54. In this inflammation, bleeding forms a principal means of cure, and should be performed as soon as the disease is discovered, in a quantity proportioned to the urgency of the case, though it should not be less than two or three quarts.

When the more alarming symptoms are thus abated by a repetition of the remedies, as far as may seem proper, then the invigorating plan must be had recourse to, though it must be conducted with judgment and discretion, and medicines of a heating nature not carried too far; gentle stimulants are therefore most proper, which will promote digestion, and not too powerfully excite the action of the organ : as,

Take of Nitre, one ounce,
 Valerian, one ounce,
 Epsom Salts, four ounces,
 Ginger and Long Pepper, each half an ounce.
 Gentian, one ounce.

To be given in a quart of camomile infusion, and one pint of mild ale, and to be repeated once a-day till the animal is recovered.

Regimen.

Much attention should be paid to the regimen in this disease ; nothing cold should be allowed to be taken into the stomach, and the diet should consist of warm mashes and

the lightest food, which should be given, at the same time, in sparing quantities ; even when the recovery takes place, the same caution should be observed both with respect to the food and drink ; for, when the appetite returns, the animal will be very apt to overload her stomach, which, being still weak, may be unable to throw it off, if left to her own will in taking it.

Inflammation in the Third Stomach.

THIS disease is equally frequent with the former, and is known by the names of Maw, Fardel bound, and Lakeburn ; it is attended with great danger, if proper steps are not taken to remove it before it gains ground ; no time, therefore, should be lost to give the animal relief, and check its progress : it is most prevalent in dry summers, and the latter part of the year.

Symptoms.

The symptoms of this malady are, a loss of milk, with little or no appetite; a fullness of the body may be also perceived, and a purging takes place, but only in small quantities at a time, of a dark colour, and of a disagreeable smell. When made to walk, or to turn suddenly round, the animal will groan, and betray much uneasiness; a cough sometimes ensues; the least exercise fatigues and occasions a shaking of the flank; the extremities of the ears and legs feel cold; and as the disease increases, there comes on a difficulty of breathing, with a quick pulse, and apparently much restlessness: when fatal, this malady terminates in mortification.

Cause.

Several causes give origin to this complaint, the most frequent of which is, the cow not having a sufficient quantity of water

to drink, as happens in dry summers, when cattle are at grass, and the ponds, for want of water, nearly empty : thus the food is imperfectly prepared for digestion ; and, besides this, the water drunk is of a bad quality, from the custom cows have of standing in the ponds to cool themselves, where they stale and dung, and thus render it unwholesome ; their food wanting proper dilution becomes so very dry, that on entering the third stomach, which is of a particular structure, divided into folds, it clogs them up, and, by stagnation, becoming hard and black, it forms into a kind of cake betwixt each fold, which never fails to produce inflammation.—Besides this cause, the disease may also proceed from poor forage, either from the produce of the land being naturally so, or the animal being too long on it at a late season of the year, when it cannot afford a competent or sufficiently digestible nourishment. The same effect may also arise from the animal eating astringent matter, such as oak leaves, &c.

Cure.

With a view to stop the progress of this disease, the first point will be to bleed as early as possible, to the extent of a quart or more, in proportion to the violence of the symptoms, and the strength of the animal; and if in good condition, from three to four quarts will not be too much: indeed, in certain cases of high inflammation, and much quickness of the pulse, the author has bled to the extent of six or seven quarts at a time, with certain advantage in mitigating the disease. In all cases of active inflammation, it is to be observed, that one *large* bleeding will do more service, and check the disease at once, than a number of small ones. These bleedings above recommended are to be repeated at the distance of twelve or fourteen hours, if found necessary, and the necessity for them will be judged of by the violent symptoms of inflammation continuing unabated. The repetition, however, of the bleeding

should never be to the same extent as at first. This practice is to be succeeded by a proper use of medicine; and the best form in this disease the author has found as follows:

Take of Flour of Sulphur, twelve or sixteen ounces,
Camphor, two drachms,
Nitre, two ounces,
Aniseed and Cumin Seeds, one ounce.

Mix for one dose; which is to be given to the animal in two quarts of water-gruel, with one pound of treacle. In two hours after this drink is administered, the following is to be given in one quart of strong decoction of camomile flowers, in which one ounce of gum arabic has been dissolved.

Take of Linseed Oil, one pint.

This will more powerfully assist the operation of the other medicines, and will be a means of dislodging the hard aliment from the folds of the stomach. The operation of the medicine is generally in twelve hours after it is given; sometimes it is so early as seven or eight.

Of all medicines, purgatives are best

suited to remove this disease, by their operating upon its cause, which is a retention of dry food in the folds of the stomach ; and in cases of dissection, the first stomach is always found very full, from the circumstance of there being no passage or digestion through the other.

Glysters have here no effect, as the cause is too distant for their operation.

The first marks of the medicine being successful is its bringing away pieces of black caked matter ; their thickness is generally equal to half-a-crown. This appearance indicates certain recovery, if, at the same time, the animal seems inclined to drink. After the operation of the purgatives, the following medicine may be administered :

Take of Valerian, Nitre, and Gentian, each one ounce,
Epsom Salts, four ounces,
Gum Myrrh, Ginger, and Long Pepper, each half an ounce.

To be given in a quart of camomile tea, and a pint of ale, for one dose, which may be re-

peated once a-day, or once every other day. In the above prescription, the salts are used in a small quantity, to keep the body laxative; and the other materials will give tone to the stomach, and will enable it to throw off the remaining part of the indigestible food which overloads it.

Regimen.

The regimen here should be the same as in the preceding inflammation, viz. avoiding giving any thing cold, and at the same time making use of diluent drinks.

Inflammation of the Bowels.

THIS disease is marked by the following

Symptoms.

The animal is taken with a cold shivering at first, she loathes her food, and seems to be full; she is then seized with violent pains,

resembling gripes, the eyes and inside of the mouth are red and inflamed; she often lies down, and rises of a sudden; a purging soon comes on; what is passed is of a blackish or coffee colour, with a very offensive smell, more so than that of a common scouring; the dung is also mixed with an appearance of putrefied skin, consisting of mucus; and also the inner layer of the intestines, which seems in the last stage of the disease to be separated from the others; the pulse is here always low, and the extremities of the animal feel very cold.

Cause.

This disease generally arises from the animal catching cold, particularly from being over-driven immediately before calving; it is also produced by costiveness; and these different causes should be well ascertained before proceeding to the treatment.

Cure.

Where the disease is attended with loose-

ness, and arises from cold, the treatment consists, after first letting blood, in administering a dose of Epsom salts, in the following form :

Take of Epsom Salts, from half a pound to a pound,
Crude Opium, one drachm,
Nitre, one ounce.

Mix the whole, and let it be given in two quarts of smooth gruel, in which an ounce of common soap has been previously dissolved. This dose will be generally sufficient to remove the violent symptoms of inflammation; and that being done, the following medicine will then be proper to restore the bowels to their natural state :

Take of Kali, prepared, two ounces,
Nitre, one ounce,
Camphor, two drachms,
Aniseed, two ounces,
Laudanum, two drachms.

Mix the whole, and give it in a quart of gruel, wherein one ounce of isinglass has been previously dissolved; the dose to be repeated twice or thrice a-day, if the symptoms require it.

If the disease is connected with costiveness, then the following form will be more proper :

Take of Sulphur, from half a pound to a pound,
 Nitre, one ounce,
 Aniseed and Coriander, of each one ounce,
 Ginger Powder, one ounce.

Mix the whole in two quarts of gruel, in which two ounces of castile soap have been previously dissolved ; to which may be also added, one pint of cold drawn linseed oil. This medicine may be repeated in twenty-four hours, with half the quantity, if the obstruction is not removed by the first dose. When the violence of the disease is thus got the better of, the sulphur may be continued in small doses, joined with camphor and the aromatics, as in page 236.

Regimen.

During this disease, the cow should be kept on a diluent regimen, and plenty of gruel and other thin drinks given her, which

R

should be made warm, in order to assist the operation of the medicines.

Inflammation of the Liver.

INFLAMMATION of the Liver is known by the following

Symptoms.

The breathing is difficult, a swelling is sometimes felt about the short ribs, and an uncommon fulness about the region of the womb; the pulse is intermitting; symptoms of fever attend, and the urine is of a yellowish colour, such as it appears in the real Yellows or Jaundice, and the animal appears as if griped.

Cause.

This disease arises especially from two causes; the first is, the animal being overdriven when very fat; it is more liable to take place when the weather is very hot. The second cause of the disease is some external injury, as a knock or bruise, which occasions

the organ to swell and inflame. The consequence of this disease very often brings on dropsy, or decay of the body ; and the more the internal part of the liver is affected, the more dangerous is the disease.

Cure.

The treatment of this disease is to be conducted in the same manner as the other inflammations described ; but as costiveness is here a leading symptom, the state of the bowels requires a very marked attention.—Immediately then after bleeding, which is the first step, let the cooling purge first prescribed in the preceding disease, p. 236, be given, and repeated as often as the costiveness requires. These leading measures being premised, the cure is to be finished by the use of diuretics, of which the following form is employed by the author :

Take of Castile Soap, one ounce,
 Aniseed, in powder, one ounce,
 Valerian, in powder, one ounce,
 Camphor, two drachms,
 Nitre, one ounce,
 Fennigreek, one ounce,
 Sweet Spirits of Nitre, half an ounce.

Mix, to be given in two quarts of water-gruel. This medicine is to be repeated once or twice a-day till the swelling of the liver, and the other symptoms, depart. The regimen here is to be the same as recommended in former diseases; and the animal may be indulged in drinking warm water, or gruel, as often as she is inclined to it.

Inflammation of the Kidnies and Bladder.

INFLAMMATION of the kidnies is pointed out by the urine being deficient, attended with a shivering, and sign of pain in the region of the kidnies, which the cow shows by turning her head to her side, as if looking at the part affected; and if she is made to walk, moves with some degree of stiffness with her hind parts, and at times utters a deep moan; the horns and legs are generally cold, the pulse low, and the animal feverish; the urine is discharged in small quantities, and of a high colour.

The violence of the disease is to be judged of from the appearance of the urine; when it is of a coffee-colour, and of a moderate consistence, the disease is favourable : when voided in small quantities, and black and fœtid, it forebodes a fatal termination. The disease often ends in suppuration, when an ulcer of the kidneys takes place, though it is often got the better of.

Cause.

This disease proceeds from different causes, such as from strains, by riding other cows, from blows, or any external injury, from gravel, or any thing which prevents a free circulation in those parts.

Cure.

In the first stage of the disease, bleeding is here necessary, as in every other inflammation ; the bowels are then to be opened by the saline purge, consisting of Epsom salts, nitre, and soap, as recommended in page 58.

The remainder of the cure is then to be trusted to mild diuretics ; and the author has found the following to succeed the best :

Take of Nitre, in powder, two ounces,
Castile Soap, one ounce and a half,
Camphor, in powder, two drachms,
Oil of Juniper, half an ounce.

The soap is to be cut into shavings, which is to be dissolved in two quarts of water-gruel : the other ingredients may be added, and administered to the cow when new-milk warm. If the animal seems extremely restless, and full of pain, two drachms, or half an ounce, of liquid laudanum may be added to the above dose. This medicine is to be repeated once a-day, or as often as the symptoms demand it, and continued till the disease is removed. Besides this treatment, the glyster, page 59, may be given once or twice a-day, and continued as long as it is found necessary. If the saline purge should not open the body sufficiently, it may be repeated ; she may also have administered to

her, once or twice a-day, a quart of the following decoction :

Take of Juniper Berries, bruised, four ounces,
Mashmallow Roots, dried, four ounces,
Camomile Flowers, four ounces,
Linseed, bruised, three ounces ;

to which add four quarts of water · these are to be boiled for half an hour, then strain off, and give as above.

Regimen.

During the operation of these medicines, the cow should have plenty of diluent liquors, such as water-gruel, &c. and mashes made of malt and bran.

In many cases, in spite of the most judicious treatment, the disease, instead of being checked, passes on, as already mentioned, to suppuration, when a different mode becomes necessary to be adopted: this consists in the use of diuretics of a more powerful detergent nature, which may be capable of healing the ulceration that ensues. When this takes

place, the following symptoms will occur: At the time the animal stales, her urine is voided with much pain, she groans at the time of making it, and blood and matter is mixed with her water; after each time of staling, she sets up her back and tail for a considerable period afterwards; the hairs on her body stand an end, and the skin soon becomes tight to her ribs, attended with fever, and loss of appetite.

Cure.

When the disease has advanced to this stage, the following medicine will be proper:

Take of Common Turpentine, half a pound,
Camphor, in powder, four drachms,
Gum Myrrh, two ounces,
Calomel, prepared, forty grains.

The turpentine is to be first boiled over a slow fire, till it is of a sufficient hardness to form into balls, then take it off the fire, and let it stand till it becomes somewhat hotter than new milk; then add the other ingredients, which must be well stirred together till the

mess gets cold ; then divide it into four balls, one of which may be given every day, or every other day, till the disease is removed. It will also be proper to give, once a-day, one quart of the before-mentioned decoction, to which add half an ounce of nitre. The bowels are also to be paid attention to; for if the animal becomes costive, one of the saline drinks must be given, in order to open them, and it may be repeated as often as it is found necessary.

Regimen.

The food should consist of diluent liquors, malt mashes, &c. as before mentioned.

Red Water, or Staling of Blood,

As a peculiar species of the above disease, to which cows are very subject, and it often proves very fatal ; it is accordingly distinguished by the name of the Red Water, or Bloody Urine.

Symptoms.

The symptoms of it are, the urine tinged with blood, which is generally voided after a long attempt to make it. The cows under this disease leave the rest of the herd, seem to have little or no appetite, their hair stands an end, their eyes are dull and heavy, and appear, when the disease is far advanced, sunk in their head. From the fever which attends this disease, the state of the bowels, generally at first loose, becomes in the end the reverse, and the animal is very much obstructed.

Cure.

Though the appearance of this disease is so formidable, the author knows it will readily yield to a large dose of salts; and he commonly gives them to the quantity of from one to two pounds, according to the form of the ball prescribed in p. 196, stated by mistake as a drink, which is to be given in three quarts of gruel, in which two ounces of soap have been dissolved. But if the bowels are in a

relaxed state, and no costiveness has come on, then, instead of the former, a different practice must be adopted, and the use of strengthening and gently astringent medicines employed; the form of these found most useful by the author is as follows :

Take of Turpentine, three ounces,
 Red Sanders, two ounces,
 Bay Berries, two ounces,
 Bole Armenian, two ounces,
 Nitre, one ounce ;

which is to be made up for one dose, and given in two quarts of water-gruel; to be repeated once a-day. By this medicine, the relaxed state of the kidneys will be gradually braced up, the water recover its natural colour, and the disease thus brought to a favourable termination.

One mode of practice which is not so common in this disease, and which the author derived from the experience of his father, is *pegging* the dewlap, in the manner formerly mentioned in Inflammation of the Lungs; the effect of this is to give a sudden turn to the appearance of the water, and thus it would

seem as if a revulsion were made from the seat of the disease. In all cases of moderate looseness under this disorder, the practitioner should never be afraid to employ the salts as above recommended; for as costiveness generally takes place in the end of the disease, this previous step prevents its occurrence, and proves, when properly administered, the speediest method of cure. To render this method of treatment still more effectual, it may be conjoined with decoctions or drinks, of the following vulnerary herbs:

Take of Shepherd's Purse, a handful,
 Comfrey-root, washed, two pounds,
 Plantain, Sage, and Nettles, of each a large handful;

which may be boiled in four quarts of water till it is reduced to three; then strain off; a quart of which may be given once a-day.

Regimen.

To co-operate with these means, the regimen of the animal must not be forgot; the diet should consist of the softest and most succulent kinds of food, such as gruel, with

currants, bran mashes, &c. In point of situation, the animal should be placed under cover, and not exposed to the heat of the sun, either by placing her under a shade, or taking her into the cow-house.

Garget in the Limbs, or Constitutional Rheumatic Lameness.

THIS disease, termed also Hide-bound, and Joint Yellows, seems but little understood by cow doctors in general, who, from being unacquainted with its real nature and cause, are totally at a loss how to direct its cure : thus many a fine cow is lost, from their ignorance, and the improper application of medicines to remove it.

Symptoms.

The first symptoms of the disease are exactly the same as those which appear on the first attack of a common cold. These symptoms are succeeded by those peculiar to the distemper ; the coat of the animal appears

soon of a rusty colour ; the hair stands an end ; the hide adheres to the body so tight, that it is moved from the ribs with some difficulty, and will even crack ; when pinched on the back, in order to raise her up, the attempt gives the animal great pain, which she shows by bending almost to the ground, and moaning or grunting. At the same time, motion is equally disliked ; and if forced to walk, she performs it with great difficulty, from the stiffness of the limbs, and the exertion even causes a violent heaving or working of the flank. Where the disease has been of long standing, the limbs, on attempting to walk, seem to crack like the breaking of sticks ; and there not unfrequently prevails a swelling of the joints, and also of the udder. In this disease the appetite is much impaired, and little or nothing is eat ; fever comes on in its progress, marked by a strong pulse, dryness of the nose, and frequent grinding of the teeth. During the whole of the malady, the body is in a costive state.

Cause.

The most frequent cause of this disease is heats and colds; and the draught ox is more subject to this disease than the cow. The effect of this cause is to produce obstructed perspiration, which, when not occasioning inflammation of the lungs, liver, or bowels, induces a general stiffness of the skin or surface, and particularly in the joints, where motion takes place. This disease is more ready to occur where the animal is in a bad or morbid state of body, from improper feeding, &c.

Cure.

The natural effect which attends the above cause is to excite inflammation; bleeding is therefore absolutely necessary. In spite of the appearance of the animal, seeming low and lean in flesh, a circumstance always conspicuous where the malady has continued long, the bleeding should be from one quart or three pints at a time; and if the fever con-

tinues, it may be occasionally repeated. When the bleeding is over, the following medicine may be given :

Take of Sulphur, from eight, twelve, or sixteen ounces, proportioning it to the
strength of the animal,
Grains of Paradise, half an ounce,
Nitre, two ounces,
Turmeric and Cummin Seeds, each one ounce.

Mix the whole together for one dose, to be given in two quarts of water-gruel, to which add half a pound of treacle. This drink should be given milk warm. It generally operates briskly, and will sometimes continue for eight or twelve hours. After its operation, the following combination will be proper :

Take of Flour of Sulphur, four ounces,
Nitre, two ounces,
Grains of Paradise, half an ounce,
Valerian, Cummin, Aniseed, and Gentian, of each one ounce.

To be mixed together for a dose, and given to the animal in three pints of good ale, with the addition of a small handful of chopped rue. This medicine may be repeated every day till recovery takes place ; and it seldom requires more than five or six doses.

Regimen.

The regimen must here be the same as in other inflammations.

Rheumatism of the Loins, or Lumbago.

THIS disease seems not understood by authors, nor has it been treated by them. Every affection of this part has been referred by them to external accidents, as blows, strains, or dislocations of the vertebræ of the loins. This ignorance of the cause has given rise to improper treatment.

Symptoms.

The first symptoms of the disease are a loss of milk, attended with fever, costiveness and loss of appetite. On motion in the stall the animal reels from one side to the other and sometimes falls down, as if having no use

of her hind legs; she then rises with the greatest difficulty, or cannot rise at all without assistance. When turned loose, she walks with great difficulty with her hind limbs: and joined to these symptoms, in the progress of the disease her skin comes to adhere tight to her body.

Cause.

Obstructed perspiration, brought on by cold, is the chief cause of this disorder; and this cause will be the more active where the body of the animal is already in a morbid state. The seat of the malady is evidently in the tendons and muscles of the loins, which acquire a morbid rigidity and hardness.

Cure.

Bleeding is here, as in other inflammations, the first remedy, proportioned in its quantity to the violence of the symptoms, and the strength of the animal. After it has taken place from two to three quarts, then the prescription first in order in the former

disease, page 256, is to be given as there directed; and it may be next succeeded by the form given in ulcerations of the kidneys, in page 246; or the following:

Take of Nitre, two ounces,
 Flour of Sulphur, two ounces,
 Camphor, one drachm,
 Juniper Berries, two ounces,
 Long Pepper, one ounce,
 Oil of Turpentine, two ounces.

Mix the whole in three pints of mild ale, with a handful of wormwood previously boiled, which may be repeated as is necessary, not more than once a-day.

Besides these internal medicines, local applications will be found highly useful. The form of a charge will be found most effectual; and the charge directed in p. 200, is the one preferred by the author. The disease generally gives way to this practice in the course of ten days or a fortnight. Many of the symptoms of this disease may show themselves from a violent strain of the loins, by one cow riding another, as happens in

the time of bulling; but this accident is generally perceived immediately, and the symptoms come on instantaneously.

Regimen.

The regimen is here the same as directed in the last disease.

*Garget, or Inflammation in the Cow's Bags,
or Udder, &c.*

THIS is a very common disease, in Kent called the *Yellow*s, and its attack is generally sudden; milking cows are most subject to it, but more particularly old ones; and if the complaint is not early checked, the loss of one or more of the quarters is generally the consequence; therefore proper medicines to stop its progress cannot be too soon administered; for if neglected in the first instance, and the inflammatory symptoms should increase rapidly, it may take its course into

the body and attack some of the vital parts, when the death of the animal is the result.

Symptoms.

The first symptoms of this complaint are a sudden swelling in the milk-bag, or udder, in one or more of the quarters, attended with costiveness, fever, and loss of appetite; and, previous to its attack, it is not unfrequently preceded by a cold shivering, or shaking of the extremities; and when the teats are drawn out, the milk is dregy, or becomes coagulated. As the disease advances, the serous part of the milk becomes bloody, and, as the swelling increases, the bag becomes more red and inflamed, which gives the cow great pain when touched; the hairs of the animal stand an end, and the hide soon becomes tight to its ribs, &c. When the loss of a quarter takes place, and the inflammatory symptoms abate, the milk soon forms into a complete corruption or matter.

Cause.

'The most predominant cause is from catching cold, or a bad habit of the body, but more frequently the former: it may also proceed from other accidents, such as kicks, blows, or a poke of another animal; and sometimes by laying on it herself, which is not unfrequently the case; but the latter cases of the disease are more easily cured than the former, which require some little alteration in their treatment, and will be hereafter explained. If the disease originates from cold, or bad habit, the following treatment will be proper.

Cure.

In this case bleeding is absolutely necessary, and no time should be lost in performing the operation; the quantity of blood to be drawn must entirely depend on the urgency of the disease, and strength of the animal; three or four quarts may be taken,

if the inflammatory symptoms run high, and the cow is in good condition; but if lean, or low in flesh, three or four pints will be sufficient: the best place to perform this operation is in the milking vein, which is distinctly seen on each side the belly, and has its communication with the udder. Bleeding there has a better effect in reducing the inflammation, than when drawn from any other vein, and takes the load much sooner from the oppressed vessels, and consequently gives more room for circulation. When the operation of bleeding is finished, the following drink may be given :

Take of Sulphur, from twelve to sixteen ounces, according to the strength of the animal,

Grains of Paradise, or Long Pepper, half an ounce,

Cummin Seeds, one ounce,

Turmeric, one ounce,

Water-Gruel, two quarts,

Treacle, half a pound ;

to which add one pint of ale; which is to be given new milk warm for one dose. This drink will generally begin to operate in about twelve hours from the time of being admi-

nistered, if it does not meet with any particular obstruction in its passage ; if the latter should be the case, it may be twenty-four hours before it takes place ; if it should not operate in that period, a pint of cold drawn linseed oil may be given, with the same quantity of water-gruel, wherein a handful of salt has been previously dissolved, which will assist the operation of the other medicine. When this drink has done operating, the following medicine is to be given once every other day, till the disease is removed, and the appetite returned :

Take of Flour of Sulphur, four ounces,
 Nitre, two ounces,
 Madder, two ounces,
 Grains of Paradise, half an ounce,
 Valerian, one ounce,
 Cummin and Coriander Seeds, each one ounce.

Mix, for one dose, in three pints of warm ale, wherein a handful of rue, featherfew, or wormwood, has been previously chopped and boiled. The diseased quarter should be drawn out three or four times a-day, not forgetting, at the same time, to give friction to

it with the hand ; it should also be rubbed twice a-day with the following liniment :

Take of Lime Water, four ounces,
 Linseed Oil, two ounces,
 Spirits of Turpentine, two ounces.

The spirits of turpentine and linseed oil are first to be mixed together, then add, by degrees, the lime water, which is to be well shook, in order to make them unite. But if the inflammation runs high, and there is danger of a mortification taking place, the following medicine may be used twice a-day :

BLACK OINTMENT.

Take of Hogs' Lard, four ounces,
 Oil of Vitriol, half an ounce,
 Spirits of Turpentine, one ounce.

Mix together for use , a little of this may be well rubbed into the part affected as often as above directed. The parts may also be fomented once or twice a-day with the following fomentation, with flannels dipped in it :

Take of Wormwood, a large handful,
 Camomile Flowers, four ounces,
 Bay and Juniper Berries, of each two ounces.

These are to be boiled in six quarts of beer

grounds, or spring water; the former is the best, if it can be procured. It will also be adviseable to give, once or twice a-day, the following medicine :

Take of Bark, one ounce,
Gentian Powder, one ounce,
Nitre, two ounces,
Valerian, one ounce.

To be given in three pints of strong ale, made warm, for one dose.

Regimen.

The regimen should consist of warm water or thin gruel, sweet hay, and once or twice a-day a mash made of malt and bran, which is very proper food during this illness, as it always tends to keep the body of the animal in a regular state.

Sometimes in this disease the inflammatory symptoms run so high, that a mortification will take place in spite of every effort used to prevent it, particularly when not early attended to; the author has had a

number of cases of this kind under his care, and the consequence has been, the loss of one or more of the quarters, which have even fallen off. Though the disease may have advanced to such an alarming degree, if the latter instructions are strictly adhered to, they will generally succeed in preserving the life of the animal.

Whenever the mortification has proceeded so far as to cause the quarter to fall off, some alteration of treatment is required; the fomentations may be discontinued. The wound from which the mortified parts have separated, if not stopped, will generally become ulcerous; to prevent which, it should be washed twice a-day with the following cosmetic wash, and continued till it is completely healed:

Take of Blue Vitriol, one ounce,
Spring Water, one pint.

The vitriol is first to be rubbed into fine

powder, which should be put into a jar, then add the water scalding hot, which will soon dissolve it; the clear part is to be poured into a bottle, to which add two ounces of compound tincture of myrrh. The bark drink must be continued till the appetite is restored, and the strength of the animal returned.

When this disease proceeds from external accidents, such as pokes from other cows, kicks, blows, or by lying on their udder, or from the tread of another cow, the first method of cure is to bleed to the quantity of two or three quarts, if she is a strong cow, and in good condition; then give the following medicine:

Take of Epsom Salts, from one to two pounds,
 Valerian, one ounce,
 Cummin and Anise Seeds, of each one ounce,
 Turmeric, one ounce.

Mix together for one dose, which is to be given in two quarts of water-gruel, new-milk warm, with half a pound of treacle. After

the operation of this medicine, the following may be administered once a-day till the inflammation is removed :

Take of Nitre, four ounces,
Fennigreek, in powder, two ounces.

To be given in two quarts of water-gruel for one dose. The liniment prescribed in p. 265, is to be used twice a-day to the swelled part. The bag is also to have good hard rubbing, as before recommended. If these rules are strictly adhered to, the cure will be soon completed.

This disease may also proceed from bad milking, by not milking the udder clean out; in consequence of which the bag will swell, and the milk therein becomes ropy; and if the above practice is continued, it will frequently cause the loss of one or more quarters; therefore, the bag should be clean milked out, otherwise all attempts to cure it will be of no use. If this neglect has been of any continuance, the udder becomes in-

flamed, in which case bleeding is proper; and the purging drink, page 268, is to be given to the cow, as there directed. When its operation has ceased, the nitre powders may then be administered once a-day, as ordered in page 269, till the cure is completed. The liniment, as prescribed in page 265, may also be used to the affected part of the udder once or twice a-day, till the swelling has disappeared, and the milk has returned to its former state.

Regimen.

The regimen should be of an emollient kind, such as malt and bran mashes, warm water, and gruel made of oatmeal.

Blain.

THIS is a disease which frequently attacks cows, and is highly dangerous, if not timely remedied. But though attended with much

danger, the author, in his own practice, does not know a disease which is more easily cured, if timely discovered, and diligently attended to.

This disease prevails most in the spring, or during the months of March, April, and May. Its attacks are most frequent with those cows which, being bought in in lean and low condition, have begun to thrive and get into a better state. The disease also comes on in those days when the sun shines brightest, and is alternated with showers of rain, which renders the weather somewhat variable. It evidently proceeds from too great a fullness of the vessels, by which too great a quantity of blood is determined to the head, and likewise to the whole of the external parts; hence the regular circulation of the blood is altered, and a state of stagnation of the body is produced: this opinion will be confirmed, by considering next the symptoms of the malady.

Symptoms.

The first symptoms that show themselves are, a swelling of the eyes and eye-lids of the animal, which seems to extend through every part, even to the fundament and shape, on which last a number of purple spots make their appearance. In the progress of the disease, such seems the uneasy feeling of the creature, that she opens her mouth wide, extending her tongue out of it to the utmost stretch, from which issues a considerable quantity of froth and water. On examining the tongue, a large blister generally appears on the under part of it. When the disease advances to this height, the whole of the skin, or external surface, assumes the same state of swelling as that described to affect the tongue, from the rapid determination of blood to the skin, to such a degree, that it is found impossible to bleed with a common fleam; and the author has been under the

necessity of employing a lancet, or a pen-knife. for this purpose, though a lancet is the best instrument.

Cure.

The first and most certain means of relief is copious bleeding ; and if performed on the first attack, the cure will be rendered infallible. At this stage of the disease, a common fleam will be sufficient for the operation, and a quantity not less than three or four quarts may be taken away. By this discharge, the symptoms of the swelling will abate in every part of the body ; but if the operation has been delayed till the disease has gained ground, the lancet must then be used, which will require often to pass no less than two inches and a half, from the thickness of the skin, before the evacuation is procured. The vein preferred on this occasion for bleeding is the jugular one. Should the operator be timid, and the animal shows symptoms of

imminent danger, the same relief may be procured by cutting a bit of the tail or ear, or thrusting a penknife through the gristle of the nose. When this first object is finished, and some abatement of the disease obtained, then the following medicine will be properly administered:

Take of Epsom Salts, one pound,
Mustard, in powder, two ounces,
Aniseed, ditto, one ounce,
Juniper Berries, ditto, two ounces,
Nitre, one ounce ;

For one dose. This medicine must be varied in its dose according to the apparent strength of the animal ; as two pounds of Epsom salts will be necessary for cows of a large size, while one is a sufficient dose for small ones. It should be given in two quarts of water-gruel, made of oatmeal, in which half a pound of treacle has been previously mixed. Where this dose proves laxative, it will not be required again ; but should it not have any effect in sixteen or eighteen hours, the same dose may be repeated. These remedies may

be assisted by a proper attention to regimen, which should consist of water-gruel, warm mashies made of malt and bran, and sweet hay, a plan which should be continued for some days before the animal is made to return to her usual feeding. The blisters under the tongue require generally a particular management; it consists in breaking them, and rubbing the parts with vinegar and salt, which will resist the effects of the inflammation, and effectually cure it.

That the nature of this disease may be better understood, the author will here subjoin an extraordinary case of Blain, which occurred some years back. The cow belonged to Mr. Northwood, steward to — Harcourt, Esq. She was at grass about three miles from the author's house, on an estate of Lady Salisbury's, so that it was some time before any assistance could be had for her, and he had little doubt but she would be dead before he arrived; but, instead of this, to his great

astonishment, on reaching Kilburn, he met the cow in charge of a servant, who was bringing her home. On inspecting the animal, he observed the shape, udder, teats, and inside of the mouth, were of a purple appearance; the body of the cow, when touched, felt quite moist, and the roots of the hair were bloody. From this circumstance, a strong proof is afforded of the determination of the blood to the surface, which forces its way through the small vessels, till the force of it is restrained, and the disease is abated, by the means already recommended. In three or four days the hide of the animal became extremely hard, and particularly on each side of the fore ribs; this hardness increased, so that part of the skin became lifeless and destroyed. In the course of a fortnight it began gradually to separate from the body, bringing with it the hair and roots, in the place of which a fresh skin formed, excepting in a few points, which were somewhat more

tedious before they healed up. In this case, the practice of the author was to take from her a quantity of blood, which he did, to the extent of two quarts; he then purged her with Epsom salts, as in the foregoing prescription, and afterwards treated her with diaphoretic medicines, which tended to restore the regular state of the circulation to the surface, or skin. By the continuance of these, the cure was happily effected, with the separation of the skin, as already noticed. The form of the diaphoretic medicine preferred by the author was,

Take of Sulphur, four ounces,
 Nitre, one ounce,
 Valerian, one ounce,
 Camphor, two drachms,
 Grains of Paradise, half an ounce.

Mix together for one dose, to be given in three pints of mild ale; which may be repeated every day, or every other day, as circumstances may require it.

Regimen.

During the continuance of these medicines, the animal must have warm water and mashes, as before mentioned.

CLASS II.

DISEASES ATTENDED WITH INCREASED DISCHARGES.

THIS class of diseases is not very numerous with cows; they are attended with fever at their commencement, which is generally slight, and in their progress they are chiefly marked by the increased discharge, which is their leading symptom.

Bleeding from the Nostrils.

THE first to be treated of is bleeding from the nostrils, which takes place in greater or

less quantities, according to the cause from which it proceeds. It is a complaint which the author has never seen dangerous; though, to manage it properly, it requires to be well acquainted with its origin. When the complaint is connected with a fullness and distention of the vessels of the head, it may be considered as an effort of nature to relieve this state, and it should not be stopped too rapidly. When it proceeds even from hard exercise, or over-driving the animal, the evacuation will remove the fever produced by this cause; and unless the discharge is very profuse, it can do no harm. But when, on the contrary, it occurs with a cow which is weak and debilitated, and it appears evidently to arise from the thin acrid state of her juices, then a check must be put to it as quickly as possible.

Cure.

The stopping of the blood is always in our power by external applications; and one

of the best forms for this purpose is as follows :

Take of Sugar of Lead, two drachms,
White Vitriol, one drachm.

To be dissolved in a pint of vinegar : a cloth, dipped in this solution, is to be applied cold behind the ears and back of the horns ; to be renewed as often as the cloth gets warm. Or, in place of the above,

Take of Blue Vitriol, one ounce.

To be dissolved in a pint of vinegar, and applied in the same manner.

When the bleeding is stopped by these means, which seldom fail, attention is to be paid to the cause from whence it proceeded ; and when it is connected with a fullness either of the general habit, or of the head in particular, or when it proceeds from any suppressed evacuation of the skin or other parts, then these external applications should be accompanied with a general bleeding, and medicines to open the bowels, in order to

lessen the excess of fluids in the body. The form of such medicine is as follows :

Take of Epsom Salts, from one to two pounds,
Nitre, two ounces,
Ginger, two ounces.

To be mixed, and given in two quarts of water-gruel. With these precautions, the cure of this complaint will be always found easy.

Colds.

THE second disease of this class is Colds, which was already considered at large, as occurring during the period of gestation : to that part of the work, page 50, we now refer, with this additional observation, that where the fever runs high, the treatment may be carried to a greater length than what has been directed under the head of Gestation. Where the cold has been of long standing, and produces garget of the limbs, then the use of sulphur will be found a most admirable remedy ; and it may be given as directed

under that particular disease, called Garget of the Limbs, (see page 256.)

Dysentery, or Bloody Ray.

THE most formidable disease of this class is the Dysentery, Bloody Ray, or Flux.

Symptoms.

This complaint is distinguished by the excrements being mixed or tinged with blood; there is also discharged, as formerly remarked under Inflammations of the Bowels, a kind of putrid skin towards the termination of the malady. This disease is marked by the suddenness of its attack, and the very offensive smell the excrements possess: along with these symptoms, there prevails a quick prostration of strength, and all the other marks in the dry state of the skin and coldness of the body, which have been noticed in several of the preceding diseases.

Cause.

The most general cause of this complaint is cold suddenly applied to the body overheated; hence it follows over-driving, and whatever, by suddenly lowering the temperature of the animal, checks the circulation to the surface, and determines it to the bowels.

Cure.

In the cure, the first step, to check the symptoms of inflammation, is to blunt the acrimony of the discharge, and to open the perspiration by the skin. To check the inflammation, bleeding is the great means, immediately applied, and proportioned in quantity to the strength and condition of the animal; but it will not be proper to repeat it more than once, from the rapid tendency of the complaint to mortification. It will, therefore, be more useful to give a small dose of Epsom salts, joined with a certain portion of

opium, to allay the pain, which is here violent, in the following form :

Take of Epsom Salts, one pound,
Crude Opium, two drachms,
Nitre, one ounce,
Camphor, two drachms.

Mix. for one dose, to be given in two quarts of water-gruel ; the dose to be repeated. To allay the irritation of the bowels, oils and mucilages should be administered ; and the form which is best adapted here is,

Take of cold drawn Linseed Oil, half a pint,
Isinglass, half an ounce.

The isinglass to be first boiled in a pint of skimmed milk, till it is dissolved, then add the oil to it ; to be given once or twice a-day. By these means the more violent symptoms will abate. The obstruction of the surface is next to be relieved, as a principal point towards completing a cure ; the medicines most successful for this purpose are,

Take of Nitre, one ounce,
Camphor, two drachms,
Opium, two drachms,
Tartar Emetic, one drachm.

To be mixed together and formed into a ball,

for one dose, and repeated twice a-day; assisted by a decoction of comfrey, as in p. 252, with the addition of one ounce of salt of tartar. By this regular process, the disease will be successfully cured, frequently without any attention to the acrimony of the discharge. The author has begun the above medicines for removing the obstruction of the surface in six or eight hours after having administered the dose of Epsom salts, and under this management he has found the symptoms very readily give way.

Regimen.

In this, as in most other complaints of the bowels attended with inflammation, it is of much importance that the intestines should have as little to do as possible; the quantity of drink given should not be much, and the diet should consist chiefly of gruel and warm mashes, and these given sparingly.

CLASS III.

NERVOUS DISEASES.

THE diseases of this class are numerous; in them the powers of feeling and motion are the principal parts of the system affected. We shall enumerate them in their order, beginning with those whose seat is in the head, or superior part of the body.

Staggers, or Dizziness of the Head.

THE first to be noticed is Staggers, or Dizziness of the Head, which causes a wavering and staggering motion of the body, by which it is chiefly distinguished.

Cause.

The cause of this disorder is a general affection of the brain, particularly showing itself in the state of the optic nerves.

In its treatment, this general affection of the brain is to be held in view, and bleeding and antispasmodics form the certain means of cure. Bleeding should take place as soon as the symptoms are perceived, to the extent of two quarts, if the cow is in good condition; and her bowels then being cleared out by a saline purge, the antispasmodics are to be begun, in the following form :

Take of Valerian, one ounce,
 Asafoetida, one drachm,
 Nitre, two ounces,
 Camphor, two drachms.

Mix, for one dose, to be given in one quart of horse-radish tea : this medicine may be repeated every twenty-four hours, or according to circumstances.

Regimen.

In attending to the regimen here, thin diluent drinks are highly proper; and as the cow recovers, great care should be taken not to expose her to any extremes of weather.

Lethargy, or Dizziness.

THE next disease is Lethargy, by some called Sleeping Fever. The animal in this disease is inclined constantly to doze, or sleep, and that even in a standing posture, by resting her nose on the manger or crib till she is constantly in danger of falling. This evidently shows an oppression on the brain, and a fullness of the head, the vessels of which are unable to expel their contents, or carry on the circulation in a manner sufficiently active. The chief point then is to remove the present accumulation or oppression which causes the disease, and then to give vigour to the system, in order to prevent its recurrence. Bleeding will remove the present accumulation, which is to be followed, as in the last disease, by the same attention to opening the body. These steps being premised, anti-spasmodics will then complete the cure. The same forms will answer here as prescribed in the last disease; and the regimen may also be similar.

Lock Jaw, or Dead Palsy.

THE next disease that falls to be treated is the Lock Jaw, or Dead Palsy. It properly deserves this name, as it consists in a general stoppage of the circulation, which shows itself by the pulse being slow and irregular, and by a general numbness, or loss of feeling in the whole external parts, but which is apt to be more conspicuous in the jaws, by preventing them performing their usual functions. This disease is of a very dangerous nature, and is often attended with the immediate dissolution of the animal: in general, the internal system does not seem so much deranged, for the animal is desirous to eat, if the state of the jaws would allow her.

Cause.

This disease, like so many others, proceeds evidently from the application of cold when the body is over-heated, and the small vessels

of the surface in an active state; hence it frequently follows over-driving; but that a disease of this nature should arise, it must be connected with a certain constitutional irritability of the animal: it is not a frequent disorder, and therefore it must depend on this peculiar state of habit, modifying in a particular manner the morbid cause.

Cure.

Before proceeding to any particular plan of medicine, bleeding should be premised, which should not be here in a great quantity. As swallowing is prevented, from the contraction and stiffness of the jaws, external applications form the first means of relief to be employed.

Take of strong Spirits of Ammoniac, two ounces,
Spirits of Turpentine, one ounce,
Flour of Mustard, one ounce,
Mercurial Ointment, one ounce,
Opium, in powder, half an ounce,
Mashmallow Ointment, two ounces.

In preparing the above, the flour of mustard, opium, and mashmallow ointment, are to be

well mixed with the mercurial ointment, and after that the spirits are to be added by degrees, and incorporated with the whole.

This application is to be made twice a-day to the jaws of the animal, by rubbing in at each time to the extent of two ounces or more, all along the jaw and neck, wherever the connection of the muscles of the affected parts lies. When relief is obtained by these means, and the jaw is somewhat relaxed, then internal medicines will strongly co-operate; but as this requires some time, immediate attempts must be made, by glyster, to assist the action of the liniment. The glyster most proper at first should be of a purgative nature, as in page 197; and after its operation, the following may be thrown in:

Take of Mutton Broth, two quarts,
Opium, in powder, half an ounce,
Valerian Powder, one ounce.

To be given as a glyster, and repeated twice a-day.

The best internal medicines are opium, valerian, and mustard; and their use should be preceded with the warm aromatic purge, the first prescription in page 256. Then the following form will be most useful:

Take of Opium, in powder, two drachms,
Camphor, three ditto,
Valerian, one ounce,
Mustard, two ounces.

Mix, for one dose, to be given in a quart of strong camomile tea, and repeated every six hours till relief is obtained.

Along with these means, friction and heat to the surface will be essentially necessary; the body in general, as well as the parts affected, should be well rubbed, and dry warm blankets should be afterwards applied to cover all the animal.

Regimen.

The animal should be allowed frequently to suck in as much as she can of a strong infusion of hay, well boiled, or water-gruel;

and when the disease remits, mashes, as directed in other diseases, will be proper.

It will be necessary here to mention, that the same disease arises from external accidents, as wounds, pricks in the tendons, &c. and also from worms in the stomach; the only difference of treatment will be in this last case, that evacuations by the bowels are the chief remedy; this may either be done by calomel, to the extent of one or two drachms, or by a strong decoction of savin; and when the evacuations are once procured, so as to remove the cause of irritation, then the nervous medicines recommended above will effect a cure. When the disease arises from worms, it is in general visible by their crawling from the nostrils and mouth, and the animal, besides, feels griped and uneasy in her stomach and bowels.

Fits, or Falling Down.

THIS is a disease not so very frequent, and the author has not met with more than three or four cases of it in his whole practice. In this disease, the animal first staggers about, and then falls down, with the loss of all sense and motion, as commonly happens in a fit; a froth issues from the mouth, the eyes seem convulsed, and have a sort of tremulous motion, and there is also a working in the jaws. This fit is not generally of long duration; the circulation gradually returns, and the senses soon after acquire their natural state. The repetition of this fit is not above once a-day, but its continuance may be for several days.

Cause.

This disease evidently arises from obstruction of the stomach and bowels; it is attended with costiveness, and along with the dung there is always discharged a slimy matter;

afterwards, when a purging begins, an evacuation of a very offensive smell takes place, which shows a cure of the disease, and affords a proof of its cause.

Cure.

To give immediate relief to the fit, bleeding may be here performed; but the chief means of cure will lie in clearing out the stomach and bowels; for this purpose, the first prescription in page 256 should be given, as there directed; and afterwards the alterative medicines in the second prescription administered, in order to complete the cure.

In country practice, the author never had an opportunity of seeing this disease; it has only come under his care since his residence in town, and must proceed from the different mode of feeding.

Asthma, or Short Breathing.

THIS is a disease peculiar to cows which are fed on grains. Its symptoms are, a wheezing and difficult respiration, when the stomach is full, or when they are any way hurried. It is a disease that seldom affects the general health of the animal, as they will live for several years under it, and even get fat, though they are apt to go off suddenly in the end, particularly if a cold or inflammation attacks the lungs.

Cause.

The cause of this disease, as shown by dissection, consists in a preternatural growth at the top of the wind-pipe, or lungs; and this growth often proceeds to a large size, which the author has cut out from the dead animal weighing a pound and upwards.

Cure.

From the cause of this disease, it is evident

no cure can be expected, but relief may always be given, by occasional bleedings and purging, whenever the animal gets into high condition, or the stomach is overloaded, by which the disease gets worse than usual.

Cough of long Standing.

THE symptoms of this disease are, a strong disagreeable cough, and chiefly a sense of fullness of the chest, which is much increased on filling the stomach by food ; it is connected in some degree with this cause, for it is removed by unloading the stomach and bowels of their contents.

Cure.

The plan of cure here is first to bleed, which will relieve the oppressed vessels, and then to have recourse to purging, in order to remove the cause of the disorder pointed out;

the alterative plan may then be begun, as in page 256, second prescription, which will prevent any return of the malady.

STOMACH COMPLAINTS.

FROM the complex structure of the stomach in the cow, its functions are very apt to be disordered, and this morbid state of the organ is attended with a variety of symptoms, which deserve to be separately considered, under the heads of, Grain Sick, Flatulence, Water running from the Mouth, or Losing their Cud.

1. *Grain Sick.*

THE first symptoms of this state are a dull heavy appearance of the eyes of the animal; she frequently shifts about from one side to the other, and when she is let loose, and driven about, she grunts or complains much.

On examining her, a fullness may be perceived betwixt the hip and ribs, on the opposite side to the milking one, if pressed down with the hand ; this fullness will be felt to consist in the extension of the stomach. As the disease advances, a loss of milk ensues, and a total dislike to any food.

Cause.

Improper feeding is the cause of this, by allowing the animal too great a quantity of grains at one time, particularly the distiller's grains. This, however, may happen without any fault of the feeder ; for when two cows occupy the same stall, which is the case in London and other large towns, should one of them be sick, and the other have a ravenous appetite, the latter will eat such an over-proportion as to produce this effect.

Cure.

Bleeding and purging are the only remedies here ; the first to relieve the urgent

symptoms, the second to remove the cause of the malady. The quantity of blood should not be less than from two to three quarts; after which, the purging drink is to be given, as prescribed in page 256. When it has fully operated in unloading the stomach, then the weakness of the organ, the loss of appetite that ensues, and the deficiency of milk connected with it, will be repaired by medicines of an aromatic and bracing nature, as follows:

Take of Gentian, Cummin, Coriander, Valerian, and Aniseed, of each one ounce,
Grains of Paradise, one ounce,
Flour of Sulphur, two ounces.

Mix, for one dose, which is to be given in three pints of mild ale, having previously boiled in it a small handful of chopped rue. This should be given of a proper heat, and repeated once a-day, or every other day, till recovery takes place, which generally happens in a few days.

Regimen.

Diluent liquors and mashes form the proper food for some days; grains are entirely

to be given up till the stomach gains its former tone and strength; they are then to be given with caution, that no relapse may be endangered.

2. *Flatulence.*

THIS symptom arises from two causes; either a loss of tone in the stomach, when it is a constant and permanent ailment, or from overdistension of the organ, when it is sudden in its appearance, and quickly removed. The first of these generally occurs in old cows, particularly when they have been fed long on hot grains, by which the powers of the stomach are so much weakened, that the air extricated from the food in the process of digestion is not easily thrown off, but continues to distend the stomach, and produces that uneasiness and belching which marks the disease. The relief afforded in this complaint is generally but temporary, and the cow frequently dies of the disease at last, gradually wasting

away; and after death, on opening the stomach, it is found that ulceration has taken place in some parts of it. The treatment here must be regulated entirely by endeavouring to restore the tone of the stomach; and this will be done by the bracing aromatic medicines prescribed in page 300; before which, to clear the stomach, occasional purging will be proper, by the medicines recommended in page 196. Where much over-distention prevails, the operation about to be mentioned in the next article requires to be performed. Whenever purging medicines are given in this complaint, the cow should be driven about, in order to promote their more speedy effect.

The second species of Flatulency, which is sudden in its appearance, is a very violent disorder; it is termed by authors the Fog Sickness. It is occasioned by turning cattle into fresh clover, or other rich pasture, to which they have been unaccustomed, where

they eat so greedily as to overload the stomach: in this state, the extrication of the fixed air also taking place, produces such a violent distension of the whole paunch, that the upper part of the stomach becomes closed, so that no vent can be given to the contained matter, and the death of the animal is generally the consequence in a few hours. In this situation, immediate relief must be given, and it may be procured by opening the cavity of the stomach, by pushing an instrument down the throat, so as to open the upper part of it, which, when it does, the air suddenly rushes out, and the animal is soon relieved from her distress. The author has invented an instrument for this purpose, which is easy in its introduction, and which should be made to pass fully into the stomach to render the operation complete; no cowkeeper should be without one of them in his possession; it is a much easier method than the one commonly practised, of stabbing or paunching them. This operation is per-

formed by thrusting a sharp knife in the middle space between the hip and ribs, on the side opposite to the milking one; as soon as it enters the cavity of the stomach, the same relief will be experienced as by the former method. After relief has been thus obtained, and the violence of the disease has abated, a purging medicine, as in page 196, will be proper, to throw off the accumulation of food in the stomach; this is all that is necessary to the cure. Where stabbing takes place, the orifice may be kept open some little time, and then healed up by applying over it a pitch plaster.

3. Running of Water from the Mouth.

THIS state of the stomach, also termed Losing the Cud, is another symptom of indigestion, arising from a relaxed state of the organ, and the food accumulating there; by this means, the latter not being returned into the mouth, it does not undergo the second process necessary for its passing to the bow-

els. This symptom is easier cured than the others described, and it readily yields to the treatment recommended in Grain Sick, by first purging, and then bracing up the stomach.

Looseness, or Scowering.

THIS disease is very frequent with cattle : it consists in a frequent and liquid discharge of the contents of the bowels, which vary in their appearance during its progress, being sometimes slimy, at other times black and bilious, and occasionally of a watery frothy consistence.

Symptoms.

The symptoms which attend this disorder are generally a bad appetite, the pulse low and weak, the skin dry, and soon becoming tight to the ribs, the countenance appearing dull, accompanied with a degree of slow fever, and much thirst. Under this disease

cattle are very sensible to the impression of weather, and generally seek for shelter or cover wherever they can get to.

Cause.

The causes of this disease are various; it may proceed from an acrid state of the bile, which the appearance of the stools will show; it may also proceed from over-heating, the fluids being thus driven from the surface toward the bowels; but it more frequently arises from errors in diet than from any other cause. Thus food given hotter than it ought to be will occasion the complaint, and want of proper nourishment will produce the same effect: hence cows denied their proper support are generally cut off by this malady, which has therefore received the name of Rottenness. On opening the body of a cow which has died of this illness, the gall-bladder is found full of a thin acrimonious fluid, the part of the bowels next it shows several putrid spots, and the whole gut is highly inflamed.

Besides this, the author has seen such extensive ulcerations in them, that he has dissected from them callous pieces equal to the size of his fist, which state of the parts has occasioned the disease to be termed the Garget in the Guts.

Cure.

Whatever the cause of the disease may be, the commencement of the cure should take place by first clearing out the bowels, and discharging any acrimony contained in them, which may prove a means of keeping up irritation. A dose of Epsom salts, joined with nitre and camphor, will answer this effect, as recommended in p. 187. When this medicine has operated, diaphoretics, or remedies opening the skin, are to be begun and continued; and the following form is preferred in this disease by the author:

Take of Camphor, two drachms,
Salt of Tartar, four ounces,
Nitre, one ounce,
Mithridate, one ounce.

Mix, for one dose, to be given in two quarts

of water-gruel, wherein one ounce of soap has been previously dissolved. This dose may be repeated once or twice a-day, if the symptoms of the disease demand it. When the stricture or dryness of the skin is removed by the above medicines, and the disease is only kept up by the weakness of the bowels, the cure may then, but not till then, be trusted to the use of astringents.

Take of Diascordium, two ounces,
 Dragon's Blood, three ounces,
 Ginger Powder, two ounces,
 Grains of Paradise, half an ounce.

Mix, for a dose, to be given in one quart of the following decoction, which may be repeated once a-day:

Take of Logwood Chips, six ounces,
 Camomile Flowers, four ounces,
 Valerian, one ounce ;

which must be boiled in four quarts of water till one half is wasted. The above treatment will always succeed, when the disease has not advanced so far that the bowels have got into a state of ulceration, in which case it com-

monly proves fatal, and the animal lives till she is reduced to skin and bone.

Regimen.

In this complaint the cow should be kept particularly warm, and both her food and drink should be given with rather more than the chill taken from it, till she is completely recovered; the food should also be of the same nourishing kind so often recommended, viz. warm mashes, &c.

Hydrophobia, or Madness.

THIS disease arises from the bite of a dog, or other animal infected by it; it is always incurable, but it is proper to know the symptoms of it in cows—these are a constant lowing and distress, a great flow of froth from the throat and tongue, and the breathing somewhat irregular; the malady at last breaks out into an ungovernable madness.

As soon as the first symptoms of it is discovered, the place bit should be searched for, and, when found out, an incision made, so as to cut off all the injured part; a free discharge of blood should be allowed to take place from it, and then the sore dressed with a digestive ointment, with a proportion of Spanish flies in it, in order to keep up a proper flow of matter. All internal remedies are here of little avail; but as mercury has been known in some rare cases to succeed, it may be used here, and so freely as to produce, if possible, a salivation.

CLASS IV.

DISEASES OF BAD HABIT OF BODY.

THE last class of constitutional diseases are those which arise from a fault in the state of the fluids, and when the whole body suffers of course from their vitiated state.

Consumption, or Wasting.

THE first disease of this division is Consumption, or Wasting, where the body of the animal becomes gradually emaciated, or pines away, attended with a cough and slow fever; but where the appetite is not much affected, the progress of the disease is generally marked in the end by an attack of looseness, which proves fatal. During the course of this malady, there prevails a remarkable flow of milk, which exhausts the strength of the animal, and increases the symptoms of the disease.

Cause.

Cold and improper food are generally the causes of this complaint; the former exciting inflammation, causes ulcerations of the lungs to be formed; the latter, by either conveying deficient nourishment, or nourishment of an improper kind, will produce the same effect. In proof of this last circumstance, the author

begs here to introduce a remarkable fact, which occurred in his practice some years back, when doing business with Mr. Kendall, a very eminent cowkeeper. This gentleman had taken a predilection for feeding his cows with potatoes, which he gave to a very great excess, and continued for some time; the consequence of this was, that though the cows yielded a great proportion of milk, many fell into this disease, and were seized with a cough and wasting, which cough was so frequent amongst them, that the proprietor at last gave it the name of the Potatoe Cough. From losing a number of his cows, he was obliged to discontinue this food, when the malady stopped. Besides this, when food of a forcing nature is given to the animal, for the purpose of promoting too great a quantity of milk, the consequence will be to produce this disease.

Cure.

When the first symptoms of this complaint appear, the object will be to prevent, as far

as possible, the waste of the body from going farther, to the injury of the animal. She should be dried off immediately, or no longer kept for the purpose of milking: this will often be sufficient to effect a cure. Where the disease is connected with inflammation of the lungs, bleeding, and the same treatment directed under that head (see page 224,) is the only plan that can be adopted; but when the disease is advanced far, this and every other mode of treatment will be found ineffectual. At the same time it is to be remarked, that it seldom occurs in the country, but is confined more to cows that are kept to the stall in town, whose mode of feeding is different from those that are kept in a free and open situation, and whose food is of a more succulent nature.

Black Leg, or Quarter.

THIS is a disease both very dangerous and sudden in its attack, which generally kills the animal in twenty-four hours, or less.

Symptoms.

The attack begins in a joint of the leg or thigh, and sometimes in the foot; it is first discovered by a lameness of the animal, and the part, when examined, discovers a crackling and swelling, showing that air has made its way between the skin and flesh. Its progress is to rise upwards, and to spread over that quarter which it first seized; when it rises to the back or kidneys, it then proves quickly fatal.

Cause.

The cause of this affection has been ascribed to too great a portion of rich food, while the animal is, at the same time, only in a growing state, as it very seldom attacks them after two years old. Hence it will appear to depend on too great an excitement of the system, which produces violent inflammation of a part, and this inflammation ends rapidly in a mortification.

Cure.

From this view of the disease, bleeding is the principal remedy to be depended on, which should be immediately begun, and carried to the same extent as in the active inflammations, or first class of diseases ; in doing this, the state of the part must not be omitted, and scarification, or cutting away, so as to unload the vessels, will be of great service ; after this, the parts should be dressed with equal parts of common salt and nitre, finely powdered, by which means suppuration will come to be induced, and a check put to the disorder. Some farther assistance may be procured by well fomenting the part, by means of the prescription recommended in page 190. In this treatment, clearing the bowels should also be attended to, and it will second the more active remedies. From the dangerous nature of this disease, it is of the highest consequence to be able to prevent it; and to young

cattle who are placed in rich pastures, the following medicine may be given two or three times in the course of the year :

Take of Flour of Sulphur, from four to six ounces,

Nitre, one ounce,

Grains of Paradise, two drachms.

Mix, for a dose, and give in three pints of water-gruel, and a quarter of a pound of treacle. This remedy should be succeeded by bleeding each time.

Yellows, or Jaundice.

THIS is a disease to which cattle are occasionally subject; it is chiefly known by examining the whites of the eyes, the inside of the ears, and roof of the mouth, which have all a tinge of a yellow colour. This disorder is attended with a sense of itching, the urine is high colored, and the dung is generally hard and black, from the costiveness which always attends the disease ; there prevails also a great inactivity, or sluggishness, and the animal does not care to be moved about : as the dis-

ease advances, a considerable fever accompanies it.

Cause.

The cause of this disease is evidently an obstruction of the regular passage of the bile from the gall-bladder into the bowels, and this obstruction may proceed from various circumstances; one of the most frequent is, the formation of stones in the gall-bladder, which stop up the passage. These stones seem to be connected with the food of the animal, and the cure of this species of the complaint is effected chiefly by an alteration of the food, or placing the cow from dry fodder upon green succulent pasture. The disease may also proceed from hard tumours or swellings in the neighbourhood of the gall-bladder, as from an enlarged liver spleen, or any of the other organs. In these cases, the cows are generally old, and the disease is to be considered as a mark of a worn-out constitution, and is therefore only symptomatic of a diseased state of one or more of its organs.

Cure.

In directing the cure of this complaint, much attention is to be paid to the cause from which it arises ; the first object is to promote a discharge of the bile into the bowels, and this is to be done by purging, which is the more necessary, as costiveness is a leading mark of the disease, and tends to increase that heat, irritation, and fever, which accompanies it. The sulphur is here the best purgative ; and the form of it has been already specified in page 226. The operation of the sulphur may be succeeded by diuretic and opening medicines, as,

Take of Flour of Sulphur, four ounces,
 Nitre, two ounces,
 Grains of Paradise, half an ounce,
 Valerian, one ounce,
 Castile Soap, two ounces.

To be given in two quarts of gruel. Along with these medicines, great attention should be paid to the diet ; it should be of a soft succulent nature, as warm mashies made of bran, malt, and pollard ; and this should be accom-

panied with a good deal of dilution, or enticing the animal to drink ; and in the drink a handful of salt may be dissolved. As soon as recovery takes place, if the season permits it, the cow should be sent to grass ; and if salt marshes are near at hand, these are preferable to any other pasture, which will carry off any remains of the disease.

Dropsy.

DROPSY is not a very common disease in cows ; when it occurs, it is more frequently met with in the chest. It is known by a swelling in the dewlap, similar to what takes place in Anticor ; but here the swelling is of a soft and puffy, not of a hard nature. It is also accompanied by a diminished quantity of urine, and the eyes show a white appearance, with a weakness, and discharge of a watery fluid from them.

Cause.

The cause of dropsy is either from an obstruction of some of the principal organs, particularly the liver, and hence it appears along with many other diseases, as Jaundice, Yellows, &c. ; or it may proceed from a general relaxation of constitution, or the powers of life being as it were exhausted.

From this view, the cure of dropsy is very uncertain ; it is chiefly attempted by first giving vent to the collected water, and afterwards, when this is done, endeavouring to prevent its return, by bracing up the habit. The collected water may be removed by general purging ; the sulphur will answer here equally as well as in the former disease ; and along with this, a fleam may be struck into the dewlap, so as to make ten or a dozen orifices, which, as well as the dewlap in general, are to be rubbed with the black oils or ointment, as recommended in Inflam

mation of the Chest, or Anticor, as in p. 191. In the interval of purging, the diuretic remedies noticed in page 243 are to be given. These are the only means of cure in our power, and when unsuccessful, little else can be done.

Regimen.

The regimen here should be every thing nourishing, and rather of a dry nature; friction and warmth will also be highly useful.

LOCAL OR ACCIDENTAL DISEASES OF NEAT CATTLE.

FROM the general or constitutional maladies, we now fall to notice the various external diseases or accidents, which form the surgical part of the work. This is a part highly interesting to every cowkeeper or farmer, and as a proper introduction to it, we shall consider a few simple operations, the method of doing which it is highly necessary to know.

1. *Bleeding.*

Every person connected with cows should be able to do this operation, as circumstances will occur when the life of the animal may be saved by a timely bleeding, where proper assistance cannot be immediately procured.

The method of bleeding requires some attention. In local diseases, or those affect-

ing a part of the body, the nearer it is performed to the seat of the disease, the more effectual it will prove. In the general or constitutional diseases this is less necessary, and the blood may be drawn from any part where there is a good vein, particularly the neck. The operation may be performed by a fleam or lancet; the fleam will be found the best instrument to those who are not acquainted with the operation, but the lancet will be found preferable where the skin is very thick, and much depth to go through before reaching a vein, as noticed in the disease termed Blain. The instruments should always be kept bright, and free from rust, and by this attention the operation will be easier performed, and there will be less danger of the orifice or wound festering.

2. *Pegging.*

This is an operation confined to the dew-lap; it consists either in one large incision, or in several small ones, through the skin, which

is to be raised from the cellular substance on each side. The wounded part, or parts, are then to be filled with some irritating matter, either in the form of powder, ointment, leaves, or roots, which, exciting inflammation, will form matter, and thus promote a discharge externally, in order to relieve the internal affection, or make the revulsion complete from the seat of the disease. By this operation the inflammation excited must be considerable, and the extent of the incision should therefore correspond to the urgency of the case. In all situations where this operation is employed, it should be continued open for a length of time, both that the present symptoms may be relieved, and also that the danger of any relapse may be prevented.

3. *Tapping.*

This is an operation where a collection of fluid is to be discharged from any cavity, and this fluid may be either air, water, or purulent matter. This operation is performed by a

sharp-pointed knife, as mentioned in Fog Sickness and some other diseases. The operator should know the structure of the part through which he is to make his opening, that no danger may ensue from cutting any large vessel in his way. The incision should be made lengthways, in order to avoid cutting the muscle across, or injuring its action afterwards, which is a chief point to be attended to in every operation.

4. *Blistering.*

Blistering is only performed in the cow by liquid applications, either in the form of oils or liniments; in order to have effect, they require to be well rubbed in upon the part, and this may be done either by a spatula or other contrivance, to prevent the hands of the operator from being injured. The extent of the blister must be determined by the nature of the disease; but in general it should be made to extend somewhat beyond the part affected. The application will seldom be found to act

sufficiently, or influence the part much, till after sixteen or twenty-four hours; at that time a discharge begins to flow from it, which constantly keeps increasing till a full collection of matter is formed. The time this is to be kept up must be regulated by the relief it gives to the disease; but in general it has been reckoned prudent to continue it some time after the disappearance of the symptoms. The part is to be healed up by allowing nature to take its course, without any particular applications: indeed, the scurf which collects from this operation forms a kind of charge to the relaxed vessels, particularly in sprains and other local affections, where the parts have been much weakened or injured. In the process of blistering, it is to be remarked, that as the applications are of a liquid nature, in order to continue their effects, they require to be repeated occasionally, in such a manner, that the full discharge necessary may be kept up, to give relief to the symptoms of the disease, as will more fully

appear in the treatment of the different local affections we are now to examine.

Blindness.

IN entering upon these, we shall first begin with the consideration of blindness. In this disease, the eye appears somewhat inflamed; no other alteration is conspicuous in the organ by which the particular affection can be known, except that the animal is deprived of sight. Along with these symptoms there prevails some degree of general fever, and the cow at the same time appears dull and stupid. Where the disease proceeds for any length of time, a total blindness ensues.

The cause of this malady arises from over-driving, and is therefore connected with inflammation, and a fullness of the vessels of the head; this is proved by its treatment; for it yields readily to evacuations, particularly to

bleeding and purging. Bleeding will be best here from the jugular vein, as being nearest the seat of the disease; and the first bleeding may be taken to the extent of three or four quarts, if the cow is in good condition. When this is done, one of the saline purges may be administered, as being the most proper; the form recommended in page 187 will answer best. After this, alterative medicines may be given, to complete the cure; and the form of these may be seen in page 256. The regimen here is the same as in other inflammations.

Strains, or Sprains.

STRAINS are known by swelling and lameness of the extremities, the muscles, or the tendinous parts of them being either over-stretched, or ruptured in part. The cause of this complaint proceeds always from external violence or exertions, as bruises, &c. In the treatment of this affection, much nicety is re-

quired, and it must be regulated by the degree of the injury, and the time it has continued. When the accident first happens, and the injury is considerable, as the inflammation in this case runs high, bleeding from the part must be immediately resorted to, if it can be conveniently performed; if it cannot, it must be done as near it as possible. After bleeding, cooling solutions of an astringent and bracing nature are to be applied, in order that the injured and over-strained parts may recover their tone. The solution is as follows :

Take of Strong Vinegar, or Verjuice, one pint,
 Bole Armenian, three ounces,
 Spirits of Wine, camphorated, two ounces,
 Spirits of Ammonia, one ounce.

The bole armenian and vinegar are first to be mixed together; and when the fermentation is over, then add the other ingredients, which are to be well shaken together in a bottle previous to their being used; and the application of the solution is to be repeated once a-day. After the parts are well rubbed with

this solution, a poultice is next to be used, composed of the following materials :

Take of Verjuice, or Strong Vinegar, half a pint,
Soft Soap, four ounces,
Strong Beer Grounds, or Ale, half a pint,
Strong Decoction of Camomile Flowers, half a pint.

The soap is to be dissolved over a slow fire in the decoction, then add the other ingredients, and a sufficient quantity of bran to form them into the consistence of a poultice. This poultice is to be renewed every twenty-four hours. Where the injury does not seem to yield to this treatment in the course of four or five days, then blistering the part with the following mixture will be necessary :

Take of Spanish Flies, in fine powder, two drachms,
Spirits of Ammonia, four ounces.

Mix together, and rub a little of this volatile mixture into the part affected; after which, a flannel roller is to be slightly put on. If a plentiful discharge is not produced in twenty-four hours, it may be repeated. The above plan is particularly adapted to strains of the tendons, in the course of the muscles or the

lower extremities, where poultices can be easily applied. In other situations, such as the round bone, stifle, and shoulder, instead of the above plan, oils and fomentations will form more useful applications; and they may be prepared in the following manner:

Take of Aquafortis, two ounces,
 Spirits of Wine, camphorated, two ounces,
 Nitre, in powder, two ounces,
 Oil of Turpentine, eight ounces,
 White Lead, one ounce,
 Vinegar, one pint.

Mix together; to be well rubbed into the part affected once or twice a-day. But where there is much pain and inflammation, the fomentation, prescribed in page 190, may be used to the part with flannels, as hot as the animal can bear it, previous to the application of the above oils, which will wonderfully assist their operation. When these means prove ineffectual, either a blister or a charge must be resorted to; for the treatment here must be entirely adapted to the structure of the part, fleshy parts being more easily acted upon than those that consist of

tendons, cartilage, and bone. The form of charge and blister will be found in pages 200 and 330. Sprains are, in general, accidents of a very obstinate and unconquerable nature, especially when they have been of long standing; they require often to have the treatment varied, for an application will at times succeed unexpectedly after the practitioner has exhausted most of his skill to little purpose. At the same time, the author may be allowed to mention, without wishing to arrogate too much to himself, that in these complaints his practice has been attended with much success.

Costiveness.

THIS disease is generally symptomatic of others, and the author has occasionally treated of it in other parts of the work. Whenever it arises to any height, it is accompanied by fever, and it must be treated as directed

under that head. Where the diet alone seems to produce this complaint, consisting of dry and indigestible food, then it should be altered, first removing, by saline purges, the present inconvenience.

Strangury.

THIS complaint has already been treated of, under the head of Gestation. It also attends inflammation of the bladder; and when it occurs under any other circumstances, the treatment recommended in these parts of the work will succeed.

Tumours, or Swellings of various Kinds.

THIS division includes every preternatural enlargement of an external part; and, according to the structure of these parts, it will be either of a soft or hard consistence. All such tumours are attended with inflammation, and this inflammation terminates

either by resolution, when the part gains nearly its natural size and shape, or by suppuration, when matter forms, and the skin gives way, in order to discharge it. Where swellings end in the first way, it is the easiest and most favourable; where suppuration takes place, it is generally attended with fever, and a considerable time elapses before the matter can be brought to a discharge. But in order to understand the treatment of tumours, it will be best to consider them individually, beginning with the

Snarled Bag, or Swelled Udder.

THIS complaint has already been noticed in a former part of the work; what is to be mentioned here entirely regards the local treatment. The part should be well rubbed with elder ointment; and as the complaint is merely temporary, from the extension of the milk-vessels, and is, in fact, a proof of a good milker, it will soon yield to this application, without giving any farther trouble.

Schirrus, or hard Swelling of the Fleshy Parts.

THIS is a disease which occurs to cows chiefly in two situations; the one is under the jaw, where the glands of the throat enlarge, and produce difficult breathing, as noticed under the head of Asthma; the other is when a swelling of the same kind affects the udder. This swelling is found connected with a similar diseased state of the liver; the affection of the liver has generally preceded it for some time. The swelling then suddenly begins in one or more of the quarters of the udder, where the secretion of the milk becomes diminished; the swelling gradually increases, becomes more hard and knotty, instead of tending to suppuration. For this disease there is generally no cure. The same medicines are to be employed here as in the Yellows, or Jaundice, the disease of the liver being the primary object, which is found, on dissection, in an ulcerated state, or, as the cowkeepers term it, *rotten*. The cow gene-

rally pines under the disease for some months, and then dies.

Cancers.

CANCERS are not common in cows; the author has not met with more than one or two instances of sores he could not cure, which he considered falling under this description.

Warts, or Horny Excrescences.

THESE are affections of the skin, which in cows do not go deep; they destroy the roots of the hair wherever they form; they are of a firm and horny texture, and readily give way when pulled, or roughly handled, which occasions them to bleed, and shows their connection with the vessels of the skin. In their treatment, they readily yield to the use of emollients, particularly the goose-grease, which should be frequently rubbed on them, till the excrescences fall off.

Swellings on the Joints and Bones.

SWELLINGS on the joints and bones are generally very painful to the touch, attended with inflammation and fever. If the swelling comes on suddenly, and its increase is rapid, it generally terminates in suppuration. If situated on the joint, a discharge of synovia is the consequence, which is dangerous and troublesome to cure : but, on the contrary, if the swelling comes gradually, with little pain, and a hard callous or ossified substance is felt, then, if early attempts are not made to stop its progress, it will end in a stiff joint, and all attempts to cure it will be in vain.

Cause.

This disease generally proceeds from kicks or blows with stools, &c.; they may also be occasioned by violent strains, &c.

Cure.

When the swelling comes on rapidly,

with much pain and inflammation, bleeding and purging should be immediately premised, and they may be repeated according to circumstances. The best purge for this purpose is the Epsom salts and nitre, as in page 281. Fomentations should also be applied twice or three times a-day. The following the author has found most successful :

Take of Wormwood and Southernwood, of each two handfuls,
 Poppy Heads, four or five,
 Elder Flowers, a handful,
 Camomile Flowers, four ounces,
 Bay and Juniper Berries, of each one ounce,
 Crude Sal Ammoniac and Pot Ashes, of each two ounces ;

which may be boiled in four quarts of spring water, till it is reduced to three ; then foment the swelling with flannels, as hot as possible, for a quarter of an hour or more ; after which, the flannels are to be bound over the part till the time of fomenting again. This operation may be repeated for two or three days, at which period the inflammation is considerably on the decline, when the following method must be adopted : the volatile blister, as in page 330, must be applied

as there directed, till a profuse discharge or blistering takes place, which will form into a crust, and act as it were a charge to the part, and therefore it should not be rubbed off. This method the author has always found succeed, and it has prevented suppuration taking place; but if suppuration has already begun, or the disease has advanced so far that it cannot be avoided, it should be brought to a head as soon as possible; after which, the wound must be treated under its proper head, (see Wounds in the Joints, &c.) When the scurf falls off, which the blistering has produced, and there remains any lameness, the charge may be laid on, as in p. 200, which will complete the cure.

When this swelling comes on gradually, with little pain, and is of a hard, callous, or ossified nature, in this case fomentations will be of no use; but the following plan will be found to succeed, if early applied. The hair is to be first cut off the part affected, and

some of the under-mentioned blister rubbed well into the swelling with a knife or spatula; and it may be repeated for two or three successive mornings, or till a plentiful discharge is produced :

Take of Quicksilver, one ounce

Goose-grease, two or three drachms.

To be rubbed together in a mortar till the quicksilver is completely killed ; then add the following in fine powder :

Take of Cantharides, two drachms,

Sublimate, one drachm,

Oil of Origanum, two drachms,

Mashmallow Ointment, two ounces,

Goose-grease, one ounce and a half,

Tar, two ounces,

Oil of Vitriol, one drachm,

Spirits of Ammonia, one ounce.

Mix all well together. After this operation, and the scurf has fallen off, if there should remain any hardness, and the animal is still lame, the blister may be repeated, which seldom fails to produce a perfect cure. If the cow seems weak in that part after the above process, which is sometimes the case, the charge before recommended will be proper, in order to strengthen it.

Soft Swellings.

FROM bruises and other accidental injuries in getting up and laying down, cows are subject to soft or œdematous swellings of the joints, which are without any pain, heat, or inflammation; they enlarge often to a considerable size, and yield readily to the pressure of the finger. Though this complaint is never attended with danger, it is troublesome to the animal from its size, and even difficult to remove, if it has been of long continuance. Its management depends on making an opening into the swelling in the first instance, which may be done by running a hot iron into the most depending part of it, making two or three openings in this way where the fewest blood-vessels are situated; and this operation requires particular caution, that the discharge may gradually come away, and that no vessels may be injured, from the danger of producing an internal hemorrhage, which would occasion a new increase of swelling and inflammation, instead of lessen-

ing the disease. Where the openings into the swelling are properly made, and a gradual evacuation takes place, then the orifices are to be plugged up, and that in twenty-four hours, with a caustic composed of a small quantity of corrosive sublimate, in powder, placed on tow, which is to be first wetted, that the powder may adhere to it. The effect of this will be to cause a sloughing of the coats of the swelling, when a core to a certain extent will be brought out, by which means a suppuration will ensue, and the swelling be gradually reduced during its progress. The swelling is to be rubbed at the same time with the black oils, as in p. 191. Though the parts never regain entirely their natural size, yet, by these operations, the animal will be enabled to move the joint without any inconvenience. After the wounds are healed, the remaining callous or swelling should be blistered two or three times, in order to make the joint more pliable. The blister most proper for this purpose is inserted in page 330.

Loss of Joint Oil, or Synovia.

WOUNDS, or punctures of the joints, often penetrate so deep as to pierce through the tendons and ligaments, occasioning a loss or discharge of the natural secretion of the joint, viz. its oil, or synovia; the same accident may happen from any injury exciting inflammation, and that inflammation passing on till it produces an opening into the joint. This disease is always an alarming one, and the principle of cure is to produce the process of healing as quickly as possible, by exciting active inflammation: this may be done after the first effects of the injury have subsided, which will be effected by bleeding, purging, and fomentation, in the usual manner, and then applying the volatile blister to the joint, as in p. 330; at the same time the orifice is to be plugged with a tent, dipped in the following composition:

Take of Sweet Spirits of Nitre, three drachms,

Butter of Antimony and Extract of Lead, each two drachms.

The blister and caustic may be occasionally

repeated; the mixture every twenty-four hours, till the joint oil is completely stopped; then the following balsam may be applied once or twice a-day, in order to heal up the wound :

Take of Compound Tincture of Myrrh, two ounces,
Blue Vitriol Water, half an ounce.

The vitriol water may be made by dissolving ten drachms of blue vitriol, in powder, in a pint of hot water; the balsam to be well shaken together previous to using it. The blister is to be well rubbed on the joint, till a plentiful discharge takes place from the surface, when it becomes no longer requisite. By this treatment a cure is generally effected, unless when the bones are materially injured, along with the soft parts, and then any plan of cure will prove ineffectual. When weakness of the joint prevails after the synovia is stopped, which is generally the case, a charge is then the fittest application, as in page 200.

WOUNDS.

Cows are very subject to be wounded in different parts of the body, from a variety of circumstances; they are liable to be gored by each other, when they get together in the layer or elsewhere, especially if any of them is wounded, and they see or smell the blood; this renders them furious, and they fight and poke at each other with their horns. The treatment of all such wounds is to be conducted by first endeavouring to stop the effusion of blood, either by styptics, by pressure, or binding up, or else by sutures, or stitching of the part. The styptics commonly used for the cow are composed as follows:

Take of Oil of Vitriol and Brandy, of each one ounce.

Or,

Take of Salt and Nettles, a handful of each.

To be beat together in a mortar till it becomes a pulp. Where the styptics have not a sufficient effect to restrain the blood, they may be assisted by pressure or bandage; and should they still fail, and the situation admits

of it, the lips of the wound, or the divided skin, may be brought together with a crooked needle, made for that purpose. When this is done, every thing is to be left for the first twenty hours, in order that the vessels may collapse, and a farther effusion of blood may be prevented; at the end of that time, the wound is to be dressed; and the manner of doing this will be best illustrated by considering the first species of wounds or pokes.

Pokes, Goring, or Wounds in Fleshy Parts.

THE most troublesome of these wounds is when they go deep, and the external opening is confined; in this case, a small candle should be thinly wrapped round with tow; and after it has been well soaked in the following balsam, and dipped in the digestive ointment, it may be conveyed into the wound, and there left; the swelling is then to be rubbed once a-day with the black oils recommended in page 191. This will prevent

any tendency to mortification, and also produce a quick suppuration. These dressings may be repeated every twenty-four hours. If the parts are much swelled and inflamed, a dose of Epsom salts may be given, and the fomentation used once or twice a-day, as in page 190 ; and should there appear any tendency to mortification, the bark drink may be administered, prescribed in page 266.

WOUND BALSAM.

Take of Compound Tincture of Myrrh, four ounces,
Cold drawn Linseed Oil, half a pint,
Spirits of Turpentine, four ounces.

Mix well together.

DIGESTIVE OINTMENT.

Take of Common Turpentine, eight ounces,
Spirits of Turpentine, four ounces,
Linseed Oil, two ounces.

Mix over a slow fire.

Feet Foul.

THIS is a disease which frequently occurs, and proceeds from two causes ; the one from accidents, and the other from a morbid state of the system. Its situation is betwixt the

claws of the cow, either in the fore or hind feet, but more frequently in the former. It is always attended with a swelling, the discharge from which, when it breaks, or cracks, is of a very offensive smell.

The *accidental foul* proceeds from gravel, flints, bones, or any other hard substance getting betwixt the claws, which produces great pain and inflammation. The first step to be taken for its cure is to remove the hard substance from betwixt the claws, and clean the wound out; then the following ointment is to be applied to the part, spread on tow, and bound on with cloth and string.

Take of Soft Soap and Common Turpentine, each one pound;

which is to be melted over a slow fire till the two articles are completely united. The dressings may be repeated two or three times, which never fails to complete a cure.

Joint Foul.

THIS begins with great pain, attended with inflammation and swelling betwixt the claws, and even up to the fetlock joint. The claws are extended outwards from the swelling betwixt them, and the cow is very feverish. The attack of the disease is very sudden.

Cure.

In this case bleeding will be proper; after which, give a dose of Epsom salts, as in page 281; then apply a plaster of soft soap betwixt the claws. It must be repeated every two days till a large core comes out, which is always the case in this disease before a cure can be completed; the wound may then be dressed with the digestive ointment, page 352, in order to heal it.

Canker.

THIS is a disease in the back part of the heel of the hind foot, though it sometimes

comes in the front. The wound is about the size of a shilling, or half-a-crown ; its appearance is of a rusty colour : it makes the cow go very lame, and gives the animal great pain when touched ; the matter discharged is very offensive.

Cure.

The first attempt to cure is to clean the wound, then dress with the following ointment :

Take of Blue Vitriol, in powder, Verdigris, and Honey, of each one ounce ;

which are to be put over a slow fire in a pipkin, and continually stirred till they come to a red colour : some of this ointment is to be well rubbed into the part affected with a wooden spatula, then spread some of the ointment on a pleget of tow, which is to be bound on the wound with a cloth and string, and to be repeated in three days ; two or three times are generally sufficient to complete the cure.

Wounds in the Soles of the Feet.

WOUNDS in these parts are occasioned by a number of accidents, such as being worn through by travelling; also by treading on nails, sharp flints, glass, or any other substance that may penetrate through the hoof to the quick, either of which will cause lameness, and the parts soon become festered; if neglected, the confined matter will make its way up betwixt the hair and hoof, and consequently make the cure more tedious.

Cure.

As soon as the lameness is perceived in the foot from any of the above accidents, the foot should be drawn out as soon as possible, in order to search for the wound; and the hoof must be taken off as far as it is hollow, in order that a proper medicine may be applied to the part affected. When this is completed, the following ointment is to be spread on tow, which is to be closely confined upon

the wound with cloth and string. The dressings may be repeated every other day till well.

Take of Tar and common Turpentine, of each one pound.

To be put into a pipkin over a slow fire till it is completely dissolved, then take it from the fire, and add to it four ounces of spirits of turpentine, which should be stirred well together till it is incorporated. The above method will generally succeed in completing a cure in recent cases; but if it has been of long standing, and the wound has become ulcerous, then a different mode of treatment must take place, for which see Ulcers, as it properly comes under that head.

ULCERS.

THE last division of Local Diseases is Ulcers, which are sores that arise either from wounds not properly healed, or from a constitutional fault, which breaks out into a sore in some part of the body, the discharge from which

is of a bad nature, and does not produce any tendency to heal. Ulcers, like wounds, occur in cows more frequently in the feet and hoofs than elsewhere; and the most common of them is the constitutional ulceration of this part.

CONSTITUTIONAL DISEASES OF THE FEET.

1. *Common Ulcer.*

THIS is a disease to which cows and oxen are very subject, particularly about the metropolis; though it is not exactly confined to these alone, as the author has had an opportunity of attending several when in the country, even while at grass, which evidently shows that the disease arises from a morbid state of the body. The symptoms of this disease are, a sudden lameness, the foot begins to swell betwixt the hair and the hoof, which soon extends all round the foot, and sometimes up to the fetlock joint; and in a few days it will break out betwixt the hair

and the hoof, and will even force its way downwards, betwixt the ligaments of the coffin joint to the bottom of the foot, so as to form a complete ulcer, into which a probe may be passed through the foot; and there is generally two or three of these ulcers in each claw. When these are cured, if internal medicines are not given, they will frequently break out in some of the other feet.

Cure.

As this is an inflammatory disease in its first attack, attended with violent pain to the animal, so as to prevent her putting the foot to the ground, bleeding and purging will be proper; the fittest purge is the sulphur, prescribed in page 256. After the operation of the purge, the alterative plan is to be begun, as directed in page 256, and may be continued for a week or ten days, or as long as it is found necessary. The foot is also to be paid attention to; when the disease first begins, the fomentation prescribed in page 190

should be used twice a-day till the inflammation is somewhat abated; then apply a blister all round the cornet, or top of the hoof, as prescribed in page 340. The hoof is also to be taken off wherever it presses against the wound. The local treatment of this ulcer, after these preliminary steps, is the next consideration; and the sore is to be dressed by injecting into it the following solution :

Take of Blue Vitriol Water, one ounce,
Butter of Antimony, one drachm.

This application is to be injected every other day; and after the injection, the digestive ointment, as in page 352, is to be applied, spread on tow, to the mouth of the ulcer. To this treatment the disease will generally yield in a short time.

2. *Ulcer, with rapid Growth of Proud Flesh.*

ANOTHER species of ulcer is that attended with a rapid growth of flesh from the sore. This often takes place betwixt the hair and the hoof, and also between the claws; it ge-

nerally attacks the parts most thinly covered with flesh. The treatment here differs from the former only in this, that it is necessary to rub in a small quantity of the following caustic over the whole surface of the preternatural growth, with a spatula; and after remaining in this state, the whole may be covered with the digestive ointment, p. 352:

CAUSTIC.

Take of Soft Soap, one ounce,
 Arsenic, half an ounce,
 Oil of Vitriol, half an ounce,
 Spirits of Lavender, half a drachm.

The soap and arsenic to be mixed first, and then the vitriol added by degrees. By these means, part of the growth will become dead in a few days, which may be cut or pared off, and the same caustic application made to the remaining part till the whole is destroyed.

3. *Ulcer, with callus.*

IN ulcers in fleshy parts there is often met with a preternatural callus, or hardened growth. This must be destroyed before a

cure can be completed. Though the same means will accomplish it as in the above species, yet here the caustic requires to be applied with more caution. The hard part is to be rubbed with it for half the extent of the swelling, beginning at the orifice. The dead parts are then to be cut away every two or three days, and the application is to be repeated till the cure is complete, as directed in the last species of ulcers.

4. *Ulcer of the Teats.*

ULCERS on the cow's teats seldom occur, except when the cow has got the cow-pox, from the eruption which always attends this disease, and, if neglected, they frequently terminate in troublesome ulcers; therefore they require early attention. In the first instance, the teats should be anointed after each time of milking with the following lead ointment:

Take of Goose-grease, one pound,
Hogs' Lard, two pounds,
Red Lead, three ounces
Roach Alum, in powder, one pound.

The goose-grease and hogs' lard are to be melted over a slow fire; the lead is then to be added in fine powder, which is to be constantly stirred till it becomes cold, in order that it may be well incorporated. But when these sores, from being neglected, become ulcerous, the following medicine must be applied once or twice a-day.

Take of the above-mentioned Lead Ointment, two ounces,
Red Precipitate, in fine powder, half a drachm;

which must be well rubbed with the ointment till it is completely incorporated. These ulcers are frequently the cause of the cow losing a quarter, when any inflammation takes place in them, which may be known by the milk becoming bloody. The symptoms of the complaint are given under the head of Swelled Udder, and the treatment, as there pointed out, will be proper.

PART III.

DISEASES OF BULLOCKS AND CALVES.

FROM the diseases of the cow, which have been treated at large in the preceding part of the Work, it will be necessary to notice those of the Bullock and Calf. With respect to them, there is little room for observation.

The bullock being an animal of a stronger constitution than the cow, will be more subject to inflammatory diseases, especially when he is exposed to labour; and these diseases will also rise to a greater height; the treatment, therefore, must be regulated accordingly. All the remedies recommended must be carried farther than with the cow; he must be bled, purged, &c. to a third more, which will be a proper general rule to be observed in all his diseases; though it must, at the same time, be modified, like every other general rule, according to the circumstances of the case, and the judgment of the practitioner

With respect to the bull, he is seldom subject to any disease, except that arising from excess of venery. This consists in a discharge of matter from his yard, similar to the clap, termed, in common language, being *burnt*. It is to be treated as a common inflammation, and will yield to cooling saline purges, as in page 187, and afterwards to the use of diuretics, as in page 243 ; the yard may be also washed with the cooling solution, as in page 174. The disease is generally cured in a fortnight or three weeks, and during this time he must be kept from the cows ; they are also subject to the same disease, and the same treatment applies as directed for him.—From falls off the cow the bull is also liable to strains of his back and loins. The treatment of this complaint was considered in the former part of the work, and to that we refer here.—Cows are also liable to the same accident from violent exertions, bruises, &c. Here it is to be treated as in inflammatory diseases, by bleeding and fomentations.

The last part of the subject, or the diseases of Calves, is one on which very little occurs to be said, except what respects the doses of medicines, which must be proportioned to their age and strength. They are subject to a great part of the diseases of the cow; the treatment must therefore be the same; and perhaps the best general rule that can be laid down is, that all the means of cure employed, whether bleeding, purging, &c. should not be carried to a greater length than in the proportion of one third of what has been directed for the cow: the judgment of the practitioner will be more able to decide in particular cases, whether he should go farther lengths or not. But from the very minute detail which has already been given of the treatment of each disease, no one can be at a loss to act under any circumstances that may occur, making allowance for the difference of age, size, and condition of the animal in different cases.

Mange.

THIS is a cutaneous disease, and, on that account, from its affecting the external skin or surface, it may be placed here. It is very infectious, for so many cows as come in contact with an infected one, will immediately catch the disease. Its symptoms are, a scurf on the external part of the body, which is always attended with an itching. This the animal shows, by having a continual inclination to rub the affected part or parts against any thing she can get at. The eruption generally begins first on each side the tail or shape, which will, if not stopped, spread all over the body. Its origin is from an impoverished state of the blood, for it generally attacks those cows which are low and lean in flesh, and have been fed on poor forage.

Cure.

The first step to be taken to cure this disease, is to take a curry-comb, and gently

curry off all the scurf, in order that the medicine may have a better effect; after this, the following application is to be rubbed on the parts affected, which may be repeated every three or four days till a cure is completed; and it seldom requires more than two or three applications:

Take of Sulphur Vivum, one pound,
Spirits of Turpentine, half a pint,
Train Oil, a sufficient quantity to make it into a thin liquid.

Before closing the diseases of the cow, it will be improper to omit, that it is sometimes necessary to induce her to take the bull; and, for this purpose, medicines of a stimulant nature are used. They will seldom be necessary if the animal is well fed, though there are some constitutions so sluggish and torpid as to require them. The provocative medicine used by the author is as follows:

Take of Grains of Paradise, half an ounce,
Cantharides, from two drachms to half an ounce.

To be boiled in three pints of ale, and given to the animal new milk warm. The dose of this medicine should be given fasting, and

the cow should have nothing given her for four hours after taking it, that it may have more influence; if she takes the bull in four or five days after taking this medicine, it will not require to be repeated.

CONCLUSION.

THE limits of this Work have extended farther than, according to the original intention of the author, he meant to have carried them. He is confident, however, that his readers will be satisfied no part of the important subjects of which he treats could be dispensed with. He is even obliged to apologize to them for not being able to introduce what he proposed, some observations on the nature and effects of the cow-pox; as this, however, is a subject which does not so materially interest them, he is convinced that they will be rather pleased that it has given place to articles of more consequence to them and their concerns.



