

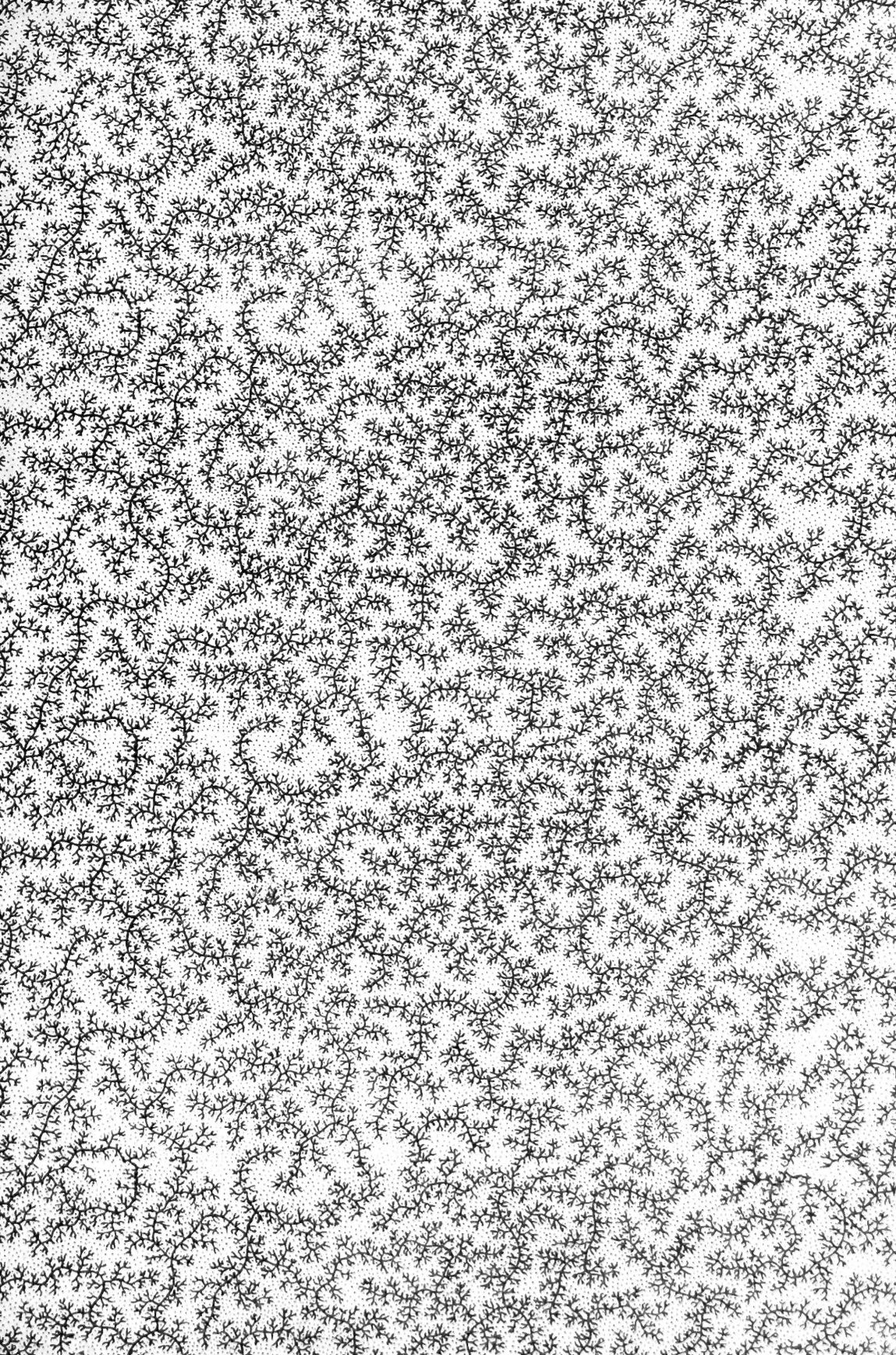
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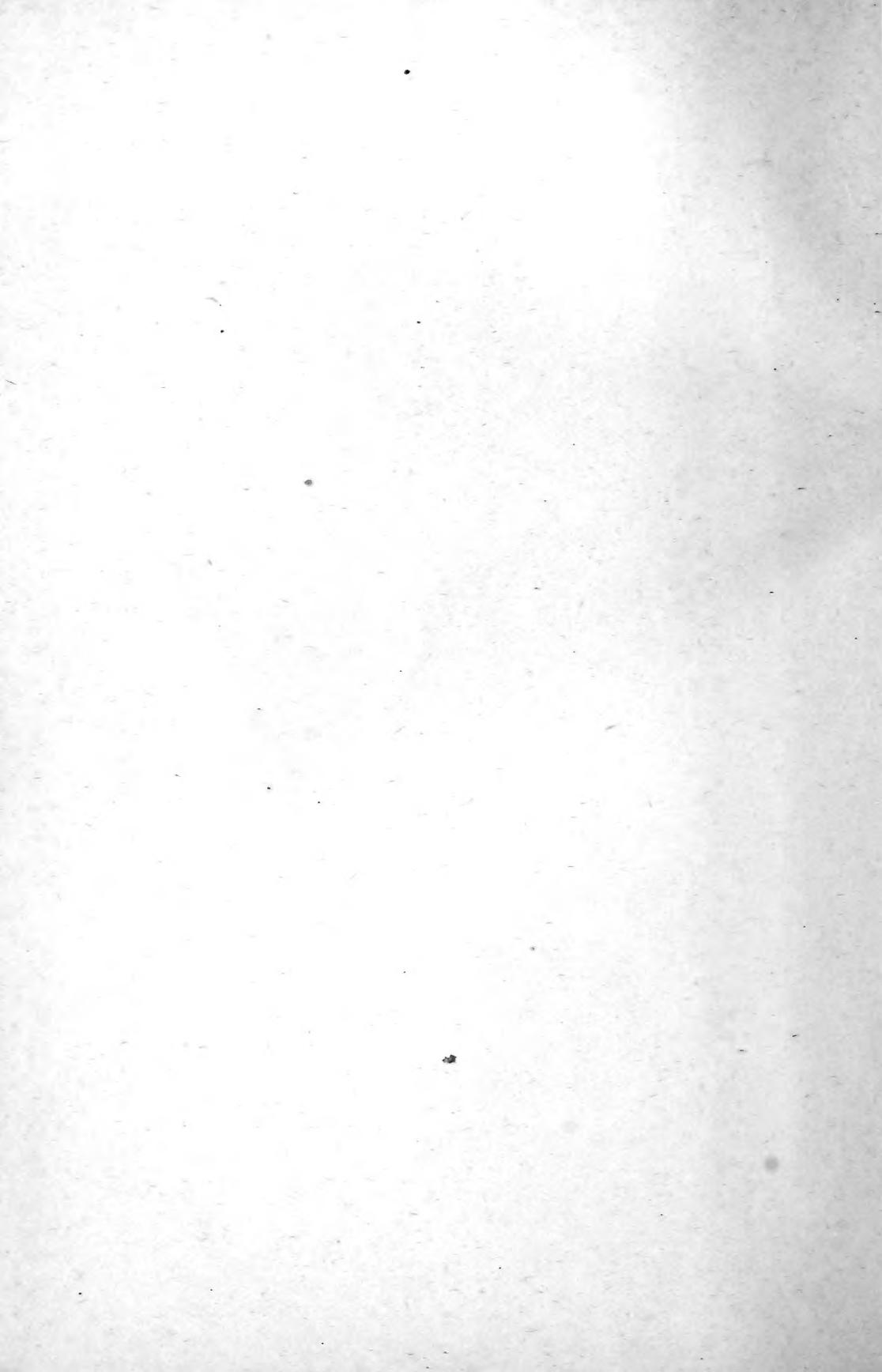
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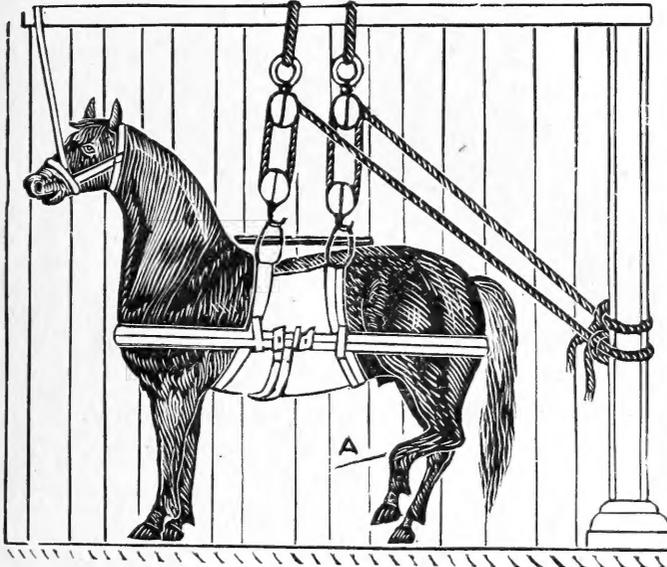






# THE STOCK BREEDERS' MANUAL.

BREEDING, REARING, AND TREATMENT OF  
DISEASE IN FARM STOCK,



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INCLUDING THE DISEASES AND ACCIDENTS INCIDENTAL TO  
PREGNANCY AND PARTURITION,

BY

DR. G. STUART, VETERINARY SURGEON,

*Veterinary Editor "Ohio Farmer" - and "Cleveland Weekly Plain Dealer,"  
Author of the "Every Day Treatment of the Horse," "Typhoid Fever  
in Domestic Animals," "Hog Cholera," "Trichina," Etc.*

ASSISTED BY HIS SON,  
DR. J. T. STUART, VETERINARY SURGEON,  
CHICAGO VETERINARY COLLEGE.

CLEVELAND:  
WHITWORTH BROS.  
1888.

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## PREFACE.

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I have the honor to answer inquiries every day from the subscribers of the *Ohio Farmer* and *Weekly Plain Dealer*, as veterinary editor of each paper. I may state that the universal circulation of the *Ohio Farmer* in every civilized country of the world has induced us to publish to every stock breeder the long-felt want of practical information in the plainest language, not only as a treatise on the diseases of the domestic animals, but a preventive of the various diseases to which they are liable. The several chapters, fully illustrated, on dystocia, or abnormal presentation of the young at birth, never has been so plainly laid before the stock breeder by any author, either veterinarian or stock breeder, in America. Therefore we have been induced to respond to the request of many to publish this work.

We do not consider that success and development in the breeding and prosperity of our American fine stock is, or ever has been, achieved by the veterinarian. No! although they lay great stress on the supposed 50,000,000 live stock in the United States, we spurn to lay claim to any such honor. It is to the intelligence, energy, and good judgment of our American stock breeders alone, who deserve the honor; and would have been done if there had never been a veterinarian on the

face of the earth. The losses sustained by our stock breeders, caused by abortion, premature parturition, and unnatural presentation, are much more serious than any one has any idea.

We are fully aware that we have grappled with a serious task, and defects will doubtless be discovered. We have not only given practical treatment in disease, diagnosed from the description of the owner, but we have fully demonstrated, by illustration, the simplest, plainest, and most successful principle, all founded on forty-three years' practice in the veterinary profession.

DR. G. STUART, V. S.,

DR. J. T. STUART, V. S.

*Cleveland, Ohio, July 1, 1888.*

## INTRODUCTION.

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Obstetrical physiology or parturition of the animal race is so little understood, that I have been induced to offer owners and breeders of stock important information regarding parturition, and saving the life of dam and offspring. I have made the operation of colting, calving, lambing, and farrowing, plainly illustrated, as I have found them in my daily practice with the best known plan and practical effort to save both mare and colt, as well as cow and calf. Parturition, with all female life, causes a peculiar change in the system. The anatomy, physiology, and pathology, which are directly related to the process of generation, gestation, and parturition, as well as that act itself, belong to the section of obstetrics to which the designation of dystocia (or difficult parturition) has been given.

We will discuss each of these subjects in the order in which they have come under our practice, commencing with the pelvis and the internal organs of generation.

### OBSTETRICAL ANATOMY.

The female organs chiefly concerned in generation and parturition are either entirely or passive, or more or less active, according as they are composed of hard, bony, or soft parts. The pelvis constitutes the first, while the second are composed of the organs and

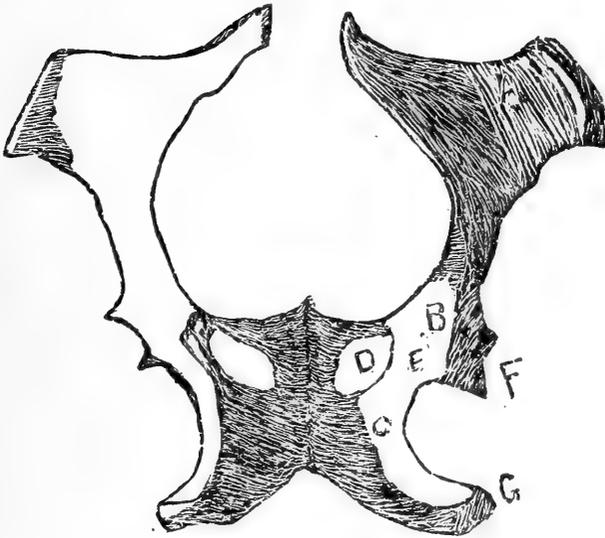
structures contained within, or more or less directly attached to it. It also forms the canal or passage by which the foetus has to traverse in order to reach the external world in the act of parturition.

The soft organs are the vulva, vagina, uterus, ovaries, and mamma. The latter furnish the young creature with its proper nourishment immediately after birth. Of these soft organs some are external, and others are internal; the first are the vulva and mamma, and the second are the vagina, uterus, and ovaries. The vagina and the greater portion of the unimpregnated uterus are contained in the cavity of the pelvis; and the ovaries, as well as the uterus during pregnancy, are lodged in the abdomen.

This work will commence with an examination of the pelvis in the various domestic animals, beginning with a description of the bones that are in any way involved; then the ligaments; and lastly, the osseous structure, which is of great importance when considered as a whole. Afterwards, the external and internal organs of generation will be minutely described and illustrated, and the difference noted in the various species. The equine and bovine species will be taken as the type, and the difference in other species compared with it.

# CHAPTER I.

## THE PELVIS.



PELVIS OF THE COW.

A—ILIUM. B—PUBIS. C—ISCHIUMEN. D—FORAMEN OVALE. E—ISCHIATIC SPINE. F—COTYLOID CAVITY. G—TUBEROSITY OF THE ISCHIUM.

The pelvis is a large symmetrical, more or less horizontal cavity or canal, which continues the abdomen posteriorly, with which it communicates in front. It is formed of strong, bony, and ligamentous walls, and contains, and sustains, and protects a portion of the genito-urinary apparatus, as well as the portion of the alimentary canal. It is situated toward the end of the

spine, and is supported by the posterior extremities with which it is connected with joints and muscles. For the hind limbs, as well as some of the powerful muscles of the trunk, the pelvis constitutes a most powerful fulcrum or fixed point in various movements. It is one of the mechanical elements concerned in the act of parturition, and its form varies more or less in different species, though its direction is always rectilinear in our domestic animals, and not incurvated, as in the human species.

#### SECTION I.—BONES OF THE PELVIS.

The pelvis is composed of three principal bones, the two coxæ, or ossa innominata, and the sacrum, and to a certain extent of the coccygeal, or tail bones. At an early period of life these bones can be subdivided, but after a certain time they become consolidated. Each coxal bone, for instance, is, at an early stage of extra uterine existence, composed of cartilage only; subsequently three centres of ossification appear, and these extend until at birth they coalesce to form three bones which are united by cartilage. In addition to these centres two complementary nuclei are present, one of which constitutes what is termed the anterior iliac crest or spine, and the iliopectineal line or ridge, and the other the ischiatic tuberosity. After birth the three chief portions of the coxæ are completely ossified, and meet in the acetabulum, where they are closely joined, and at the pubic symphysis, where the coxa of one side meets its fellow of the other side. In youth the different parts of each coxa are very thick, the spongy tissue being abundant, and the compact tissue scanty; as

the animal advances in age, the former diminishes and the latter increases in density and thickness, the two layers closely approaching each other.

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## CHAPTER II.

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### DESCRIPTION AND NAMES OF THE DIFFERENT BONES OF THE PELVIS AND DIFFERENCE IN THE ANATOMY BETWEEN THE MALE AND FEMALE.

My object in illustrating and showing the pelvis is to show the difference between the space and width of the mare and the cow, the ewe bearing a close resemblance to the cow in that particular, as the hog does to the horse, the hog having a very narrow pelvis; while the ewe has a wide pelvis. The wideness of the calf and lamb across the forehead, and the difference of the fore part of the colt and pig. Nature has made ample provision for the exit from uterine life, to extensions of the lungs and aerated circulation when in contact with the oxygen of the air.

#### SECTION II.

The coxa or os innominatum is a porous bone, there being one on each side; it belongs to the trunk through its concurrence in the formation of the pelvis, and also of the posterior limb, of which it constitutes the first ray or haunch. I have shown and explained the cotyloid cavity or acetabulum in which the corresponding articular head of the femur is lodged and moves, where hip joint lameness is the seat either by fracture or dislocation; the cervix or part of the femur bone of the

thigh is sometimes injured by an animal being backed against a post or other obstruction, or by a sudden or severe fall. All tend to cause injury to the cartilage that surrounds the edge of the cup or condyle of the pelvis or cervix of the femur bone. Fracture of the pelvis is often seen in the cow, and is caused by being too rapidly driven into the stable or barn; striking the side of the sill, because it projects beyond the square of the ribs. In some cases where the pelvis at B is fractured from the outside, it seriously interferes with parturition, and unless the pelvis is small, death is the result; but if the operator can cut the foetus to pieces, called embryotomy, without injury to the dam, then her life may be saved.

I would not recommend breeding from any animal, however well-bred, where the ilium is fractured, not interfering with the pelvis space, no trouble will result. The ilium, or hook bone, as it is better known, gives its name to the region it occupies. It is the largest of the three bones, as well as that bone which is most elevated. Its external or superior face, or dorsum, is marked by some muscular imprints, and is curved in its parts to form a concave space, the external iliac fossa which lodges the gluteal muscles. The internal or inferior face, or venter, offers a smooth external portion; the iliac surface into which is implanted the iliac fossa or iliacus muscle; and the internal diarthrodial surface, most apparent from behind. The articular facet for articulation with the sacrum. Figure 4 shows a fracture at the ilium, outer edge, at H in the illustration, which has been injured by contact with the side of the door post and frac-

tured at the part where the bone has the least protection and is driven into the space against the rectum at I, interfering with the act of parturition. This specimen is that of a year old heifer which I advised for beef instead of keeping in the herd for breeding purposes. I think I have never seen a more successful case than when I spayed several heifers. One of them had the hook bone knocked in. She made beef at the rate of one and three-fourths pounds a day from the time she was spayed. She was weighed by the owners one week after, and her weight at that time was not included. Some weeks they averaged two pounds, and others again one and one-half per day. They were sold in Cleveland for beef and gave a fair return to the owner and good result to the butcher. The author had the honor of an invitation to a banquet where the beef was served in fine style. Every one of the twenty gentlemen present gave it as their opinion that spaying will some day become a necessity in order to attain the highest price for the sweetest and finest quality of beef. It is to the butcher as the capon is to the poulterer. Beef at twenty-five and one-fourth cents per pound, easy fed, gives the best return, and most satisfaction to feeder, seller, and consumer.

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### CHAPTER III.

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#### BONES OF THE TAIL OF THE MARE AND VAGINAL CAVITY.

As the coccygeal bones of the tail of our domestic animals are so seldom referred to, either in health or disease, it will not be out of place to give the following

remarks a prominent place here. The bones of the tail of the mare in number are from fifteen to eighteen, immediately behind the sacrum, the first three of which ought properly to belong to the pelvis, as they form the base of the tail. They are small, cylindrical, or irregularly prismatic pieces, and there are several diseases that take place by accident, and are otherwise caused by injury, which will be more fully described later in this work. The difference again between the cow and mare is this, that the coccygeal bones are stronger and more tuberous; they are from sixteen to twenty in number. The pelvis of the cow is, therefore, more developed than that of the mare, and has more extensive bony walls. My object is to show that the form and direction has a notable influence in the mechanism of parturition. As I have before stated, the pelvis of the ewe greatly resembles that of the cow, the difference being that the pelvis of the ewe is more horizontal and straight.

The pelvis of the pig resembles that of the mare. The crest of the ilium is convex, the pubis is narrow, and the ischium, instead of a crest, has a tuberous prominence. The sacrum is formed of four vertebræ, which are not consolidated for a long time, and we have sometimes a difficulty to discover where it ends and the coccyx begins. The spinous processes are absent, and the neural arch being deficient on each side, the spinal canal is open above. At this particular part the sciatic nerve is prominent, which accounts for paralysis of the hind legs taking place after parturition as in cases of milk fever or excessive straining. The sciatic nerves, placed, as it were, in close proximity to any

pressure in the pelvic circle, are acted on by the action of the foetal life, and cause cramps to pregnant animals towards their time of parturition. In the operation of parturition I will refer to this particular point so as to define clearly the relief of severe pains during the process.

The cavity of the pelvis is the space between the inlet and outlet. In the human species it lodges nearly the whole of the uterus, and in the early days of pregnancy the foetus also. This is not the case with the domestic animals, owing to the difference in attitude, until the act of parturition carries the progeny there. With its two openings the pelvic cavity is capable of more or less increase in capacity in different directions, through relaxation of the pubis and sacro-iliac articulations, and sacro-sciatic ligaments. The yielding of the latter is very noticeable in the larger animals, immediately before parturition, as well as the elevation of the coccyx by the body of the foetus in its passage outward. It is also a fact that the pelvis widens permanently in aged animals that have had young frequently in progression, and is due to persistent relaxation in the articulations above described. When assistance is required, always bear upon the lower part of the pelvis, as by drawing straight the difficulty becomes more complex and serious, first, by pressure on the upper part of the ilium, causing unnecessary pain to the dam, and second, running a risk of injury to the back of the young, whereby numerous inquiries are received for reply to the effect of paralysis to the back, the colt or calf not being able to stand up for the first week

after birth. The ischium, immediately above the obturator foramen, rises abruptly to almost a right angle; this is the narrowest part of the canal, and here it is that the fœtus is obstructed in small females which have been impregnated by larger animals than their own breed. We find that the small-boned, narrow-ribbed Texas is not a suitable mare to be bred to a large Clyde or Percheron. Good judgment is required in the breeding and the management, so as to be a success. We want well sprung, round ribs, and wide hook-bones as a matter of safety in parturition.

The subject of pelvimetry is of great importance to the stock-breeder, because, by understanding the structural development, he is able to see the propriety of acting according to circumstances in the case, as the less value of animal life leads the operator, when in difficulties, to sacrifice the colt or calf rather than endanger the life of the mother. All appliances and instruments will be illustrated in this work in the proper place as we go on.

Professor Chauveau, in his measurement of the mare's pelvis: "I do not see it at all necessary in this work to enter into detail, as among our largest, as well as the smallest of our domestic animals, there is so wide a difference. I have seen a broad set, low leg mare throw a large colt, and a cow the same. When full grown the mother was quite dwarfed, when standing side by side, so any further loss of space need not be taken to illustrate that part any further than to state that the shape of the mare is not fully developed till she has brought forth young."

## CHAPTER IV.

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### ŒSTRUM EVOLUTION, OR THE SEASON OF HEAT.

In some breeds of cattle we find the season of evolution appears earlier than others. The small breeds are the only class that seem to produce this offspring with in the year. Among those of that description that have shown themselves productive at so early a stage in life are the Shetland, Skye, Jersey, Alderney, Stark, and Jersey, although, as a rule, the larger breeds are not so susceptible to evolution. I am not an advocate for premature breeding, as the rule holds good that with a small, weak dam to begin with, weak offspring is often the result. It is always best to breed from mature animals, say the heifer to be always one year old before conception, so that she may be one year and nine months old when she has her first calf. And if a good habit is to be formed by early maturity, then I consider that is early enough. When the heifer comes in heat see that she is kept from the rest of the stock in order to avoid the many evils that often happen by a heavy animal interfering with her, where several animals have been ruined for life by having their backs or hind parts sprained. The proper way is to remove the young heifer to a quiet place for a few hours, till she is cool. Then served quietly, returning again, and keeping her quiet for at least ten hours before allowing her to go with the

rest of the herd, as if she be returned to the herd before the evolution is cooled off, by her jumping other cattle and creating a secondary excitement, she will cast the semen, and she is then in a precarious state to conceive again. Then the art of the empiric is called in to fool the owner by acting the juggler, by opening the womb. What a power of sound reasoning is against such abnormal practice! I do not intend to devote a single line in this work to show up the fallacy of argument against it, as any reasoning stock-owner can see the folly of it. Always serve a mare or cow on an empty stomach; it is natural practice with all animals, either wild or domestic. No animal can settle to eat till nature is satisfied. Therefore, they must have an empty stomach. A wild animal will go into retirement after conception, and a domestic animal the same if they have the same facility.

Keeping a heifer light of food for ten hours after conception is all in her favor. In eighteen days she ought to be looked after. Should there be any signs of annoyance from any of her associates, have her removed so as to prevent any trouble. If the bull is all the time with the stock at pasture, then he will attend to her and keep the cows from interfering. The heifer now being with calf, a change has become visible. She becomes more quiet, seems to rest more quiet, either in pasture or in the barn, and lies more, and seems to spend more of her time ruminating. The mesenteric glands begin to swell, the milk veins fill up, her udder begins to swell, and the teats to elongate. When within three months of her time the udder will have undergone a decided change, as it will have taken on an in-

inflammatory appearance. Some days it will appear as if it was creating great suffering, while the whole system is undergoing a peculiar change, preparatory to parturition. Again, at another time, she looks as if she had forgotten the promise and gone back against production. The sure symptom is when the pelvis bones give way, when she must be watched as in all cases of parturition. Whenever the feet are seen making their appearance through the placenta in the vagina, the sooner assistance is rendered the better, as the less straining, the less exhaustion, and more strength is saved; and last, but not least, less suffering. It is seldom that there is need for more than one person if properly attended to. Should the heifer be lying, see that everything is clean. Go quietly up to her, break or burst the placenta or water bag; then seize the feet of the calf with both hands, then take a piece of cloth in each hand, and take hold of the feet, drawing slowly towards the udder. Whenever the heifer assists by straining, see that you are making progress. If you find that you are not making progress toward delivery, now is the time to call for an assistant. If she should rise to her feet, place a bunch of straw behind her, so that the calf may not be injured when on to the ground. Draw the fingers through the calf's mouth, so that there may be no interference to prevent breathing. If the calf is to be suckled, then be very careful in placing the young thing before the heifer. A very good plan is to sprinkle a little oatmeal or bran with salt over the calf before giving to the dam, so she will lick it clean and dry. Milk the cow clean in every case, and if the heifer has been tied by the head, as is

the best way, assist the calf when it begins to walk, to suck, and if the heifer is turned into a box stall for a day or two, where she can have liberty to admire and lick her offspring, she may be turned to pasture if in season, and the pasture dry. But do not turn out a new-calved cow on wet grass. Let her remain two hours the first day, and longer every day after if she is doing well. One thing, above all others, must be attended to, that is, to see that the bag is milked clean several times a day ; as if left entirely to the calf, there is often more than the young thing can take, and the result is often garget or inflammation of the udder. The reason why I so earnestly charge my readers on this point is, that sometimes the calf will suck the teats of one side clean, while he will not suck the teats on the other side, and one or other of the quarters becomes the prey to udder clapp or garget. When the teat is drawn, it will only yield curdled milk, or worse, a kind of slimy scum. [See Treatment of Garget.] If the calf has to be taken away from the dam, she will require to be milked not less than three times a day, as has been her wont, and see that her udder is at all times kept in a healthy condition.

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## CHAPTER V.

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### GENERATION AND CONCEPTION.

In entering upon the field of generation and conception, and illustrating the generative organs of the

mare, I know that I hold views quite contrary to some of those supposed to be understood by breeders and stock-owners generally, but as proof of the correctness of the same I shall make every point plain, and show the fallacy of opening the neck of the uterus in preparation for the reception of the male.

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## CHAPTER VI.

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### GENERATIVE ORGANS OF THE MARE.

The genital organs of the female are much more complicated than those of the male from the far greater share they take in the process of generation. They are usually described according to their situation, as external or internal, or from their function as copulative and formative.

Proceeding from the exterior to the interior these organs may be enumerated as follows: The vulva, and mamma or mammary glands, the vagina, uterus, fallopian tubes, and ovaries. We will describe these in the above mentioned order, taking the mare again as the type, and indicating the difference in the other domestic animals.

#### PART I—THE VULVA.

The external orifice of the generative organs, the vulva, appears as a vertically elongated slit, situated beneath the anus, between the perineum and ischial

arch, and the posterior margin of the two hind quarters. It presents two thick lips or labia, and two commissures, externally; and internally it forms a cavity, which is confounded with that of the vagina, and extends beyond the meatus urinarius. The limit between the vulva and vagina is not perceptible in the adult, but is always conspicuous in the fœtus. The labia vulvæ or lips are usually in contact with the rimæ vulvæ, although they vary in size, according to age and condition. They are slightly prominent and thick, being composed of fine, smooth, flexible, and elastic tissue, which is covered with fine, smooth, unctuous skin, destitute of hair, but rich in pigment in the majority of animals. Internally, they are covered with mucous membrane, a continuation of that lining the vagina, and which is constantly lubricated by a greasy mucus, possessing a special odor, according to the species of the animal; on the free border of the vulva this membrane and skin meet.

## PART II.

At the junction of the labia above and below are the commissures, due to this junction. The superior commissure is situated close to the anus, from which it is only separated by a narrow space, the perineum. The cavity of the vulva sometimes contains the hymen, which separates it from the vagina at a certain period of life; it also contains the meatus urinarius, and its valve, as well as the clitoris. I now leave what I might add, an amount of other explanation, which, I think, is unnecessary in this case. Suffice it to say, that there are no labia in the lower animals. The posterior con-

strictor of the vulva is very powerful in acting during copulation; it contracts the vagina and compresses the penis, by reason of its attachment to the clitoris, etc.

#### PART III.

It is at this point, for reasons I may give, that I decline to explain further, but object very seriously to the principle of some breeders performing artificial amorosity while, if the animal is affected with the heat, or symptoms of evolution, there is no need of interfering with nature. Conception is impeded, and even abortion is aggravated by such wanton interference.

#### PART IV.

The clitoris is more especially the seat of venereal excitation during coition. It is present in all domestic female animals, and is always erected while they are in heat, as well as in the act of copulation. The clitoris is abundantly supplied with nerves, which endow it with most acute sensibility, and the mucous membrane enveloping it is usually dark colored or mottled, though in white mares and horses it is, or may be, colorless. The meatus urinarius is the orifice of the urethra, which is a very short canal in the female. This canal passes immediately beneath the anterior sphincter muscle of the vulva, and after a brief course (about two inches) in the textures composing the floor of the vagina opens into the vulvar cavity at from four to six inches from its exterior. This opening, which is the floor of the cavity, is covered by a wide duplicature of the lining membrane that acts as and is designated, the valve of the meatus or vaginal (*valvula vaginae*). Its

free border is turned backwards, and it would thus appear to direct the urine toward the external opening of the vulva, and prevent its reflex into the vagina. We have several French and German authors that consider that this valve is more extensive when the vagina is narrow, and is more prominent when the female is young. Author Brugone was of opinion that it was attached to the upper surface of the vagina by a small cord, and that it was the rupture of this by the forced entrance of the penis which caused the slight flow of blood from the vulva observed in mares put to the horse for the first time. This is, without doubt, the hymen to which he refers—a membrane found in the filly, though not in the mare, or at least seldom, but which, when present, separates the vulvar from the vaginal cavity. This membrane forms a circular partition fixed by its circumference to the vulvo-vaginal walls along with the valve of the meatus, and is perforated by one or more openings, which are sometimes very small.

#### PART V.

Not infrequently old brood mares show in this situation pediculated appendices, which are the debris of the mucous diaphragm. The urethral orifice of the mare is wider than that of the horse, and it will readily admit a much larger catheter. In passing that instrument it is well to remember that the urethral canal curves forward and downward, and that the valve must be raised either with the instrument or the point of the fore finger before the passage can be entered. I speak more plainly of this part of veterinary education, as I have come in

contact with several veterinarians that could not draw the water from the horse, either because they had not the proper instrument, or did not know how to use it, while the horse suffered most severe pain for over two hours till I relieved him. After he was relieved he shook himself like a dog that had been wet by swimming in the water. I will here give a point that is generally unknown to horse-breeders. It is this. The labia usually exhibit as many wrinkles or folds as the mare has had colts. That was delineated in cases of post-mortem. During the œstrum, or especially toward the termination of pregnancy, the labia become tumefied and soft, the interior commissure descends, the vulvar opening is enlarged, and from it is discharged a quantity of tenacious, stringy mucus.

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## CHAPTER VII.

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### THE COW IN HEALTH AND DISEASE.

Second in importance to no other animals is the cow to the farmer. On that account the farmer or stock breeder ought to be fully educated as to her treatment in health and disease. For that object is this work published, so that every breeder may have at command a work that describes the cow in health and disease. How many hundred animals are lost every year for the want of skill and information to treat intelligently

injuries, accidents, and disease, that could be saved if the breeders only knew how to proceed. "A stitch in time" is valuable advice to follow. Therefore the main object of this work is to fill a long-felt want in the library of breeders and stock raisers. The proper mode of feeding cows varies according to circumstance. The prairie cow is more the animal in a natural state than this work will dwell upon, dealing strictly with the cow in a domestic state. Care and proper feeding is the first point to be considered in order to make her what she is designed to be, a source of profit to the owner both as regards her produce as a stock producer, and her value as her milking, cream, butter, and flesh production. If kept for the dairy, the produce of which is sold in the city, quality as well as quantity ought to be a criterion in her treatment and feeding. If kept for private family use, quantity is not so much an object as quality. If kept for butter production, quantity and quality must be considered, especially where calf-raising is made a principle with feeding skim milk or whey. Feeding cows for the cheese factory require more attention to make a success than is usually given them, grain fed with grass will pay better than grass fed alone, and as I proceed with this work I shall mention as the case may require, the best known results as shown by various experiments for the production of the highest standard of rich producing milk. As I have remarked in my preface, I shall not enter into detail as to the origin or breed of cattle, but keep strictly to the text as defined in regard to every day treatment. Beginning with the calf and his management, I shall give my experience in raising for beef,

by feeding both cow and calf at the same time. If the calf is allowed to suckle, attention must be given the cow that the bag is kept free of milk for the first two weeks, and the surplus milk that the calf is not able to consume carefully and cleanly drawn off in order to prevent garget or inflammation of the udder. Should the milk become clotted great care will be required to be taken by frequent fomentations of warm soap suds, and at the same time drawing the teats as you rub and foment the bag. No liniment can be used externally on the udder, as it will be sure to nauseate the calf, and although you draw as it were every drop of milk, as you suppose, from the cow, she will let down her milk to the calf when she will not give it by hand. Another point is to keep cow and calf in a dry, warm atmosphere with good ventilation, and room enough to let the youth have play and exercise, as is his wont. The food after the first three weeks ought to be of the most nutritious kind. In this country, where oil or rape cake is not popular as feeding stuffs, three parts of ground oats to one of corn, as mixture with bran, is the most wholesome of all foods, both for young and mature stock, producing the finest flavored and richest milk, not having the oily flavor of oil cake, nor the sharp smell or mustard flavor of rape cake. Oats, corn, hay, or grass is the best both for quality of milk to feed the suckling, producing the beef in either the one or the other. In cities where swill feed or brewers' grains are to be had, the milk is of the poorest kind, being ninety-eight per cent. of water. The milk in a great many cases becomes putrid in five or six hours in warm weather after being taken from the cow. Heifers fed

by suckling the cow, as a rule feed more kindly than bull calves, and make finer beef, but in cases differ in weight. It is a stock-breeders' motto never to lose the real beef, but let the calf have the privilege of feeding with the cow, as they will do fourteen days after birth. Care must at all times be taken not to let them want hay or corn stalks, as if they are fed on barley or wheat straw they are apt to become constipated, and evil results may follow. Should the calf become constipated from any cause, take molasses, one-half pound; magnesia, one-half ounce; mix in gruel, give the calf warm once a day. But should the cow become constipated, take one pound of epsom salts; one pound of molasses; one-half ounce of magnesia, in one quart of warm gruel; drench the cow with it three times a week, if the bowels do not respond at either the first or second time. The calf will in that case get the benefit of the medicine as well as the cow. Should the cow not cleanse properly a cleansing drench is made up thus: Take epsom salts, one pound; jalap, one ounce; gentian, one dram; molasses, one pound; oat meal or oil meal gruel, one quart; all well mixed, warm and given in one drench, with thin, warm, sloppy bran mash afterward, so as to relieve impaction of the third stomach, as is often the case when fed on dry food. Again, it is often the case when cattle are stalled in boxes, that unless they are well bedded and kept clean they will become affected with foul feet, and often lose flesh till the evil is noticed. The most effective remedy known is **STUART'S HEALINE**. It will commence the healing process the moment it is applied. Directions on every box. The various diseases attendant on parturition and calf-

hood will be taken up and plainly discussed as the work progresses.

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## CHAPTER VIII.

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### BREEDING.

As I have already stated, I do not intend to enter into detail as to any particular breed, but treat the cow as a purely domestic animal, fully under the control of man, not even getting a drink of water by her own free will. A single cow in the stable, kept for family use, and not for breeding, but to supply the family with the best quality of milk, is not the best to breed from, because she is very often too fat, from pampering, confinement, and the want of exercise. When she has a calf it is very often small and puny. Where a cow is kept in confinement, and fed hay and mash, she is better not to be bred, as the milk is just as rich, and as the cow undergoes no excitement, the supply is more regular, even after she has had no calf for two years. But the dairyman that wants milk during the summer, for the cheese factory, requires every cow to have a calf, so as to give a full supply of milk during the cheese and butter-making season, and in the fall, when the factory is closed, he has no further use for milk, and lets his cows go dry; while in the city, the more milk that the dairyman can make (quality no object, only quantity), swill-

feeding being the principal study, cows are not kept for breeding, as they are milked as long as they will pay and then sold for beef. Where breeding is strictly the object, the best class of pedigree stock should be kept, and all is changed. The cow does not, in some cases, have her calf taken from her, but is allowed to suckle it till it has become nearly as large as the dam. Great care is required during the first few days of calfhoo, both for the cow and calf. In every case, the calf for the first two or three days is not able to consume the whole of the cow's milk, and if the udder is extended in consequence, inflammation will set in, garget takes place, and the cow is ruined as a good dam afterwards. Whatever opinion to the contrary stock-owners may have, it is safe to milk the cow clean after the calf has had all it can take, for a few days at first. The flow of milk, as it were, will become adapted to the wants of the calf. It would seem as if nature adapts itself to this case as well as to that of the dairy cow that is milked clean three times a day, and fed accordingly. Cows that have been kept only to supply their own offspring are not the cows to keep for dairy purposes afterwards, as the lacteals, never having been developed, are insufficient to produce a paying quantity of milk, however well fed. If the cow and calf are kept in a box stall till the calf is two or three months old, and then turned out to pasture, the greatest care must be taken to prevent the cow from becoming overheated, as the calf will be sure to run, and the cow will often join in his play, frequently causing injury, either by running against some fence or stump, or the milk being overheated in the cow; trouble has often resulted

that has blighted all our hopes and brought disappointment and discouragement to the owner. Whenever the milk is overheated the calf suffers from gripes, or it results in white rush, scouring so as to reduce the system, and being unable to take the supply of milk that is secreted, the milk will become curdled, and the calf will refuse to suck any teat that becomes affected; then the cow suffers at the same time. It often happens that when a calf sucks, the cow, if in high condition, will come in heat the first six weeks. But I never approve of an early service, as it is rare that she conceives, and if she does, an abortion is almost sure to follow. Three months is about the natural period, and the most satisfactory to follow as a principle.

The evils of inbreeding ought to be scrupulously avoided, as it leads to degeneracy of any particular breed. It is the opinion of some breeders that inbreeding may be accomplished with success, but it is against the law of nature in a domestic point of view. Although the animals are perfect in health and development, degeneration will most assuredly follow if persevered in. A change of male in the herd every two years may be beneficial. A breeder of stock always has a purpose in view. If breeding for the dairy, he selects a male from a known good milk strain. If for butter, the same. If for beef, the same principle must be pursued to be a success. As is the case in Scotland and England, a two or three-year-old heifer is selected, in calf, and cow and calf are reared and fed all they can eat after the first month. The calf never loses the veal till it is ready for the butcher, when the high price that the calf beef attained is a great inducement for a farmer,

where neither milk nor butter is a criterion. That principle of feeding gave the best results, as the outlay was only the heifer to begin with. It paid at a greater percentage than if two store cattle were bought, and in most cases is more satisfactory.

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## CHAPTER IX.

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### GESTATION.

Gestation, or pregnancy, comprises the period the female carries its young while undergoing development. The consideration of this period is of much importance to the stock-breeders, and we will describe it from its normal, physiological point of view, pointing out more fully the anatomical and functional alterations attending it, the mode of recognizing it, its duration in various species of animals, modifications in the uterus during pregnancy, with the development of the foetus. The uterus undergoes important changes, while the system of the mother also participates more or less in the phenomena which mark the period of gestation. The changes of the uterus are those that relate to its volume, structure, form, situation, and direction. Our investigations with regard to volume have shown us that immediately after conception the uterus has become congested, and a close examination of its internal surface will reveal the truth. The lymphatics are like-

wise augmented in number and dimensions, and the nerves that are comparatively small in unimpregnated animals, become enlarged, and form a sort of net-work similar to that of the vessels. The cornua, which is always conspicuous because of its firmness and density, can easily be detected by the operator while spaying the female. But during pregnancy this density is greatly diminished because it becomes softer. The horn of the uterus, as we call it, becomes a mass of mucous internally, which is slowly discharged in small quantities for nine days after the removal of the placenta. Ancient and modern writers have not discovered anything new from structural changes in the uterus. The cotyledons are the same to-day, after conception, as they were in the days of Pliny, or even Aristotle—forty cotyledons before conception, and three times that number after conception.

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## CHAPTER X.

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### COMFORT OF COWS IN BARN AND FIELD.

Cleanliness, it is said, is next to godliness. Where care and cleanliness are practiced a good reward is always sure. As a general rule, we find in most barns no particular provision made for the comfort of the cows, no space between the side of the barn and hind part of the cow, and when the cows are in the barn during the

winter, their hind feet stand all the time in manure and soaked in urine, in anything but a comfortable condition for the attendant or cow herself. Foul feet is often the result, and when being milked, should she lift her foot, a portion of the adhesive substance is often a very unwelcome accompaniment to the flavor and quality of the lacteal fluid, while it often happens that she receives a word of caution, not appropriate in the Sunday-school, or rude punishment, or both. Again, some have them packed too closely, as we generally find where they are confined in stanchions. Of course, every farm barn is not large enough to have each in a box stall, but in a great many cases they are better standing wider than two and one-half feet apart. When two cows are lying down we see that the one standing between them has no room to lie down, and has to stand or crush herself between the two, and when heavy in calf, often doing injury, causing abortion, or treading on the udder of the one next her. When a byre is over-crowded, it becomes over-heated, and when the cows are continually standing in a warm, confined air their lungs become tender or enfeebled, so that if by any mistake they are exposed to a sudden change of atmosphere they become the easy prey of bronchial disease. Every cow ought to be so secured as to have the pleasure of licking herself on both sides while in the byre, and all feed ought to be contained in a receptacle below the level of the knee-joint, as if a cow should choke, her head being down, she has the power to cough it out, as when some cows are feeding they roll the bite in their mouth before they swallow it. The only objection to too much

room in the dairy is that one cow will gore her mate or stand with her hind-quarters up against another and drop her manure where the next has to lie down, thereby causing every cow to carry a quantity of filth around till the rains wash it off. Every cow, either in the barn or field, ought to be curried or brushed every day, the udder washed and dried before milking, their feet cleaned so as to remove any dirt or gravel from between the digits, as a preventive against the inroad of foul feet into the herd. When cows have been confined in the byre during the winter, we find their hind feet have grown to long points. By taking a sharp chisel and mallet, and cutting off the long points, the cow is enabled to walk better when turned to pasture. Bulls are worse than cows, as they are generally confined all the time. A barn so constructed, with two feet of space behind the cow, is anything but convenient when a cow requires assistance at the time of parturition. This point will be explained further on. It is impossible for the attendants to keep the milk clean where he has to crowd between the hind part of the cow and the wall of the barn. Cows that stand a long time in the barn without bedding are often the subjects of swelled knees, and when turned out seem as if they were suffering from rheumatism, as they are stiff and sore forward, and in some cases have the hair and skin rubbed off on the under part of the breast. A common custom is to fork the hay from the mow over the heads of the cattle, where the improved principle of feeding is not practiced, and cattle often get dust or hayseed into their eyes, suffering severe annoyance and pain unknown to the attendant.

In the month of April or May, when stock-owners are preparing their cattle for summer pasture, two hours are quite sufficient time to let them remain on pasture, as if they get too much young, luxuriant grass, they are often the subjects of hoove; and again, when suddenly turned from dry hay to grass, they begin scouring to such an extent that the condition attained in the barn is lost before they recover. Should a sudden shower of rain come on when the cattle are first turned out, no time should be lost to get them into the byre, as evil results often occur, especially the first week. After a warm shower, when the grass has got through the cattle, there is no danger. At this season every cow ought to be salted every other day, and every cow that has been turned out fresh ought to be carefully watched, so that, when lying on the cold ground, she does not become the subject of garget. It is good practice to have every cow examined every night to see if any one in the herd has been gored, and immediate steps taken to relieve the pain and injury at once. Young calves that have been lately weaned are often very troublesome if in the same pasture with the cows, either by sucking the cows, or getting gored by being forward in amusing themselves with other cattle. A sudden change of temperature will bring on chills, which are very deadly to calfhood. All weeds in the pasture of milking stock ought to be cut and cleaned off, as calves are apt to eat them and get poisoned; and the cows themselves, that ought to know better, will amuse themselves by chewing bitter and poisonous weeds, whereby the milk is made bitter, and they sometimes suffer the penalty of poisoning, as well as the

calves. It is passing strange that some cattle will chew a bone, a piece of rag, old shoe, old harness, chips of wood, besides various other substances. An instance or two from my own experience might be useful. I was called to see two cows that had become sick; could not eat; gave no milk. One was a heifer, fresh only three weeks; the other her dam, two months calved. I found them in a high fever, greatly excited, suffering from thirst, nose dry, frothing at the mouth, horns hot; pulse at radial vein excited. On inquiring where they had been, I was told that they were at pasture close by, and had the best young, clean pasture that could be furnished, as it was clover and mixed grasses, and there could be nothing in it to injure them. The owners were among the most respected families in the neighborhood, and no one was ever known to have any grudge against them. I diagnosed the case as one of poison. I was met with the prompt, English-like reply: "You are wrong, doctor; you are wrong. It cannot be, as there is nothing here to do the cow hurt." I told them they might think so, but I was confident, and I wanted to have an examination before I gave either water or medicine to one of them. I found the pasture a small enclosure, with fine white and red clover, and a mixture of grasses. On one side was a high fence and houses, with their back yards close to the pasture, and here and there the usual ornaments of empty tin cans, pieces of crockery, etc. Among other things, we found that the people in one of the houses had thrown over the fence a quantity of salt beef that had been in strong brine, and had not been keeping well. The shoulder cuts were licked and gnawed, and

dragged here and there, and the ground around the spot trod with the feet of the cows, showing that they had had a good time enjoying their salt beef. There was no need of further investigation. Treatment was the next step to be taken. I knew that I would not have impaction to deal with, but the sooner relief was given the better. I gave each 4 oz. of carbonate of soda and cream of tartar, mixed in two quarts of cold water, every two hours, and no food till I called again. I called at 6 p. m. and found both much easier, not so excited. The worst patient I had to deal with was the attendant, who had been over the pasture making a funeral of the beef, with not a tear shed, but raving mad, not in a good mood to receive directions to save the lives of the cows. We gave both good warm gruel of oatmeal and oilmeal, half a pailful each, milked what we could get from the cows, and left for the night, giving them no further thought. The next morning the cows passed pieces of salt meat and blood, most revolting to look at. I ordered the gruel three times that day, and an hour at pasture. The cows got well, but I ordered the milk to be given to the hogs for one week, as the heifer gave bloody milk for a few days.

Another case that came under my observation was that of cows pastured in a lot where horses were turned in at night only. One of the cows ate up all the horse-manure she could get. I was consulted as to the case. I inquired the history of the cow. She was bought from a dairy where she had been fed with mill stuff, and getting nothing but grass, hankered after a change.

One more and I am done. I was called to a case where I found the young cow gaping and frothing at

the mouth, with her head stretched out rigid as a log. I saw that she was choked. I stripped, got my hand into her throat, and with great difficulty drew out a large piece of shoe sole that she had chewed and attempted to swallow.

I impute every instance above related to the want of salt. If cattle, either milking or feeding for beef, were to have a quart of bran and enough salt while in pasture, every other night, better results would be secured than to lay the salt down on the pasture once a week as is often done, and keep each cow visiting the spot, craving for a tonic to strengthen their appetite and tone up their stomach.

Before I conclude this chapter I wish to impress upon the mind of every reader that nitrate of potassa or saltpetre is not a medicinal agent, whereby fever or excitement can be allayed in living tissue; therefore, it ought never to be used, unless you want to prolong a case and assist the disease to kill the animal.

Cows calving on the pasture will be treated of on another page. Prairie cattle, or cattle in a wild state, require different treatment from domestic animals, and as it will not add any to the value of this work, we shall not treat of them further than the observations that may be brought out in the different chapters treating on disease. When a cow is seen to be in heat while at pasture, she ought to be put in the barn as a safeguard against injury to herself and others.

## CHAPTER XI.

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### SIGNS OF PREGNANCY AND PARTURITION.

Eight weeks after service an expert will be able to tell whether the cow is in calf or not. While very often a cow will come in heat regularly during the period of gestation, at an early age of foetal life the only sure way to know is by the stethoscope applied to the right side of the abdomen, and often a slight discharge of mucus from the vagina. When six months have gone give the cow a salt mash at night, and the first thing in the morning give her a drink of cold water, stand behind her, and if you see a slight movement on the right side, it is caused by the foetus. Another point is this, it is said that a bull calf lies more to the right side of the cow than to the left, and a heifer calf more to the left, but that, as a rule, does not hold good, as I have seen it different, even when in twins more to the right than to the left. No cow goes an exact time. Sometimes a cow will go three days over her nine months, and the next calf she may go fourteen days over. There is no accounting for it, either. A heifer, with her first calf, will show signs of parturition by an inflamed, extended udder, four weeks before she is due, but there is always one sign that never fails, that is, the bones of the pelvis do not begin to slip till from forty-eight to twenty-four hours before parturition, and an

attendant at all acquainted with the case can tell to a few hours before calving. In every case when the bones give way, ten hours after you may be on the watch to assist nature, as it is always best to save the strength of the cow, as by straining herself weak, aggravating fever, and being unable to bring forth her offspring, she will become the subject of parturient fever. In every case assist the cow every time, as the sooner the labor is accomplished, the sooner will the pains cease and strength be retained. At the moment of birth draw the hand through the calf's mouth, and if the cow is to suckle the calf, sprinkle bran or oatmeal all over the calf with a little salt; lay it before the cow, when she will lick it dry, and be no further trouble. But the udder will require attention if the cow or heifer has not been forced in feeding previous. The calf may get the first, but it is safe to draw as much milk as is thought proper from the cow as a safeguard against milk fever. I do not approve of a cow sucking her calf for a week or so, and then taking the calf from her. Remove the calf at once, give it the first of the cow's milk, and whatever purpose the calf is to be turned to, to feed it accordingly. If hand-fed, the next chapter will explain our views on that subject.

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## CHAPTER XII.

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### PROLAPSIS UTERI, OR INVERSION OF THE UTERUS.

It is one of the most alarming and frightful scenes a dairyman or stock-breeder can see when entering the barn or stable to witness a case of prolapsis of the ute-

rus. Although of rare occurrence, it can be very easily returned, and the mare or cow get as well as ever. It will take place sometimes after service, as I have been called to attend a case recently, the history of which I may briefly state. The mare was served at 4 p. m. All went well till the next morning, when the groom got to the stall to feed her. He was surprised to find something serious had taken place, and what to do placed him in a state of consternation. He called in a neighbor, who quickly gave his opinion that whatever it was, it would have to be cut away, and the mare would most assuredly get well. Their better judgment prevailed in reporting the case to the master, who did not generally get up till 8 a. m. Word was left for the owner that he was wanted in the stable, as something had happened to one of the horses during the night. On his going and reaching the stable the sight completely upset him, as such a circumstance he never knew or saw before, and his own words were: "I have owned mares for twenty years, and never saw or heard of such a thing befalling any horse. He telephoned us to come at once, 8.30 a. m. We expected something unaccountable, as he had so much to say in his excitement that the phone of the instrument fairly vibrated as he tried to describe the case, and gave us to believe that we had a first-class operation to perform. We drove out, loaded down with instruments for the occasion. When we got there we found a case as described and his remark as stated. I admit I did laugh at the supposed loss of his high-priced mare. He said that it would have to be cut clean off, and if it had to be done I was to do it. Every one seemed distressed about it,

but we did not trouble ourselves much about it. I sent the hired man to the kitchen for a pale of hot water and soda. In the meantime we were getting a few boards put in an open stall, raised ten inches behind, above the level of the fore feet. The mare had no sickness, but was a little excited, but I strapped up the fore legs so I could get the assistance of both in order to hold a cotton sheet on each side of the mare till I fomented the uterus and cotyledons clean; then placing a sponge, saturated with the hot water, I lifted the uterus from below, pressing against the sheet till with a piece of warm water, cloth and oil, I returned the uterus into the place and spread it in such a natural position that I had no further trouble. Keeping my hand and sponge in the uterus till the stall in which I intended to keep her was ready for the purpose I intended it, we walked her to the stall, and had her placed in position. After I had her raised ten inches behind, and she a little settled from her strange and unaccustomed position, I withdrew my hand, sheet and sponge, then doused her well with cold water, and gave her internally a good anodyne of opium, tincture of iron, and spirits of camphor. I returned in the afternoon and found that contraction had taken the vulva in a natural state, and she resting easy, but quite astonished at her new position. All went well for eight days. All her treatment was flax seed, a few scalded oats, and bran scalded, with very little hay. When I ordered the raised floor removed, and her out for a walk, her joy was unbounded, as she reared, skipped, and whined as if she had lost her colt. The stall was five feet wide, but we put up a trivage two and one-half feet wide, with the floor

supported with heavy beams that we got handy, and raised ten inches behind, with a scantling wrapped with an old blanket to keep her from getting back and getting off the raised floor, and at the same time preventing her getting chafed. Some of our readers will ask what caused such an occurrence. After service she was put into a comfortable box stall with iron rails four feet from the floor on top of the sides, and the horse in the next stall had teased and annoyed her all night, which caused her to strain till she caused inversion. The moral in this case is to keep every mare after service away from any other horse, as quiet as possible after service. This is one other case where the horse is to blame, and gets a bad name through neglect and want of knowledge.

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## CHAPTER XIII.

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### SENSIBILITY OF PREGNANCY.

Shortly after conception an increase of volume, weight, and capacity takes place, and the female often acquires a higher degree of sensibility, caused by the development of the nerves of the embryo, so that between the cervix and cornua there is established an irritation caused by the swelling of the surrounding tissue and enlargement of the foetal germ that it often occurs that an animal—mare or cow—will evolute all

the time as if in heat, and while the horse or bull may refuse to serve, little or no sign is seen externally to cause the breeder or owner to think anything else than that the male animal is at fault. If any horse or bull refuses to serve after a mare or cow has been served, it is indiscreet to attempt to force nature, as by doing so many a fine mare or cow has spent or aborted her foetus, and been rendered unfertile during the season, and resulted in a loss of the colt or calf she ought to have borne.

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## CHAPTER XIV.

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### SITUATION OF THE UTERUS AT THE TIME OF CONCEPTION AND AFTER CONCEPTION.

The uterus cannot change its form and volume without altering its situation. Before and until a certain time after conception, the body of the uterus is contained in the pelvis, but as it and the foetus increase in size, the position changes, and this change causes an alteration in the situation of other organs. In the mare it gradually displaces the pelvis flexure of the colon, which is lodged in that cavity, and passes forward below that intestine toward and beyond the umbilicus, to rest on the floor of the abdomen, and in proximity to the diaphragm, stomach, and liver, towards the termination of pregnancy. In its development it is situated

chiefly in the middle line of the body, slightly inclining to the left, because of the large mass of the colon occupying the right flank.

In ruminating animals the uterus pushes the rennet and cæcum out of the pelvis, presses the mass of intestines to one side, and extends between the right sac of the rennet and the abdominal walls. The presence of the rennet in the left flank causes it to deviate somewhat to the right. In multiparous animals, in which the young are placed end to end in the cornua, the latter rest on each side of the floor of the abdomen, and curve upwards; in the pig they incline somewhat to the right side, though in both each cornua lies above its corresponding mammary line.

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## CHAPTER XV.

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### DURATION OF PREGNANCY.

The usual period of gestation of the mare is eleven months, though there is a variation between weak and well, developed and strong animals. From observations by authorities on that subject, out of one hundred mares the shortest period of gestation was two hundred and seven days, and the longest three hundred and ninety-four days, or a mean of duration of three hundred and forty-six days. In the Percheron breed of mares the time has been from three hundred and twenty-

four days to three hundred and sixty-seven days. It has been our privilege in practice to be called to a mare that went in one case twelve days over a year. On examination we found the foetus dead, and milk streaming from her teats. We pronounced the foetus dead for over one month at least, being told by the attendant that the mare had shown signs of parturition several times. We never would have been called had the mare kept well, but she became sick, and the owner, being alarmed, had recourse to our services. We now call the particular attention of our readers to this case. On examination per vagina it was found that considerable torsion had taken place at the time when she showed signs of labor pains, and that must have been at or about six weeks previous to our visit, the foetus having been dead all that time. The mare, in her straining and struggling to expel the foetus, exhausted her strength and energy, whereby she became sick. We removed the dead and well developed foal, decomposition having taken place, and her uterus being involved by a series of hypertrophous envelopes. Emphysema had taken place all over the foetus, and in a short time it would have killed the dam. We have removed a dead, putrified foetus where it was so far gone that it was scarcely recognizable, and when the foetid smell was almost enough to kill not only the operator, but every animal in the stable. Here again we wish to draw the attention of our readers to an important matter. Never allow either mare or cow to show signs of parturition without assisting her at once. You are always safe in assisting her, as if you delay until she has strained and struggled till she is exhausted, death will be the result.

The usual signs, if the mare is up to her time, appear twenty-four hours before parturition, when a brown, waxy matter will form on the end of her teats, even though the udder may be extended for one month previous. If the colt be dead the milk will drop from the teats, and her sides, instead of being round, will become flat and fallen in with her hookbones projecting. With regard to the influence of breed on the duration of pregnancy, we have the researches of French, German, Persian, Arabs, Russians, and English. For Persian, the gestation period is from three hundred and forty-one days to three hundred and forty three days for male foals, and three hundred and thirty-eight days for females; in thoroughbred Arab mares the average was three hundred and thirty-eight days to three hundred and thirty-nine for males, and three hundred and thirty-seven for females; Russian mares, from three hundred and forty-one and one-half to three hundred and forty-one for males, and three hundred and forty-two for females; for English mares, three hundred and thirty-nine and one-half to three hundred and forty for males, and three hundred and thirty-nine for females. But the normal interval that mares go is from three hundred and forty to three hundred and fifty days; some foals are born alive from the three hundredth to the three hundred and tenth day, but this is rare. Births are frequent between three hundred and twenty-five and three hundred and forty days. Then we may consider three hundred to four hundred days as the extreme limit within which the normal gestation occurs in the mare. Although the male colt is longer in uterus than the female, it is so in the bovine species. But if a mare

is in foal to a jack then either foetus is longer in utero than if she had been in foal to her own species. We find that gestation decreases with age and that the shortest period in pregnancy of old mares above twenty years was three hundred and sixteen to three hundred and eighteen days, and the longest in mares from six to nine years of age was from three hundred and thirty-four to three hundred and forty-eight days.

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## CHAPTER XVI.

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### IN THE COW.

The usual time understood by every breeder is nine months, although there are variations which must be taken into account. We find records at two hundred and forty-one and three hundred days, so that we find in the cow that parturition is very rare before the two hundred and forty-first day; while again we find certain breeds to go as long as two hundred and eighty-two to two hundred and eighty-three days. It is said by an English correspondent that all calves born after the three hundred days were females, while the *American Journal of Medical Science* gives the longest period to be three hundred and thirty-six days, and the shortest as two hundred and thirteen days; the average of the males being two hundred and eighty-eight days, and of the females two hundred and eighty-two days. It is well understood that the period of gestation is longer for a male than a female in any breed.

## CHAPTER XVII.

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### GESTATION OF SHEEP AND GOATS.

Sheep and goats generally go about five months, or between one hundred and forty-three days and one hundred and forty-nine days.

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## CHAPTER XVIII.

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### PIGS.

The pig is usually pregnant four months, or, according to some observers, three months, three weeks, and three days. The average is one hundred and nineteen days, so that the shortest period is twenty-three days or less. A peculiarity of our domestic animals is that the largest breeds bring forth the fewest in number. The mare usually has but one foal at a birth, but on rare occasions twins appear. We find in our practice, both in Europe and America, that when twins are conceived, they are often dead, unless some one has charge that knows how to attend to a case of twins, the signs

of which will be described later in this work in connection with illustrations of this subject. We have attended parturition in six mares that had live twins, and ten mares that had dead twins. Every one can be saved if attended at the first appearance of signs of parturition. It is different with the cow, sheep, and hog. It is not uncommon for a healthy cow to have three calves at a birth, and we once saw in London two steers and two heifers that were said to be brought forth at one birth. The quartet did resemble each other, both in marks and build. We have a manuscript in our possession which details a case of a cow that was owned by Mr. Alexander Stephens, Farinton, Alford, a black polled breed that had seven calves in one year—four at a birth. One of the four calves died early in 1846. In 1840 that same black polled cow gave birth to six calves, all of which died prematurely. Attempts have been made by breeding a bull that was a twin to raise a twin-bearing breed of cattle. In some instances it did look as if it would prevail, as two cows had twins to that bull the same season, but one of the two cows had twins the second year, and the major part of his stock only produced one at a birth. We have records of monstrosities of different shapes, showing several fœtuses grown together in utero. On that subject it is not necessary to enter, as such will serve no good purpose, either as research in physiology, or as a breeder's object.

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## CHAPTER XIX.

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### FREE MARTINS.

It is generally understood that the female twin is

sterile and unproductive, but we have seen at different times a female twin calf in this city that has had three calves, and is every way a well developed cow. We have tried to find out if the heifer was born first, or if the bull was sterile, but have failed so far. It is said that, if the cow calf is born first, it will not be sterile, and that, on the other hand, if the male is born first, it will be unproductive. However that may be, we never had an opportunity to prove the truth in the matter.

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## CHAPTER XX.

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### CHANGES IN UTERUS.

While these changes are taking place, the broad or lateral ligaments are facilitating them by becoming unfolded and lengthened, and the uterus in its increasing bulk extends backward as well as forward. The cervix, firm and resisting, approaches the vulva, and to such a degree, sometimes, that in certain cattle, particularly those that have a small pelvis, the posterior part of the vagina appears between the labia of the vulva a month or more before parturition, more especially when they lie down. At this juncture of gestation any animal that protrudes the uterus or any part must be raised a little behind when in the barn or prolapsus uteri may follow, either before or after parturition. With mares it is often very different, while with cows that are very pendant the

opposite occurs; for the uterus, in passing downward and forward, carries the posterior part of that portion of the vagina behind it, and this cavity becomes lengthened and constricted posteriorly, the cervix is shortened and the vulva appears to be deeply buried between the tuberosities of the ischium. It is much better that a portion of the vagina appear one month previous to parturition than a tight vulva and torsion when the pains of birth take place. It is at this point where the obstetrician is tried, as it is considered impossible to deliver an animal when in that state, as it often happens that the face of the uterus is downward and the horn thrown forward so that the fœtus is dead.

This is the worst state an animal can be in, as the chances of delivery are against every process yet known, and death of the parent is sure to follow unless in the hands and care of a skillful practitioner. We have no way of assisting internally the turning or untwisting of the uterus so as to undo the torsion, but turning the animal over and over and assisting, as much as possible, the uterus both by inserting the hand into the uterus internally and manipulating the abdomen when lying on her back till the twisted part of the posterior has been relaxed, the dead fœtus can be removed without injury to the dam. Numerous cases are recorded which incontestably prove that during pregnancy the uterus will make complete revolutions on itself, producing torsion of the cervix and the posterior part of the vagina, and strangulation of the organ will result, so that spontaneous delivery of the young animal by the natural passage is impossible.

## CHAPTER XXI.

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### ABORTION OR PREMATURE EXPULSION OF THE FŒTUS.

A great difference of opinion is held among writers on veterinary science in regard to the cause and prevention of abortion. It is every day causing serious loss to stock-owners, and the object of this chapter is to explain and make it better understood. By following the instructions given, and carefully noting particulars, thousands of dollars will be saved by stockmen. There are so many causes of abortion that it will be quite in place here to mention a few. Cattle, when pregnant, and first turned out to pasture, are apt to run and play, and in their frolicsome moods will gore each other. Chasing with dogs, fright, feeding on ergotised grass, hay, or corn-stalks. Turning a cow out from a warm barn to drink at an icy brook often gives the foetus such a sudden chill that a disturbance may be seen when behind the cow for hours after, and is a great cause of protracted labor when the foetus is at the stage of maturity. A strong calf, while turning in the uterus preparatory to parturition, often in its struggles gets reverted, and in common place language is called a cross-birth. Therefore, when the pelvic bones are not prepared, it requires the most scientific and practical skill to even save the dam, to say nothing of the young,

however valuable. In a case of twins, the difficulty becomes more serious, as the umbilical attachment, when severed in an unnatural way, causes the loss of both dam and young by internal hemorrhage. We have had several inquiries to answer of cases of this character, brought on or caused by no other thing than drinking icy water. Feeding over-ripe Hungarian hay; feeding on wet clover and causing tympanitis, feeding mangel wurzel leaves, striking animals on the right side, getting squeezed or crushed in a narrow doorway; constipation, or excessive straining, all are to be guarded against as primary causes of abortion. Cows, when pregnant, are like the mare, particularly sensitive to putrid smells. It is customary for farmers, without thought, to butcher their hogs in the yard, where the cows are turned out to exercise, while the barn is cleaned out. They sniff and turn up their lips, showing an expression of disgust, and from sympathetic influence, they often become the subject of abortion. The symptoms are, if dry, they become hollow-backed, flat-sided, and, instead of the round, circular form, seem to be walking on edge, with the milk coming into the udder in a thin, fluid state. Then the whole herd is in danger if the affected animal is not removed at once to a distance, as the placenta is not naturally discharged, and remains to pass away in a loathsome, putrid mass, sending off a fetid smell that causes every animal to sniff, thereby aggravating the in-calf cow until she is caused to abort. The consequences of such carelessness become a serious matter to any stock-owner. Every kind of dead animal ought to be buried deep out of the way of other animals. No cow that has aborted

ought to be allowed near the herd for some month after, and ought to be fed for beef rather than risk her to breed again, as in most cases abortion will recur at about the same stage in pregnancy. When a cow aborts remove every part of the placenta at sight, wash the uterus out with a solution of  $\frac{1}{2}$  oz. carbolic acid to 2 quarts of tepid water, or a little chloride of lime, either of which acts as a disinfectant, and, in a great measure, counteracts the smell caused by the discharge. At this stage the milk is not fit for use, as if allowed to stand in warm weather for an hour or so, it will emit a fetid smell. It must not be fed to hogs, as it sometimes is, and we have known fatal results take place from its use. No cow that has aborted ought to be pastured in the same lot where the rest of the herd is at pasture, as the daily discharge will most assuredly cause abortion in the herd. The cow should have a cleansing drench, composed of 1 lb. epsom salts, 1 oz. jalap, 1 oz. ground ginger, 2 oz. ergot of rye, mixed, and given in warm oat meal, or oil meal gruel, every other day for one week, and the cow kept clean. Should the pasture become foul from the discharge of fetid matter, remove every animal for at least one month until the rain has cleansed it. An animal that spends most of its time in quiet confinement can no more stand the strain of severe exertion when with young than a wild animal could stand the strain of fright in confinement. A mare may be employed at her usual work up to within a few days of her time, but an hour's over-exertion would be ruinous. Proper exercise, with any animal, is beneficial, but over-exertion is decidedly injurious. We could give many instances in proof. Last July a circus

visited this city. A mare with foal, hitched to a wagon, met the procession, and was so frightened that three men could scarcely hold her. We were called to attend her the next morning, as during the night she had slipped a nearly perfect foetus.

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## CHAPTER XXII.

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### ABORTION—ITS TREATMENT AND CURE.

We have given the causes of abortion, and now take up its treatment in the different stages. Food and drink in excess create a disturbance of foetal life, that in an advanced stage produces annoyance and inconvenience. A sudden chill by drinking cold water will do the same, even causing excessive and violent struggling, and the serious danger of separation of the umbilicus. When this result has taken place, then comes the endeavor to prevent the death of the foetus from hemorrhage. Nature has not prepared the way for premature expulsion. The symptoms that are presented to the attendant at this stage show themselves by the mare or cow becoming flat-sided; milk making its appearance from the teats, showing distress, ears cold, and dry, hot muzzle; if a cow, one horn cold, and one often very hot. At this stage we find in most cases the pulse full, the sub-maxillary artery longer than usual and somewhat bound-

ing under the finger; the regurgitation of blood in the lower parts of the jugular generally strong; the sounds of the heart generally increased. Apoplexy in all its alarming symptoms has set in. The first step to be taken is to assist an unprepared parturition by relieving the dam of the fœtus. Injudicious and inconsistent means are often resorted to by the ignorant and inexperienced. The main object in this case is to save the dam. The first thing is to give a saline aperient; sulphate of potash half an ounce, and forty drops of laudanum in a little cold water, with cold wet cloths, kept on the head so as to render the animal quiet while undergoing parturition. The first act of manipulation is to break the placenta. No unnatural force must be applied. Proper measures, which cannot well be described, will require good judgment and practical skill, to bring the dam through to a state of health. After the comatose stage has passed by, the patient rises upon her legs. She staggers a little at first, but the countenance does not indicate the existence of pain. The temperature of the surface of the body is normal. The animal partakes of a little food; but with only temporary relish. The bowels and kidneys seem to perform their natural functions, to all appearance. The udder becomes softened, and milk can be drawn in large quantities, and our patient requires nothing more than good nursing and proper diet. In all such cases we should be careful not to be carried away with the notion that stimulants, or vegetable or mineral tonics, are necessary to assist nature. The chances are that such medications will be a principal means of assisting nature in her mighty restorative powers, and help to bring on

that state we so much wish to avoid, viz.; pure and general fever.

Not unfrequently twelve to twenty-four hours after the patient has regained her feet and seeming strength, and, perhaps, has eaten heartily, and the anxiety of the owner is considerably relieved thinking all is well, we find that although the animal eats a little, or, it may be, gives an increased quantity of milk, and the bowels and bladder are in a natural state, a glance shows us that the patient is not doing as well as we could wish. The muzzle is dry, mouth hot, tongue slimy; the legs, teats, and udder cold; the pulse indicating from  $65^{\circ}$  to  $75^{\circ}$ . These are the symptoms we generally see in an animal from twelve to twenty-four hours after the comatose stage of parturient apoplexy has passed off. In all such cases we cannot be too careful in after treatment. By all means keep warm and well bedded. If symptoms of chill come on, place a cloth wrung out of hot water over the back; give internally cinchona and tincture of iron, equal parts, one drachm, with a little essence of ginger every two hours; bandage the legs with flannel, rubbing well to assist the circulation; drenching three times a day with flaxseed tea, one quart; black molasses one pint, and four ounces of epsom salts, given warm with hay tea, with a little salt. If thirst is present, as is generally the case, sesqui-sulphate of potassa in a little cold water, given little and often, will subdue the desire and assist in reducing the fever. In every case see that the bowels are not costive. Oils, lard, and fat pork are not to be given, as they are an abomination to all ruminants, whose power of digestion is confined to vegetable matter; animal food brings on nausea and a

disease of itself. Saltpetre and all other supposed fever-reducing remedies must be avoided. We care not who disagrees with us in this, saltpetre is an inflammation-producing agent, and ignorance of materia medica from the time of Youatt seems to prevail among those who ought to know better, which is a disgrace to intelligent veterinary practice.

During icy weather farmers ought to be careful as to feeding, watering, and exercise of mares in foal. Always see that the entrances to their stalls are roomy enough, so there will be no danger of striking their sides against the sides of the doors. Mares in foal should never be allowed to run in pastures with sheep when the latter are dropping their lambs. The practice is not a common one, yet we have seen such cases upon farms where cattle, sheep, and horses run together in large pastures, and serious loss has sometimes resulted.

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## CHAPTER XXIII.

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### THE PLACENTA.

The placenta varies considerably in different animals. There is a great difference between the placenta of the mare and that of the cow. In solipeds it is made up of a number of villi or piliform papillæ, which are spread in a uniform manner over the whole external surface of the chorion. These villi are spread like a

network all over the lining membrane of the uterus. They are red in color, and, like the chorion itself, consist of vascular layers, being the terminal ramifications of the umbilical cord. They are slender and easily torn, and are connected with two veins. On this account there is no fusion between the vascular continuity, as was at one time taught. In the uterine mucous membrane all the important changes that occur take place through the walls of the capillaries by virtue of osmotic force.

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## CHAPTER XXIV.

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### THE CHORION.

This is the outer membrane that covers the ovum, very loosely, at the earliest period of its existence. It corresponds with the membrane lining the eggs of oviparous animals. It is a large membranous sac, completely closed, which, being moulded upon the uterine cavity, resembles the uterus in form, and has often been understood to be all that was required to be removed in spaying heifers. It has a body and two cornua; the latter, however, are not co-extensive with those of the uterus. When the chorion is distended, its cornua show fine and deep plicæ or bulgings like the cæcum. The cornua are always unequal in size, that in which the fœtus is developed being, of course, the larger. The

external surface, otherwise smooth, is studded with innumerable small, red, short papillæ or "processes," which are formed by the placental villous tufts. This papillary face adheres slightly to the internal surface of the uterus, and between the two surfaces a trifling quantity of brown or blood-colored fluid is found. The inner face is lined by the external layer of the allantois, to which it is closely adherent, except at the insertion of the vascular cord, where there exists a kind of conical infundibulum, occupied by the umbilical vesicle. On this surface the umbilical arteries and veins ramify, their minute divisions traversing the membrane to form the placental villosities. The chorion may be divided into two laminæ, the outer of which has been called the exochorion, and the inner the endochorion. From the endochorion are derived the vessels which pass to the villi, the chorion itself being destitute of vessels until the allantois is developed. All these vessels and veins are seen in the illustrations 36 and 71.

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## CHAPTER XXV.

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### THE UMBILICAL VESICLE.

This is a small pyriform pouch, lodged in the infundibulum at the extremity of the umbilical chord. Its fundus adheres to the chorion. While one end adheres to the chorion by a narrow canal, the terminal portion

of the small intestine terminates in the vena portæ of the dam. Its use is evidently to carry nutriment from the mother to the fœtus, even before the development of the placenta; although, in early gestation, it may serve other purposes. It is the first part that is affected after conception, as it then begins to supply blood to the fœtus. There is one point I wish to impress on the mind of the reader; after a mare has had several colts, the umbilicus is active instantly after conception. We only find one umbilical cord that has its fountain head at the vena portæ of the parent, and no placenta to form a living habitation for the reception of the embryo seed that has been planted. At that period of evolution it seems to act like the trunk of an elephant ready to renew the same action that it had performed in a previous case of conception. The ovaries then take hold, and, like secreting glands, play their part in the stability of impregnation. I shall again refer to this when speaking of sterility, &c. Likewise, under the head of abortion, there are several observations of great value to the stock-breeder, farmer, and every individual that has the charge of stock.

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## CHAPTER XXVI.

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### THE MAMMÆ.

The mammæ are the organs that produce the lac-

teal fluid to sustain life after the birth of the young. In early life these glands are rudimentary, but become developed on reproduction, and are fully fifty at the end of gestation, when their function is about to be carried on actively. When the young creature has completed its term of sucking they lose their activity, and gradually diminish considerably in size. In the mare there are two glands or mammæ, placed on each side in the inguinal region, about nine inches in front of the vulva, where they take the place of the scrotum of the male. Externally, they appear as two hemispherical masses separated by a shallow furrow. Each has its centre on each side of the median line. Each has a conical, slightly flattened prolongation called the teat or nipple, which is perforated by several orifices from which the milk escapes, and by which the young creature obtains that fluid by suction. The two glands are retained in their position by the fine skin covering them, and which, destitute of hair at the extremity of the teats, though elsewhere provided with a short soft down, is smooth, pliable, and unctuous from the presence of sebaceous follicles. At the base of the teat are a number of small tubercles, which are really the areola of the nipple. The mammæ are also attached to the abdominal tunic by means of several short, wide, elastic bands, which bear some analogy to the suspensory ligaments of the male scrotum. In structure each udder offers an envelope of yellow elastic fibrous glandular tissue, the sinuses or galactoporous reservoirs, and the lactiferous ducts, with excretory canals or milk ducts.

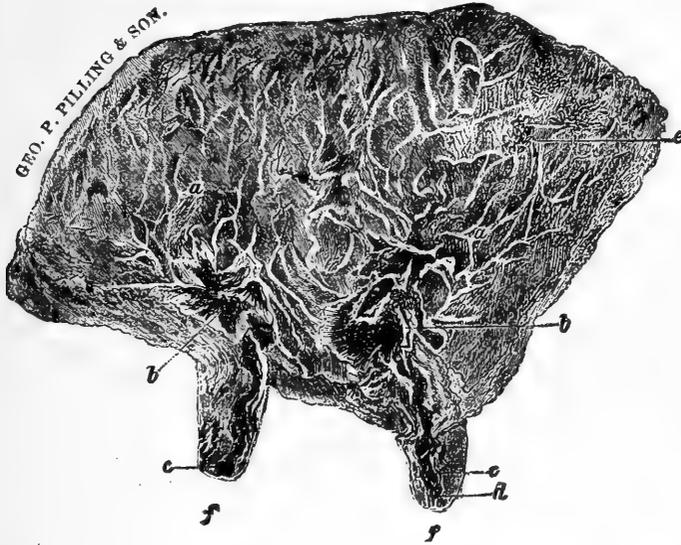


FIG. 13.—UDDER OF THE COW.

A—NAVEL. B—MILK VEIN. C—MILK GLOBULES. D—LACTIFEROUS DUCTS. E—COLOSTRUM. F—ORIFICE OF THE TEAT. G—THE SKIN DRAWN BACK TO SHOW THE GLAND.

The diseases of the udder will be explained and remedies given in due time. From the galactophorous sinuses or reservoirs the milk is quickly discharged into the teats. The length of the teats varies with use. The elastic tissues surrounding them lengthen and become erect under the influence of stimuli. The extremity of the teat (at F) is well provided with this tissue, which acts as a sphincter, and prevents the passive flow of milk. Connective tissue, blood vessels, nerves, and absorbents complete the organization of the mammæ.

## CHAPTER XXVII.

## SUPERFÆTATION.

This condition, mentioned by the ancients and old writers, has never taken place to my knowledge, nor could I believe it, as the uterus is closed immediately after copulation. Only at one service are the ova impregnated, and not at different times, as supposed by old Hippocrates, even in a case where a mule foal and a horse foal have been brought forth at one birth by the same mare. In 1753 a mare at Chatillon-sur-Sevre brought forth a horse and a mule foal. In the *Veterinaire-Pratique*, 1826, there is mentioned a mare which was covered the same day by a male ass and by a stallion. She brought forth in eleven months a well-formed though weak mule foal and a full developed horse-foal, both dead. In the same journal there is a similar case recognized in 1836, where a mare was covered by an ass and a two-year old horse colt broke into the enclosure with the mare and served her several times during the day. She was several times tried afterwards, but refused the horse, and in eleven months brought forth a well-developed mule and a horse foal. Both lived and did well. There are a great many such cases on record, but I have never seen one.

## CHAPTER XXVIII.

## MULTIPLE PREGNANCY.

It is guess work in most of cases to truthfully diagnose twins. Yet a few remarks on that point will be quite in place here. At the early months of pregnancy with twins, the abdomen becomes more voluminous than where there is only one, but this does not always hold good, as an aged cow, if fed on hay, will show a very large abdomen, as if she is likely to produce triplets. But there are several symptoms worth attention. Either a mare or cow will lie down more than formerly; respiration will be accelerated, and all her movements while at exercise will be dull and clumsy when the twins are in life. But when dead her posterior limbs will show an œdematous appearance, and she will show a decided falling off in condition when nearing parturition. Should the colts be suffocated in their foetal abode, she will show signs of parturition at the time, as a shrinking of the abdominal muscles will appear as if they had fallen in, and a dead weight was keeping them in place. This is the time to operate for their removal, to save the life of the dam. Not a moment should be lost, even although

the pelvic bones have not slipped as is natural when all is in a normal state. Any practitioner that does not take this opportunity ought to be made responsible for the value of the mare or cow. It is sometimes very difficult to tell when there are twins, even by examination per vagina or rectum. Auscultation does not show the beat of both hearts, as one is very apt to accept the throb of the heart of the dam instead of that of the twin hearts. Distinct pulsation of the foetal hearts, especially if at a distance, is impossible to be heard. In illustrating the position of twins, I have placed them ready to be delivered, as I have several times had them in my own stock, especially in Ayrshire cattle. The position of the young in the uterus varies. In some cases we find both are developed in the same cavity and the same amniotic fluid, their membranes being common, and no partition existing between them, while at other times we find each foetus enveloped in its own membrane. In every case of parturition it is prudent to explore per vagina in utero, as to the presence of another, as it often happens that the placenta will contract on the last one, and will remain in utero some hours, or even days, before relaxation takes place. Meanwhile suffocation may destroy the coming young one. Sometimes both the fore feet of each foetus will be presented at once—four front feet. One has to be pushed back with the aid of the compressor by placing it carefully across the breast of the lowest colt or calf. Immediate action is necessary on the part of the attendant to remove the first as quietly as possible, as suffocation is apt to kill the lower one. Having removed the first, the second is very seldom difficult to remove.

Remove the placenta at time of birth. Give the dam, if exhausted, a quart of strong ale and flax-seed gruel immediately. Be sure and draw your hand across the mouth of the colt, or calf, so as to remove any mucus that may have got into the mouth or nostrils in parturition. It is customary, especially in Europe, to break a raw egg and put it down the throat of either colt or calf at time of birth, and, indeed, a raw egg is a welcome accompaniment at any time in life to any of our domestic animals. I have known a mare to have two colts; one died about the fifth month, and the other colt grew and was delivered in good health, throve well afterward, and I took the dead fœtus away without injury to the mare at time of parturition. Had I not been called at the time the parts involved would have contracted on themselves, and in forty-eight hours I should have lost both mare and colt. Had both colts been in the same envelope of the uterus, both would have been dead, but each had its own sac. I had a case where the fœtus was retained in the uterus for over one year, and was a living, healthy colt afterwards, but for a considerable time previous to parturition the dam seemed unwell. The death of the fœtus in these multiple cases appears to be due either to the stronger vitality of one, which, attracting to itself a larger share of nutriment, starves the other or to the too considerable increase in volume of one fœtus, which compresses and atrophies the others; suspension of nourishment has resulted, and decarbonization of blood stained and poisoned the fœtus. I herewith present the reader a clear picture of twins whereby their position can be seen and easily understood.

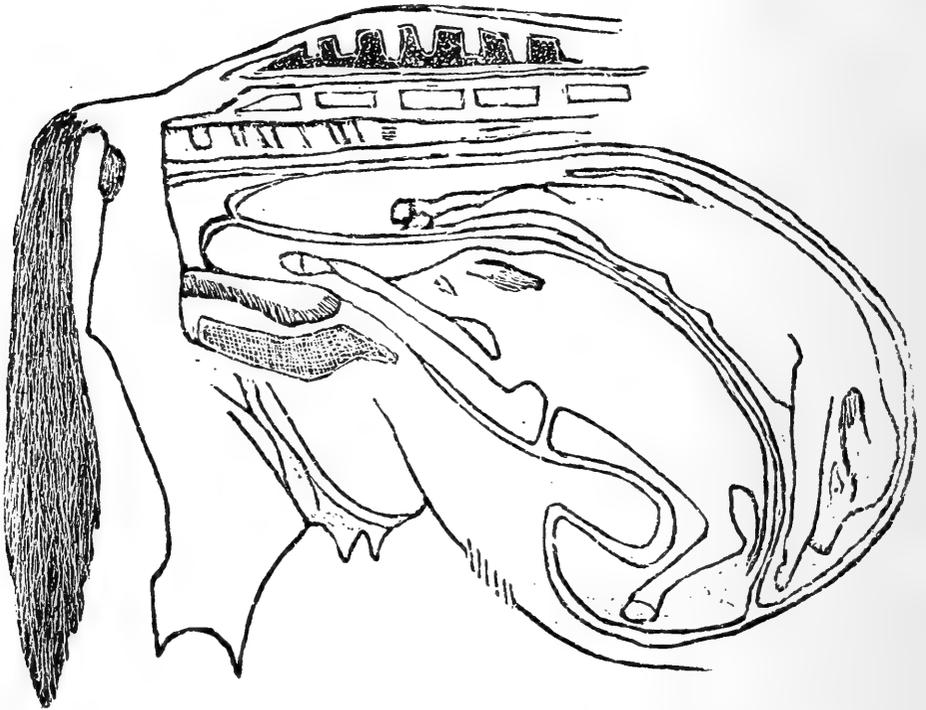


FIG. 3.

TWIN FŒTUSES IN DIFFERENT PRESENTATIONS, PASSING INTO THE GENITAL CANAL, SHOWING THE DIVISION BETWEEN EACH, SO THAT IF ONE COLT IS DEAD, THE OTHER MAY NOT BE AFFECTED WHEN THE DAM IS HEALTHY.

The under calf is represented as coming in a normal presentation. The more the lower fœtus struggles, the more the weight of the upper one fills the space in the sac, each having its distinct sac. The envelope is seen quite distinctly. Had one of the calves been dead for any length of time the one either above or below could have lived independently of the other. The umbilicus, distinctly represented on the under colt, is

divided by accident in struggling. The chorion division between them kept them apart, and no injury could happen to the live foetus, and it would be retained in the uterus till natural parturition took place.

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## CHAPTER XXIX.

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### TWINS OR FREE MARTINS.

Few stock-breeders but have had a cow bring forth twins or two calves at a birth. But although there may be twins at a birth, they may be free martins, or a male and female, which is understood as free martins. It is well understood that the heifer will not breed, but the bull will. Although the heifer will come in heat quite regularly, and having a bull in the pasture grazing with her, she had no calf. I have spayed a free martin four months old, and I considered the defect, if any, that the uterus does not develop, which, I think, is the only reason that the heifer does not produce offspring. As for the bull, he is every way fully developed, and has been the sire of as good healthy stock as any other. I would not advise the raising of either sex for stock purposes.

## CHAPTER XXX.

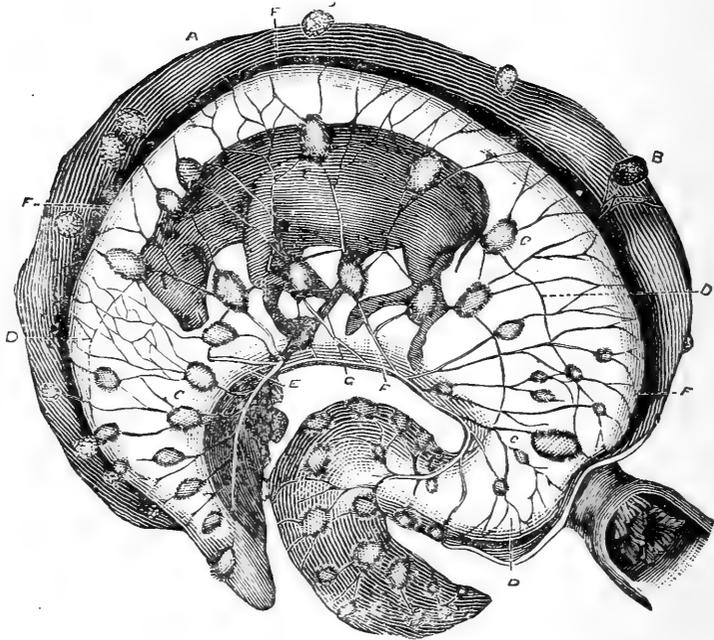


FIG. 4.

## FÆTUS AND MEMBRANES.

A-UTERUS OPENED ON ITS LEFT SIDE. BB-COTYLEDONS OF THE UTERUS. CC-PLACENTULÆ. DD-ALLANTOIS. E-VESICLE OF THE URACHUS. F-AMNION. G-UMBILICAL CORD.

We might have explained more fully the anatomy of the uterus, but enough is illustrated in this to show fully this great repository of animal life from its inception to active existence. To the student of anatomy it might be more useful to go into detail, but this work is not got up for that purpose. It is only to show to the

stock-breeders the necessary essentials of propagation, and the proper treatment of the breeding female in gestation, and the benefit to foetal life of safe and quick delivery.

The membranes that compose the uterus are the chorion, a membranous envelope exactly fitted to the uterus; the amnion, a second ovoid sack included within the chorion, and containing the foetus; the allantois, a membrane composed of two layers, which are spread over the external face of the amnion and inner surface of the chorion, thus lining the cavity formed by these two envelopes; a small bladder of a pyriform shape, the umbilical vesicle, the placenta, a collection of vascular tufts connecting the foetus to the mother, and the umbilical cord, composed of vessels that attach the foetus to the envelopes which contain it, and which ultimately ramify in the placental tufts. We will describe each in detail, as a correct knowledge of the anatomy is essential to the practitioner. We will take our domestic animals, as our type—sequus, bos, and ovis, especially the soliped.

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## CHAPTER XXXI.

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### ASSISTANCE IN DELIVERY—ILLUSTRATION INSTRUMENTS.

Having described every position that presents itself, or, at least, the most difficult, I will try to describe the instruments and how to use them. It is a general opinion with stock-breeders that if all is well with the dam, there is no need of help in case of normal presentation. We decidedly differ from this in opinion, as the

sooner delivery is accomplished the better, both for dam and colt. Exhaustion and debility are thus prevented, and the many parturient pains greatly lessened. We have often been called to cases where the mare or cow has been suffering from parturient pains for forty-eight hours, and when we arrived, we found the young one dead and the dam prostrated, not able in any way to assist in the delivery of her offspring. If attention had been given at the first, both dam and colt might have been saved alive, and all right. It is quite different with our domestic animals, which, in a manner, are pampered, and the more value placed on them, the more they are pampered, and as they are prevented from having the liberty that is necessary, extra exertion is required in a great many cases to expel the foetus. An animal in a pampered state very often throws a large calf or colt, and sometimes the dam is fat when there is even more need of help at this time.

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## CHAPTER XXXII.

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### HOCK PRESENTATION.

This case was a dead foetus at ten months, that had been dead some time, the cow showing signs of sickening. The mechanism of hock presentation is supposed to be as follows: The foetus in the posterior presentation, impelled by the uterine contractions towards the cervix, reaches the inlet with the hind limbs not quite extended, and the axis of the young creature quite coinciding, perhaps, with that of the passage.

Consequently, the legs come in contact with the pelvic brim below by the posterior surface of the shank, while the rump encounters the sacro vertebral angle above. The labor pains continuing, the rump has a tendency to descend, and, with the points of the hocks, to advance through the os; the hocks become flexed until at last the cannon-bones press against the thighs, and the double legs and rump become joined in the outlet, because, the hind-quarters being doubled inward, the mass is too large to advance further. Labor is, therefore, suspended, and the animal becomes exhausted with severe straining. It is now too late to think of saving colt or calf; therefore, every effort must be judiciously made to save the life of the mother. Give her one-half an ounce of laudanum, either in spirits or cold water—spirits is the best. The dose will cause painless prostration in less than five minutes, and the operator then can use any means to deliver her. The greatest care must now be taken to prevent either hernia in utero or injury to the bladder in the use of any kind of instrument. The compressure must here be brought into requisition. The animal lying prostrate, place the compressure carefully against the crupper of the colt, guiding it carefully in place; press gently inwards till you find that the fœtus is clear of the pelvic arch, hold, press steady while you introduce the hook, (fig. 11); catch hold of the hock of one hind leg, pressing the rump back into the uterus. Then you can get more space to raise up the hock and pull forward the metatarsal and pastern joints. Pull it so far out into space as to enable you to tie a cord or buckle a belt tightly around the pastern joints. You then can

press the hind parts into the uterus, using the hook to get hold of the other hind leg, tie a cord to it and have your assistant draw the cords and cause delivery as quickly as possible. Remove the placenta at once, then see to the dam. Untie her head so as to give her relief, and give her a quart or two of warm gruel with ale, porter, or wine mixed in it.

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## CHAPTER XXXIII.

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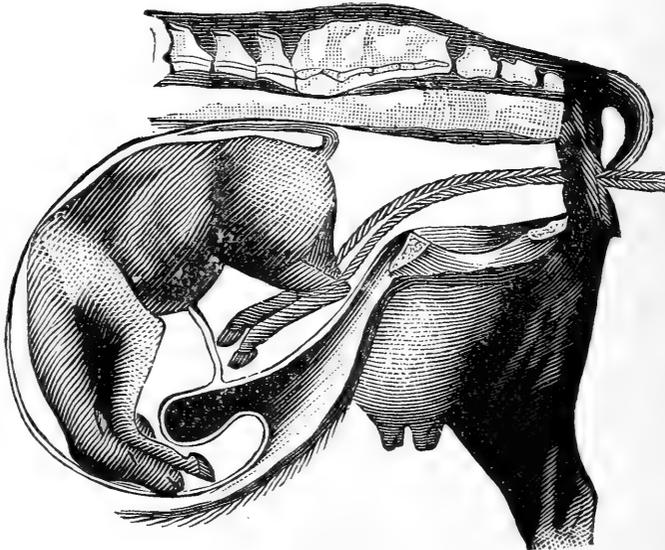


FIG. 5.

HOCK PRESENTATION, WITH CORD IN POSITION, BEING SLIPPED OVER BY THE COMPRESSURE.

There are two ways by which the hind legs can be got into position for rapid delivery. One is to use the

loop by pressing under till you get it over the hind feet, or even one foot, cording one or both, and instantly using effort to deliver. Should the hock joints be inadvertently drawn into the pelvic space, use the compression by pushing the foetus back till the loop can be got over the foot and a cord round the pastern joint. In every case of hock presentation the point of the os calcis is always the part which the hand encounters first. It is sometimes found well into the canal, and the body of the colt or calf in the uterus, and in some cases we find the rump wedged in the inlet or passage, all caused by the dam's straining. Active measures must be resorted to. Press the foetus well forward into the uterus, and have the hook brought into instant use, so as to get room to draw the feet out by getting the hind legs straightened. When a cow has become exhausted and lain down, the difficulty is greater on account of the pressure of the abdominal muscles interfering by upward as well as downward pressure. When any difficulty in that way becomes apparent, lay the mare or cow on her side—it does not matter which side. You will find it much easier to deliver the colt in that position than when she is standing or lying with her feet under her. It is the custom with some practitioners to amputate the hind legs, either at the stifle or hock joints. The writer is decidedly against amputation, as when the operator has done so, he has prevented his getting a powerful hold to assist delivery, even if the colt is dead. A calf thus presented is frequently alive, but a mare will strain till her strength is exhausted, and the result is strangulation of her colt.

## CHAPTER XXXIV.

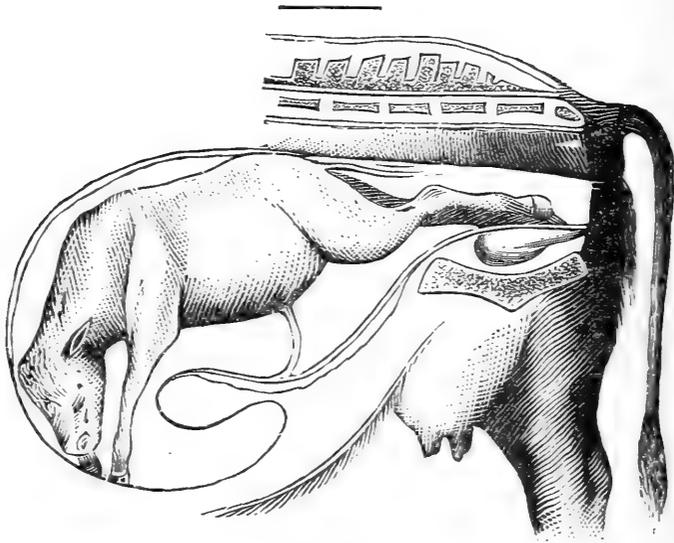


FIG. 6.

## POSTERIOR PRESENTATION—LUMBO-SACRAL POSITION.

In hock presentation I described very fully the *modus operandi*. All I wish the operator now to do is to exert himself and assistant to induce a rapid delivery, so as to save the life of the fœtus, and relieve the mare or cow from severe straining, as the sooner relief is attained the better. The great trouble in this case is the danger of the fœtus turning, and in the struggle getting the hind feet entangled in the umbilical cord, and either lacerating it, or tearing it free of the abdominal adhesions, and causing the fœtus, after birth, to evacuate the urine from the navel, instead of from the proper opening. There is scarcely a month in the year but we are asked to give cause and cure for umbilical troubles,

like abnormal micturition through the navel. In every case we prescribe a compress, such as is illustrated in this work, for a case of hernia in calf, where the proper appliance is given, so that every stock-breeder may use the unpatented treatment without restriction. First, put on the single bandage, then adjust it to be exactly over the navel, then place a pad made of cloth and cotton batting, properly covered, on the side next the navel, with Dr. G. Stuart's Healing Ointment. It is a rare case that the pad ever needs to be removed till the "breach," as it is called, is healed, never again to show weakness of any kind.

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## CHAPTER XXXV.

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FIG. 7.

### DYSTOKIA—FORE LIMB CROSSED OVER THE NECK.

In such a case it is sometimes very difficult for an inexperienced person to understand the real position

of presentation of the foetus, and very imprudent means have been used to deliver the mare, without avail, and often doing great injury. It is very easily done by the use of the compressure, pushing the foetus back so as to unlock the position of the leg that is placed firmly over the back part of the head, thus preventing the straining of the mare from again wedging the colt abnormally into the canal of the uterus again. Immediately on the assistant's getting the limbs in a proper position, loop the head and get it in between the fore legs, then deliver the mare without delay.

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## CHAPTER XXXVI.

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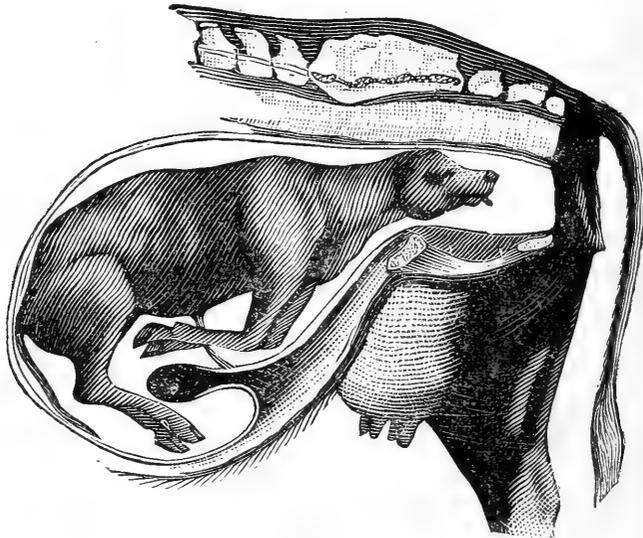


FIG. 8.

ANTERIOR PRESENTATION—BOTH FORE LIMBS COMPLETELY RETAINED.

It will readily be perceived how one or both of the fore feet bent back under the body will prove an obsta-

cle to the passage and quick delivery of the foetus. You should find in every such case that the shoulders of the colt or calf are the cause of dystokia. The great muscular mass forms a very prominent obstacle when the limbs are thrown back. Then, again, unless the feet are quickly got in position, so as to deliver the calf, the young thing is lost by being strangled. First, push the calf back, and with the hook described, grasp the arm at the joint, draw one fore foot forward first, then the other. Remember that in every case you cannot get the fore leg straight unless you have space to do it, as you will be forced to yield to the severe straining of the dam while drawing out the leg, showing plainly the necessity of keeping the compressure firmly fixed on the shoulder. I have already given the proper precautions to ease and prevent straining by the dam, which is a safe preventive against exhaustion, and is the prime secret of success. Immediately on getting the fore feet in position get them corded, the head loop over the head, and deliver, either standing or lying. It matters not which position the dam may take, but if she persist in standing, have a bunch of straw ready, or a good bed, so as not to in any way injure the young thing. Always pull down if standing; if lying draw always toward the udder, as when drawing straight out you are apt to injure the spinal column. That is often the cause of the colt's not being able to stand up for days without help.

## CHAPTER XXXVII.

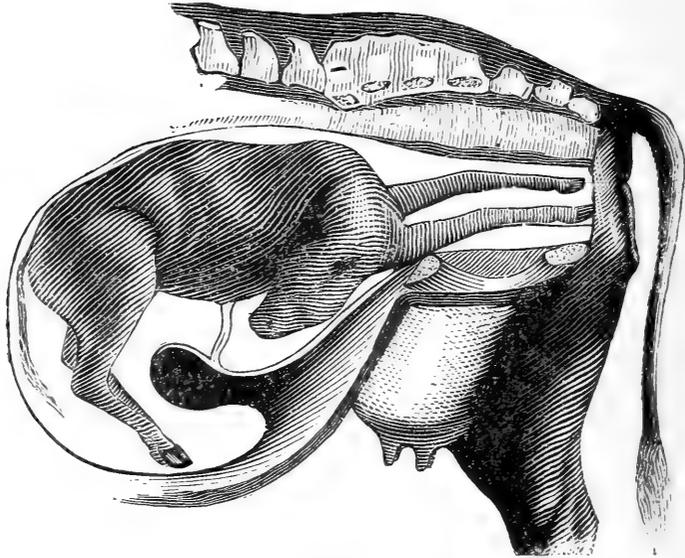


FIG. 9.

## DYSTOKIA—WITH LATERAL DEVIATION.

It is generally acknowledged that lateral deviation of the head is not well understood. Such a statement may fall from the lips of a non-experienced practitioner, but the practical operator knows full well that he never found a case of lateral deviation in a weak or immature foetus. We only find a case of torsion in a well developed foetus. Its struggles in utero are often caused by the dam's rolling, drinking cold icy water, when the foetus can be seen rolling, as it were, by continued pressure on the abdominal muscles, if the attendant stand behind the mare or cow. In such cases the uterine contractions propel the head of the foetus against the walls of the pelvis, instead of into the os-uteri, and the impelling forces are kept up by strong pain and dis-

turbance. The foetal membrane gives way and the liquor-amnii escapes—the “waters,” as it is often called. Spasm of the cervix uteri, torsion of the uterus, and other anomalous conditions may all, more or less, occasion it. As with the downward deviation, if the nose is not in the axis of the pelvis, or os even, though the latter may be partially dilated, misdirection may occur, and all the more rapidly should the fore limbs pass into the vagina. I think from experience that this takes place more often in mares that are pregnant for the first time. Every breeder who knows when the dame's time is up will note carefully the least uneasiness in a mare, such as walking from place to place with raised tail, or if, in an advanced state, standing isolated with her back arched, showing unmistakable signs of distress. No time must be lost in making an examination. If it is ascertained that the liquor has been discharged, and the foetal membrane can be felt by a gentle spreading of the lips of the vulva, it is high time to act. Make instant preparations at once; have the hand and arm well rubbed with fine oil, or fresh lard, and make an examination per vagina, in order to ascertain the proper condition of the colt or the cause of disturbance with the dam. It is not difficult, as a rule, to distinguish the existence of a case of lateral deviation. Usually both fore feet are presented in the vagina, but birth does not progress. A very important occurrence may be noted; that is, one limb on the side belonging to which the head is bent, is, as it were, shorter, or rather less advanced, than the leg or foot on the other side. By this sign the owner will know that lateral deviation has taken place on the side that has the shortest leg pre-

sented. Having ascertained on which side the trouble exists, care is required to raise the head. No time must be lost to save the life of the colt. The pastern joints must be corded, and the compressure placed firmly on the fore leg close to the breast, gently pushing the colt into the body of the uterus in order to get a wider space to raise the head. The head loop must then be applied over the nose, keeping the body back as far as possible. Your assistant must gently pull the head into place so as to get it into the neck of the uterus, and then, with the help of assistant and mare straining, instant delivery will be effected.

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## CHAPTER XXXVIII.

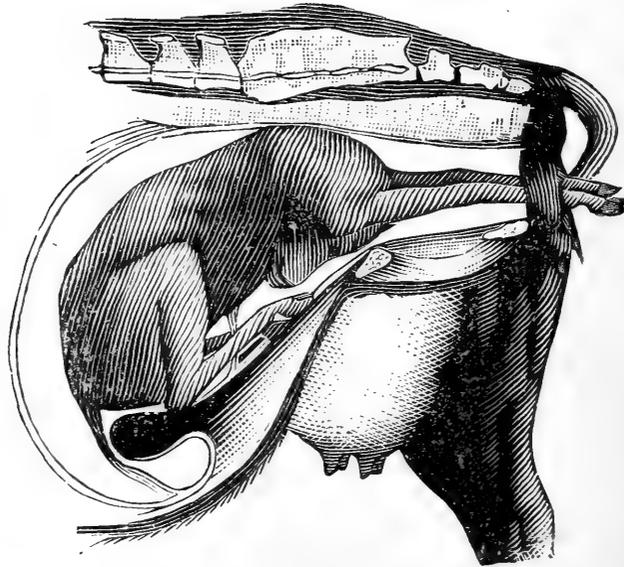


FIG. 10.

ANTERIOR DEVIATION—EXTREME DOWNWARD DEVIATION OF THE HEAD.

This is usually the deviation of the head met with

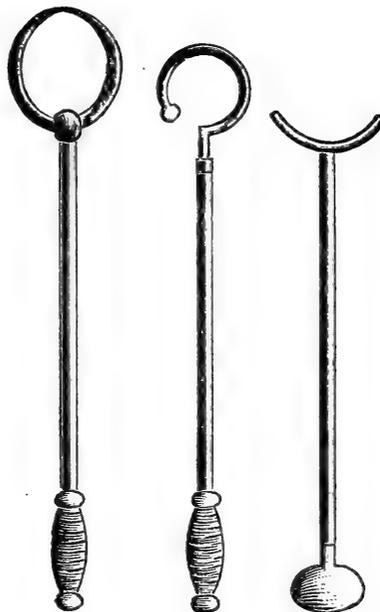
in hydrocephalus, though it is not uncommon when the cranium is normal and the fœtus well formed and strong. The deviation may vary from mere flexion of the head at the atlas, the nose lying immediately in front of the pubis border, to extreme flexion of the whole neck, the head being pushed beneath the chest, or even the abdomen. It is only met with in the vertebro-sacral position of the fœtus, and more often, perhaps, in the cow than the mare. It is caused by premature rupture of the fœtal membranes, and the deviation occurs when the head or nose of the colt or calf is entering the pelvis. If the nose is not exactly in the axis of the inlet, but inclines a little downward, and is slightly flexed, the nose comes in contact with the brim of the pubis, and is retained there, while the uterine contraction, pushing on the body, propels the fore limbs, if in a favorable direction, into the genital canal. Thus it will be understood that, if the expulsive efforts continue, the head becomes more and more flexed, as the fœtal mass is carried toward the vulva, (as is shown in the above illustration), until, instead of vertical and oblique, the face becomes horizontal, and is pressed firmly on the floor of the pelvis, and, as straining and labor go on, the head is retained, so that when the hand of the operator explores the genital canal, the feet are found presented towards the vulva, if the forehead comes in contact with the brim of the pubis. The uterine contraction and straining being stronger, the head is thrown against the lower arch of the pelvis, while the shoulders and crest of the neck are impelled towards the inlet, and may be forced firmly, according to circumstances. In this case, difficult as it may appear, the

hand of the operator is introduced and follows the direction of the mane; after having pressed the head backwards it is lifted up, and the hand drawn through the mouth, in order to ascertain if the colt be alive. If the tongue, when drawn out, is quickly drawn back, the young thing is alive, and no time must be lost to get delivery and save the animal from suffocation.

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## CHAPTER XXXIX.

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No. 11.

No. 12.

No. 14.

### FŒTAL DYSTOKIA.

Transverse presentation in any or all its forms must be instantly attended to, as any delay endangers

the life of the dam. We have already observed that there is no case where the fœtus cannot be removed without serious injury to the dam, even without having resort to embryotomy. The first instrument in dystokia or difficult parturition, is No. 14, called the repeller. This instrument must be a little stronger than here represented. It is first used when the fœtus is firmly fixed in the canal of the pelvis, to push it, alive or dead, back into the body of the uterus, in order to draw either head or feet into such a position as will enable the operator to perform a quick delivery. When the head is fast fixed between the fore legs, and the fore feet presented, the first thing is to cord the posterior joints, then with the repeller push the fœtus into the uterus. Then use the hook No. 12, (if the nose cannot be looped over with No. 11, called the "head-loop," illustrated by Fig. 19, showing the way to loop the fœtus,) which is the best, as once getting a fair hold, you have good command of the head, and can draw the head into position, and then, having the cords firmly attached to the fore feet or the pastern joints, you will have a powerful hold in delivering the colt. Should you require help, your assistant can be called on, but always be sure in whatever way the colt is presented not to use force till you have ascertained the exact position, for fear that a fore foot and hind foot may be presented. In such a case force will kill the colt and endanger the life of the dam. We have been told in cases where assistance was required that in introducing the hand into the uterus, the colt was so far forward in the uterus that one could not get a hold of any part to draw the fœtus into proper position for delivery. Here the hook No. 12 comes

into requisition, and also the assistance of the olive-shaped repeller (No. 14), as, if the hand cannot reach the feet or head, this instrument will be easily put over the feet, and the cord drawn tight, so as to hold the foot till it is corded; then the head can be adjusted so as to be delivered instantly, as the dam's straining will throw the foetus back.

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## CHAPTER XL.

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FIG. 15.

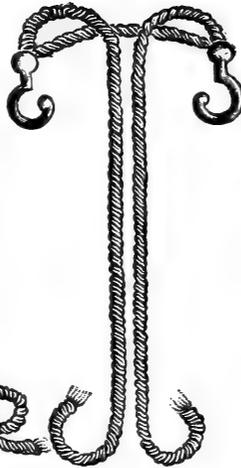


FIG. 16.



FIG. 17

### INSTRUMENTS USED FOR DEAD FŒTUS IN UTERO.

Many injuries are the means of destroying the life of the colt or calf when nearly fully developed. A mare that has been turned out to pasture after having

been sweating at work, is sure to roll in consequence of itching. This should not be allowed, as the colt is sure to be strangled by torsion. I have had several cases of the kind where well-kept mares, but not cleaned and curried every day, will roll, and the result is a dead colt. Cows are quite different. Curry and clean any mare that is used in harness before she is set at liberty, as she is sure to roll and kill the colt. Whenever it is ascertained that the colt is dead have it delivered immediately, even if you should have recourse to craniotomy.



No. 18.

EXTRACTOR TO BE USED ONLY WHEN THE COLT OR CALF IS DEAD.

Forceps used only when the fœtus is dead; one side is carefully placed in position, fixed firm on one side of the jaw, or behind the shoulder, if the head loop has been placed over the head. Then slide the other side of the forceps firm in position; in the opposite side fix the slide so as to keep the teeth of the forceps firm in place and deliver the dead fœtus.

The best way is to use the double forceps, No. 18, with sharp teeth firmly fixed on each side back of the jaw, pushing the square slide till they are firm in place. In introducing them into place one must be taken in the hand and carefully placed behind the jaw; then slide up the other side, and insert it firmly in place, bringing both rings together, so that a piece of round wood can be put in, by which to hold it firm. A pow-

erful hold is thus obtained, and whether the mare is lying or standing, delivery can be soon accomplished. But it often happens that the foetus is retained for some time after death, and it has become fetid, and then, on pulling hard, the head will come off. The double-crotchets No. 17, is placed carefully behind each shoulder blade, and the cord connecting each over the back part of the shoulders. A strong effort then being made, the colt is brought away. If all should give way, and decomposition has so far advanced that every muscle has lost its strength, resort must be had to the toothed forceps, by which every part can be removed without injury, either to the operator or dam. Great care must be used not to get the hands scratched while working on such a case. Always keep them well oiled.

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## CHAPTER XLI.

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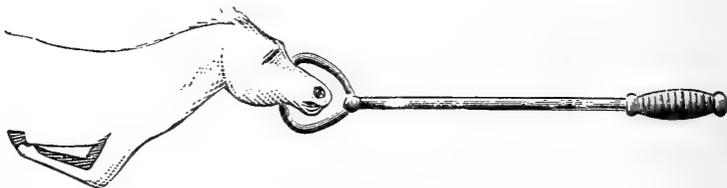


FIG. 19.

### USE OF INSTRUMENTS.

Fig. 19 shows the proper way to put the head loop over the face till it is placed on the back part of the

head. Keep the handle below the throat, so as to prevent the colt from being choked while assisting delivery. In every case this instrument is the best one to be used. It will take the assistance of four men in delivering a cow without this instrument, while, by its aid, the job can be more easily and quickly done by two. Let the feet be firmly grasped by a piece of cloth, so as to enable the man to hold firm, while the assistant gently draws the head with the aid of the head loop. Every experienced breeder will admit that it requires great exertion to deliver a cow or mare by only having hold of the feet, even with the use of a cord. By the use of the head loop the work is lessened, and pain obviated with a quick delivery. It is often adduced that wild animals do not require assistance. We reply that they cannot get it, and, besides, their offspring seems small, as if nature had adapted the size to the outlet of the pelvis. I believe it is a rule among western cowboys not to interfere in parturition when any of their wild cows are showing signs, as the dam will go right off and never look at the calf on account of fright at the presence of the cowboy. When left undisturbed she will turn and lick the young one, and remain with it to protect from man, wolf, or dog. I may repeat here that it is the practice of some breeders to milk a cow previous to parturition. This is a mistake, as nature never intended the milk glands to be cultivated till the young were present to receive its nutritive secretion.

## CHAPTER XLII.



FIG. 20.

## DEAD FŒTUS.

This illustration represents the head line and crotchet hooks placed behind the shoulder, which gives the operator more power and a firm hold. If the foetal tissue is in any way softened or decomposed, the crotchets get hold of the back part of the shoulder blade, and the centre cord, pulling firm over the shoulder, gets such a hold that the dead foetus is soon extracted. The sooner the better, as soon as it is known the foetus is dead. Violent efforts of the mother to expel it, and the danger to her life by blood-poisoning are thus avoided. I prefer linen cords as the best, either for the crotchet or repeller. As explaining the use of this instrument, I was called at 2 a. m. one cold morning in February, and found a heavy Clydesdale mare in distress. On examination I found the two fore legs and the hind feet in the upper side of the vulva opening with the hind legs in the floor of the vagina, firmly wedged. A block and tackle were awaiting my arrival, as it was thought that they would be required. The owner and attendants insisted that I should use them, but I did not. I got the

assistance of one man to push the fore part of the foetus back into the uterus after I had corded the hind pastern joints. We accomplished that part of the operation with great difficulty, as the more we pushed, the more the mare strained. We managed to accomplish our object by getting the fore feet well forward into the uterus, drawing the tail between the hind legs. In a few minutes she was safely delivered of a full-grown, large colt. Had we used excessive exertion, or cut the colt to pieces, as some have done, we most assuredly should have lost the mare.

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## CHAPTER XLIII.

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### HIND LIMB DEVIATION—ANTERIOR PRESENTATION.

In nearly every case the preservation of the mother is the first object, the life of the foetus, if yet alive when the practitioner arrives, being quite a secondary consideration. It must be admitted that if he is present when the colt or calf is vigorous and alive, no time should be lost in delivery, especially if it is not far advanced in the pelvic cavity. Should the sac not be broken, and the liquor amnii still in place, there is every chance to save the colt. Have instruments and assistants ready. Break the water sac, and in the shortest space of time use every endeavor to deliver the colt. We often find

that the best bred (or, I may say blooded) colts are the most vigorous. Should you fail in bringing the fore feet in place; be sure to get the head free of the pelvic canal, so as to prevent suffocation. Lock the head with a pair of reins, if no other appliance is at hand; draw the head clean out, slip your finger across the mouth, press the tongue into the mouth, then get hold of each foot, and, in five minutes, delivery is performed, and both dam and colt are saved. We often have other cases to attend to, that, if all went well, we never should have had. Necessity compelled the owner to call for our services, and the result is often different. Figure 8 is an illustration of a condition that often terminates fatally to dam and colt. When anterior presentation takes place, and the fore foot is presented, followed closely by the hind foot or feet, unless the veterinary surgeon is well experienced in obstetrics, foetal dystokia supervenes and mare and colt are sure to be lost. Some reason is trumped up by an unskilled person as the cause. The mare can usually be saved if proper care, service, and attention are given. In such a case loop the head to prevent the colt, whether alive or dead, from turning on its back and causing much difficulty in the parturition, because of torsion. Get the fore foot corded; then take the compressure and push the colt back into the uterus, so as to be able to draw the other fore foot in place; press against the flank in order not to push the head too far back and prevent you from getting the fore foot. After you have pressed the foetus back into the centre of the uterus, take care not to cord a hind foot. When all is ready draw the head well into the pelvis, taking care

that the cords are kept tight on the fore feet, so as to prevent either one or the other from getting bent up, causing the knees to project forward. Then you are into worse difficulty than ever. In this case you will have to use the compressure. In the meantime the walls of the vagina will be becoming dry, and you must use fresh lard freely, there and on your own arms, which will greatly assist the delivery. There are some cases where the above process cannot be used. You will then have to resort to extreme measures, being obliged to use the double hooks. They are called crotchet forceps, and the instrument is firmly placed, either behind each jaw or shoulder blade. The loop over the head is by far the best, as there is no need for both loop and forceps on the head when the swollen shoulders of the foal cause the difficulty. By being placed behind the shoulder the forceps get a firm hold, and the cord that binds each crotchet assists to hold the part, and gives a far better purchase to the assistant. The reason that we cannot use a pair of forceps, as does the human accoucher, is because the heads of all domestic animals are flat-sided, and two-bladed forceps slip off every time. There are a great many forceps used by French veterinarians, which, I think, are really useless, as the instruments here described can be made by an ordinary shoeing smith, and by the stock-owner himself. Sometimes one must have recourse to cutting the fœtus in pieces in the uterus, but by attending to these rules there is seldom need for any such work, as there is every provision made for expulsion of the fœtus, either at or before maturity.

## CHAPTER XLIV.

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### MILK FEVER.

As calving time approaches, the careful dairyman will watch the condition and surroundings of his cows with the greatest solicitude. If the cow is a heavy milker the necessity for his most watchful attention will be all the more needed, and all his knowledge and experience should be brought to bear to get her through this most critical period. That fell disease, milk fever, the terror of dairymen, is ever ready to snatch from us the best of our herds. It rarely reaches forth for a poor cow, but calls for the pride of the stables. We never see a poor cow of the skin-and-bone character take it, as she is always looking for something to eat. It is said that veterinarians are at a loss to prescribe successfully as to its use. I wish it to be understood that the moment the cow shows symptoms of sickness it is then too late; the mischief has been done. The circulation has taken up the natural secretion, and is carrying it through the system. In our investigations of milk fever, parturient fever, or puerperal fever, we have seen the serum in the shape of milk oozing out of the solid muscles of the shoulders, when cut into after death, which clearly verifies our position, by proving that, instead of the milk being healthily secreted, it is taken up, and as an effort to throw off the disease overpowers the secreting glands, and, instead of allaying the fever, it adds to its intensity by being thrown into

the muscullar and cellular tissues. The brain suffers most, as the moment the cow becomes prostrate, she is unable to recognize anything, even her own calf. At this stage few animals are saved. The milk is often said to be dried up; one cannot draw a drop from the udder, every muscle is blazing hot, or a deadly dew pervades the whole skin. Prevention is better than cure, by giving remedies that will reduce the secreting powers of the glands at the proper time previous to parturition. If the cow is fat, or has been a great milker, more attention ought to be exercised in preventing the disease. Begin three weeks previous to her time of calving and give her STUART'S PREVENTIVE against milk fever. You will not injure any cow by beginning too early. Nor will you in any way discomode the cow by keeping it up after parturition. Better be sure than to run the risk of losing the cow. There are several points to be considered. If the cow is in a plethoric condition when pregnant, in early spring, when kept in the barn, her daily feed must be such as mash feed, of ground grain. But above everything that tends to aggravate the disease her bowels must be kept loose. Drench her with flaxseed and bran in small quantities, to control the bowels and ward off fever by accelerating the digestive activity of the stomach. Continue the same for ten days after parturition. Again, we have heavy milkers in all breeds of cattle over which we must keep a watchful eye, as they require strengthening and stimulating food to support them through the severe ordeal of parturition. They have not gained in condition and strength, in consequence of their heavy milking all through the previous

season. Such cows ought to be dried up two months previous to parturition, as a matter of justice to the system, and a sure and better plan of reaping the full benefit in the coming season. About the end of May and the beginning of June, when the pasture is most luxuriant, cows that may be coming in require the most attention, as even a very light milking cow may be the subject of parturient fever. But should she be showing symptoms of an enlarged udder, keep her off the pasture as much as you think will be best for her by keeping her in the barn on half feed, which is enough for her, for fourteen days before, and till ten days after calving. She will have come to her full flow of milk then, the pressure and hard garget feeling never having been felt; she can then be put on to full feed, and all risk and anxiety on the part of the owner are at an end. When a cow comes into full milk, for the first three months she should never be exposed to a chilling rain, as she is just as apt to be attacked with milk fever in its worst form as if she had parturition as the forerunner. Where a calf is not to be brought up by suckling the cow, it should never be allowed to suckle, but be taken from the cow at birth, preventing the craving and worrying of the cow for her calf sure to occur if he should be allowed to suck for a week or so. It is not good practice in a domestic state any way, as the calf can be fed with the cow's milk three times a day, and at the same natural temperature as if the calf drew it from the teats, and there will be less fear of either garget or blind teats in the cow's udder, being carefully milked every time. A calf for the first week cannot be expected to consume all the milk an ordinary cow will give, there-

fore the udder ought to be milked clean at least twice. We see that sometimes when a calf is getting a full supply of milk, it will seem partial to certain teats, leaving the others undrawn. The result soon shows itself by the quarter becoming hard, and when the teat is hand-drawn it gives curdled milk.

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## CHAPTER XLV.

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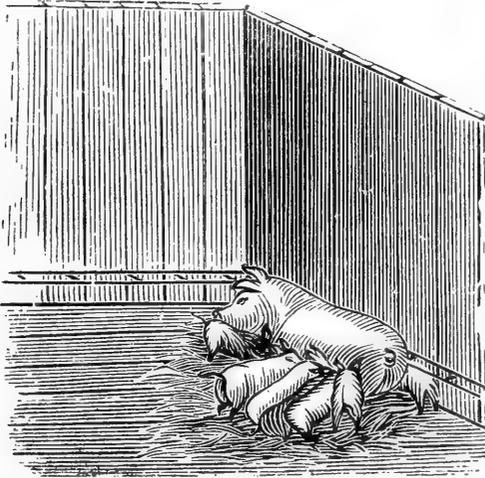


FIG. 21.

### PUERPERAL FEVER IN SWINE.

In by-gone days it was quite common to let the sow take care of herself and rest wherever she saw fit. She was always at home, whether in her neighbor's wood or her owner's; it did not matter, if water cresses or acorns could be had. Luxury on her part or her progeny's was unknown, and her nomadic life from infancy was unrestricted. Confinement was monotonous and provoked ill-temper. Puerperal fever was unknown.

Her time of parturition was of little consequence, and her whereabouts were never thought of. Among a lot of leaves was nestled her offspring. Should she be surprised by either man or dog, a respectable distance was a safe motto, as the old saw-backed dam was sure to challenge the intruder. But as time rolled on she would show up with her long-legged family, and make a call at the old log cabin for food. Anything in the shape of either animal or vegetable food did not come amiss. A dead carcass drawn to the woods, even a dead dog, was a luxury. But when forced into domestication it was a serious punishment until she got fat, and then she became content, but was seldom reconciled to be handled, and when the pork barrel became empty, the rifle had to be used instead of the silent knife, and it was very common for the neighbors to attend the wake through curiosity. Lard was then a scarce commodity in a commercial point, and a dead hog was as great a curiosity in those days as a dead donkey is at the present time. The intelligence of the agricultural classes has overcome all these shortcomings, and the improvement of our porcine stock is the admiration of every nation. But what with over-feeding, inbreeding and confinement, puerperal fever is a common result; over-feeding and carelessness previous to parturition, the want of suitable attention for the first few days after farrowing, are great causes of this disease. The anatomy of the hog is very different from either the horse or cow, or other animal that only brings forth one young at a time. The separation of eight or ten umbilical cords produces an effect little thought of, and the care required at such a time is not

given to the animal as she deserves. Every breeder ought to have suitable accommodation for the comfort of all their domestic animals, and the improved breeds of hogs are as much deserving of comfort as any farm stock. I question if any stock will pay better for the food and care bestowed than the hog. A little sulphur, sulphate of iron, gentian powder, or a simple condiment, is quite a tonic for a hog in confinement, or even in the winter when she cannot get vegetable food. The pen in which the sow is confined should have a protective rail around it. It often happens that when a hog makes her nest previous to farrowing, she chooses the corner of her pen, and as the young are brought forth unless a careful attendant is present to remove them they are crushed in the struggles of the mother, and for two or three weeks there is danger of the young pigs being crushed against the sides of the pen. This is obviated by placing a rail around the outside of the pen, a foot from the floor, and ten or twelve inches from the sides. With this protection the sow can be left alone with comparative safety. Care in protective measures would save millions of dollars annually. The best kept and improved breeds are the most apt to kill and smother their young. The sow is as careful of her progeny as any other animal. Every time she wishes to lie down and suckle her pigs, she spreads them with her nose, and although they may be rolled against the side of the pen, no harm can happen to them on account of the rail protection. In two or three weeks the rail can be removed, as the pigs are then able in a great measure to take care of themselves. Remove the feeding trough immediately after feeding, so that no injury

can be occasioned by it. Teach the pigs to feed from the trough as soon as possible, so as not to depend on the sow for their entire support. Feed her all she will eat one week after farrowing. And never forget to give her oats or oatmeal, as that is what makes bone. Overfeeding sows with corn only produces pigs that are almost unable to stand up, and are often treated for kidney worms. A little lime water is good for an in-pig sow; it will renovate the system and strengthen the bones.

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## CHAPTER XLVI.

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### PUERPERAL FEVER IN COWS.

Every one that has lost cattle asks the question whether diseases are cured by art or nature? Perhaps no disease was ever cured by art, but art may so modify the pathological condition that the recuperative powers of the system can thereby induce salutary changes, without which they cannot be effected so readily; thus art, when understandingly applied, may be said to aid nature. Puerperal fever, the scourge of the dairy, never affects the animal in poor condition, but takes the best conditioned animals of the herd, and

always the best milkers and greatest favorites. By observing the following advice the calamity can be averted in every case, and thousands of dollars saved.

Milk fever takes place in every instance after parturition, never before, as the separation of the umbilical cord has diverted the secretions of the body to another channel, but owing to a pathological disturbance and plethoric (or fatty) condition, inflammation sets in and the cow gets down, disowning her offspring, throwing her head from flank to manger, and dashing her head on the ground, moaning in agony and distress, often covered all over with perspiration; a dry muzzle and hot horns, cold limbs and bounding pulse. The first step to be taken is to introduce a well-oiled hand into the anus, and remove all the fæces that can be reached. Give a warm injection; also give ten drops of tincture of aconite in a tablespoonful of cold water every half hour, and bathe the head with cold water, or apply an ice-bag, if it can be had. Foment the udder with warm water, and draw all the milk that can be got, in order to attract all the fluids of the blood to the udder. I have occasionally given half an ounce of tincture of opium in three ounces of cold water, and it gave immediate relief. But this is an extreme measure that ought at all times to be guarded against. Every cow, previous to calving, should be kept loose in the bowels, as no living man ever saw a cow that was kept loose previous to calving, take milk fever, however fat. But I wish it to be understood that medical treatment previous to calving is a safe plan. I do not advocate starvation, but if the cow be costive, take two pounds of slippery elm bark, boil for four or five

hours, in two gallons of water; boil four quarts of bran; take one quart of the slippery elm decoction, add to the bran, and give to the cow in every case of constipation for one week or ten days before calving. Another good plan is to give two quarts of boiled bran and one quart of molasses or syrup for a few days before calving. The Barbadoes or Cape aloes, salts, jalap, salt pork, oil, or other unnatural medical poisons create nausea, and result in fever and disease.

The treatment of puerperal fever in bygone days was a disgrace to the veterinary profession. The most abominable drugs in all the materia medica were prescribed. It was held that the sheet anchor in puerperal convulsions is the purge and lancet, the depleting agents of death. Many a noble short-horn has paid the penalty of this fool-hardy treatment. The practice of the once acknowledged authorities will not stand the test of modern medical logic. It is contrary to intelligent experience and common sense, and will soon be a thing of the past. To cure prolapsus uteri or inversion of the uterus in the cow or mare, it is necessary to raise the hind parts of the animal by raising the floor. The inclined plane is made of boards four feet long and elevated ten inches at the rear. Make the stall three and a half or four feet wide, so that the cow cannot get out of position, and thus cause a relapse and consequent metritis or inflammation of uterus. Never give medicines to cause contraction of the parts. This contrivance avoids the use of the rope truss and other appliances of so-called medical science. All females are subject to vaginal weakness, either from disease, accident, or parturition. Any young cow that shows vag-

inal weakness can be thus stabled till nature has restored strength to the parts. A collar, with a ring slipped over an upright pole in front of the stall, will allow the animal to raise the head up and down, but prevents much forward and backward movement. This is the successful modern plan instead of the painful truss or stitched vulva.

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## CHAPTER XLVII.

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### QUESTION AND ANSWER.

The Ewe Flock.—“P.” says:—I have lost two ewes in lamb from excessive protrusion, prolapsus of vagina, etc. The first affected died about a fortnight after the commencement of the protrusion without slipping her lamb. The second became affected this last week, and appeared to be suffering so much that I ordered it to be killed. She should have lambed within six or eight weeks. All attempts to replace the prolapsed portions were immediately followed by straining and fresh protrusion. Under such condition of parts, can any benefit be derived from local or general treatment?

Although this is a very serious affection when oc-

curring in in-lamb ewes, many cases do well if treated in the following manner: As soon as the protrusion is observed, carefully cleanse and return it.

Prolapsus Uteri—I have a valuable mare that has a protrusion from the vagina. It showed itself after I brought her in from a sleigh ride yesterday. She is five months gone in colt, and I am anxious about her, as I am told it will cause abortion. She has a warm box stall and good care. Please give me your valuable advice.

Straining and slipping on the snow is not proper work for a mare in her state. As she has shown threatening signs of aborting, you will only require to give her walking exercise. Keep her in an open stall with the hind feet raised one foot higher than the fore feet. Do not feed her much soft feed, as you are apt to bring on lactation in a premature form and result in parturient fever.

Farmers should look carefully after their mares in foal during the next few months. If ice forms in the yard where they exercise, or around the watering tubs, keep it covered with gravel, ashes, or manure from the stable. See that the entrance to their stalls is so arranged that there is no danger of striking the animals' sides against them when coming in from the yard.

It is one of the most difficult cases of lameness to diagnose where a horse or mare has slipped and spread their fore feet, wrenching their costal muscles between the fore legs.

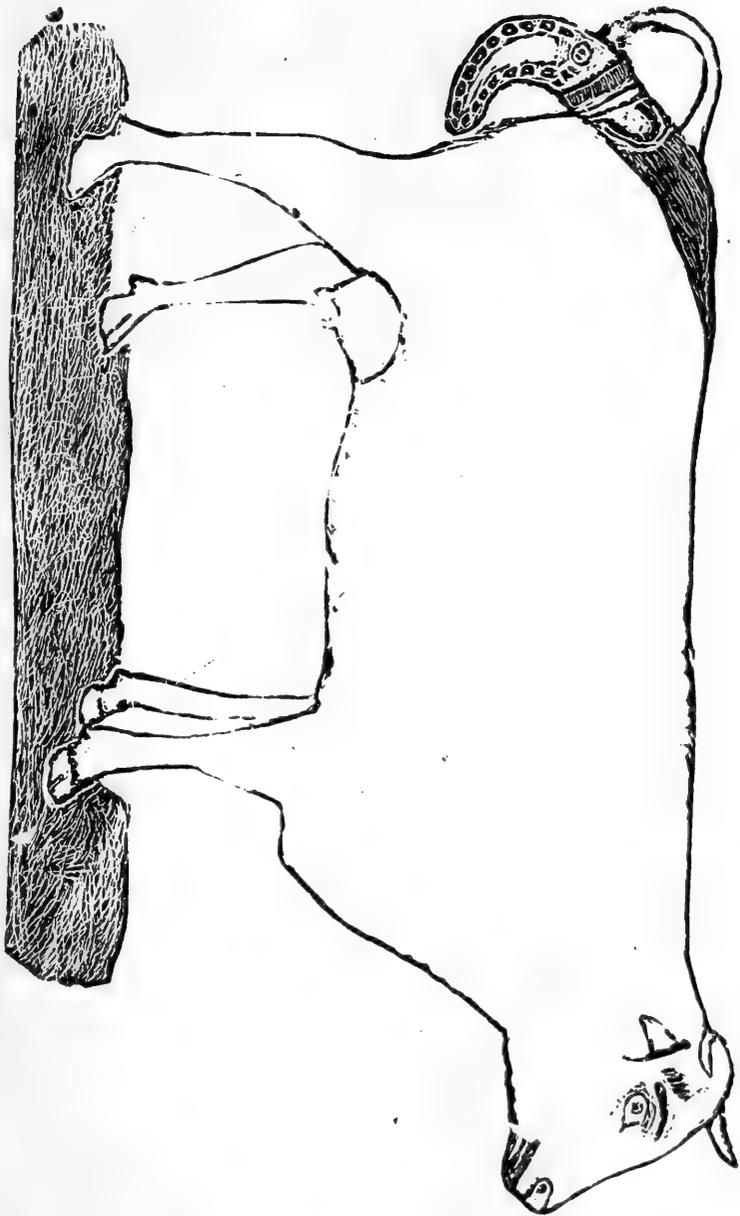


FIG. 22.—PROLAPSUS UTERI; OR, INVERSION OF THE UTERUS.

## CHAPTER XLVIII.

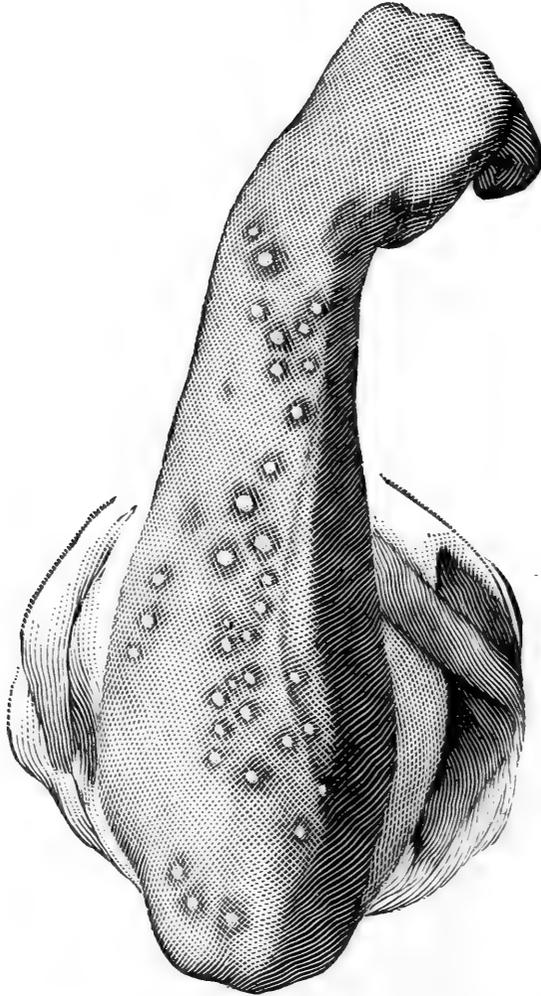


FIG. 23.

ECTHYMA OR SIMPLEX, PUSTULAR ERUPTION ON THE ARMS  
OF VETERINARIANS FROM CONTACT WITH THE VAGINA IN  
PROTRACTED LABOR.

This pustular eruption occurs on the arms of veterinary surgeons from contact with the vagina in cases of protracted labor. The following was written by Professor John Gamgee, lecturer on veterinary medicine and surgery in the new veterinary college, Edinburgh, Scotland :

“ On the 23rd of November, 1857, I was requested to attend a cow which had been in labor more than 36 hours. I saw her at 9:30 a. m., and was told that on Saturday evening, about five o'clock, she was observed to have pains, and efforts to expel the foetus were powerful. One of the dairymen passed his hand up the vagina to feel if all was right. The calf's head was presenting itself, the little animal making attempts to suck the man's finger. No more notice was taken of the cow until the next morning, when it was perceived that the feet of the calf were passing forward through the vagina, and on introducing the hand the head could not be felt. Many attempts were made to reach it, but all to no purpose, and a farrier was called in. This man explored, and accusing others of great ignorance, declared the limbs in the vagina to be the hind limbs and not the fore limbs. Accordingly, ropes were obtained, tied on to the limbs, and great efforts were made to extract the foetus. One of the men connected with the dairy, not satisfied, examined carefully, and said he felt one of the calf's ears, and that the head was turned back. The farrier having worked for several hours, a dairyman, who, with some reason, claims great dexterity in delivering cows, was called on the evening of Sunday, the 22d. He found the protruding limbs to be fore ones, and the head to be bent back. (It was in the

same position as we represent in Fig. 9, 'Anterior Presentation—Extreme Downward Deviation of the Head.' We have had several cases of this kind in Cleveland and surrounding country, and we have saved a majority of the colts and calves, but we have not lost either mare or cow; all the dams were saved.) But he could not feel the hind feet as the farrier supposed he did, and hence could not ascertain its real position. He tried to get at the head, but all attempts failed, having done all he could for several hours. On Prof. John Gamgee's reaching the byre at 9:30 a. m. Monday morning, the cow was found lying with the vulva swollen, and two feet of the calf protruding. (At this moment, when the attendant sees the presentation, ascertain the position of the head. Do not on any account pull on the feet, as the dam will strain until she is exhausted and become prostrated. If it is presented so that you are sure of position, should it be a one-sided presentation, cord the feet so as not to lose your hold by the foetus struggling or turning in your effort to get the head up, either by using the head loop or the hook Fig. 11. I do not use the hook if I possibly can help it if I find the foetus alive. I prefer the head loop; and in this way that cow and calf could easily have been saved.) The Professor got the cow up on her feet; having tied a cord round each fetlock, the hand was passed up, having warmed and greased it with butter. It was with great difficulty, says the Professor, that I got my hand into the uterus, all the parts being hot, dry, and swollen. The calf was dead. The throes and straining of the dam were violent. I felt the sternum, and, of course, the head was bent back to the right, and by

the severe attempts that had been made to pull the calf away the neck had been twisted, and the head pushed back as far as it could be. I attempted, by grasping the skin and fixing the hooks, to draw the neck and head forward, but could not succeed. I had no room to work in, and the cow, though subject to uterine contractions, was fast becoming exhausted, and in a sinking state. I decided on performing embryotomy and promptly removed both extremities by dissecting the skin back from the fetlock, separating over the left shoulder and taking away one leg after the other. I had hoped to have had more space to work in, so as to relieve the cow quickly; but the swelling was so great, and by this time the cow was so exhausted that she could not keep on her feet. I decided to let her rest two hours, after bathing the genital organs with tepid water. I returned at 10 o'clock and found the owner trying to sell the cow to a butcher. She was much exhausted, and I introduced my hand with a bestourito attempt the exportation of the calf's sternum and its removal, but my arm was so firmly grasped in the swollen passage that it was impossible. And a very intelligent student, M. S., whose arm was much smaller than mine, also made several attempts, but to no purpose.

“ I did not entertain any thought that the cow would recover if we were successful in delivering her, and the proprietor was determined to have her destroyed, so she was left quiet till the evening, when a butcher carried her off. About nine o'clock the same evening I felt a strong itching sensation on my right arm; my left arm was affected also, and on examining my arms, I found the skin the seat of a diffused rash. Next morning the

redness had augmented on both arms, but chiefly on the right; and the pruriency was replaced by pain. On the Tuesday evening an abundance of small circumscribed pimples had formed, which suppurated on the Wednesday. By the afternoon of the 25th they were well-formed pustules. Fig. 23 represents the arm as it was on the morning of the 27th. The pustules were large, distinct, full of matter, and surrounded by a red areola. Both arms were very painful, the axillary glands slightly swollen, and I suffered in health. On the right arm the pustules were very numerous, but less so on the left. I was prevented lecturing for some time. My arms were daily dressed with diacetate of lead lotion and opium. This relieved the pain somewhat, but the pustules attained the size of large peas. Others became encrusted with a brown, scaly scab, and others, on bursting, left behind a cicatrizing sore. I was tormented for six weeks, when the only existing eruption was the brown appearance of the skin where the pustules had existed. Early in March, however, at a spot on the inside of my right arm just above the elbow, where the redness had not completely subsided, a large boil formed, which, on being opened, was found to contain considerable slough. This boil was attended with much pain, and healed very tardily. I am not the only person that suffered, for on the Wednesday Mr. S. complained of the itching, and he afterward suffered from the same pustular eruptions on the arms. On the second week after I met the dairyman that had the cow with his arm in a poultice. He had suffered much from an active eruption similar to the one I have described affecting both arms. The man that attended the cow,

the farrier and dairyman, and every one that in any way came in contact with the virus, were affected in a similar manner."

I have since collected the histories of a few more cases, which I will here describe, as they well deserve very thoughtful study, as the nature of the contaminating agent has yet to be discovered. In the *Berlin Magazine Fur die Gesammte Thierheilkunde* for 1845, at page 170, Mr. Luthens gives the history of an unusual pustular eruption on his arm after attending animals in labor. He concluded with the following sentence: "I was so severely affected after attending to a mare, that I was for a long time ill, and I therefore think the case worthy of being recorded."

Herr Luthens again suffers on March 14, 1858. M. Herturg adds his testimony, having suffered by attending to cases where the animal had been in labor for several days. Dr. Weber, of Frankfort; Kaubner, of Eldena; Arnsberg, of Barteristetin, and Kuper, of Erefeld, all report similar troubles resulting from attendance on mares and cows that had been more than twenty hours in labor, whose genital organs were swollen in a state of asthenic inflammation. The liquor amnii had been evacuated long before, and the young was dead, and in some cases the colts or calves were in an advanced state of putrefaction. (I have invented a pair of clawed forceps with a sliding ring that greatly assist the practitioner, and, if the colt or calf is dead, it will assuredly, in every case, relieve the animal of the dead foetus, even if it should be ten or eleven months gone, and save every dam.

I have numerous reports of persons being affected

in the same way as described by Prof. Gamgee. I advise every stock owner to assist any animal immediately on presentation, as by so doing the strength of the dam will assist the operator to a quick and safe delivery. In order for any one to avoid being contaminated by the infection of the eruptive poison, and risking his life, he should always be prepared by providing himself and assistants with palm oil and chloride of lime, previous to exploring the genital organ. The best remedy to prevent any febrile eruptions is to use gargoline. I have been saved times without number when the animal was the subject of puerperal fever. The severity of this disease affecting the human species after assisting an animal in parturition suggests the following questions: What is the nature of the poison which thus irritates the skin and induces the pustules? Is the contaminating agent the same in man and animals? What is the nature of the disease induced? What light do these cases throw on the diseases attendant on parturition? In answer to the first I will say that the systematic excitement and exhaustion are attended with such a fundamental alteration in the solids and fluids of the body, the nature of which may be expressed as a partial loss of vitality, that such animal tissues, when inflammation has set in, prove injurious if brought in contact with other living animal textures. I do not consider the change a local one for the following reasons: The animal suffering from the pains of labor for many hours becomes exhausted and worn out, especially after the ignorant interference of an attendant when too late, frequently perish, notwithstanding delivery has been accomplished. The

cause of death is called metritis, but the animal rapidly sinks in a manner for which inflammation of the womb alone can scarcely account. The flesh of all such cows has been proved to be injurious if eaten by men. In support of this statement I shall simply refer to Noirots report: "On the 17th of June, 1856, at the castle of Gruneberg, district of Prenzlau, Prussia, a cow that could not be delivered of her calf, although attended to by a veterinary surgeon, was slaughtered and used as human food, cooked in different ways. All that partook of the meat became sick within twenty-four hours after, with colicky pains, severe vomiting and diarrhœa. A surgeon was called and pronounced it cholera. He dined at the castle, ate of the cow, and shortly after was seized with the same symptoms as his patients. On the evening of the 21st of June, Dr. Rehfeldt, of Prenzlau, was called to attend the sick at the castle, forty in number, all that had eaten of the cow. All showed the same symptoms of diarrhœa, yellow and watery stools, burning sensations in the stomach, intense suffering, insatiable thirst, vertigo, cephalalgia, excessive debility, almost amounting to paralysis, pale cold faces, sunken eyes, hollow cheeks, and a small and accelerated pulse. Investigation of the case clearly brought to light that none but those that partook of the cow beef were sick, and that no disease of any kind similar to it was to be found in the country. It was seen in this case that the intensity of the symptoms in each case was in proportion to the quantity of the meat eaten. In no case had the symptoms showed themselves in less than six hours after eating the meat. All the circumstances indicated the introduction of a poison into the blood, and

that poisonous principle existed in the flesh of the cow. All the kitchen utensils were carefully examined, but nothing found to indicate such a result. A further proof became patent: a quantity of raw beef was sent to five persons at a little distance away. One of these, a woman that was suffering from a chronic disease, died, while all that partook of the same meat were taken sick with all the symptoms of the cholera. At the time of the medical investigation, a few days after the disease, had overwhelmed all that ate the meat, a search was made for the generative organs, but they could not be found. The chemical analysis gave no result from the flesh. It is generally understood that in puerperal fever gangrene of the uterus sets in, and the putridity of the fever is not easily destroyed or rendered inert by cooking in any way or manner. In this case cooking did not destroy the poisonous principle of the meat."

This instance serves to show how dangerous it is to allow diseased animals to be sold to the butcher. With the exception of two persons, all that were taken got well after long-protracted suffering. We find similar effects result from eating flesh of oxen that have been over-driven, and, perhaps, when animals die of disease, and have been poisoned, the poisonous nature of the flesh may depend as much on the exhaustion preceding death as on any accidental poison. The local irritation would, therefore, not be essential to the production of the disease by a similar venom. Although the most common form of parturient fever in animals is known to occur in well nourished cows that have had no difficulty in labor, still many cases which have been set

down as cases of metritis, accompanied by putrid fever, are similar to those in which the conditions of the system carry danger in the introduction of the arm into the vagina. The carcasses of animals that have died from parturient fever, like those of animals dying from protracted labor, are poisonous, and induce enteric disorders, if eaten. It appears to me that the poison belongs to a distinct class, the most characteristic of which is the cadaveric venom, which has cost the life of so many zealous students of anatomy. It cannot be classed with the small-pox virus, which is capable of repeatedly inducing a similar disease in a number of individuals, by passing through their systems one after another. So far as experiments have gone, it is essential that the skin of man be brought in contact with the genital organs of the lower animals, in order that the eruption may present itself. Inoculation of this matter developed in the arm of man has failed to produce a similar disease on the person inoculated. Another most important distinction is that the varioloid poison does give rise to a very definite lesion, a disease having a regular course, only modified according to the degree of its malignancy; and there is no proof that the varioloid poison introduced into the alimentary canal induces anything different from varioloid disease. Moreover, the constitutional effects from the introduction of small-pox poison into the system are as characteristic as the local, whereas the irritative and the putrid fevers attendant on dissection wounds, certain forms of parturient fevers, and the fevers in cases of eruptions, such as we have described, are by no means characteristic. We cannot deny a certain degree of resemblance be-

tween the various effects of the element which proves visitating to the hand or arm of the veterinary surgeon or physician accoucheur. No doubt there is great similarity in the condition of the system attendant on protracted labor in the human female and our domestic animals. The similarity is probably quite as great as between some of the forms of fever attendant on parturition, which are proved to be contagious. As regards the human being, it has also been demonstrated that there is some similarity between the cadaveric poison and the puerperal. After adducing strong arguments in favor of the contagious nature of the epidemic, peritonitis, among women, the late Dr. Watson says: "It is my opinion that putrefaction is entirely opposed to the development of the genuine cadaveric venom." We cannot perceive material difference between putrefactive changes in the body of man and the body of a horse. We may dissect as many horses as we like, wounding ourselves each time (unless they be glandered), without suffering. Occasionally a dissection wound produced when dividing the tissues of a horse may suppurate, but we have observed that this results generally when peculiar circumstances, such as breathing foul air, etc., have seriously affected the system of the dissector. However, it is clear that animal matter introduced into the animal economy induces typhus fever with complete destruction of the assimilative power, etc., very different from the effects of the irritating discharge of the genital organs, or even the putrid fever attendant on protracted labor. With reference to the nature of the disease induced by the poisonous elements from the genital organs in protracted labor, it is

either a local pustular eruption, with more or less severe symptomatic irritative fever, or, if the animal be diseased, a peculiar poison may contaminate the skin through contact with the mucous membrane of the vagina, causing malignant pustule. In the human being we find a veritable puerperal poison, which may be similar or identical with the poison inducing the eruptions named, which may adhere to the hands of the accoucheur and contaminate healthy women. The facts are clearly proved that many a woman has lost her life by the hands of the accoucheur who has been in attendance on a case of puerpuritis, and, being called to a healthy woman, did not take the precautions needful to prevent infection from introducing the contagion.

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## CHAPTER XLIX.

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### MILKING.

It is believed that the best plan that the dairyman can adopt is to milk with dry hands, yet nature is averse to any such practice. Observe the calf sucking. He seizes the teat with the tongue lubricating first, then clenching the jaw together, and drawing the teat as far into the mouth as possible, manipulating the teat between the tongue and upper part of the mouth, while the warm fluid is streaming down the throat. He gives

a press, always upward, at every swallow, as it were, coaxing the udder to give the milk at every press. Dry milking is no doubt a very uncomfortable feeling to the cow, and is the cause of sometimes making her very uneasy. Should the teat be scratched, or have a little sore on it, the irritation is much more aggravated than if it had been first lubricated, so as to make the teat soft and smooth. A teat that happens to have a wart, although very uncomfortable to milk in any way, is much more so if milked dry. When a teat is sore, either with scratches, pocks, or sores, it should always be milked last, and if blood or matter is present, every drop of such milk ought to be put out of the way, as it is not fit for a dog. Every one knows by experience that a cow will give her milk more freely if the teat is lubricated than if dry. Experienced dairymen say that milking dry is a preventive against sore teats, but that is a mistake.

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## CHAPTER L.

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### DIARRHŒA IN CALVES.

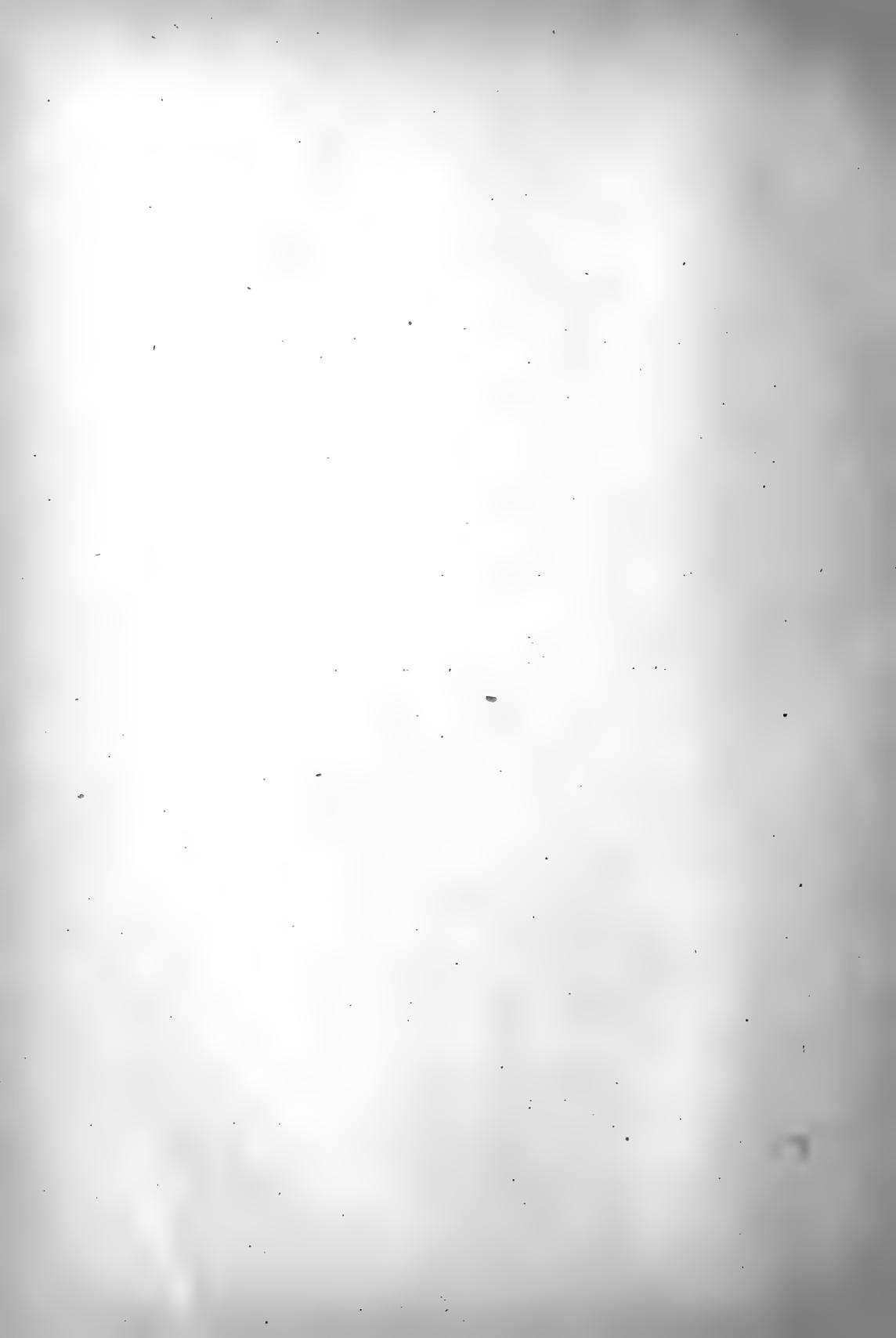
A question put to me was: "What is the reason my calves are not doing well? They are troubled with continual scouring, losing flesh, and they smell badly. We have our cows on the best of clover pasture during the day, two miles from the barn, and they come home every night, lying out on an old pasture field near the barn. Although our milk is the best, and the calves are not stunted, we find several calves with scours, and

they become so emaciated that they die. We have given them linseed oil, soda, saleratus, and a whole drug store load of aloes by the advice of our veterinary surgeon, but without good effect. Will you give us your opinion of the case?"

It is a wonder that they have a calf alive, on account of the hygienic treatment of the cows and the ignorant advice they received from your inexperienced veterinarian. The cows travel too far with their bags distended with milk. It becomes overheated, fevered, and unfit for human food, far less for calves. The milk retained in the bag for twelve hours becomes poisonous, and although the calves are on pasture, they are greedy for their milk, so that the contents of their stomachs become overcharged with acidity, the fevered milk aggravates the trouble and poisons the young animals. Aloes, oils, and laxatives of that nature were injurious of themselves. Had the owner given a raw egg beaten with ten drops of opium at the first appearance of scouring, and kept the calf shut up quiet, that would have stopped it. In an advanced state the disease requires more stringent measures. It would be better for the cows to remain on the pasture, and be milked there rather than to travel four miles a day. They travel all day, till tired, when grazing. The milk would then be more fit for feeding calves than in a fevered state. We wish the attention of every stock-breeder that may read this. We prescribed lime water to the cows, and to keep them on the pasture instead of traveling the hot, dusty road, as a point of economy, as the owner thought, and to prevent his losing all his young stock. There is nothing better than a drink of lime

water daily, either for a mare in colt, or a mare with colt at foot, or a cow where her calf is suckling or being fed from the pail. Every experienced dairyman knows full well that butter will come easily in hot weather, when cows feed on soils that contain a proportion of lime. They are never troubled with difficult churning, the butter comes hard and firm. Give every calf two months old one tablespoonful of epsom salts, one pint of well-boiled flaxseed, and half-pound of black molasses, with a sufficient quantity of boiled milk added, and in a few hours all is well. The rumbling or peristaltic action of the bowels will have subsided, and the youngling will commence to ruminate. Every stock-breeder will find it to his advantage to have a trough or tub filled with cold water and a lump of lime thrown in, so that any of their farm stock may have access to it; but remember, an excess of lime will cause gravel. We have proved time and again that a fevered cow's milk will cause summer complaint in children. A month later we learned that our advice was carried out to the letter, and every one of the seven calves that were alive when he received our advice had lived and done well. He says he had lost five calves, and some of the best three were Duchesses, and two were Mayflowers. If dairymen who send milk either to the city or the cheese-factory will let their cows have a little lime water three times a week, they will see the good result in their cream. On the island of Jersey, the chalk soils of Dover, and along the French coast, the cattle are famed for it. If food makes a fine quality of milk, the soil on which it grows has something to do in supplying an evident need.

MISCELLANEOUS.



## THE MISCELLANEOUS

Has been introduced in order to give a clear view as to the way the effect of disease is diagnosed by an amateur—his description and opinion in the various diseases of our domestic animals. It is something new, but will show to a great extent the reason why we have introduced this part in our present work. Any one having diseased or lamed animals can have advice how to treat them by consulting Dr. G. or Dr. J. T. Stuart, veterinary surgeons, Cleveland, Ohio. All answers requested by return mail must be accompanied with one dollar enclosed.

## MISCELLANEOUS.

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### SICKNESS IN SWINE.

Although the tail of a pig will not reach up to his head, and has not the length to switch a fly from between his ears, yet it is the thermometer by which the animal's health is known. If the pig is out of sorts, even though he may have the appearance of feeding, should the tail be straight and hanging down, he is not doing well. The sicker the pig, the straighter the tail. But if the tail is curled firm, and so hard that it cannot even be uncoiled without springing into the same curled position, then the pig is in perfect health. We never see a hog with the head hanging down and ears pointing to the eyes, without a straight tail.

### BUYING A HORSE.

I am sorry to say that little confidence is often placed in any individual selling a horse, as the principle of truth and integrity is often at a premium in horse-trading; hence the necessity of a strict examination, as "Man's inhumanity to man makes countless thousands mourn."

The first thing to be done is to see him in his stall; to ascertain whether he is a cribber or wind sucker, give him a handful of oats, and he will prove himself; if a weaver, stand quietly behind him, and you will see him swinging his head from side to side of his stall; if

a kicker, you will see the mark of his kicking on the side of his stall; shake the oat measure, but do not give him any, and that alone will bring out some of his vices in the stall.

Lead him out of the stall, examine his mouth, nose, eyes, etc., for external defects. If the enamel is worn off his fore teeth, then he is a cribber; if his eyes are of a whitish blue color, he is partially blind or may be given to shying, a very dangerous habit; and whatever purpose the horse is recommended or wanted for, whether for riding, harness, or farm work, get a fair trial. You will then be able to find out some of his vices (if any). Get a warranty or guarantee with personal security from the party selling, or have him carefully examined by a competent veterinary surgeon. A horse may be sound to-day, but having been idle for some time before sale, he may feel good, and overwork himself by fretting, or be caused to work too hard and too long hours, and thereby become sick. Such cases I have known, and the horse returned, and a serious lawsuit be the result. Settle all cases by arbitration, if possible, as the price of a horse goes a short way in law, however good.

#### A "SOUND HORSE."

It may be hard to say what constitutes a sound horse, but we are positive that a horse is unsound when he is suffering from any chronic disease or defect, or weakness which prevents him from performing his daily work, or the kind of labor he is best adapted for. It must be observed that if a horse has a ringbone, spavin, or splint, that causes permanent lameness, or even if not

lame, if there is exostosis of bone, although he can do his work, he is not a sound horse. Should a horse show symptoms of defective or labored breathing from whatever cause, he is unsound. A horse that is suffering from thrush, atrophy of the muscles, poll-evil, sprain, or injury that can be cured, cannot be called unsound. But we would not advise any one to buy a horse that is suffering from any such disease or defect. Many a horse has had lung fever, was lamed, curbed, had colic, etc., that has got over these diseases, and is, in a manner, sound and able to do a good day's work, either of speed or power. But every one that examines a horse (for whatever purpose he is buying him) cannot be a judge unless he is up to the tricks of the trade in order to detect defects.

#### BRONCHOCELE IN LAMBS.

Can you tell what ails my lambs? They are born with a lump in the throat and die in a short time. The lump is so large they cannot hold their head up to suck. The lump, when opened, looks like the sweetbread in animals. Please give a remedy if there is any known, and oblige a constant reader of your paper.

\* \* \* The disease from which your lambs die is "bronchocele" or enlargement of the thyroid glands, two small bodies placed on the lateral aspects of the wind-pipe in the region of the throat. These glands perform a function that is not very well understood during the intra-uterine life, but when a young animal is born they usually shrivel up and get smaller. Bronchocele is not an uncommon disease in lambs, and is usually ascribed to the presence of magnesian lime in

the water partaken by the dams of the young animals, or feeding sheep on land containing magnesian limestone. At the same time it is also found in low, swampy situations. Little can be done for the lambs, as they are too young to bear medical treatment.

#### SICKNESS IN SHEEP.

I wish to ask a question as to the nature of the disease among sheep, which the shepherds call in this part of the country "sickness." Can you tell me the cause and cure?

The disease of sheep recognized by the term "sickness" is a form of gastro-enteritis—inflammation of the stomach and bowels. The causes are chiefly dietetic—as great and sudden changes in the food supply, or the use of improper material. The disease is most prevalent when hoggets are first placed on turnips, and in mild seasons when these latter are still growing. Here the remedy is to restrict the quantity of roots, or to give a little artificial food in addition.

We find the disease on a section of heavy clay one year, and the next on a light loamy soil, so that we have never arrived at a certain conclusion what is really the cause. I have consulted several authors, and not one, either French, English, or Scotch, has any definite conclusion on the cause. In France we have the gravelly drift, which contains a red clay, containing the sulphate; in Wales, the slate and mineral springs; in England, chalk, lime, and magnesian soils, and in Scotland, where more care and attention to sheep are paid than by any other nation in the world, we find all varieties of soils from heavy clay on the seashore, containing the

chloride of sodium, to the sweet pastures of the Cheviot hills.

#### SHOE BOIL.

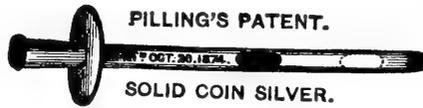
I have a seven-year-old horse that has a swelling on the point of the elbow on each fore leg. Horsemen tell me they are commonly called shoe boils, caused by the horse lying down so that the shoes lie under the elbow. The first boil came about one month ago. When ripe I had it lanced; and it discharged matter freely. Soon after this one came on the other elbow, much larger than the first one, which I lanced, letting nearly or quite a gill of matter escape. This one is running yet, though lanced ten days ago. The opening in the other closed up after running about ten days, leaving quite a large bunch or callus, which I noticed yesterday was beginning to swell again, and to-day it has increased considerably in size. I tried poulticing with ground flaxseed to bring the swelling to a head, but could not keep a poultice on, although I used new cotton cloth and fastened by sewing with strong thread. He would get it off by rubbing against side of stall. Will you please inform me what to do for him? \* \* \* Shoe boils are caused by pressure from the heels of the shoes when the horse lies down. Once the elbow gets bruised it is very hard to entirely remove the enlargements, the slightest pressure being sufficient to cause them to swell up again. In order to overcome the condition you must put the horse in a large stall, and have two padded rollers made and placed around the posterior points. They can be obtained or made to order at any harness maker's. Keep them continually on when

the horse stands in the stall. The local treatment necessary is opening the sac, and fomenting two or three times daily with hot water ; then use ossidine ointment as soon as you perceive any indication of a boil. If any other remedy in the shape of a blister is used you will find that it will make it worse, as it acts first on the accumulation of calloused substances on the outside, and does not go in.

#### SUB-ACUTE MAMMITIS.

Please tell me what is the matter with my cow, and also give the proper treatment for the disease. She was two years old last April, and was fresh on the 8th of May following. For five or six months thereafter the milk seemed to be good. From that to the present time she is giving bloody milk out of the front teats. Sometimes the milk is good for two or three milkings, and then bloody for a few times. For the past week there seems to be something like a kernel or lump in the lower part of the udder, or the upper end of the teat, but I have not yet taken any bad milk out of the hind teats. The cow seems to be in good health, and also in good condition. The treatment that I have given for it has been tansy, sulphur, and saltpetre. I also bathed the udder with salt water. This treatment has been kept up about three weeks, but with no effect. \* \* \* There is a sub-acute form of inflammation confined to the fore-quarters of the udder. Bathe the quarters twice daily with hot water, soap and soda, and use gargoline to draw out the inflammation, milking the teats. This treatment is correct for a mare, cow, or

sheep, and as a safeguard against any stoppage of the



No. 24.

teats, have a silver milking tube in every teat affected. Discontinue the stuff you have been giving the cow. You are only aggravating the trouble, as your experience has shown you. Saltpetre internally and salt externally are poor treatment. Feed oil meal, bran, and one tablespoonful of Dr. J. T. Stuart's Cleansing Powder mixed in her feed, the dose for a mare and two years old cow, but half the quantity for a ewe of any age.

#### INVERTED RECTUM.

I have a two-years-old horse colt that has been on good pasture, and has always been healthy until the present; he has apparently what on a person would be called a bad case of bloody piles. It is swollen as large as a man's two fists. I placed it back and washed it in cold water with alum. Will you please advise by mail? Shall I change to dry feed, and what treatment shall I give him? \* \* \* Inversion of a portion of the rectum is the cause of the enlargement mentioned. We would recommend you to return to the inverted portion immediately after it appears, and apply our smooth healing ointment, with fresh lard mixed in, and insert a little with the end of the finger into the rectum, smearing it around the inside of the anal opening. Apply the ointment morning and evening. Feed the colt

principally grass, and give a bran mash once daily, having two good handfuls of linseed meal mixed with it. I would recommend two drams of opium as a preventive against straining. Keep the colt raised a little behind, and disturbed as little as possible till the protrusion ceases.

#### CANKER OR FOUL-IN-FEET.

In winter and early spring, when cattle are confined in stables, or run in muddy yards, filled with decomposing manure and slush, canker or foul-in-foot is often troublesome. In many cases cattle have to stand in the stable with their hind feet in their own dung, which is very injurious, resulting frequently in this disorder, and reducing the condition of the cows or checking the growth of young cattle. The feet between the hoofs become macerated, soft and tender, and absorb the ammonia and deleterious matter of the dung, which produces ulceration between the hoofs. Prompt treatment and a removal of the cause will prevent serious loss to the dairyman.

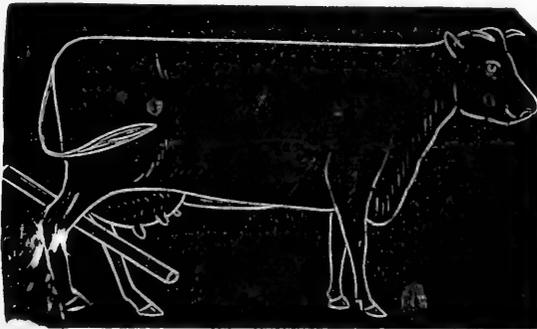


FIG. 25.

This illustration shows the proper method of taking up the cow's foot, in order to pare, dress, or apply

ointment. A cow will not hold her foot steady, like a horse, when taken up. One man can not do it. If you use a block and tackle you run the risk of breaking the cow's leg. Take a pole the thickness of a man's wrist, and wrap it with a horse blanket or any soft substance. Place the pole between the legs, inside and forward of the hock of the leg on which you wish to operate, and above the hock of the other leg. Let a person take hold of each end of the pole and lift to the level of the hock. The cow will struggle a short time, but ineffectually, and will soon be quiet. Then the operator can go to work with comfort and ease to the cow and himself.

#### BLACK LEG IN CALVES.

This disease is known under various names, "quarter evil," "black evil," "joint murrain," "anthrax," and "charbon." Young cattle are, in every case, the subjects, and the first in the herd to be attacked are those in most plethoric condition. The attack is so sudden, generally, that the animal is often dead, or nearly so, before the owner knows that anything is wrong. The joints of the hind legs become swollen, and the animal is lame. So severe is it, that it is often pronounced acute paralysis, upon first seeing the case. Severe and general fever prevails, every part of the system becomes affected, the blood becomes clotted, and circulation is impeded. The pulse, from 60 to 80, falls suddenly to 40, with a flickering, bounding feeling, and death soon ends the scene, often without a struggle.

Formerly, this disease was regarded as a pure inflammatory fever, but modern investigation proves it to be of an epizootic and enzootic character, and thus sub-

ject to the same law which governs other diseases of this type. The symptoms are fever, denoted by quick, full pulse, hurried breathing, outstretched head, blood-shot eyes, hot mouth, loss of appetite, moaning, etc. The animal becomes lame in a fore or hind leg, swellings appear on some part of the body, on the quarters or about the joints; the back and loins are tender to the touch, the skin becomes hard and dry in patches, and afterwards sloughs off, leaving sores that discharge offensive matter. Swellings appear about the back, which, when pressed, gives forth a crackling sound, called emphysema. Gangrene rapidly ensues, involving the whole muscular tissue, and death ensues in 24 to 48 hours. Bleeding was generally practiced in former times, but investigation has shown that no animal ever has any more blood than is needed to sustain the functions of life. Depletion and purging have had their day. They can have no good effect in any inflammatory disease like this, where prostration is so great and dissolution so rapid. Calves are subject to this disease, whether sucking the dams or artificially fed. The disease prevails one season more than another. The present season is more productive of this malady than any we have had for some time past. As precautionary measures, keep the bowels open, give exercise, do not feed boiled milk, guard against a plethoric condition. If the calf runs with the cow, and she gives more milk than it should have, milk a portion. When any swelling or stiffness of joints appears, apply hot water and a little soda or borax; foment with a sponge. Keep this up till you can obtain from the druggist the compound embrocation of ammonia, camphorette

spirits, and laudanum. This is the best application in use. Apply with friction, actively. It will relieve the cellular tissue from becoming charged with serum or clotted blood. Do not skin the animal that dies of this disease, but burn or bury it deep. Burning is to be preferred, for then there is no possibility of infection afterwards.

#### THE AGE OF A COW AS INDICATED BY HORN MARKS.

The horn of a steer or heifer does not at any time of life give a true tabular scale or gauge whereby we have a correct standard as to age. The bull at five years has certain rings or waves whereby the age at and after that time can be told with accuracy. The horn or prolongation of the frontal bone of the cow begins to indicate age after she has been served by the male, and is developed after she has produced her first calf. Our simple illustration clearly defines the various points, which will explain the different stages of bovine life.

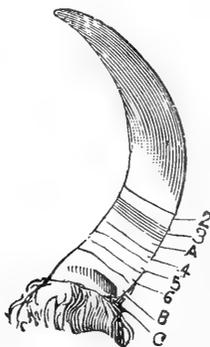


FIG. 26.

At two years the first mark is shown, after the birth of the first offspring. The rude mark at 3

shows the broad ring which every horn has when a cow has run farrow for one year, showing that the cow is three years old, and only at that age had one calf, which is ordinarily the case, but in some breeds, when a cow has had a calf at three years, she then goes farrow in her fourth year, when her mark at A would then be the same as at 2. The marks at 4, 5, 6 are what we would call calf marks, showing that up to six years of age she has had four calves. Ordinarily, at seven years of age, she again goes farrow, which is seen at B, and produces the same kind of a ring that we represent in the cut, growing with a regular wave from the lower side of the horn over the cutis and frontis of the occipital bone. At the base of the horn is the gelatinous or soft cuticle wave, up under the hair, and as it grows, it becomes hard, tough, and elastic, as seen at C. The cow is now rising eight years, and has had five calves. Each year that she has a calf the same wave or ring is left on the horn, and up to ten years she has been farrow two years, and was two years old when she had her first calf. Between ten and fifteen years a cow is more apt to go farrow every third season. But there are exceptions in the reproductive life of the bovine, as well as in any other species of our domestic animals; some cows will have twins several times in their lives, but the standard of horn mark is not altered. One ring or mark only indicates one year, whether it is to be one or two calves at a birth. The teeth of cattle are no criterion of age, as the soil on which they feed and the kind of food will wear or preserve the teeth, according as the case may be.

## VETERINARY APPLIANCES.

The farmer often finds it necessary to apply a poultice or blister, etc., to various parts of the horse or cow. We propose to illustrate and plainly describe simple methods we employ, several of which we have illustrated.

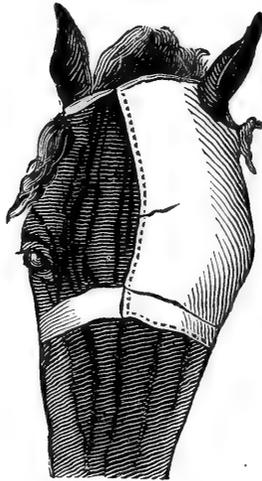


FIG. 27.

Fig. 27 shows the method of applying a bandage to the eye, to secure a poultice or lotion, in cases of injury or inflammation. During a practice of over forty years, we have found that the great difficulty with horse owners in treating the most simple injuries is to keep a proper covering on the part. The illustration of the eye bandage will enable any farmer to apply it with no trouble or failure. It is used to secure an eye lotion, a blister, or even a cold water poultice.

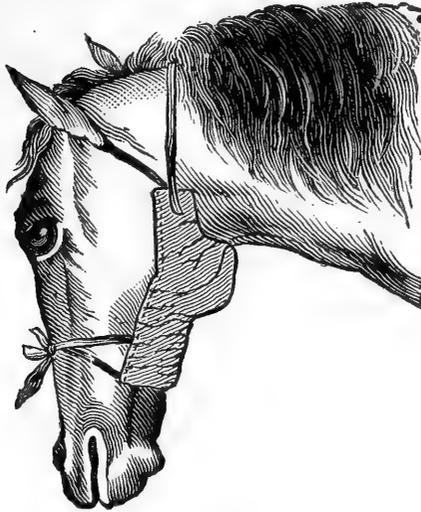


FIG. 28.

Fig. 28 shows the proper method of applying a poultice to a tumor located on the throat, after a blister has been applied. The strings, as seen in the cut, do not interfere with the eye or movement of the head. After the poultice has been applied the five-ring halter is then put on, and the under strap keeps the covering firm on the tumor. In all veterinary works we have illustrations or explanations of the disease, but the treatment and mode of application thereof are never

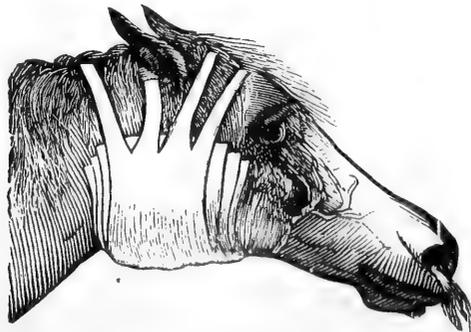


FIG. 29.

shown. Fig. 29 shows the best method of applying the bandage to the throat, when properly adjusted. If a poultice is used, as in a case of strangles, swelled glands, etc., the bandage is first adjusted firmly, then the contents of the poultice are put in the cloth and drawn between the bandage and the throat or parotid gland. After it is put on in this way the halter is put in place. The poultice, being kept close to the part requiring it, does not need to be taken off, as an application of warm water three times a day keeps the poultice in an active state. A liniment can be applied in the same way.

Fig. 30 shows the proper way to adjust a bandage on the chest when liniment is used in a case of pleurodynia, founder, lung fever, hernia, or a poultice on collar boils, etc. Catarrh, or "cold in the head," is an affection of the lining membrane of the nasal chamber and cavities of the head. It consists in a congested or

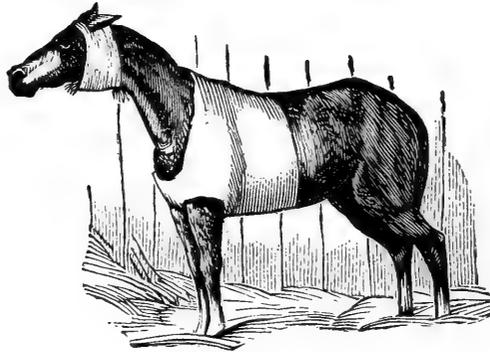


FIG. 30.

inflamed state of those membranes, giving rise to a glaring discharge from one or both nostrils, and when the upper end of the windpipe (larynx) is implicated, it is accompanied by a cough. This is the congestive stage. The fever is then at its height, and in every

case is accompanied with a cough. Sometimes a very simple remedy will check the disease. At other times this matter becomes pent up in the sinuses of the head, which will show itself by being discharged in clots. At this stage the nose-bag, illustrated in Fig. 31, aids in



FIG. 31.

steaming the nose with hot bran and water, with two teaspoonfuls of aqua ammonia mixed in it. This will cure every case, but every case must be cared for. Do not expose the horse the day after, as he is apt to take a relapse. This nose-bag can be easily and properly adjusted. This treatment is mild, and suited to the following cases as a preventive against matters being thrown on the lungs: Bronchitis, Tonsilitis, Catarrh, Laryngitis, sore throat, and strangles or distemper.

Figure 32 shows the proper method of applying a poultice, absorbent, or blister to the withers. The poultice is first put on over the swelling; then the appli-

ance is put over it, so as to keep it in place. A horse can shake anything off the withers, unless such

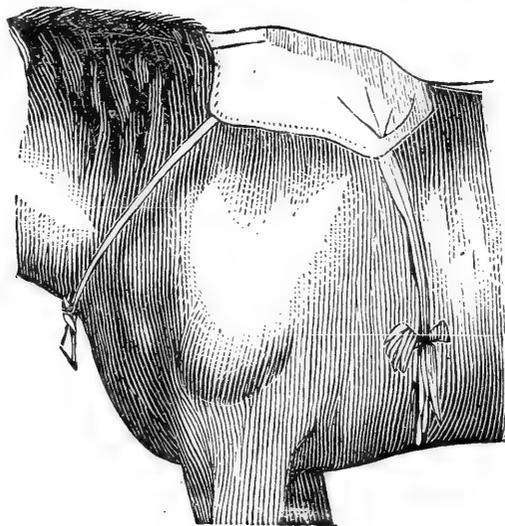


FIG. 32.

an appliance is used. It is an easy and simple method to keep cotton batting when an ointment has to be kept on, and likewise blisters or fomentations. Simple as it looks, it is difficult to keep medicaments in place in any other way. In consequence of chafing by an ill-fitting collar, inflammations, indurated cysts, or tumors are often caused, and matter is formed beneath the large flat muscles which cover the fore part of the shoulders. The tissue around the part becomes thickened, so that it is difficult to detect any fluctuation of matter, yet it may be assumed when there is considerable swelling, that has continued for some time, that there is pus. There will be no recovery till the matter has been removed. In slight cases only a nut-like indurated tumor appears on the skin (see Fig. 33), on the top of the shoulder, and another behind. Fig. 33 is caused

by the collar, the other by the saddle. The one so well

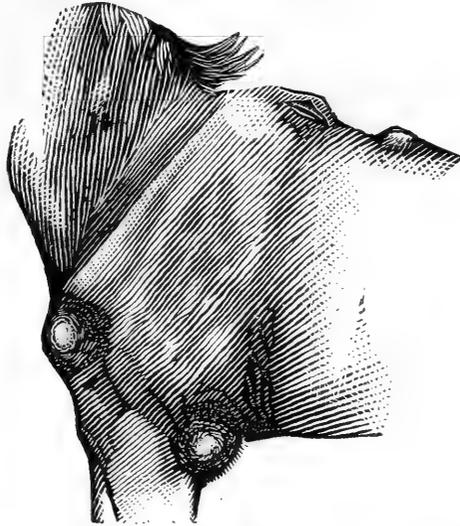


FIG. 33.

shown on the point of the shoulder is the worst kind of a hard calloused tumor we have to deal with. Any

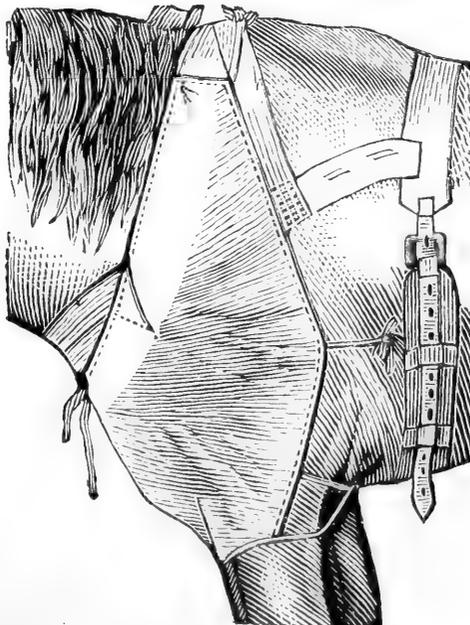


FIG. 34.

appliance, even when carefully adjusted, cannot be kept in place, unless the proper apparatus is first put on, so as to keep the remedy used properly in place. Such an apparatus is illustrated in Fig. 34. The elbow tumor represented in Fig. 33 is another of the same sort, caused by pressure, when lying down, upon the heel of the shoe of the fore foot. The appliance is adjusted for all these much in the same way. In Fig. 34 the outside covering or bandage proper is put on, then the remedy, either as a poultice or blister of any kind, is pushed under. If any part of the shoulder is cut, snagged, or bruised, this appliance is the most suitable, and will keep the remedy in place. We next take up the treatment of stifle lameness, or laxation of petella. I have delineated with care the various modes of treatment. Fig. 35 is the ordinary way, well known to

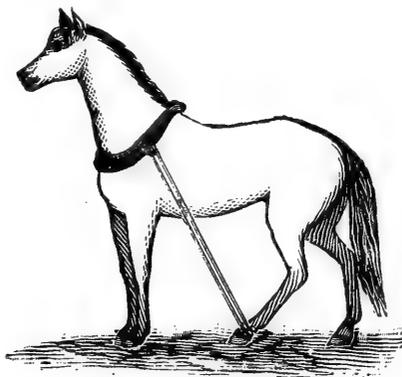


FIG. 35.

the veterinary profession, when used with what is called the side shoe. We have in our practice a better and easier plan in treatment of laxation. There is an objection to the use of the side line. When the colt finds that he is cramped up and has no use of his foot to rest

himself, he will frequently struggle and fall down in the stall. We here illustrate two different modes of treatment which are preferable to the side line shown in Fig. 35, and always safe. Fig. 36 shows a great improvement over the old injurious stifle shoe that had to

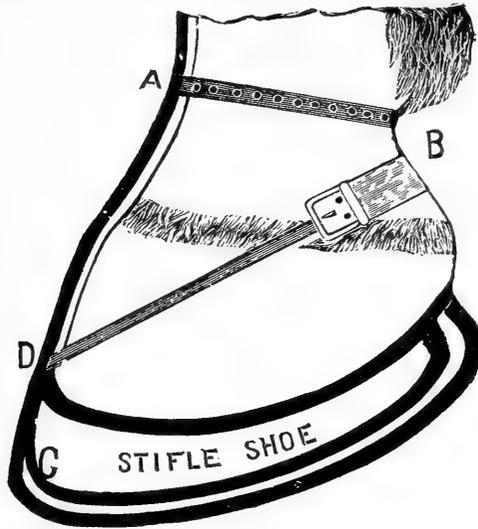


FIG. 36.

be nailed on the foot, and, in a great measure, was the means of doing serious injury. This shoe requires no nails, and is simple and easy of construction. Still, it is expensive and does not meet our views, so we use a better and safe mode, shown in Fig. 37. The shoe in Fig. 36 is six inches from D to sole. The shoe proper is wide web bed, and the rest or bow at C is welded on at D, and the iron heel strap is also welded at D, and buckled to a girth strap B, that comes over the fetlock a little above the heel, so as not to chafe. The belt at A is strapped firmly, so as to hold the thin band of iron that is firmly connected with the bars at D, and fits well

up the fore part of the hoof and pastern joint. This shoe has the advantage over the old shoe, as it can be moved at pleasure, which the nails in the old shoe prevented. Fig. 37 shows the most preferable of any method we have ever tried. The horse or colt is put into a

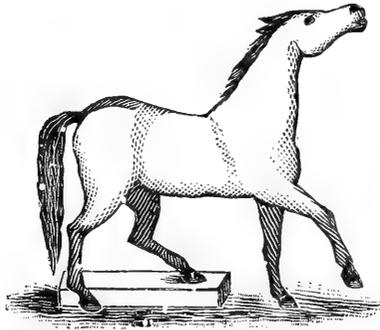


FIG. 37.

narrow stall, two feet six inches wide, with no more space than is needed to let the horse stand easily. It makes no difference whether he is haltered or not, as he cannot turn round. A scantling is kept close up on the back part of the stall, so as to keep the horse up. A box four feet long, fifteen inches wide, and six inches deep, is placed in the stall, so as to have the stifled foot rest on it while the foot on the sound side rests on the floor. The fore feet are at a level with the sound hind foot. I treated a young mare for laxation of petella six weeks ago. She had slipped and fallen while turning a corner of the street. The off shoulder and near hind leg were seriously injured. The illustration shows how she stood for three days in her stall. She is now perfectly sound. This simple appliance will cost a reader of this work scarcely anything compared to the price of the shoe, or the risk of injury with the side

line. In every case a slight blister is applied to the stifle. Easy, soothing remedies are preferable to an active blister of any kind. Mercurial blisters are very bad, as they either ruin the ligaments or tendons, or cause necrosis of the bone.

#### TEXAS CATTLE FEVER.

The appearance of this disease at various points of Pennsylvania, Virginia, and Ohio has excited much apprehension, particularly where the exact cause of the fatality among cattle was not known. In most of the localities affected there had been no previous acquaintance with splenic fever, and many supposed that a new pestilence had broken out. Investigation, however, soon decided that it was Texas fever, communicated by cattle from the Southwest being brought into the neighborhood. This dangerous malady has some peculiarities that all should understand in order to prevent its introduction. It does not apparently affect Texas, Cherokee, or Indian Territory cattle that are brought to the North. To all appearances they are perfectly healthy, but if they come in contact with our native cattle, should the latter pass over the same road, graze on the same field, or be shipped in the same car, shortly after the disease is communicated it is alarmingly fatal. If these Southwestern cattle pass one winter in the North there is no danger of infection from them, as freezing weather soon stamps out the disease, as it does yellow fever. The cattle of all the Gulf States are subject to this disease, and it is thought that the present outbreak in Virginia was caused by cattle brought from South

Carolina. In the Western States the nature of the malady is well understood, and these Southern cattle are kept from coming in contact in any way with Northern cattle, and thus its fatal effects are prevented. Splenic fever was introduced into the vicinity of Cleveland in the fall of 1877 during the great railroad strike, by Texas cattle that were stopped here en route for the East. They were driven along our roads to different pastures, and ere long the fatal fever made its appearance and carried off over 400 head of native stock in Cleveland and suburbs. Our experience during those two months enables us to write understandingly in regard to this fever. In every case where our native cattle came in contact with the Texas cattle, or followed along the road they had traveled or on the same pasture, they contracted the disease, and where no veterinary surgeon was in attendance death invariably resulted. We know of a case where a butcher put a number of Southern cattle in the same pasture with twelve milch cows. The Southern cattle were all slaughtered in a few days, but the cows contracted the disease and in three weeks all were dead. These cows were literally covered with Texas ticks. Another cow that traveled over the road a distance of 60 yards from the barnyard to pasture, where a drove of Texas cattle had passed the night before, picked up some of the Texas ticks—exoides—and in less than a week every cow on the place became affected. They began to fall off in milk, then to sicken, then to die. Post-mortem proved it to be true splenic fever.

The first sign of anything wrong in a cow is the failing in milk, a refusal to feed, standing apart from

other cattle in the field; the fæces become hard and dry, emaciation follows, the animal passes bloody urine, and in a few days death ensues. By post-mortem we find enlarged spleen and liver, with cysts and abscesses frequently, and the liver having a peculiar yellow or brownish appearance. In a number of cattle that we examined we found the same appearance generally. The flesh takes a black yellowish appearance, caused by an excess of the coloring matter of the gall, and in every case becoming putrid in a short time, as the result of congestion. By the inexperienced, Texas fever is pronounced to be typhoid from the black, turbid state of the blood. The ticks that are gorged with the poisoned blood of the Southern cattle, getting upon our natives and inserting their proboscides, bring about a true vaccine poison. Our own cattle were several times exposed to the influence of Texas cattle, with only a rail fence between the cattle on either side, smelling each other and touching noses, but no ill effect followed till they became infested with the ticks; then splenic fever was the result forthwith. It would not be our choice, had we the power, to stop traffic in Southern cattle, but as a protection to our farmers and stock owners, we would repress traffic at place of debarkation, and slaughter every animal where it lands from the cars. In no case should they be permitted to travel over our roads or feed upon our lands.

#### FOOT AND MOUTH DISEASE; OR, MURRAIN IN CATTLE.

The name seems to indicate the external parts affected. Its origin has never been traced to any other cause than contact with the virus. Parties who have

been near diseased animals, such as cattle, calves, sheep, dogs, and the virus from the mouths of any or all of the above, know that the disease is only communicable by contact. Its origin, like that of contagious diseases generally, is wrapped in mystery. It is highly contagious. Every case has been communicated by association with diseased animals, directly or indirectly. Vesicular diseases among cattle were well known to early writers on epizootics. We find this malady referred to as early as 1711 in Germany and Italy. It was introduced into Hungary and described as inflamed tongue, covered with blisters, with a constant discharge of saliva, which, being dropped on grass, communicated the disease to other animals.

Finley Dunn speaks of a similar disease breaking out among the cattle of Great Britain in 1810, and in 1834 it was again prevalent all over Europe. The names given to it then were Blain, Murrain, or Distemper. Prof. Simmons first saw the foot and mouth disease at Twickenham, in September, 1839, and he proved that it was introduced on the farm by some sucking calves bought at Smithfield market.

Having briefly introduced the subject and referred to its early history, I now wish to explain its effects and show its ruinous results to domestic animals, cattle, sheep, hogs, and poultry, and present the urgent necessity of protection against its inroads among us.

When a cow first shows signs of this disease, she becomes languid, staggers, great heat is manifested in the mouth if the hand is introduced, the tongue looks

as though the skin had been dipped off in patches, gums are ulcerated, are of a red and bluish color; the hoofs become ulcerated around the top or coronary band, and in acute cases slough off. Rigidity of muscles and stiffness of limbs are often among first symptoms. When once seen the trouble is easily recognized. The animal walks as though treading on thorns. If a cow, ewe, goat, or sow is with young, they are sure to abort; if nursing, the young soon die, the milk becomes quite poisonous. Children fed on the milk have died, showing the ulcerous and other effects of the disease.

The outbreak of 1839-40 was the most serious of any that ever occurred in Great Britain. Cattle were the only victims. Sheep, pigs, and poultry suffered to such a fearful extent that it was not uncommon for persons employed in cleaning out Smithfield market to pick up basketfuls of sheep's and pigs' hoofs which had been lost during the day, and in every case animals had to be carted from the market, as they could not even stand, much less walk. After this outbreak steps were taken to extirpate the disease. Rigid restrictions were imposed, and with success. The disease has never been so prevalent since, though it is spreading in Great Britain at this time, and as we are importing cattle and other farm stock in large numbers, great care will be necessary to prevent its introduction. Should it gain a foothold among our Western herds or flocks, the result would be disastrous to what should always continue to be the leading industry of that region. Immediate slaughter, paying a fair value for the animals, is the only method to stop the progress of the disease.

## WHAT'S THE MATTER WITH THE EWE?

I have lost a fine two-year-old ewe, with a caked bag. She had twin lambs, three weeks old, doing well. She was sheared on Friday, appeared well then. Sunday a. m. I noticed the lambs trying to suck, but she kept walking away from them. I followed to see the cause, and found her bag very much swollen and feverish. I tried at once to milk her, but no milk would come. I then rubbed her bag well with camphorated lard, but by middle of afternoon she lay down, and was dead by noon the next day. Will some one tell me what caused the bag to cake at that stage of the lamb's growth? The sheep have access to a blue grass pasture, and are fed bran in the evening enough to increase milk and bring them up to the fold. The ewe suffered from exposure, caused by becoming chilled after shearing. It would have been better to have left the wool on for another week, till the weather got warm, but shelter, and a good, warm, dry bed would have been judicious treatment with any animal that was weakened down by having twins. The cold acting on her most delicate parts, or lactiferous ducts, stopped the secretion of milk from the mammillary glands, caused garget, which caused inflammation and general fever, forcing the blood back to the heart, producing puerperal fever and death; starving the lambs for the want of nutrition from the time the ewe sickened. The proper treatment in the early stage of such a case would be to wrap a blanket around the ewe; keep in a warm place, and give aqua mentha pip, one ounce; sherry wine, one ounce: mixed in half a

pint of oat meal gruel, given as warm as is prudent; fomenting the bag with warm water and a little mustard, so as to accelerate the secretion, the internal remedy getting up a rapid circulation and breaking down the curded state of the milk by driving the lactic acid through the kidneys instead of through the milk-secreting ducts. After you have fomented the udder till you have drawn all the milk from the bag, and softened it, rub on gargoline so as to remove the pain and keep the bag soft. Five drops of tincture aconite and tincture colicynth, in alternation, would then have carried your patient through, to gain strength and be fully able to nurse her lambs. Flock owners ought to be careful in attending to breeding stock during this cold, showery weather.

#### SECURING A HORSE.

The following is my method of securing a horse for castration, the excision of a tumor, or any other operation of similar nature. It is humane, preventing injury to the animal or operator. The usual method of throwing a horse is cruel, injuring and killing many noble animals, and is the same as practiced in the days of Youatt, Percival, and Mayhew. In the cut 1 is the halter strap, tied firmly to a beam, keeping the horse's head well up, so as to prevent struggling or any attempt to lie down; 2 is a rope fastened firmly to the partition of stall, keeping the horse firmly secured so that he cannot move from side to side; 3 is a strap buckled to the scantling, going over the shoulder, and through the partition, so as to prevent rearing up; 4 is the girth to which the strap from the fetlock joint (8) is secured,

drawn up as tight as the case may require; 6 is a strap passing around the body, to be used when necessary to keep the foot firm and close to the abdomen;

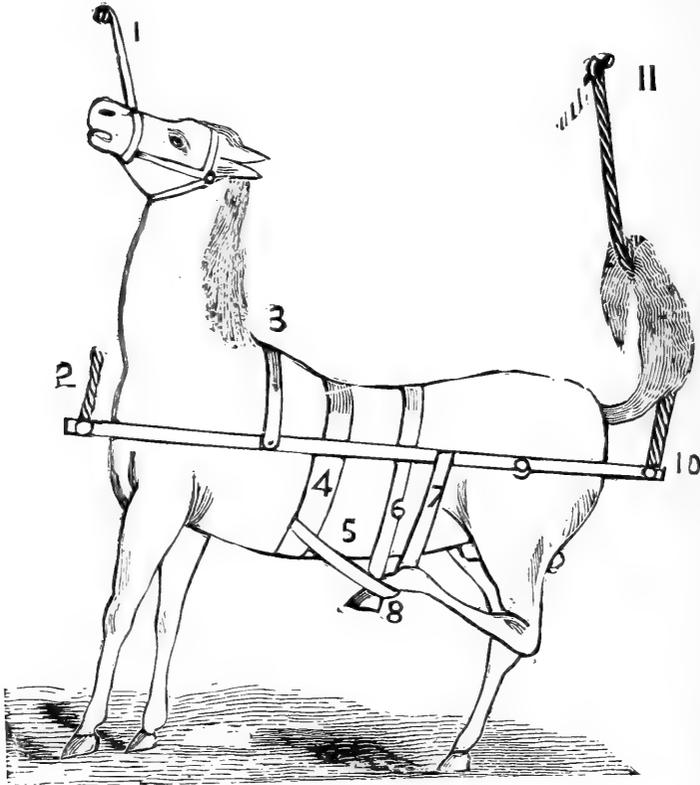


FIG. 38.

7, a strap fastened to a scantling, goes around and is fastened to the side of partition, so as to prevent crouching, which will occur every time without prevention; 9, scantling; 10, end of scantling to which the rope is fastened and then lashed firmly to the partition; 11, tail tied up out of the way of the castrator, and helping to keep the horse firm. Aged bulls, as well as aged stallions, should be

castrated in this way, which I have practiced for years. It will be new to thousands of professional castrators and veterinarians. The cut and this description have been copyrighted, and hence cannot be used by others without permission.

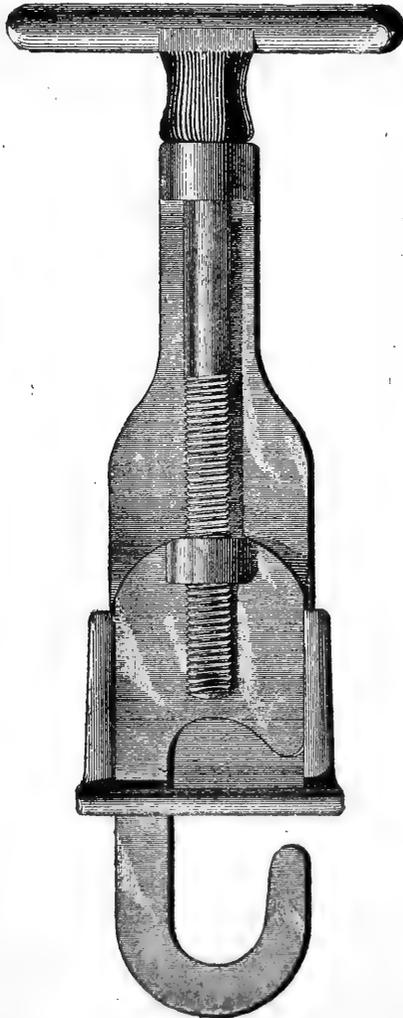


FIG. 39.

We use this ecraseure in preference to the chain

ecraseure. It is safer, makes a clean cut, causes no hemorrhage, never was known to cause a schirrus tumor, and is so handy to use with our principle of castrating all animals standing, and it has a preference over any other kind. It is easily cleaned. There is no blood-poisoning following the operation, is nickel-plated, and can be carried in the vest pocket.

### MALFORMATION.

#### INTERNAL DEFECTS OF THE HORSE WITH ILLUSTRATIONS.

Parrot-mouth, or malformation of the mouth of the horse, is seldom met with, but is occasionally found among all breeds in every country. No animal life is exempt from abnormality; all are affected more or less. Parrot-mouth, or a projection of the upper incisors over the under incisor teeth, is an impediment which, in every case, prevents a horse so affected from feeding in pasture. However anxious to eat, he would die of hunger on ordinary good pasture, not being able, from the shortness of the lower jaw, to graze. The annexed cut will sufficiently explain the peculiar deformity. Such a horse must be fed from rack and manger. The upper incisors having no triturating action on the lower, become unnaturally long, and require the use of the half-circle tooth rasp to keep the upper lip from projecting unnaturally over the under lip, and preventing the gathering process of food to the incisors and molars for mastication. The longer the teeth the worse the horse can feed. That class of horses are always thin and poor in flesh, besides requiring the strictest attention of the groom to see that they are feeding easily and

free, in order to keep them in working condition. These teeth are apt to get very sharp at the upper edge, and hence cut and lacerate the upper lip, thus placing another impediment in the way of gathering food. The

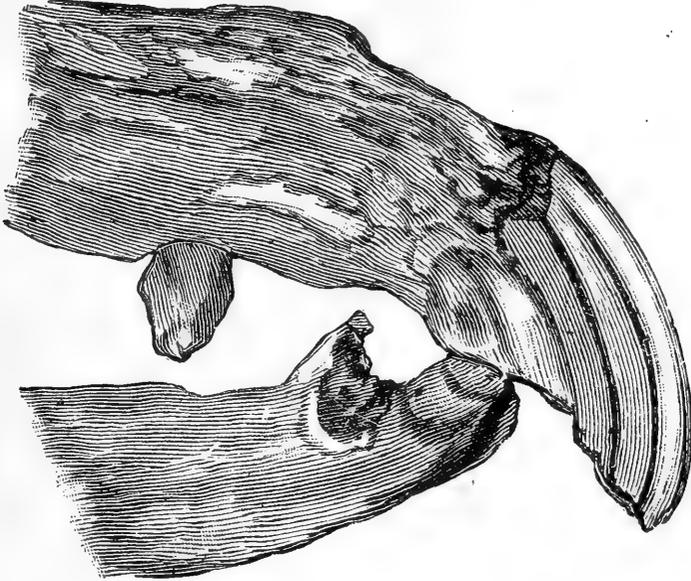


FIG. 40.

illustration, Fig. 41, represents a projecting molar (a), which causes a defect in mastication, resulting in loss of condition. Such a tooth ought to be rasped level

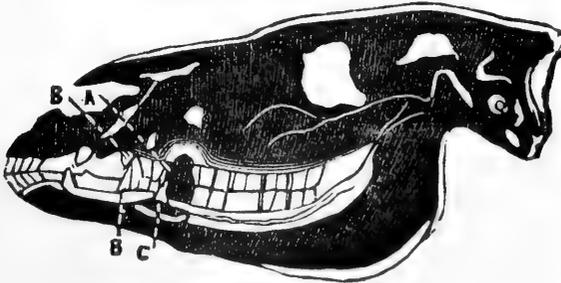


FIG. 41.

with the other molars. The second tooth from the front of the under jaw, having worn the second tooth of the upper jaw below the level of the other molars, has left a sharp edge on the outside of the other tooth of the upper jaw, whereby a raw sore is cut on the inside of the cheek, and the animal is suffering acute pain without the least knowledge of the owner. The symptoms are quidding, or partially chewing the food, especially hay or grass, and soft food or oats are swallowed whole. Fermentation and consequent colic is one of the evils attendant upon partially masticated food. Whenever the hay or bulky food is dropped from the mouth the teeth ought to be examined at once, and no examination previous to purchase is complete without looking in the mouth to see if incisors and molars are in a regular and healthy condition. If a horse has an offensive smelling breath, see the molars. If he holds his head to one side when the bit is put in his mouth, and when driving, see the molars. If at any time blood is seen on the manger or the tongue, look at the molars, and if an examination reveals sharp enamel edges, get the tooth rasp and dress the teeth immediately. Rotten teeth may produce some of the symptoms I have described. The gums are red and inflamed, abscess may have formed, and unless the teeth are immediately extracted, the diseased fangs will ultimately bring in disease of the jaw, such as caries, and keep the horse slobbering large quantities of frothy, stringy mucus, every time he feeds; there will be a continual slopping of the food into the mouth, and all over the feed box or manger. A case of diseased teeth once came under our observation, where the horse was considered to be

suffering from nasal gleet, and even pronounced glanders. We have used our forceps in several cases where a rotten tooth, when removed, gave the horse immediate relief, and he went to eating with great freedom. The treatment, therefore, is to draw out all diseased teeth, but prominent or sharp edges ought to be reduced level and smooth by the rasp. There are occasionally very singular conditions of the teeth of horses, and one of the most common is the persistence of the jaw of some of the temporary incisors. This arises from the latter having been pressed upon by the advancing colt teeth. We have known a horse with twelve incisors in the lower jaw, though most frequently the peculiarity only amounts to the presence of one or two extra teeth. In herbivora, the incisor teeth vary in importance and are absent in the upper jaw of the ruminant, their place being occupied by the fibro-elastic pad. In the horse there are two pairs of tushes, and we observe twelve large, broad, pillar-shaped molars, in the upper and lower jaw. In the front of the molars there are occasionally small rudimentary teeth called wolf teeth, because they represent in appearance tushes like the carnivora. Various superstitions are connected with these accidental and harmless teeth. It is believed that they cause blindness and require removal. When in front of the first molar at B B, no injury occurs from their presence, but between the first and second molar their presence is injurious and painful to the horse, as seen by the redness of the gum at C, but properly speaking are not wolf teeth, and ought to be extracted as abnormal dentition. Those in front will lose their hold and drop out. But besides the teeth between the

molars (which is a rare case), not one in a thousand require extraction for the purpose of saving the eyes, a is believed by many. Let the reader forever discard the idea that wolf teeth are injurious to health, and will causes total blindness.

#### THE EFFECT OF TIGHT REINING UPON THE TRACHEA OR WINDPIPE.

The many beautiful points of the horse, and his physiology deserve much greater attention than has been hitherto paid to them. We have always been an enemy to the abuse of the horse, either through fashion or custom, and have frequently demonstrated many of the evils connected with reining, to which we mean to refer in the following: Fig. 42 represents the cruel and wicked practice of reining the head up so tight as not only to interfere with the breathing, but to cause suffering and distress by bringing on contraction and disease of the rings of the trachea, for no other reason than to make the horse look stylish and carry a good head, which in our opinion only disfigures and worries the animal. The drawing of the head so close into



FIG. 42.

the breast extends the muscles of the neck and contracts the muscles of the throat, so that breathing and

deglutition are seriously interfered with. The thyroid cartilage is crushed into the posticus muscle, infusion, or a thickening of the windpipe, takes place, besides a contraction of the rings, as represented in figure 43.



FIG. 43.

The trachea consists of from fifty to fifty-two cartilaginous rings, the structure of which is admirably adapted to effect every purpose for which it is intended, each ring possessing sufficient thickness and strength to resist ordinary pressure, and each constituting a joint with the one above and below, and, therefore, admitting of all the flexibility that is required. These rings are connected by an interposed fibro-ligamentous substance, extensible, elastic, and yet so strong that it is

scarcely possible to rupture it; and the fibers of that ligament not running vertically from one to another, and, therefore, admitting of little more than the rotation of the head, composed of layers adapted in themselves to every variety of motion. These rings are represented in Fig. 43, are thickest in front, and project circularly, composing an arch-like form. There, too, the ligament is widest, in order to admit of the greatest motion in which it is most needed when the head is elevated or depressed. Laterally these rings are thinner, because they are to a greater degree protected by stronger muscles, and do not interfere with the motion of the tube but give firmness to it. The cut of the trachea represents the contraction of several rings, causing a defect in inspiration and respiration. A, thyroid; B, arytenoideus muscle, paralyzed and partially absorbed by the constant use of the bearing-rein; C, the crico-arytenoidens posticus muscle, rendered pallid and deprived of the power by the use of the bearing-rein. If we were to draw a straight line from B to the right side of the under ring, represented, and tighten this line so as to press the rings D D together, we have the same contraction and deformity brought on by the cruelty of tight reining, especially the bearing-rein. When the animal is in active exertion, running, trotting, or drawing a load, any interference with the windpipe or bronchial tubes is certainly against his comfort in performing the duty imposed upon him. In the natural state of the wind-pipe, this pressure, either by the drawing of the bearing-rein into the neck and throat, or a tight, ill-fitting collar, or any other brutal contrivance, is dangerous and deleterious to the action, ease, and com-

fort of the horse, and we expect ere long to see neither bearing rein nor overcheck used in driving a work horse. At D, in the cut, the difficulty is seen by the pressure of the muscles, and the distress is shown by the expansion of the nasal organs. We see it in the high stepper, and the fancy high-headed carriage-horse, and many of the diseases so common to that class are wholly to be attributed to the inhuman treatment of high-checking. We favor the fashion when it accords with humanity and good sense, but firmly oppose it when it results in pain, distress, discomfort, and debility, especially to the lower animals.

The first figure illustrates a fashion creeping in upon our horse owners that brings with it only evil. It is the latest mode of torture for that useful but mis-used animal, the horse. They say it looks stylish, makes the horse carry a good head, etc., but they give no thought to the pain and discomfort it causes. Any horse harnessed in this style will in a short time be-

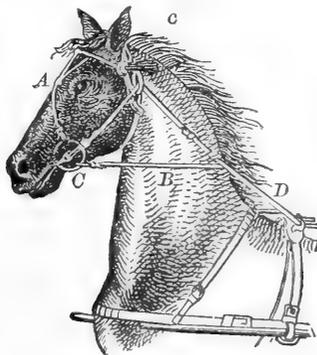


FIG. 44.

come a confirmed roarer. He will show a difficulty in breathing from the moment the straps tighten. The horse dudes look at his appearance only, and say

he is a stylish high stepper, but we say that a horse traveling half the time on his hind feet for the sole purpose of seeking relief from oppression, is no picture of pleasure to a humanitarian. Every veterinarian should set his face firmly against such practices.

The figure represents the strapping for preventing a vicious horse kicking; but if a horse can not be driven with safety without such torture, he should be used for some other purpose.

The various diseases that result from such treatment are manifested from middle life to old age; such as roaring, whistling, sneezing, broken wind and heavy horse, etc. Spasm of the larynx, often taken for megrims, staggers, and phrenitis, when the animal staggers, chokes, and falls, is never imputed to tight reining.

At Fig. 43 we illustrate the deformities of the windpipe. The trachea may be distorted in horses that have been used with a bearing-rein, and an instance of this is here figured.



FIG. 45.

Constriction of the windpipe has frequently been witnessed, and among the most curious forms of this disease we have cases in which the ends of the carti-

lages curl in and divide the passage into two narrow tubes, through which an insufficient amount of air passes and the animal dies of suffocation.

At A is shown the contraction of the thyroid cartilages : at B the arytenoideus muscles, cilated in consequence of pressure against the thyroid cartilage A ; at C the posticus muscle is thickened, caused by pressure of the muscles of the neck ; at No. 1 the second ring of the trachea is pressed within the first ring on the upper side, with an indurate growth adhering to the cervical muscles of the neck, which interferes greatly

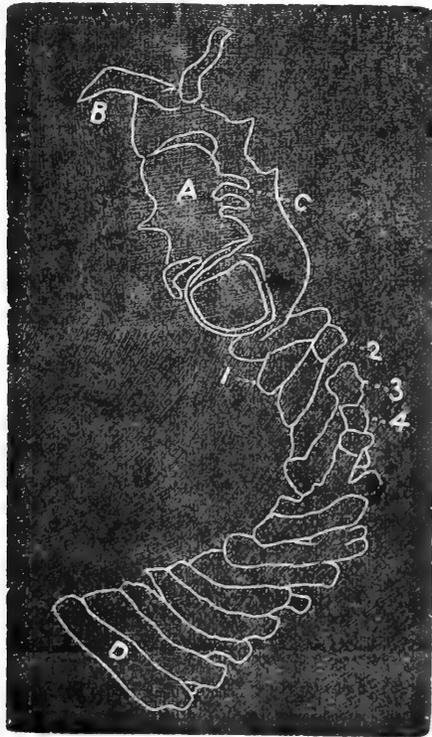


FIG. 46.

with inspiration and expiration ; at 2, 3, 4 separation by the scalpel showed the tumors adhering to the verte-

bræ the contraction of the sixth ring, and morbid choking from the tumors caused this animal to be a confirmed roarer.

Knowing the horse in life, we had the pleasure of examining the case, after he was made a present to us, for the purpose of giving a correct report to the rich owner. We found the trachæ in the same state when dissected as represented in the cut. We kept it dried and varnished for many years.

The treatment for roaring is of a most palliative description: a pad carefully adapted over the false nostrils, or by having a tube inserted in the trachæ. But why all this when it can be avoided by proper treatment? The reason the pad is used is to dilate the nares, so that no more air can be forced upon the contracted rings of the trachæ, and the trumpet action is prevented, of a wide mouth and a narrow passage, which gives off the sound of wheezing.

We hope we have created an inquiry into the evils we have tried to describe plainly, and that we may be the means of preventing to some extent this, as well as the many other abuses the horse is subject to more than any other animal under control of man. We have so far illustrated and exposed the result of tight reining and injury to the windpipe.

We now show the result from another cause. It is understood that these defects are not hereditary naturally but the young animal being perfect in every respect, men to gain a particular point in the breaking or education of the colt, have tortured and employed by what they call good training. Fig. 45 shows another evil result of this kind of usage.

The staring eyes and expanded nostrils indicate the suffering endured by the unnatural appliance. The injury is seen by the laceration of the tongue, whose sensitive organs of pretension are chiefly composed of muscular tissue, among which fat and glanular structure are interspersed, and the whole covered by integument of the mucous membrane. The tongue, as represented, came under our notice in our practice. We found it lacerated, and nearly severed by tight reining and sawing the bit in the mouth, on the plea that the horse had a hard mouth, or was a hard puller. It must be remembered that the tongue of the horse cannot sink so far below the jaw as to be free of the bit; nor can it become so thin that the intermaxillary space between the under jaws will allow the bit to rest only on the jaws so as to protect the tongue from injury. The tongue has intrinsic and extrinsic muscles. The intrinsic are especially destined for the local movements of the organ, and in every particular favorable to the movements of the food within the mouth. The extrinsic are connected with the tongue bone or os hyoides, and chin, and favor the protrusion and retraction of the tongue, in the prehension of liquids as well as solids. The membrane covering the tongue is provided with eminences or papillæ, destined to increase its surface for the production of the protecting scaly epithelium. It is well known that the tongue is one of the most sensitive organs of touch, from its delicate, sensitive nature; therefore measures the most human are required in the bit within the mouth. We need not allude further to the cruel practice referred to. The illustration explains itself.

When any part of the animal so sensitive as the tongue is so treated, it should lead us to ask of any contrivance to be used—is it human? The rule we should adopt is that if treated artificially, animals must be managed according to their habits of life, unless we wish to destroy them.

Among the most unsuspected of all defects is worms in the eye of the horse. Many of the readers may have no knowledge or never heard of such a result. And we are sorry to say that few veterinarians have ever been called to treat a case. We never had the pleasure of seeing a worm free from cyst in the corner of the eye of the horse, when alive, but only when dissected, after death. The only known species found in the eye of the horse is the *Filaria Papillosa*, which resembles in appearance the *Filaria Verminosa*, found in the air passages of young animals. All the genus of *Filaria* entozoa are to be found in the most obscure and most delicate structures, the most dangerous to be tampered with, and worst to reach with medicines for their destruction without injury to animal life. Gamgee, the best living authority on entozoa, says that *Filaria*, or threadworm, is to be found in the lachrymal glands, which means the tear-secreting gland below the eye, and between eyelids and eyeballs. The *Papillosa*, or warty threadworm, is found beneath the pleura and peritonæum, in the horse, ass, and mule, in the crystalline lens and interior chamber of the eye, and is rarely suspected during life. It was known in the early history of veterinary science. Blain, in his work, refers to it. Hertwig notices it. Spinola, Mayhew, Kohne, Lullin, Gerike, Newieres, Fromage, De Tengre, Kuch-

enmeister, the greatest German investigators that ever lived, all affirm the finding of the Papillosa after death. No one, however experienced, can puncture the eye without injury. It has never been done, either in England, France, Germany, or Austria. No one has ever found it in a free state, but always encysted, when in possession of the cornea of the eye of the horse. It has always been understood as cataract, and will be seen in the eye of the horse as an opaque spot. The eye itself consists of three transparent humors—the aqueous in front, the crystalline lens in the center, and the vitreous humor behind. The first is a perfectly transparent and limpid fluid, secreted by the lining of the chamber in which it lies. The second has the consistency of hard jelly, and arranged in concentric layers. The third is a vitreous limpid aqueous humor. Here is where the papillosa is found, and the opacity that often pervades the eye is first seen by the owner. It often happens, while the horse is young, that this disturbance only causes a defect of sight upward, and the horse can see objects on the ground, while it is the cause of inveterate shying when the fore part of the eye is affected. It has been often taken for injury, ophthalmia, and inflammation, treated as in the case we allude to, with lotions, consisting of sulphate of zinc, plumbi acid, belladonna, and other eye washes, besides an active blister below and behind the eye. Zoological writers say that the papillosa finds its way into the eye by the lachrymal apparatus, situated beneath the outer wall of the orbit, and, as we have said, secretes the tears that wash the junction clear of any foreign substance. We have seen no reason to approve that

theory, but claim it an unsolved problem. Rather would we believe that the same species finds its way into the air-passages of the chicken, picked up when coughed from another, and instead of traveling to the crop, rests by the way, adhering to the tonsils, and then traveling direct to the windpipe. The same with sheep or lambs. Therefore, treatment in such a case is unavailing, so far as our experience goes; that is where we are lost when we find the retina, or expansion of the optic nerve of the eye, disorganized by disease. This is the trouble in so many cases that leads to shying, and is perfectly incurable. The natural color of the horse's eye is generally brown, except in some cases of the piebald, where the mooneye is so often seen.

#### RUPTURE OF THE DIAPHRAGM; OR, HERNIA OF THE TRANSVERSE MUSCULAR SEPTUM, WHICH SEPARATES THE THORAX FROM THE ABDOMEN.

Were a horse like man, walking in an upright position, such a defect would be of rare occurrence, but the trunk may be said to rest on four pillars, and in that space are contained all the vital functions of life. In the thorax are contained the most vital—the heart and lungs; in the abdominal, the liver, stomach, and intestines; between the two is the diaphragm through which the œsophagus, or musculo-menbranous canal, passes, extending from the lower part of the pharynx to the superior orifice of the stomach. At that part where the muscular septum is thinnest, and from excessive exertion, such as hard pulling after the stomach has been distended with bulky food, pressure will tear the thin fibrous coat, causing the omentum to protrude

into the space occupied by the heart and lungs, causing a difficult sensation and difficulty of breathing. If the horse is young, in a great many cases he gets over it, in a manner, and at the time it is considered an ordinary case of colic, showing all symptoms by its spasmodic effect. From that time onward, in the life of the horse, he is a confirmed subject of heaves, suffering after very full feed, especially at work, the greatest difficulty of inspiration; the nares extended, the expression of the eyes with every pang depicted, and laving flanks, all indicate it. We have often advised in practice, after a case of spasms, from whatever cause, to feed strained or cooked food, so as to remove any object in the way, such as dust balls, that are occasionally found in the stomach of the horse. These have their origin from a nucleus, such as a piece of nail or wire, that may have been swallowed in the oats. Millers' and feed store horses are most subject to dust balls, caused by feeding sweepings of the floors. At no time ought a horse that is the least inclined to be short winded be overfed, or have a large quantity of water to drink. It is wisdom to feed such a horse four times a day, and give but little water at a time, as a horse once affected is subject to a return of flatulent colic, which will most assuredly end in enteritis. But the great risk is the infusion caused by hernia of the diaphragm; being adherent of the lungs, pleurisy is set in, and (as in all such cases), is never known until it is too late. Large feeds of wet grass, corn or corn meal, will cause the greatest distress, and ought, at all times, to be guarded against. The existence of such a trouble is to be found in many more horses than we are aware of,

and is commonly the cause of lingering and hidden disease, terminating in death, without our knowledge of its nature. The only way we have of ascertaining that the diaphragm is involved, is by the husky cough peculiar to the irritation or pressure of the stomach on the lungs, with the defect in inspiration.

#### ACARI AND ENTOZOA OF OUR DOMESTIC ANIMALS.

Acari, or the insects that infest the skin of our domestic animals, are ticks, or lice, generally the result of filth and bad treatment, and are generally believed to be the cause of disease in our domestic animals. It is true, however, that they are the true agents of debility and the propagation of disease, as we have seen. As an instance, an animal affected with mange or scab will give the disease to all animals that come in contact with it.

The majority of skin diseases, particularly in the horse, are due to the expression of some form of eczema. Eczema as defined by early writers was believed to be a form of minute vesicles or eruptions, causing an erythematous state of the skin, with heat, tingling, and itching, soon followed by the formation of vesicles, or watery pustules. Modern science and investigation with the microscope and other appliances have fully attested the belief that acari were the cause of the most of the skin diseases of animal life. As an instance, grease heel, according to Professor Herring, is caused by the presence of *sarcoptes hippopodus*, as shown in the illustration.

Herring says of it that its body is twice as long as broad, beset all over with hairs like satin, with eight

feet, and each of them has a sucking disc at the end and two small hairs on each joint, etc. The presence of this parasite in chronic grease is accidental. And other diseases, such as canker, mallanders, and sallanders, are apt to be complicated with a mange caused by this parasite; but Gerlach, according to Prof. John Gamgee, designates this, epizoo symbiotes equi, and says that the disease induced by it may be called foot mange, scratches, or grapey greased heels, and in neglected cases becomes transformed into a low form of fibrous tissue and swelling of the legs, and in some cases the legs of the horse become enormously swollen from this cause.

The causes of grease are both intrinsic and extrinsic. Of the intrinsic and predisposing cause we mention *breed*. Grease is most common with hairy-legged cart horses, with big broad feet and light washy bodies. Some are of opinion that white legs are peculiarly liable to this disease; but a careful and impartial investigation of the matter has led me to conclude that this idea involves a popular fallacy. The exciting causes of grease are, improper food, neglect, filth, and allowing the horse to stand with the feet and legs wet, and frost hanging to the hair after he has been put in the stable for the night. Chronic eczema, when expressed by an eruption other than that of grease, requires a specialty of treatment applicable to itself. The cure or treatment I do not intend to enter upon, as it is not my intention in the present series of articles. Besides the hippopodus are the sarcoptes that burrow in the skin: dermatodectes, that simply bite and hold on to the skin, and symbiotes, living together in large numbers,

and piercing no further than the epidermis in search of food.

The experiments of Herring, Hertwig, Gamgee, and others have proved that the mange insect may be transferred from the lower animals to man; that they bore the human skin, erect galleries in it, and cause itch-like eruption. All, however, are agreed that they do not procreate in the human skin; that although those in attendance on mangy horses may suffer from the disease, they do so only slightly, and but for a limited period.

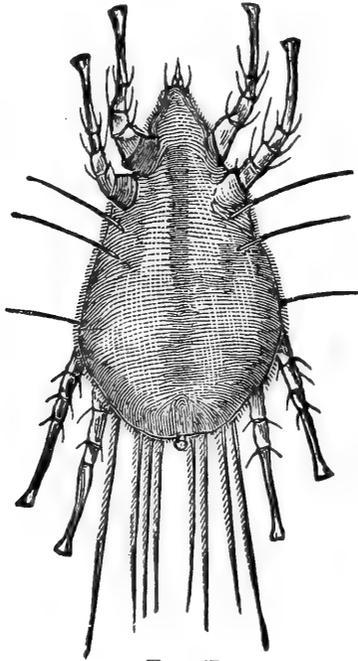


FIG. 47.

## SARCOPTES HIPPOPODUS.

One form of lousiness in the horse deserves special mention—Phthiriasis, or poultry lousiness. Its commencement is instantaneous. The horse is seized with

violent itching; so sudden and irresistible is the desire the animal possesses to rub his skin against every resisting body near him, that he stamps and bites every place he can reach with his mouth, manifesting by his continual movements the burning itching by which he is devoured. At night his torments increase, so much so that he tears his skin and carries portions away in his mouth, and denuding himself of hair and skin, suffering unsupportable torment. *Acarida magna* (or ticks) is another and a more general annoyance to the domestic animals. They are found on the skin of horses, and they attach themselves so firmly and deeply to the skin that it is impossible to remove them without tearing away the skin or leaving their heads imbedded, and they multiply so rapidly in hot climates that animals have been known to die of exhaustion. The most common of acari in the horse is the bot or gad fly, the embryo of which is seen adhering to the hair of the fore quarters and legs of the horse, especially in the month of August and in the fall. The eggs are deposited on the hair, the horse licks them off, and they are swallowed into the stomach, where they develop and adhere to the mucous membrane of the stomach and bowels. It is very often that their presence is attended with fatal consequences. They sometimes riddle the muscular tissues of the intestines, the animal being thrown into great suffering, appearing like an attack of colic. Acari of every description are the forerunners of debility and poor blood, in all animals, and ought to have immediate attention, should symptoms show themselves, but in some cases are not easily detected, except by the eye of experience.

## ACARI AND ENTOZOA.

## ROT IN SHEEP.

The frequent occurrence, insidious progress, and great fatality of the "rot," places it at the head of the most serious affections to which sheep are liable, in the lowlands of Scotland, fens of England, and on the continents of Europe and America. The fluke, or distoma hepaticum, is the dread agent in this disease, causing great loss in sheep, and, indeed, in other farm stock. The present season is favorable for the work of this malady, and every sheep-owner would do well to study its character, cure, and prevention.

Rot is one of the oldest diseases with which we are acquainted. The earliest writers make mention of it. It belongs to no particular country, and no part of the globe is exempt from its ravages. A fact of this kind is of much importance, because it disproves the theory that the disease owes its origin to deleterious grasses,

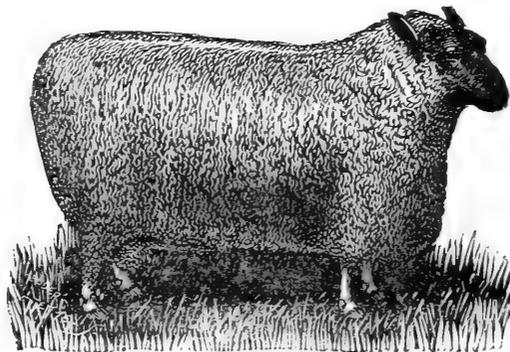


FIG. 48.

such as the carnation grass, etc. This grass, like others similarly regarded, grows only in wet and undrained

localities, and its existence is but an indication of dangerous pasturage from other causes. The supposed deleterious grasses do not grow in all the countries subject to rot, plants of a particular kind being limited in their distribution. Wherever the disease prevails the mortality is great, in the Eastern or Western Hemisphere. In Germany it has destroyed thousands, and in the north of France the flocks are frequently swept away by it. Youatt tells us that in the winter of 1809 scarcely a merino in France escaped. It is destructive as far north as Norway, and in the most southern provinces of Spain. It has thinned many a flock in South America and Van Diemen's land, and in Australia it has occasionally been as destructive as on the worst undrained land in England. The veterinarian, many years ago, stated that it appeared every year in Egypt. It commences about the end of July; near Cairo, in August; near the Capital in October and November; and in the Delta in December, January, and February. It is most obstinate and continues longest near the confluence of rivers and streams. In lower Egypt it lasts about one hundred and twenty days. Its ravages are less when the rise of the Nile is not so great. The Arabs say that 16,000 sheep are annually destroyed in Egypt, and that death usually ensues between the twenty-fifth and fortieth days after the attack. In this country, I will say, in brief, that undrained pastures, wherein are swamps, swales and stagnant pools, even when dried up, as we have experienced in some summers, are hotbeds of propagation of the liver fluke, or distoma hepaticum, illustrated. I neglected to state that the view shown was an abdominal one and en.

larged. The prevailing rains of October spread the embryo and carry it within reach of healthy flocks. Wherever fluke exists it is safe at all times, but more especially in the fall, to feed bran, oats, salt, and one-fourth ounce of sulphate of iron, mixed, to each full-grown sheep. Pound the sulphate of iron till it becomes fine as flour, mix with a little flour of sulphur, and finally mix with the oats and bran. I have prescribed this for sheep, and every time with great success, even when the cornea had become yellow. In every case the sheep should be driven to the highest pastures. Hydatides, as well as fluke worms, are almost always attendants on rot. The former have puzzled the learned and unlearned for many years, and erroneous views have been disseminated by writers having little practical knowledge of the subject. Some writers describe the disease as being essentially inflammation of the liver; others regard it as a general dropsy, associated with chronic disease of the liver and impure blood; and one author, a surgeon, contends that it is tuberculous disorder of the lungs. He says the lungs are the principal and primary seat of the disease. This has no foundation in fact. Sheep are not subject to deposition in the lungs of the aplastic material, which has proved so destructive to the human race. The small, hard lumps, holding calcareous matter, mistaken by this author for tubercles, are the product of the *filaria bronchialis*, which, in the early stages of formation, present a pus-like appearance. A male parent worm, having served the chief purpose of its life, will be seen coiled up itself. It is about to die and become entombed in calcareous matter. Similar changes are

believed to take place with the female, but these, from their great size and number, produce correspondingly greater results, giving a flesh-like appearance to the lungs, here and there. Myriads of ova and young filaria will be found in these places, and by irritation they produce the changed lung structure in which they dwell. These are the revelations of the microscope, showing one form of entozoal disease to which sheep are especially subject. One of the earliest accounts we have of this disease was in 1735. One man lost two flocks, 300 head, another delayed too long in marketing a large flock, and sold them at sixpence per head, all he could get. This rot came on so rapidly, and was so severe and general that thousands of sheep were not worth offering for sale. It was the most general of any recorded, as it attacked deer, sheep, hares and rabbits that fed on the land where rain water was retained on or near the surface for any length of time, and dead bodies of rotted sheep were so numerous as to be a nuisance. A serious visitation occurred also in 1747, the result of a wet spring succeeding a very mild winter. Rain began to fall in May, and continued through June to July, and a midsummer rot ensued. The year 1766 witnessed another and far more serious outbreak. A very rainy season is bad for sheep, as was experienced all over England and Scotland during that summer, when whole flocks died of rot. Other outbreaks are recorded in 1792, 1809-10, and at frequent subsequent dates. In 1810 Mr. Fairbairn, Berwickshire, Scotland, lost eight hundred out of a flock of two thousand. The year of 1816 was a very wet one, but a low temperature prevailed, and not a sheep took the

rot. All that part of the country at that time was undrained and growing in heath, on which the cheviot and black-faced, horned sheep thrive so well. On the irrigated meadows near large cities, which are covered periodically with city sewerage, every sheep that pastured for some time would contract rot, and young cattle also. Enough has been said to show the cause and fatality of the rot, and that in every case it occurred in wet seasons. The time is near when agriculturists will be convinced of the necessity of draining all low and wet sheep pastures, to prevent this trouble. Sheep should also be watched closely as to their movements and color of their eyes. Weakness and debility are the forerunners of rot, to the eye of the experienced stockman. Let readers take due precautions, and give the remedy prescribed, as a safeguard against the inroads of this disease, the coming season.

#### FOOT-ROT IN SHEEP.

Wherever the conditions of moisture and grit exist on the same lands, foot-rot may be expected to be rife. Whether the land be light or heavy seems to matter but little. The stiffest undrained clays and the lightest of undrained sandy soils are equally active in the production of the disease, which is tolerably general in its distribution. It is usually admitted that foot-rot is unknown where the soil is efficiently drained. It is certainly well known on soils which are so porous that the idea of drainage is scouted on the plea that the land is never wet enough, although we have had the satisfaction of hearing these owners admit that in the driest seasons on such soils the disease is less prevalent. The

rapid extension of foot-rot among the flock is easily explained when all are exposed to the same influence. If there is sufficient wet to soften the horn and dilate the canals it is only necessary, further, for gritty particles to be present to complete the requisite conditions for the production of the effects. All the evidence obtained by investigation tends to prove that foot-rot only spreads under the influence of causes which act mechanically upon the structures, and are in no way connected with the development of a specific virus.

I need not discuss the importance of perfect drainage, but looking at the affection independently and the causes which give rise to it, the question occurs, can any remedies be applied to ameliorate or cure it while

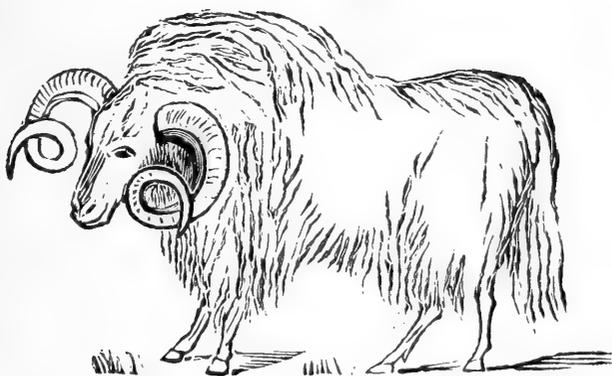


FIG. 49.

these causes remain? Experience decides in the affirmative. Indeed, so little difficulty attends the treatment that every flockmaster has an infallible remedy, which certainly often succeeds in curing the affection about as fast as it is produced, so that an average number of cases will always require attention. This may be considered as a normal state of affairs on

lands which give foot-rot. The routine is perfectly simple. Each sheep that indicates by his lameness the necessity for treatment is caught, and the detached or decayed loose horn of the foot pared off with a sharp knife; sometimes the entire hoof requires to be pared away, and every exposed surface made clean. Our first effort is to arrest the development of the malady or to prevent its occurrence, by any means which can be devised to render the feet less susceptible to the action of the deleterious influence to which they are of necessity exposed in certain localities. This is of more importance than the treatment of the disease in its worst forms. By occasional examination of sheep among which foot-rot is prevalent, the first symptoms will be detected and a check put to the further spread of the disease. It is too late whenever the sheep tell their own sad story by creeping on their knees, to keep in existence, and present only a mass of skin, bone, and clotted wool. Foot-rot is such a distressing disease and throws sheep so quickly out of condition that it is better to leave unhealthy pastures unstocked for a few months rather than run any risk. The disease yields readily to proper and thorough treatment. Every part of the diseased structure must be cut away. If possible, then, drive the sheep through a gravelly stream of water, and then apply the Royal Solution for a large flock. But a small flock can be more easily dealt with by examining every foot, and using the solution once is enough for recent or mild cases. In its most malignant form butter of antimony, mixed with an equal amount of compound tincture of myrrh, is effectual. This is an active caustic and must be used with care, applying it

with a sponge. Prof. Williams recommends this above all other remedies. Compound Hoof Ointment, advertised in this work, is the best remedy I have seen used. If a sheep is seen to be lame, catch it, cut off all loose and diseased horn, and apply the ointment, with a piece of cotton batting stuffed between the digits, and tie a piece of canvas or sheepskin over the foot. Keep in a clean place for a few days. I have seen sheep that went on their knees for one week or more, rise up and travel almost as well after being treated with this ointment as though nothing was the matter. To prevent foot-rot, Scotch shepherds sometimes use a solution of arsenic two lbs., washing soda two lbs., and water, ten gallons. This boiled slowly down to eight gallons, and the hoofs sponged with it, after cleaning them off, or place the solution in a shallow trough and drive the sheep through it. It is claimed that foot-rot is unknown in flocks where this is used occasionally. Various names, which are more or less expressive of certain conditional states of the system, are used in different localities to designate this affection. The one which is more generally applied is that which we have preferred to use in the articles, namely, "rot." It is not difficult to see that this term has its origin in the evident unsound state of the animal during life, and, in fact, of the body undergoing quick putrefaction after death. Rot, however, like the majority of names employed, both in this country and Europe, fails to convey a sufficient exact knowledge of the pathology of the malady. It is by no means easy to find a term which will do this, and which, at the same time, is also a suitable one for adoption by the stock

breeder in general. The German term, Egelseuche, is certainly far more expressive than many others; but even this does not admit of a better translation than the fluke disorder or infection. French veterinary surgeons usually designate the disease cachexie aqueuse, which points to the dropsical condition of the organism of the animal in an advanced stage of the malady, referable to a bad state of the body. By the common people of France it is called pourriture, or rotteness, and other terms nearly allied to this are also similarly employed. In the western part of England, and particularly in Somersetshire the disease is known as bane, the probable origin of the name being the baneful or injurious effects which attend its progress. In Dorsetshire, Devonshire, and Cornwall it is called covathe or coade, which is derived from the Welsh term, cothe, meaning a sickly or fainting condition. The word coathe, in Norfolkshire, is expressive of a person in a fainting, sickly, poor condition, therefore, the above term is in common use to imply that the sheep is incapable of exertion. It may be quite in place for me to remark that there are several diseases affecting sheep which pass by the common term, Rot, a fact that explains why various opinions are entertained with regard to the disease by different authors. We occasionally hear or read of such terms as water rot and fluke rot, which would induce a belief that in one variety of the disease a dropsical condition of the body existed, and in the other certain entozoa, commonly designated flukes, are located in a particular part of the organism. I desire to confine myself to the word rot, although we call it braxy in Scotland. My next article will give the treat-

ment of rot under their local names, in Egypt, Circassia and borders of the Black Sea, Germany, France, Spain, England, and Scotland.

#### FOOT-ROT.

The foot-rot in sheep commences between the claws of the hoof, where it causes irritation, heat, and usually from the first, slight lameness. There is a very pungent, acrid, and offensive stench present. This is one of the surest tests by which those acquainted with the disease judge of its presence. It gradually works its way round under the hoof until it is loosened, and the whole hoof is a mass of offensive disease; and often, where it has been permitted to run for any length of time, a number of flocks may be seen feeding upon their knees. Usually, at that stage, the foot becomes fly-blown, and often a large number of maggots may be taken from the foot. Of course this is very painful to the victim, and rapidly reduces the flesh and strength of the sheep; but being confined in its immediate work to the locality of the foot, it is surprising how long the poor victim will endure the strain; and it sometimes may recover without curative aid being applied. With such a disease, the treatment must be heroic, and very thorough. The whole flock—every foot even in the flock—must be examined. All must be trimmed carefully, and from every diseased foot the hoof carefully cut away, just as far as the disease has spread under it, even if the whole has to be cut entirely from the foot. To every foot, whole or diseased, must be faithfully and carefully applied, with a swab, gargoline, that has never failed to cure.

## FOUL FEET.

I have a cow that has sore feet. There is matter between the hoofs and swelled over the top of the hoofs. She does not care to stand and lies most all the time. What can we do to cure her? Her feet are awful hot.

Wash the feet well with hot alum water and a little carbolic acid, mixed, several times a day, and then keep the feet clean and dressed with hoof ointment.

## SOILING.

Soiling cattle is one of the most satisfactory engagements that a dairy farmer can practice. In localities where cheese making is carried on the cows begin to drop their calves at a season of the year just suited to supply the cheese factory or creamery. All goes well with a full supply of milk till the pasture begins to fail, when the supply fails as well. In order to prevent a shortening of the supply of milk soiling is and has been found the most profitable policy to pursue, as at that time the cows have hard work to get a living. What with cropping short innutritious dry grass and fighting flies the living profit of the farmer is cut short by a reduction of the milk supply. How can it be possible for a cow to keep up the supply of milk standing in the shade tormented with flies, or in a quagmire of mud knee deep, when very little expense would have them comfortably housed in the barn, chewing their cud, and, instead of suffering, enjoying ease and comfort. Cattle that are brought into the barn at 10 a. m., fed green food once or twice between 10 a. m. and 4 p. m., keep up their milk supply all the season, and, instead

of having a herd in September and October that are not paying for their keep, they are just as flush of milk as if they were two months calved. A farmer having prepared a piece of ground in the early fall, sowed with winter rye, can have the best of soiling feed to feed early, so as to save his pasture when it is most needed. During the heated term cows turned out after having been kept in the barn, cool with plenty of free air for six or seven hours, and all milked clean before turned out at five p. m., after the heat of the sun is over, are fresh, and get to work right away to feeding, and lying out all night, when taken up in the morning, give two full meals of milk of a superior quality than if it came from fevered cattle, as we generally have it. Milk from a cow that is kept in the barn during the day and fed, free from the sun's scorching rays, is better milk, richer in cream, more of it, and will keep longer in good condition. I think I hear some one say that will never pay. I say try it and be convinced. The ground that was sown in the fall might be sown to clover at the time, or just when the March frosts are heaving the surface, and that same ground might produce two good cuttings of rye, and in the fall a cutting of clover. But in order to keep up the supply of soiling food in May, a few acres of millet, mixed with barley, might be sown. To keep up the supply at the end of August, when our pastures are generally run out, plenty green food, such as the aforesaid, is the life of stock and profit to the farmer. What is the use of any man following a business that does not pay him? What pleasure has a farmer in seeing his cattle starving when he has it in his power to feed them?

Millet, producing tons to the acre, I think is superior to sowed corn, as the seed, when in the milk, is one of the most valuable feeding materials that can be produced on the farm, either for milk cows, feeding steers, calves, sheep, or horses. Hogs are very fond of it, and sheep will eat it in preference to any other kind of food, as I have tried it in all cases. Ten acres of rich ground is enough to supply twenty cows all the season with soiling food, as I have mentioned. In the fall the cows are in good condition to go into winter quarters, and are more easily kept in good condition than if they were turned into winter quarters, skin and bone, and dried up by force of circumstances. Any of the cows that may not be wanted to keep over can be fed a little grain, and sold for beef to give a return, nearly filling their place with young stock to begin the season again with. Every farmer that will take a reasonable view of the matter will never stick and see so many difficulties in the way as prevent him from making the most of everything. A reaper may be needed to cut the green food. But that will be more than paid for the first season. A single load of soiling food will feed twenty cows easily for one day. Of all advantages, that is the best, instead of cows going dry in October, simply because the milk is not needed. They can be milked right on till within one month of calving. There is no forcing in this kind of treatment, and the extra manure that is preserved is worth all the expense to the farmer. The day is not far distant when this practice will be carried out, and the silo, the next, after the soiling is over, will carry the cows of the farm as the most remunerative kind of stock feed

that the farmer or dairyman can keep. Farmers that supply the city with milk ought not to lose a moment in following the practice. The stock would be at all times more healthy, as there is not the sudden change from green to dry food, as we have when taken from grass and put on dry hay or corn stalks. Constipation, impaction, and inflammation of the bowels would soon become a thing unknown, and, instead of slaughtering a cow because she is calving, so as to get some benefit, the herd is free of any bad result from dry feeding, and many a good cow saved to roam the green pastures to be a source of profit another season, instead of her bones lying bleaching in the woods.

#### SUMMER DISEASES OF CATTLE.

Every year, in July and August, I am requested to answer inquiries regarding peculiar diseases that I find do not take place or show themselves at any other season of the year. Among the first that is noticed comes in this form: "Dr. G. Stuart, please advise me as to my cows. They were all well a week ago, but since I changed their pasture, they have taken sore eyes. Some of them seem as if they were blind, as they do not care to open their eyes; they run water at first, and then a white scum comes over the eyes. They seem to suffer pain, as they are afraid to let them be examined. I have had my horse affected the same way before. It cannot be the hot sun, as they have plenty of shade and water. Do cattle take moon blindness like horses? What can cause the inflammation, as some of them have bloodshot eyes, as if they had been struck? It must be contagious, as first one took it, and then

another, till now they all have it. I have seen sheep and lambs have the same disease. We were advised to use a weak solution of nitrate of silver, and where the eyelids were raw and sore, we touched the raw places with the caustic in a quill. Some of the sheep went blind under that treatment. Some eminent veterinary professors believe it to be a sort of epizootic ophthalmia; I am willing to convince them by practical observation. When hunting woodcock in August my setter dogs took sore eyes. When feeding them at night I noticed them rubbing their eyes till they became red and quite bloodshot. I washed their heads clean. As the yellow pollen that had dusted our legs caused a disagreeable choking sensation, when we were walking among the ragweed in bloom, I came to the conclusion that that was the cause. Always after I noticed particularly that wherever my dogs were hunting in ragweed pollen they were less or more annoyed by the vegetable dust when in flower. \* \* \* I often had dogs brought to my office for treatment with sore eyes, red, opaque colored, and ulcerated on the edges of the eyelids, or raw and sore all round, caused by scratching the irritated part with the hind feet; I treated them in every case with soothing remedies, never using anything of a caustic nature, as far as I could help. I have had horses time and again affected the same way, and colts that were only one month old suffering from pollen irritation. This summer a company of friends had a picnic, where they cut a few nosegays of rag weed, and brought them to the city. Every one that had been enjoying themselves, rolling among the weeds till their hair and clothes were yellow,

became the subject of sore eyes.

#### RINGING A BULL.

This operation is often attended with considerable risk, both to the operator and the animal. The illustration shows the proper method of securing the bull so as to be perfectly safe. Put a strong rope around the horns, and tie to a post or beam, so as to have the head well up. Seize the under jaw, and place a half-inch rope-twitch around it, drawn firm by a half-twist, with a three-foot handle, as represented. The assistant stands close to the left side of the animal, holding firmly, so as to keep the bulkhead in position, giving the operator, who stands in front, perfect freedom. The operator seizes the front of the nose with a pair of pinchers, such as smiths use, and draws it out well. With the forefinger feel where the cartilage is, and in the edge, a little up, insert the trocar and canula, which must be within handy reach. Draw out the trocar, but leave in the canula in the wound. Let go your hold with the pinchers; take the ring which is ready, open, and place the thin end in the open end of the tube of the canula; draw the canula and ring through together; press the ring together, and put in the screw, and the work is done. We have always found a copper ring to be the best, as it is not so brittle as iron. A little tincture of myrrh, or tincture muriate of iron, will soon relieve the pain by applying it to the nose as soon as the ring is secured, and no bad result will follow.

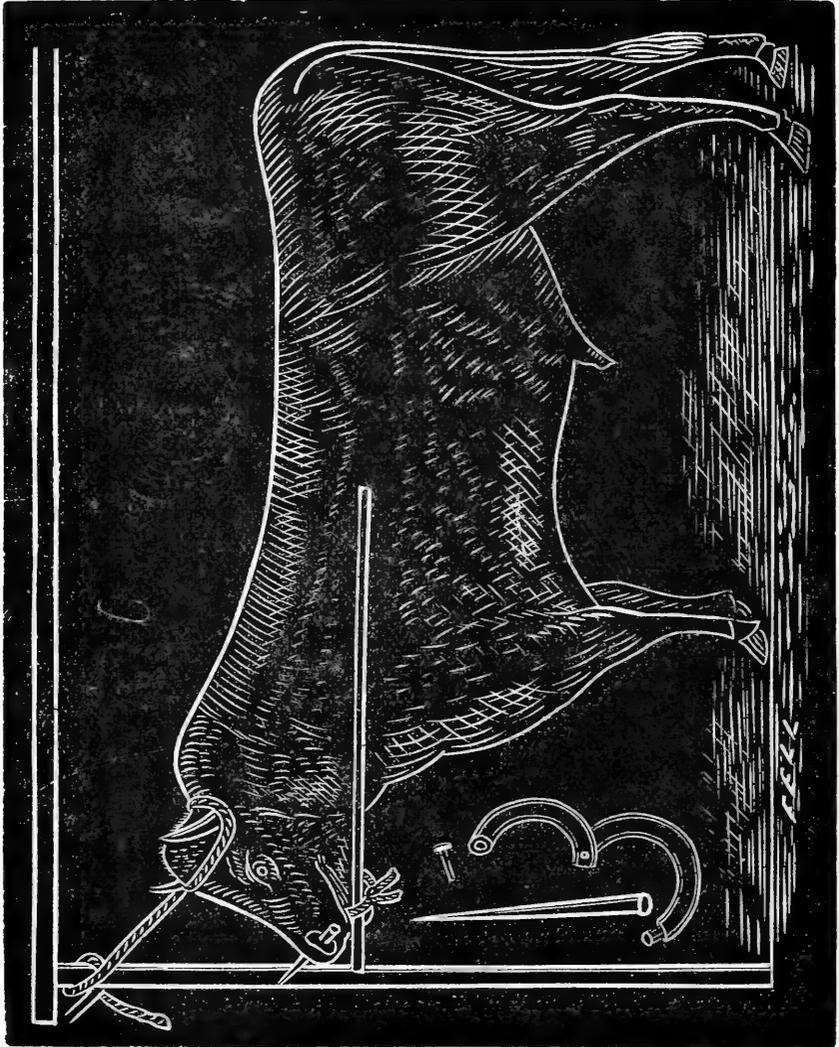


FIG. 50.

## PLEURO-PNEUMONIA

AS IT EXISTS IN GREAT BRITAIN AND HER COLONIES.

The disease called by this name is equally alarming and fatal wherever it exists, whether in the tropics or the temperate zones. It spreads with fearful rapidity, and undisturbed, would soon result in the total extinction of the bovine species. Its true name, as stated above, may not be so well understood or so applicable as the name applied in this country—the lung plague of cattle. It is understood to mean inflammation of the pleura or fine membrane that covers the lung and inside of diaphragm, or inflammation of the substance of the lungs. By different writers it is presented in three forms, varying in early and latest stages, viz.: congestion, the earliest stages; enlargement, or the acute stage; hepatization, or the advanced stage; purulent infiltration, having possession of the vital parts, filling every part and section with solid, black, fibrous matter, resembling clotted blood, rendered solid by a mixture of adhesive, waxy substance called bacilli, in solid clusters.

The incubation of disease, from the period of exposure to contagion and appearance, is variously stated by different authors at from ten days to many weeks. But the fatality is not the same to all. Some animals exposed to the contagion will not contract the disease, but resist its influence; others, again, undergo only a mild and brief indisposition, but these cattle carry the disease and infect whatever cattle they come in contact with.

No breed is more exempt than another. I knew of a cow, bought in the city of Edinburgh, Scotland, taken to a cow feeders' byre at Cannon Mills, that was afterward known to have had a slight touch of lung plague, and she infected every cow in the byre, twenty-six in number. All of them were sent straight to the slaughter house, where a number were condemned as diseased beef, unfit for human food. It fell to the lot of the writer to condemn fat cows from the same byre, that came under his jurisdiction as Cattle Inspector.

Singular as it may appear, every one of these cows died, or was slaughtered as soon as symptoms of disease appeared. Applied science has been exhausted in the endeavor to counteract the disease, in every city of Great Britain, her colonies, and the different nations of Europe, but without success. Vaccination in various forms and circumstances, has been tried and persevered in, for the purpose of checking the disease, but I have failed to find a successful report in any instance. We have inserted the virus in each side of the dewlap, between the shoulders, behind the ears, in the flank, thigh, and tail. In some cases no noticeable change occurred until the cow sickened and died; in others a hard tumor would appear at the point operated upon, the size of a hen's egg. Every one that showed the effects of the vaccine and produced a pustule, died within eighteen days. I have prepared the lymph from hepatized lungs, in the New Veterinary College, Lothian Road, Edinburgh, for the following eminent veterinarians; Professors John Gamgee, Jr.; Hon. James Law, Utica, N. Y.; Arthur Gamgee, of the Chemical Laboratory University, Edinburgh, and

Chemical Lecturer, N. V. C.; Prof. Bouley, Imperial Veterinary College, Alfort, France; and last but not least, Prof. Chauveau, of Berlin, who paid me a second visit during the prevalence of cattle plague in 1863, and in no case did we ever get a successful result, but spread the disease wherever we experimented. I accompanied Professor Dick and Strangways, of the Clyde street College, to a byre of healthy short horns at Cherry Bank, near New Haven, where the best sanitary care was in every day practice. The owner had incurred no loss on these premises from lung plague, but as a safeguard against the inroad of the disease, we vaccinated every cow in the byre. When operated on the tail it sloughs off, and in every case before the tail would heal the cow died. We introduced the disease by the vaccine matter, and every cow died, or was slaughtered in a diseased state. I got into trouble with the two last named professors, as I protested against the operation, terming it very dangerous. Prof. Law will bear me out in the assertion that no one was a welcome guest at Clyde street who was a Gamgee. It is now twenty years. I made up my mind that vaccination for lung plague would only spread the disease wherever it was practiced on calf or cow, and experience since has demonstrated the fact. The good sense and judgment of our national commission, headed by Prof. James Law, the head of all successful experimenters in Great Britain, will decide in favor of the poll-ax as an exterminator, and drawing a cordon around the infected districts, and keeping up the ninety day quarantine. We have no need now of imported cattle. Our resources far outnumber either Great Britain or Ger-

many. Should the lung plague ever find a foothold in our western herds, nothing short of annihilation would put a stop to the ravages of the disease.

#### UMBILICAL HERNIA.

The proper attention to the umbilicus of the colts and calves at the time of birth is often neglected by farmers. Such neglect is often shown by the attacks of such diseases as joint-ill, hernia, inflammation of the small intestines, and kindred ailments. Permitting a newly-born animal to lie on a wet floor, covered with straw saturated with urine, containing uric acid in its most active form, exposes the young thing to danger of ulceration, through contact of the umbilical wound with the poison before it has time to heal. Giving the proper attention at birth is, as the saying goes, half the battle in the starting of the animal in life, of health and profit. As soon as a colt or calf is dropped, the umbilicus and remnant of the cord should be washed, and some healing ointment applied. This ointment ought to be kept in every stable, barn, or byre, ready for use when needed. This application of ointment prevents any danger of inflammation, and thus often saves the life of a valuable animal. Often it is necessary to put on a compress, and in order to show how to do this properly, the accompanying illustration is given: A is the broad girth which is strapped around the animal after it has been thrown by the aid of the tackle at I, E, which is secured to cross ropes or bands, fastened to each fetlock of the animal. If there is hernia, it can be pressed back, or reduced, when the animal is thrown, and is lying quietly on his back. If the

bowels are empty, the hernia often goes back without any manipulation whatever. But, if the intestines are full, the hernia must be pressed back very slowly and carefully. When all is in proper shape, raise the hind

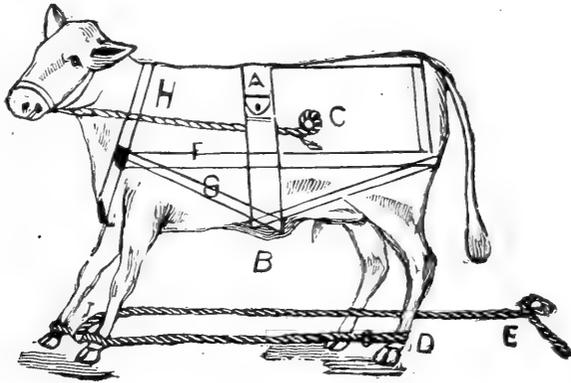


FIG. 51.

part of the animal, by lifting it several times by its hind feet, so as to spread the omentum and intestines into their proper positions. This will prevent any danger of intorsusception, or choking of the bowels. Draw the edges of the abdominal muscles as closely together as possible, then put over the wound a well-covered pad of cotton, and draw the bandage tight over it at A. Let the animal rise to its feet, and adjust the tackle straps G, so that the bandage will be held firmly in place. Remove the ropes from the feet, and all is well. In many cases no further attention is needed. This tackle, or appliance for throwing a cow, bull, or steer can be used in handling the most obstinate animal. There is less danger than in any other way, as by drawing the fore legs together, the animal is rendered incapable of resistance, and all liability to injury is obviated

Another point is that there is no extra expense for pulleys, or long ropes, as any short piece of rope that is strong enough will do.

#### EFFECT OF FOOD ON MILK, BUTTER, AND CHEESE.

The various means adopted by dairymen and cow feeders to increase the quantity of lacteal fluid is a question that ought to be studied by every one connected with the production and use of milk.

In the country, where a farmer keeps cows for butter, a certain mode of feeding is the rule, and for the special manufacture of cheese, the same. When butter and cheese are both wanted, a double demand is required of the milk, and food should be given in accordance with this demand.

With the city cow the food consists of swill collected from hotels and boarding houses. It consists of every imaginable material—digestible, indigestible, poisonous, fungoid, bacteria, bacilli, old, rotten, greasy dishcloths, soap, dead rats, etc., and kept in a sour, putrid mass. A common cry is, "Where shall I throw this?" and the answer invariably is, "In the swill barrel." I have been called to extract the neck of a glass bottle from a cow's gullet, obtained in the swill.

How on earth can kitchen slops, scraps from the table, vinegar pickles, and putrid meat make good, healthy milk? But the brewers' grains and glucose swill, undergoing fermentation and putrefaction, are the fountains from which flows the nondescript mass of our so-called pure milk. No wonder that the general complaint is, "the milk will not keep from morning till

night without becoming putrid and unfit for human food." Who can wonder at the infant mortality and the prevalence of fevers, to say nothing about the dyspeptic, tape-worm sufferers, etc., that the city furnishes?

The farmer who feeds for butter, without considering the character of the food—say grass, corn-stalks and clover, without meal or grain—does not know, perhaps, that he is not getting the full benefit of his cows' produce. He plods on day after day, taking what he can get, without thinking for his own benefit. The cow kept for butter and cheese requires food rich in caseine and fat-forming elements, such as bran, crushed corn and oats, well steamed so as to be easily assimilated, with other bulky food, oil meal, boiled potatoes, turnips, mangel wurzels. Brewers' grains and glucose are not butter or cheese producing foods, and no fermenting food is healthy for milch cows in any capacity. The crowning food of all is barley meal, bean meal, pea meal, and lentils. With these, the butter takes on that bright annotto color, having a sweet, firm, nutty taste, and both milk and butter keep their flavor and color better than when fed on any other kind of food.

Raw turnips give the milk a rancid smell, and the butter has a sort of nip to the taste. Butter or cheese made from the milk of swill-fed cows will not keep sweet or fresh many hours. The cheese becomes hollow and foetid, watery fluid fills the space; in a short time it will fall to pieces, giving off a loathsome smell, and instead of weighing sixty pounds as it did when it left the press, it will not weigh forty pounds in ten days after being placed in the drying room.

This is proof that the food must be adapted to the purpose for which the cow is wanted. It makes no difference what the breed of cows is. Any breed that will give a large flow of milk should be selected, if quantity is wanted. If quality is desired, it can be improved by feeding and good care. Milk is a highly nitrogenous and ossiferous food, as nature is first concerned in growing the frame developing blood, bone, and muscle.

An every day example can easily be given to prove that a grass-fed cow will only give one pound of butter to twenty-five of milk, when a corn meal diet will give one pound to ten of milk; and a cow fed on bean or pea meal has been known to give one pound of butter to six of milk—and milk of a superior quality is left after the cream has been taken off, with casein of the richest kind and best adapted to the manufacture of cheese. The Cheddar of the English, Old Paddock, and Yorkshire, I think, excel the Gouda of Scotland, unless the cows are fed on bean meal. Swiss cheese requires a large percentage of cream to come up to that made of milk produced from bean or pea meal. I have no hesitation in recommending beans imported from Great Britain, to feed our cows when on pasture, or a more profitable plan to soil with while the cheese factory is in operation. American cattle would then gain a point for perfection of product, unequaled in the world, and their butter and cheese would command the highest price in the markets of Europe, as well as at home.

We must keep in mind that apparent bulk of cream is no surety as to yield of butter, nor bulk of

milk a test for the yield of curd. Every cow fed on grass, clover, or cut corn-stalks either in the field or soiled in the byre, is improved in flesh, milk, butter and cheese, if fed a reasonable amount of corn meal. Especially is this true of the aroma and flavor of the products. An important point is to have an article of first-class quality, that will keep till the season when it can be sold at the highest price.

#### RAISING FARM STOCK WITH PROFIT.

In several districts of Ohio it will not pay to raise colts, as the risk and length of time before they are fit to work are against them, compared to other kinds of stock. It is cheaper to buy a horse and have a choice than to raise a colt. The production of Texas, Cherokee, and Indian beef, at so low a figure, prevents the Eastern farmer from feeding fat cattle to leave a profit; even feeding an old cow that is down in condition is a loss, but the policy to be pursued in that case is to keep the cow as long as she pays, or sell for what she will bring, or kill and sell the hide, boil up the beef to feed hogs and poultry, saving all the tallow.

A great number of the readers of this work feed and raise cattle for the supply of city dairies, and will be a little interested to have the practical views of a practical breeder. My stock consists of pure Jerseys, and my practice is to take the calf from the cow immediately after calving, away to another part of the barn, to keep the cow from fretting, and not allow the calf to suck; but milk the cow three times a day during the heavy flow of milk. My practice is to feed two calves from one cow's milk, giving

one quart to each calf, with a raw egg switched in it, three times a day for the first week. The second week I feed one quart of warm milk from the cow, and one pint of skimmed milk, with one teacup of linseed gruel added, for each calf. The third week I give two quarts of skimmed milk, one teacupful of flaxseed gruel, and one pint of oat-meal gruel to each calf, comfortably warm; and the fourth week, what skimmed milk can be spared, with a proper feed of mixed food, as stated, and as soon as possible, buy another pair of calves one week old and treat as above. But see that the new-bought calves are not constipated from being fed on new milk; if so, give one pint of molasses, half an ounce of carbonate of magnesia, in the milk, so as to cause a gentle flow of the bowels, and remove any undigested food from them. By doing so you will not be troubled with white rush, as it is called. After the second pair of calves are one month old buy another pair, and proceed as above, giving less milk and more gruel as the calves grow older. By the time a calf is six weeks old he will eat out of a feed box placed two feet high; the food—cut hay, sowed corn-stalks, with ground oats and bran mixed, all steamed and fed a little at a time, with a drink of tepid water three times a day in cold weather. Keep them in separate stalls for two months, as if they are kept together they are apt to learn the habit of sucking each others' ears, and they will keep it up after turned out to pasture.

Calves can be bought cheap at one week old in the fall, as there is no demand for them as in the spring. Whatever breed of calves is bought, if bulls, see that they are pure bred, as bulls will realize and sell quicker

than heifers, especially if Shorthorn, Hereford, Devon, Holstein or polled cattle, as the Western demand is so encouraging in price for flesh-forming cattle. Jersey or Ayrshire for home want, at six months, will realize a good cow's price. If Jersey heifers, at nine months have them served by the bull; if Ayrshires, twenty months, and others breed as soon as possible after. The cow that has brought up six or eight calves between the months of September and June the following year, will forever put a stop to the opinion that raising one's own stock does not pay; besides, I have not lost sight of the cream and butter saved from the cows, which have brought a good price during the winter months, and have augmented the bank deposit to a favorable extent.

Every farmer ought to plan to have his cows come in at the end of September, as the work of the farm is getting through, and dry up his cows about the end of June, so that no milking will interfere with the harvest operations, when every moment is so precious. By doing so, help in some cases can be dispensed with. During the winter, keep the calves warm, and in the spring, when turned out to pasture, do not turn them out if cold or wet, but see that they are well housed every night till the weather is warm, and no check to their growth will ever stint them. A summer cow is no profit to a farmer, as the butter sells at a small price, and the cows take up his time when he has no time to spare. No cow should be left out in the pasture from the beginning of June till October, fighting flies and losing flesh, but ought to be kept in the barn from 9 a. m. till 5 p. m., fed on cut clover or corn-stalks. The man-

ure made while in the barn for five months will pay well for all the trouble.

I have pointed out the above practical facts in no haphazard, theoretical way, but from practical experience, and every farmer following the plan will be rewarded with the following results: First, by having better stock; second, by making butter of the finest quality, and instead of selling at 10 cents in summer, with double labor, will get 35 cents in winter, with half the work; third, have more and better manure; milch cows do not require so much exercise, as they get fatigued, and thereby the flow of milk lessens; fourth, the labor of harvest is greatly lessened by having the cows come in after the heavy outdoor work is over.

#### ECONOMY IN FEEDING FARM STOCK.

When the season has been dry, a source of anxiety to all breeders and stock owners, scarcity of feed will drive farmers to extra exertion to keep farm stock in thrifty condition and secure a profit. Feeding raw food to cattle or horses is a great waste, and causes serious loss to farmers or feeders. I will endeavor to prove, by a few simple experiments, which can be easily tried by any one, that only one-half of the food fed raw goes to nourish the animal, while a fourth of it is used up to expel another fourth from the system, that has not been acted upon by the gastric juice. I hope I will be the means of causing inquiry as to the loss of grain fed to horses, cattle, sheep, or swine.

Experiment first, August 10, 1881: Dry pasture, cow fed on hay and raw corn, two quarts, morning and evening. I took four ounces of excrement, dropped it into

a glass of water, stirred well to break up the particles, let it stand till it settled, poured off the liquid part, washed it again till all the coloring matter is washed out, spread on a sheet of white paper. Then, with a magnifying glass, I found grain whose shell had not been broken, and the kernel as free from digestion as though it had never been fed. The result was five grains of corn, a quantity of hay and straw fiber, a little sand, besides a quantity of the shells or hulls of corn, with particles of kernel attached—all weighing one ounce and a quarter. I throw off the quarter of an ounce on account of the water absorbed, and arrive at the conclusion that there is a loss of one-fourth of the feed.

Experiment second, August 13, 1881: Four ounces of horse droppings; horse fed on oats and hay, washed as before. Result—32 grains of oats, a quantity of hay fiber, masticated, but not acted upon by gastric juice, as the joints of the hay were quite hard; weight of oats, hay, and undigested matter, one ounce—still a loss of one-fourth.

Experiment third, September 27, 1881: Cow fed expressly to test the result of cooked food, but turned out in a small field a few hours each day, where grass is scant. Four ounces washed and cleansed as before. Found particles of corn cobs that had been ground, oat shells, with fiber of hay and straw, a little sand, and woody fiber picked up in the pasture—in all three-fourths of an ounce; all the starch, sugar, albuminoids, and hydrocarbonates fully digested and set free, the result of steaming or cooking.

Thus, by feeding raw food, we actually throw out at the window what has been brought in at the door, when a profitable reward can be gained by a little expense and exertion. Besides, it is a pleasure to see the stock with shining coats, fat, sleek and thrifty, filling the bank book of their owner instead of growing poorer on scant rations of raw food. The way some feed, half of the pasture season is over before the stock gains flesh enough to give a fair return for food and labor. Such feeding is a loss to the farmer, making poor butter, poor manure, with a greatly increased quantity of food consumed.

Grain or fodder that has not been masticated or chewed, but swallowed whole, generally escapes digestion in spite of the fact that they consist largely of digestible matter, because their hard outer shell or coat shuts up the latter in an impervious case, and, therefore, are forced through the alimentary canal without having done any good whatever to the animal. In my experiment I find a large percentage of coarse fodder undigested when fed raw, but in short cut, well steamed or cooked food, I find nothing but fiber with all the albuminoids and nutriment fully extracted.

Should an animal digest 75 per cent. of its ration when supplied with a certain quantity of raw food, give that animal 25 per cent. of the same food extra, and only 75 per cent. will be digested, and 25 per cent. of the ration will be lost, and a third more having been used to carry the remainder through the bowels. Such is a true method to ascertain the loss sustained by feeding uncooked food. A cow giving four quarts at a milking, by feeding on steamed food will double the

amount in three days, and double the quantity of butter, of a bright and better color, easily got in the churn, and commanding a higher price. By cooking, all the nutriments of dry, coarse fodder are digested, and re-absorbed to the same extent as when it is fed green.

Although it may not be seen that such an extra amount of lost food has been evacuated, it is clear that only one-half has gone to support the animal system, while the 25 per cent. has been used to provide albumen to throw off the remaining 75 per cent. Of course 25 per cent. is thrown off unacted on by the gastric juice. By the above mode of reasoning it appears that if a horse gets four quarts of oats uncooked, only two quarts go to support the system, and two quarts are thrown off as waste, owing to the amount of albumen required to keep the peristaltic action of the bowels and prevent constipation from taking place. How is this to be prevented? we ask. Cook the grain for a few hours before feeding, so as to swell the kernel and burst the shell, and one-third less of either corn or oats will do more to supply the demand than if given dry out of the bin.

#### WEANING AND CARE OF CALVES.

The present season all through has been very critical to the breeder of stock, and the cold, showery weather is telling seriously on young stock that is entirely dependent on the luxuriant pasture for support. Although the feed is abundant, disease is lurking near. Scouring is common, and many applications come to us for advice on prevention and treatment of hoove as the result of over-feeding on wet clover;

pneumonia or pleurisy, as the result of exposure to cold and wet by lying out during the night. Weaned calves seem to show a depravity of appetite exceeding that of any other farm stock. They will even lick up sand till their stomachs have become unfit to fulfil the function of health. A lime heap, or old bark gnawed from a stump or fence rail disturbs the process of rumination and disease or death is sometimes the result. No calf ruminates while fed exclusively on milk; not until the sumen has received the bulky food can the action so pleasurable to more advanced age be carried out.

Calves ought not to be weaned until they have attained the full capacity of sustaining the growing condition, which they have kept while full fed with milk. Every calf ought to have two good feeds of gruel, tepid warm, with sufficient salt to keep them growing and thrifty, and—as the term is used—keeping on the flesh. A swamp, or putrid pool of water in a calf pasture is another deleterious thing that ought to be avoided, as the animals are so apt to fly for protection from the tormentors of animal life, and gorge themselves with the impure water, causing impurity of the blood, skin disease, and other ailments. This often results in serious trouble to the breeder, who, without investigation, never thought what caused the loss or injured the health of his young stock. Marshy districts prove especially injurious to the health of young stock during the hot season, but more especially when they begin to find a change in the nutriment of the food they have been accustomed to. The rank sour grass that grows around swampy ground is eagerly eaten.

Such food is deficient in nutrition, brings on a weakly condition, and as a result, the calves easily become a prey to disease.

Under these circumstances, the reading, intelligent, thinking farmer arrives at the conclusion that the present season with its humid, poisonous exhalations, a soil soaked with shower after shower and vegetation decaying all around, is a very unhealthy one, and that the young stock especially should not be exposed to its influence during night or early morning. He sees plainly that the sun ought to be well up before young or old stock of any kind are to be exposed to the inhalation of miasmatic influence. We are in possession of facts to prove that the soiled stock are keeping the healthiest this season, and the loss of condition, apoplexy, hoove, pleurisy, etc., are all avoided by being kept in while wet and only turned out while the weather is suitable, a few hours each day.

#### FEEDING MILCH COWS.

A knowledge of organs of digestion, and of the process by which food is converted into milk, beef, etc., is essential to the success of the farmer. Fortified by this knowledge, understanding the laws of digestion and assimilation, he can not only feed to greater profit, but can prevent many diseases that find entrance through that channel. The object of this article is to explain the various changes that food undergoes, in the cow, until it is converted into milk, and to furnish such information as will enable the farmer to prevent disease usually resulting from digestive derangement.

The natural food of all ruminants is of a succulent nature, as green grass. This food is slightly masticated and passes to the first stomach, thence to the second stomach, where it is rolled into balls and returned again to the mouth for rumination, is again returned to the second stomach, where the real process of digestion begins. The food then passes to the third stomach, where we find it imbedded in the laminæ, the cuticular covering of which is singularly constructed, being covered, as it were, with little hooks, the function of which is to prepare the food for introduction into the fourth stomach, where it meets the great distilling process, where the real secreting force is applied, reducing the entire mass to an assimilable state. Digestion proper ends here, but that of secretion continues, the small glands of the intestines contributing their fluids as the digested matter flows by, until every particle has been acted upon and made ready to enter into the circulation.

This is a brief explanation of the digestive process, but sufficient for our purpose. We propose now to explain the difference of action in the digestion of dry food and of succulent or sloppy food, in all ruminating animals. First, soft, succulent, or sloppy food prevents rumination or cud chewing, and dry or bulky food is, therefore, necessary to the complete process described. Rumination is involuntary. The animal can no more prevent it than it can prevent the heart's action. Here is a point that intimately concerns every one who owns a cow. Whenever an animal ceases to chew the cud, some derangement of the system has taken place, from accident or disease. It is one of the

first symptoms that become apparent. Fever, from the derangement, stops secretion. The milk that is secreted from the blood, instead of flowing on in the healthy channel, is taken up by the circulation and pyæmia or blood poisoning eventually results.

Dry grain with bulky food, without the necessary liquid, engorging the rumen, will cause fermentation in that organ, and rumination ceases at once. Fever and non-secretion is the result. It is the custom of some to feed milch cows dry meal or grain, with no vegetable matter except in a dry state, and only cold water to drink. The result of such feeding, often, is a dry, solid, indigestible mass in the stomach, the residue of which, when evacuated, resembles pieces of black walnut, with a coating of mucus, streaked with blood.

If a cow is fed dry grain, at any time, she should have some succulent food at the same time, as turnips, mangels, carrots, etc. Or what is safest, scald the grain with boiling water. This is not only safe but profitable, either for milk or meat. When a cow is fed grain and hay, with only cold water, the digestive organs are tried to their utmost to extract the albumen from the food.

#### THROWING CATTLE OR HORSES.

Every owner of stock ordinarily has any amount of straps or rope about his place, but very few are supplied with hobbles made for the purpose of throwing animals. Some of our readers have seen the Rarey method used, and many have witnessed the old method, in which the animal is thrown upon its head, or on its side, with its head drawn under, nearly breaking its

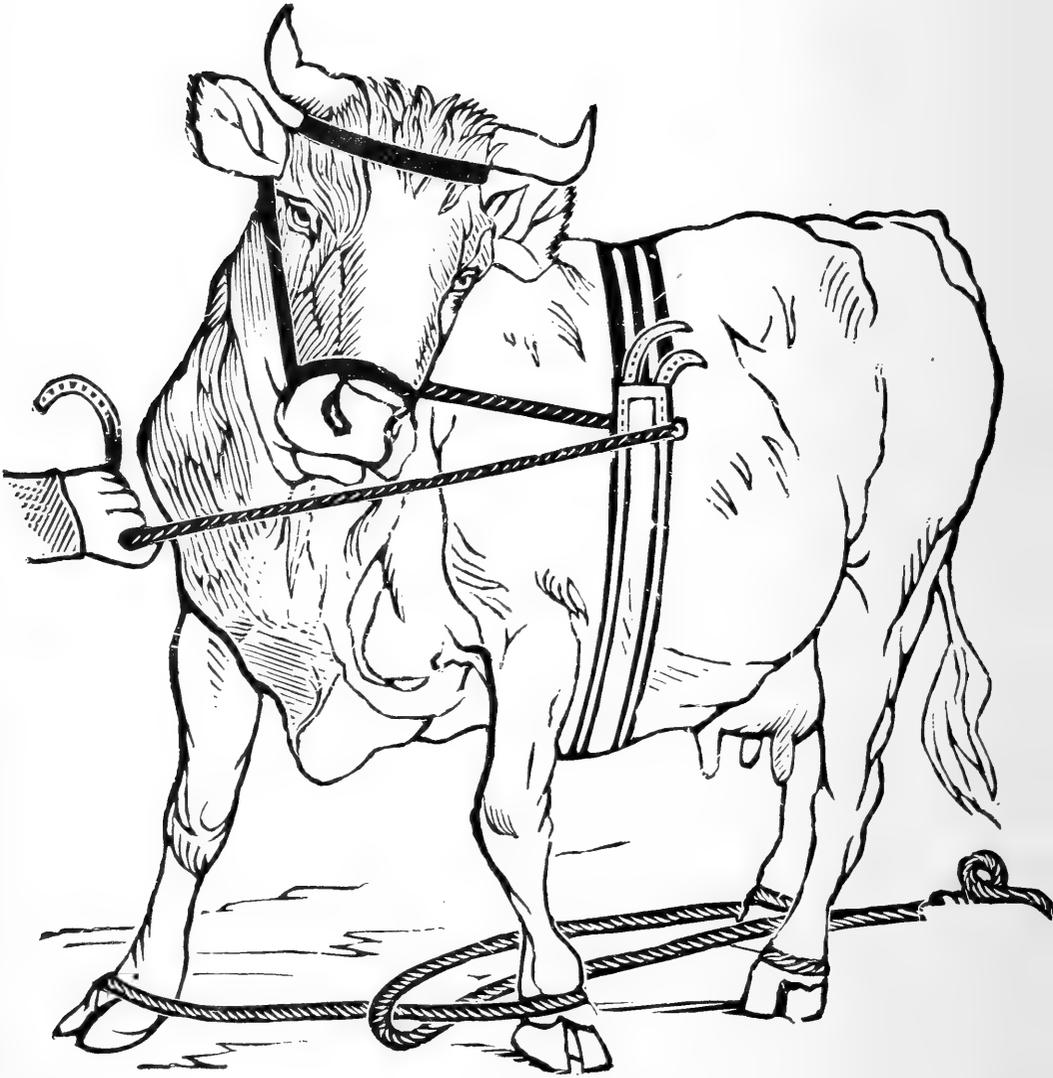


FIG. 52.

THROWING A COW.

neck. The method we practice is shown in the illustration.

It is our own, and employed with perfect safety and success in every case. Strap a strong surcingle around the chest. Strap the fetlock joints together, the closer the better. Then tie the draw rope to the centre of the hind feet straps, taking it over the fore feet straps, bringing it out between the hind legs as represented.

Place plenty of bedding on the floor, and a good bundle of straw on the side you intend to lay the animal, so as to break the fall. Draw the halter strap into the surcingle, and let one person hold the end in front and draw the head gently in towards one side. The animal, a cow, for instance, will try to brace herself against the force by moving her feet, and the assistant, having a steady hold of the draw rope, takes up the slack rope which is thus given.

The four feet being drawn together firmly, the head to one side, the animal is quickly laid over on its side, just as you wish. No animal can rear up, as in other methods usually practiced, nor can any injury result, as is often the case.

When down, remove the bundle of straw and place in position wanted, an assistant keeping the head down, after releasing it, so as to give the animal a straight neck.

We have shown the two fore feet farther apart than is our practice, to show the portion of the draw rope better. It will plainly be seen that this method is simple, safe, effectual, and costs nothing for application.

## FRACTURES AND BROKEN LIMBS.

During the seasons of severe frost we hear more of broken bones and fractures than at any other time, leading many to suppose that bony matter is more brittle than at other seasons. There is more slipping and falling, and the surface is as solid and unyielding as a rock. Every step must be carefully guarded, or the animal is down, and the result may be a broken leg. A severe stroke at any time, on the cannon or metacarpal bones, may result in the same way.

It is generally believed that a broken leg, of cow, horse, etc., is without remedy; the animal is destroyed

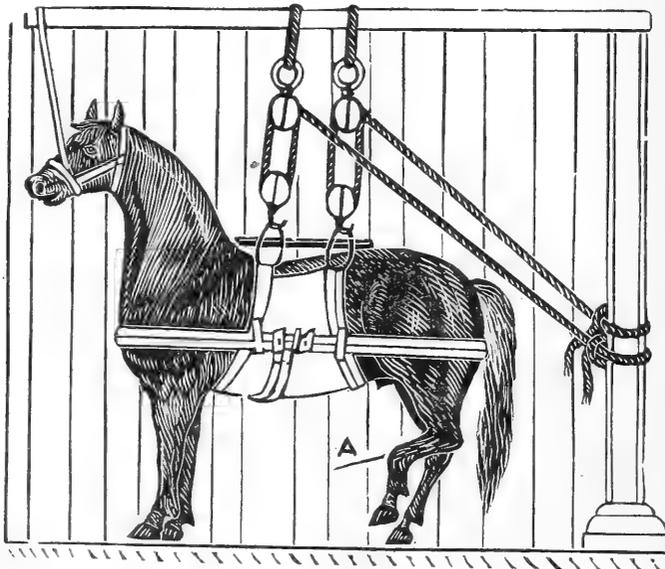


FIG. 53.

at once, and the breeding world frequently sustains a severe and unnecessary loss. Broken legs can be cured, and in the ox species will be as good as ever, except

the enlargement at the point of fracture. With the horse it is different. If it is the hind leg of a draft horse, it will never be as good as before, but may still be made useful in light work, and if a mare, as good as ever for breeding purposes. In running or trotting horses it renders them useless for those purposes. We have frequently been called to treat broken bones in all the different domestic animals. The treatment is about the same for the same locality of injury, in all. If a rib, a tight bandage wrapped around the chest will be sufficient, with rest and proper care. But if protrusion of bony splints should cause a wound of muscles, then a flesh wound must be treated also, and great care and skill are required sometimes to place the bones in proper position and keep them there, so

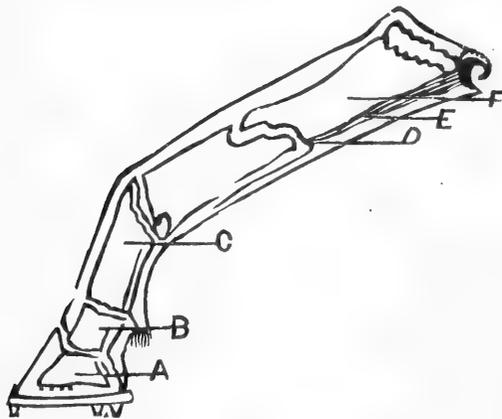


FIG. 54.

no defect may ensue. A broken leg in chickens, dogs, sheep, or calves will heal, and, if properly set, does but little injury. The only principle and practice is to keep them lying in a comfortable position, changing from side to side, occasionally, to give rest.

With heavy animals, as a mare or cow, desirable to save for breeding purposes, the most successful method is the use of the sling, and the best style is represented in the cut. All the tackle used is explained in our veterinary work, except the safe protection of the rollers and stays at the upper part of the back. These should be bolted tight together to assist in keeping the animal in position, preventing her from falling forward. There should be a strong, broad chest strap, well fitted in place, so as to keep the animal a little higher in front than behind. The next great point is to see that no part of the tackle is chafing. Invariably feed light, nutritious food, keeping the bowels slightly relaxed, as otherwise fever may ensue, owing to the constrained position and tight binding of the leg. In feed, the attendant must hold the pail up, relieving the animal's head sufficiently; handfeeding of scalded or steamed hay; occasionally let the tackle down a little, so as to let the weight rest on three sound legs. Sawdust is the best bed for a slung animal, as it does not worry the animal to lay its head down on it, as does straw or hay. But never leave the animal a moment unless well slung up, for fear of falling forward or other accident. Our practice is to rest the foot of the broken leg by placing a bundle of straw beneath. The animal will soon learn to rest the foot thus. We do not like the blocks fixed to each side, and the sling open at the back, as the least struggle, when the attendant is absent, throws the animal forward or back, hanging on the straps. The bars and rollers being bolted tight a few inches clear of the withers and back, pressure and chafing are prevented, and the animal is held tight and free

from injury. Cut and fit the canvas below, so as to cover as much of the chest and abdomen as possible, but not to interfere with sheath or udder. After the animal is in a proper position, let an attendant stand at her head to pat and comfort, as the pain is apt to render her unmanageable while the surgeon is reducing the fracture, "setting" the leg, or adjusting displaced splints. After the bones are set a broad bandage is sewed over the upper part of leg, saturated with arnica and opium, equal parts, oleaginous substances being used outside of bandage, on a layer of cotton batting, laced tight, on the same principle as the cavalry bandage. The splint, which is made of thin hickory, steeped in boiling water, is held by an assistant to the under part of the leg, in position, and the operator runs a thin solution of plaster Paris outside of cotton batting pad; then the upper splint is placed over and inside, and plaster filled in, holding the leg down as much as possible, the foot resting on the pad of straw, and the plaster poured in between the splints, filling every part. Bandage as tight as possible with pieces of strong cotton or linen, two inches broad; it cannot be drawn too tightly on the outside, as the cotton batting will prevent any undue pressure. Having finished the operation, and the surgeon sure that all is in right position so no defect will result when the bone has knitted, his directions are plainly and explicitly given to the attendant. All that is required is to saturate the upper part of the bandage with arnica and opium to relieve the pain while the healing process is forming. The weight of the shoe is sometimes very annoying to the suffering animal, but better relieve the weight of the leg by

the support of the straw, than have to soak the foot in hot water for an hour and cut the nails out, as it is impossible to use the pinchers in removing the shoe. The greatest care will be required to watch the case for the first week, as lock-jaw is apt to set in. Keep the bowels cool by cooling drinks, gruels of flaxseed or oatmeal, and sulphate of soda or potash, with ten drops of arnica in a little cold water, often. This will overcome every difficulty to a successful issue. Fig. 54 represents the bone broken in an oblique direction, as is invariably the case. A, ospedis, or coffin bone; B, the lower pastern; C, the upper; D, the break; E, the splint bones immediately articulated to the metatarsal or shank bone of the hind leg; F, the large metatarsal bone. The bone of the horse is not so easily broken as the bones of cattle, as the animal is much thicker set over the osseous part, and are not so porous; but a stroke on the inside of the leg when the foot is raised from the ground will break the bone easily. A stone thrown at an animal, and it strikes as noticed, will break a horse's leg. A very slight kick or stroke with a fork while the foot was raised has broken many a leg, a fact known to comparatively few persons.

#### PARASITIC DISEASE OF LUNGS IN LAMBS.

“My lambs are dying. We find on opening, the lungs containing needle shaped worms.” Or “we find small hard lumps on the lungs.” The needle-like worms appear to the naked eye as such. The lumps referred to are granular cells with a hard, oily, crystalline deposit, to the touch, generally of an opaque gelatinous appearance, and are the deposit of the strong-

ylus filaria. Generally this opaque and semi-gelatinous material is observed toward the more healthy part of the lung in the shape of circumscribed masses, often not exceeding the size of an ordinary pin head, and if each small nodule be squeezed a gritty substance, the result of cretification of the above mentioned deposit, is felt between the fingers. Each nodule indicates a spot where the germs of the strongylus filaria have been deposited, giving rise to irritation and the exudation of material around them. In this material granule and pus cells develop, and a fatty calcareous degeneration ensues. The eggs are of an oval shape. They are at first appearance transparent, but when fecundated, the yolk when formed adheres to a cellular mass having a coiled and elongated appearance and presents the external and internal organization of the strongylus filaria.

The parasite, coiled on itself and alive in the cell, moves about, and at last becomes free and grows to its full size, passing out of the lung into the air passages, where it is coughed out and often deposited on the grass, likely to be eaten by other animals. How it attains the lungs to deposit its eggs is so far involved in mystery. Some writers believe that they find their way to the bronchial tissue through the circulation. Others again believe they pierce through the tissues from the stomach to the lungs; though from the eggs being universally disseminated into the circulation and stopped in the pulmonary capillaries, where they produce irritation and the deposit before described.

The strongylus filaria is a worm from one to two and one-half inches in length, the male smaller than the

female and of a yellowish color, whereas the female is white. The body is of uniform size, but tapering at both ends. We are speaking directly by experience from the lens of the microscope and might describe further, but enough so as to be understood.

Returning now to the parasitic disease of the lungs, it is clear that there are two distinct stages of the affection, the one mistaken for true tubercular disease, and the other when the worms are fully developed and lodged in the air passages. Dr. Crisp's theory is that the germs of the parasite are carried back from the stomach to the mouth in the act of rumination, and then finding their way into the trachea. As with the germs of the cysticerci, only the young sheep are affected, because they cannot pierce the tissue of the older ones. With this theory we do not agree, and would further state that these nodules which we find on the pleura of the lungs contain small worms and eggs. These parasites show signs of life on being moistened after being dried for one month, and even when having been immersed in spirits of wine, so very tenacious of life are they.

Again, French writers say that the ova containing worms sink into the air passages, they being material, and are thus embedded in the lung tissue. This would lead us to believe that when worms are swallowed by healthy sheep, they immediately find their way into the windpipe. We must confess we doubt this. Of course the eggs of the worms developed in the lungs, and are deposited in the lungs again, or may move indirectly into the system of another animal, but the migration from the mouth or alimentary canal to the lungs cer-

tainly requires a better explanation. Anyhow the number of worms met within the lungs of one sheep is quite enough to infect a whole flock, and then in that case, it becomes an entozoic disease. Another point we wish to observe, this is not hereditary, as we find the lungs of young lambs healthy. The development of the germs in the lungs is always attended with irritation. The changes going on in the early stage are associated with symptoms of spasmodic cough caused by irritation in the throat; small worms get free, and are coughed up with the mucus on the grass, the sheep rubbing their nose on the ground and sniffing to remove the difficulty. We find a large accumulation of worms in the lungs leads to emaciation, anæmia, and defective nutrition, with debility and dropsy. Concerning the prevention and treatment of this disease, it is only necessary to indicate the danger of attending the feeding of young sheep on pasture where older sheep have been. To prevent the disease, you require fresh and sound pasture, and it may be necessary to give a quantity of artificial food, such as flour of sulphur, muriate or sulphate of iron, powdered gentian, etc. To cure the disease, inhalations of chlorine gas, sulphur fumes, externally; internally, camphor, urpentine in linseed oil, or ether. The iron may be given from ten to twelve grains, daily, to a full grown lamb, with one teaspoonful of salt. Salt and sulphur for sheep is our motto for the destruction of both entozoa and acari.

#### EXOIDES OR TEXAS TICK.

I now present an illustration of it. The upper figure is the natural size and appearance when the insect

is gorged with blood. The lower figure is enlarged, showing the animal in a half-starved state. This parasite, as I said before, infests the Texas, Indian, or Cherokee cattle. I am convinced that when transferred to our native cattle from southern cattle directly imported, they cause disease, which results in death in many cases. When Texas cattle are driven along the road the ticks fall off, and creeping up the grass and weeds, they attach themselves to the native cattle that happen to follow and come in contact. They creep up until they reach the flanks and hindquarters, and inserting their proboscs soon transfer a deadly poison

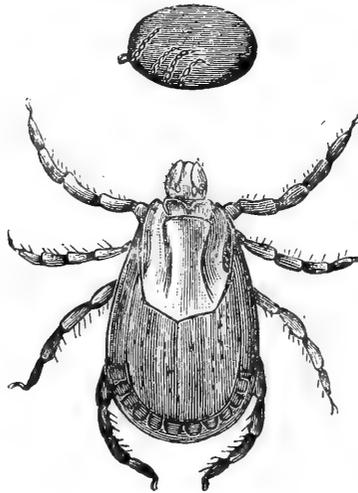


FIG. 55.

into the circulation. The liver and spleen seem to be the first organs affected. The former is enlarged and softened, and the hepatic function rendered unfit to perform their part in the economy of life. The spleen is enlarged to several times its natural size, the blood

becomes thin and watery; and comparatively incoagulable, with a deficiency of fibrine and red corpuscles. The urine becomes red and black before death ensues, showing hepatic disturbance. Southern cattle that have been north a few months will not communicate the disease when coming in contact with our native cattle—a case of the kind never being known. The agency of the exoides in communicating disease is denied by some, but after a considerable experience with actual experiments made to test the matter, I have come to the above conclusion, and will abide by record.

#### BAD HABITS OF THE HORSE.

We now illustrate and describe some of the bad habits of the horse in the stable. We feel sorry to admit that an animal that has been so long in domestica-

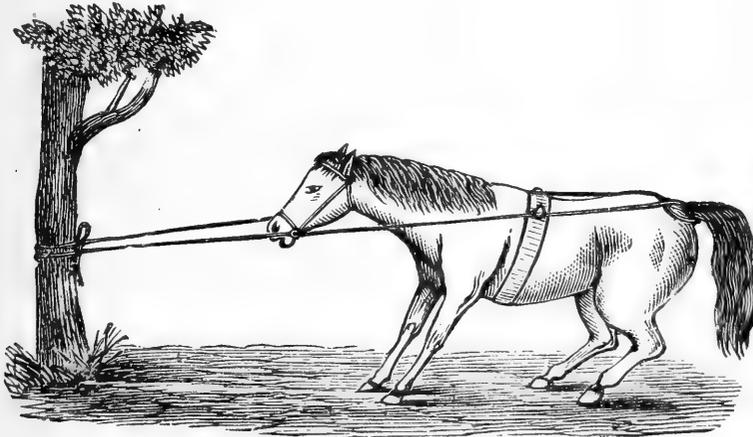


FIG. 56.

tion as the horse, has, like his owners, a number of bad habits, besides other vices. Most of these, however, are to be laid to the charge of his owner. The cut

illustrates the habit of halter pulling, and its cure. The colt will become a halter puller from ill usage or fear. Standing long, confined in an open stall, when the horse in next stall is taken out for work, the colt anxious for a change from the monotony of close confinement, will pull on his halter, and do his best to turn around in his stall. In some cases that we have known wounds, and even poll-evils, were the result of pulling. In turning round, the colt sometimes has got the halter strap around the fore or hind leg and received serious injury from being thrown. The only known cure for such a habit is a small rope attached as represented. The habit once acquired by the colt in the stable is practiced when hitched outside, and when broke to harness will pull on the hitching strap, breaking the strap. Finding a hindrance behind, they will either commence kicking to get free, or run away. But the plan, either in the stable or in harness, is to apply the check line as a sure preventive, having the line a little shorter than the halter-strap. We once owned a mare that would stand quiet and safe without being hitched, but if the hitching strap was applied, would pull by her neck till she choked and fell.

Cribbing and weaving are among the most common of bad habits, especially the former, which is a very unpleasant and disagreeable habit. The horse lays hold of any object, as manger or hitching post. Many devices have been tried to cure the restless animal from continuing the practice, but so far no permanent cure has been attained without inconvenience to the animal. The habit is first learned either from the dam or standing in the stable beside an inveterate crib-

ber and windsucker. Cleaning a horse in the stable is another cause whereby the habit is learned. It is the opinion of some veterinarians that a horse that is an inveterate cribber and windsucker is more subject to colic than any other not prone to the evil habit. This we emphatically deny, as no proof has ever been adduced that would substantiate the opinion. Flatulence, we would say, is the result, but no evil effect has been known to occur. A horse may leave the stable so much extended in abdominal proportions that one would suppose he was not able to go a yard, but the movement of a few steps would remedy the difficulty, and no evil resulted. We say emphatically—and our experience is founded upon a lifetime practice, besides being the owner of several cribbers—that the habit is incurable. While our experience convinces us that numbers of inveterate cribbers and windsuckers are in poor condition, there are other causes for it. The loss of food by seizing it firm between the teeth and dropping to the ground, results in some cases in only half a feed. The only means we have, without a test, to know a horse of this habit with which we are not acquainted, is by the incisor teeth being rounded on the front edge, the enamel being worn off by the continued cribbing. The horse is exceedingly irritable. The colt, before learning to eat, has been known to be a confirmed cribber, learned from the dam.

Weaving is not so common, many a one having never seen a case. The horse only does it in the stable, while standing idle. He will swing his head from side to side of the stall, like the pendulum of a clock, or the action of a polar bear when confined in his cage. Be-

fore the purchase of a horse that shows the worn enamel of the front teeth, take a few oats and place in the manger, when the first mouthful will show the habit. The above are our views on cribbing, but we would not advise the purchase of any horse that has the habit.

Restlessness is the cause of the disagreeable habit of pawing and kicking in the stall. It is such an annoyance to the owner and attendant to take charge of a horse that will paw all the bedding from his fore feet before lying down, often causing injury to the fore parts of the pastern joint and knees. They are met with every day. The knee is calloused, and often swollen; the fore part of the fetlock joint has the appearance as if the hair was growing the reverse way, all caused by lying on the bare boards. All the bedding, however clean at night, will be pawed back and soiled in the morning, which, with a city horse, is a decided loss, much more so than with the farmer. But the remedy for such conduct is, in the city, to bed with sawdust, and in the country cut straw. There is no other preventive. Once the horse contracts the habit it is not easy to drive him from it. Stall-kicking is the most provoking of any vice, either injurious or otherwise. Many a device has been tried, but in a confirmed case no cure has been effected. A chain fastened to one of the hind legs, with one foot in length of the links free, so that when one foot is used to kick the side of the stall, the hanging chain will strike the other leg, and be the means of making the horse quit; but bad results in every case ensue, and we would not recommend it. A rope has been placed behind the horse to keep him well up in the stall, but to no good. A strap

fastened from the upper part of the fore leg to the fetlock of the hind leg has been tried, but the horse, being afraid to lie down, bad results have followed. It is no uncommon practice with a mare in heat to be addicted to the vice at that time; when in her normal condition it is foreign to her. The danger of such a practice to other horses in adjoining stalls is a common one. "Kicked in the stable" is nothing strange to us, it seems everyday language. If there ever was an irritating vice or habit that the horse is addicted to, stall-kicking within hearing of a family living in close proximity to the stable is certainly one of the worst. The horse seems to enjoy the continued rap. The sound seems a sort of pleasure to him, while the person sleeping near feels in a different mood, more like getting up to cut the kicker's throat, and forever putting an end to his stall-kicking.

Cribbing.—Will you please inform me if there is any help for a 2-year old colt that is a cribber?

It is a habit often learned from the dam. A tight belt placed around the throat on a horse while in the stable, but not safe in the field. A broad belt placed around the neck up to the throat, slack at first, and gradually tightened, will prevent it.

#### CORNS ON HORSE'S FEET.

We illustrate corns on horse's feet and their prevention. They occur in the best kind of feet, as well as the poorest. The seat of the corn is in the laminated structures at the angles of inflection, or as may be better understood, the extreme point of the heel. They occur under fast exertion, the same way that a blister

does to our heel under hard marches. The ecchymosis which follows the injury (and which is called the corn) is nothing else than after effect, due to gravitation of the blood-strained serum which is exuded. The corn is a reality. As its name implies, it consists in a horn tumor, at the angle above indicated. These tumefactions reach to various proportions, from that of enlargement and increased density of the common horn laminæ, to their obliteration, and in their place, an introducing growth of smooth horn, more dense than that of any part of the hoof normally.

Although I have represented it in our illustration on the inside of the off fore foot, it often happens that each side of the heel has a corn, or extravasation of blood in the horn tissue. We often hear it laid to the practice of bad shoeing. I am sorry to say that in a great many instances it is the case, but the owner is equally to blame, by allowing the shoe to remain too long on the horse, till it has been worn so thin as to bear too much on the heel in consequence of the horn or outside growing over the shoe, and therefore extravasation of blood caused by pressure on the soft sole of the foot takes place, and the horse is lame in consequence. Again, in taking a colt to the smith to get shod for the first time, no one ever dreamed of looking for corns, as there are none; but when the colt has been several times shod we are astonished to find that on cutting the foot, a corn is found; the cutting and paring of the healthy horn has so weakened the foot that the least irregular prominence causing pressure on one part more than another, has brought the pressure of

blood into the tissue of the horn and formed what is called a corn. The paring of the heel is bad practice at any time, but more especially in colthood, when every part of the foot is perfect. The effort of nature to fence out and strengthen, as man mutilates and weakens, offers a warning lesson to those who cut and destroy the sole of the hoof. We find that the more it is scraped away, and the extended cavity deepened, so relatively does the intrusion increase upwards, the tissues and cartilages making way becoming absorbed. The most common form by which the approaching crisis manifests itself in inveterate cases is by suppuration. This last state seldom arises until after the horse has endured long suffering from the corns, it is not usually the internal horn, tumors are found that sloughing of the parts and quitters are brought on. And this is important to be understood, because a prevailing, vicious practice is in vogue, under the pretense of exploring, by cutting away the sole of every lame horse in search of matter, and is supposed to give it vent. Blood only is found, and with that the searcher is satisfied, whilst mischief is done, such as takes long to repair, even when the patient gets under better care. The proper treatment of corns is a rightly applied system of shoeing, which our illustration will describe. When first a colt is shod do not cut or rasp any part of the horn down more than what is loose or irregular, but get the horn level and smooth, leaving the sole as you find it, firm, complete, and on no account to interfere with the frog. Fit the shoe in all its parts to have equal bearing, and do not allow the shoe to remain too long on the foot till the horn or weight bearing part has over-

grown the shoe, for then the mischief has been done, and the poor animal has been made a sufferer for life. Every colt ought to have wide-webbed shoe at first, as a safeguard against irregular pressure. When a corn is once formed, the cut illustrates the best known preventive for the relief of pain and eradication of the corn, by having no pressure on the diseased part with the shoe. As illustrated, the three-quarter shoe is the only preventive against pain and suffering, and in almost every case a complete cure, as the shoe is

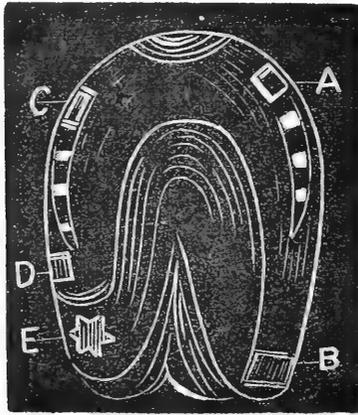


FIG. 57.

tapered a little thinner at the part nearest the corn. In winter calks are necessary in slippery weather, and are shown at A, B, C, and D, but in summer there is no need of them, as a smooth shoe is the best in order to get a regular bearing to the foot all round. At E the corn is shown, the shoe only coming within proper distance, not to interfere or cause pressure on the part involved.

## TONGUE LOLLING.

It is considered by some that this habit is a disease, or a paralysis of the tongue, and like other diseases is beyond control of the horse. It is shown in fig. 58. Some suppose it is caused by certain kinds of bits, and that the tongue has been injured by the bit. There are several other things frequently given as the cause of

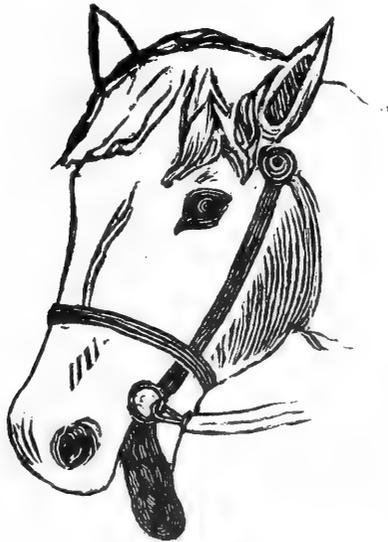


FIG. 58.

tongue lolling. It is a habit, and a very disagreeable one; slobbering when standing in the stall, and lapping the mucus of the mouth when driving. The habit can not be controlled in the stall, but by using the bit, fig. 59, when hitched up, in most cases it is prevented. I have had experience with horses that could not be prevented with this bit, but fig. 60 prevented it entirely.

One has a stationary addition to the bit in front of the straight bar and an obdurate loller will get the tongue under it, and slip the tongue on one side free of the ob-

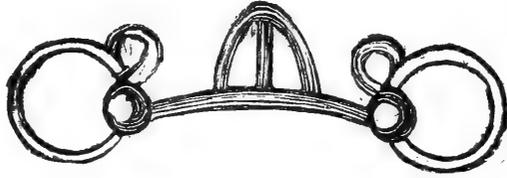


FIG. 59.

struction. But fig. 59 also interferes with the closing of the mouth and is very hard, but painful for the mouth, while fig. 60 will remain flat in the mouth, having a revolving plate attached to the bar. When the

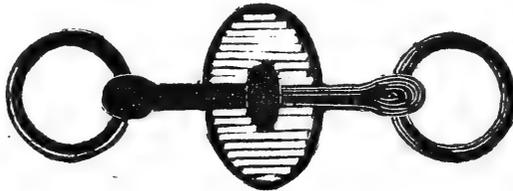


FIG. 60.

tongue is pressed forward or to one side, the pressure from the under side or forward side will cause a pressure on the pad of the tongue, and in a great many cases will cure the habit.

Fig. 61 shows the horse with bit (Fig. 60) in his mouth. It is somewhat remarkable that a horse in the habit of lolling will keep the tongue always to the same side, never changing. Therefore, some horsemen think that it is a want of power to keep the tongue in the

mouth. This smooth plate prevents the tongue from being lacerated by the teeth, while the other bit will

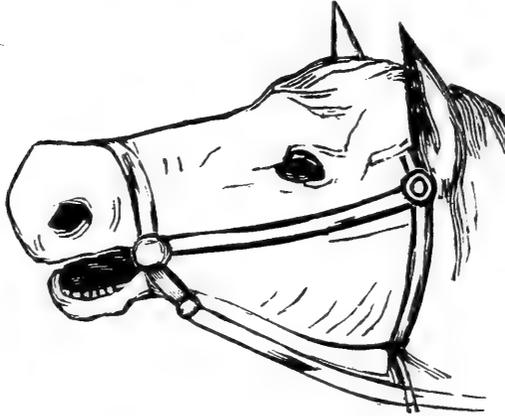


FIG. 61.

press the tongue against the tusks, cutting and injuring the tongue until it becomes diseased. The foregoing illustrations show how to control the habit by means of a proper bit.

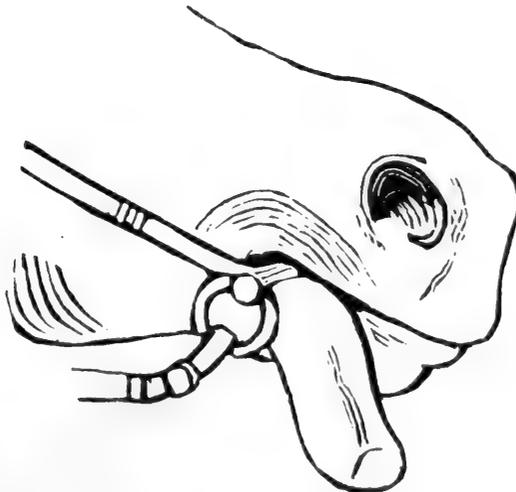


FIG. 62.

Fig. 62 shows the tongue protruding from the right side of the mouth, caused by the bar bit. The snaffle bit, shown above, causes the tongue to protrude from the left side.

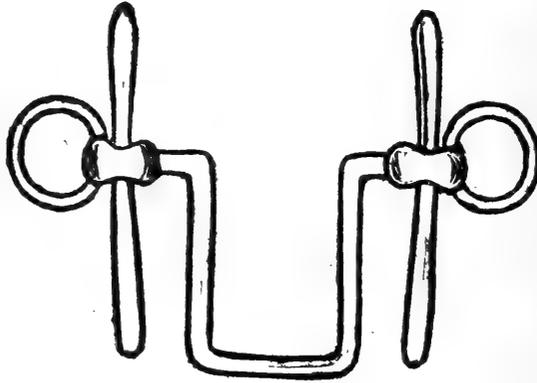


FIG. 63.

Fig. 63 shows a bit used in England for tongue lolling, that causes paralysis of the under lip, as shown in Fig. 64. This also shows the expression of the horse's face when the bit was taken from the mouth.



FIG. 64.

Every time the reins were drawn tight the mouth was thrown wide open, to relieve the pain caused by pressure on the gums and under jaw.

### INJURY.

One which some men have come some distance to see. The case is as follows: In December last a four-year-old colt got mired and sprained the cords running down the back part of fore leg. It was done by pulling out of the mud hole. At first he showed but little signs of injury, did not limp but merely rested his foot on the toe when standing. He rested for a month and grew worse. He was then worked lightly a week and grew better. He then began to grow worse gradually, and in about three months from the time he was sprained the pastern joint began to fly forward with a puffing noise every time he stepped. (This flying forward of the joint and puffing noise was while he was in the act of lifting his foot.) At one time the leg was swollen some, for about three or four days. There is no swelling now, except slightly where the cords join the pastern joint, and the cord itself is not flat as the other leg is, but is somewhat rounded from its enlargement. He has not been used any for three months, and used but very little since hurt (in Dec.). He can paw with the lame leg and does not flinch when standing square on it, and does not limp except the limp caused by the joint giving way when he attempts to lift his foot. The foot itself is not properly controlled by him, as it lacks spring and firmness, and is not steady as it should be. There are diversities of opinion. If the cords were

“pulled loose at the bottom,” why did it not fly forward and crack from the first? I think the cord and nerve are injured, failing to supply vitality, elasticity, and strength to the limb. At times there is a little more than natural heat in leg from knee down to hoof, but at no time showed much fever, except the few days when swollen; his feed is not high, as stated above.

Answer. Your colt ought to have been attended to long before this time, and would have been quite sound, as the colt is young, but it will now require some length of time, and attention to our directions to bring him all right. Take plumbi acid and sweet oil, equal parts; rub the pastern joint well; take a linen bandage, saturate with the liniment, wrap the bandage military fashion, keeping the ribbon twist on each side of the leg so as not to interfere with the splint before and behind.

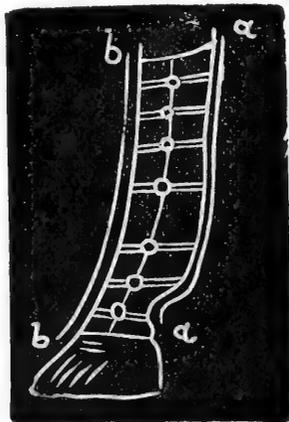


FIG. 65.

After you have got on the bandage, extending from the knee to the hoof, take a thin hickory splint, soak in warm water so as to make it pliable, and fit

tight to the bandage, before and behind. This is the only mode of treatment. Remove the splint every other day, so as to foment the bandage with the liniment, to keep the leg cool and prevent fever and swelling.

Do not take off the bandage till you see without showing any signs of knuckling or weakness, which may be two months. A quiet yard and cut clover will be the best.

The cut shows how to bandage : b b is the splint in front, and a a is the one in rear of leg.

#### CARE OF HORSES IN WINTER.

This season requires greater care to be bestowed upon all animals. Hogs, and sheep, and cattle, and horses must be sheltered. They must be protected from the excessive cold, the fierce storms of winter. Horses require shelter fully as much, if not more, than any other class of animals. They seem to lack more than cattle and hogs the force to withstand the inclemencies of the weather. They are animals of value, and their loss is always most keenly felt. On very few farms no more horses are kept than what are absolutely necessary to perform the usual farm work. When one is lost its place must be immediately supplied, and that will generally require an outlay of from one to two hundred dollars. It is clearly to the farmer's interest to care for his horse as best he can. He can afford to do so, as he will see to his own satisfaction when he has to replace a horse that dies from the lack of judicious care. In the winter care of horses the most important item is the shelter. This should be kept warm.

It must keep out the rain, and snow, and wind. But it can be made too warm and too close. Horses must not be overheated when in the stables, or they will chill and contract disease when taken out into the free air. There must be a fair circulation of air through it. It must be well ventilated. If there is no ventilation the air confined over the manure and bedding, and breathed and rebreathed by the horses, will become foul and noxious and a fruitful source of disease. Because there is a free circulation of air and a good ventilation is no reason why the stable should be cold, it may be made warm and comfortable and yet well ventilated. Cold air may be admitted and a current established without harm if it is not allowed to blow directly on the horses. The great trouble with stables is that they are made too close. As we have said, they are too close for health because they do not admit of being ventilated. Another trouble attendant upon this over-closeness is lack of light. Light is as scarce as pure air. The horse stands in darkness and breathes foul air that is thoroughly impregnated with manurial vapors. Such circumstances are not likely to be conducive to health. Light is essential to health. Darkness affects all organs; but more particularly the eyes: it weakens the eyes, they seek to accustom themselves to the darkness, then when the horse is led out into the sunlight the eyes are dazzled and sustain injury.

Stables should be clean. Horses like to be clean. Of all farm animals they most despise filth. Feed boxes should be scrubbed out in the fall; stalls white-washed; the manure and bedding cleaned up each morning. Use plenty of wheat straw for bedding; it is

a good absorbent and a poor conductor of heat, consequently it will save the urine and keep the horse warm.

Horses require very little grain when not at work. Give them plenty of good bright hay or fodder, water them regularly, and that is about all they will want. They should be given a little ashes through the winter, and salt should be given at least twice per week.



FIG. 66.

#### COW SUCKING.

I have a cow that sucks another cow, would like to hear of a remedy.

We give an illustration of a sure preventive. The halter is made of good leather, spikes three inches long, riveted firm, with soft leather inside, over heads, to prevent chafing.

#### HEREDITARY DISEASE IN BREEDING STOCK.

Hereditary unsoundness in regard to cattle, sheep, and swine is of importance only so far as it concerns organs which are intimately related to the vital pro-

cesses. In the selection of sires and dams, therefore, the expert is required to ascertain that they are free from any trace of disease, the tendency to which being transmitted to the offspring will lessen their value as meat and milk producing animals. Considering that the selection of breeding stock, with the view to cultivate the qualities which are held to be most essential in food animals, has been for many years the great object of the breeder, it is remarkable (says a recent writer in the *Field*) that the question of hereditary unsoundness, which may entirely frustrate this object, has met with no attention. It is true that there are very few diseases of stock that are likely to be transmitted from parents to progeny ; but on that account it would be more easy to exclude from the list of sires and dams those animals which show any indication of being affected with them. Cattle are liable to a disease which does incalculable mischief to the creatures themselves, and it is at least probable that through them human beings suffer. The affection which is well known to breeders as tuberculosis (grapes) is closely allied to, if not identical with, consumption in man ; and there is some reasonable ground for suspecting that uncooked milk and under-cooked meat of tuberculous cattle will induce the disease in susceptible human beings, particularly children. That tubercle of the bovine animal is an inoculable disease has been proved by numerous experiments ; and the late Professor Bowley succeeded in transmitting the disease to swine by feeding them on tuberculous meat—a result which, in his opinion, tended to support the views of those authorities who held that man, whose digestive organs are nearly re-

lated to those of the pig, is equally susceptible to infection, provided that the tuberculous meat or milk of which he partakes is not sufficiently cooked to destroy the infective matter. Bovine tuberculosis is unfortunately widely spread among the various breeds of cattle, not excepting the most valuable stocks, and the history of the last twenty years proves that its tendency is to continue to extend. The evidence on which it may be inferred that bovine tubercle is an hereditary disease is not quite conclusive; but the facts justify a very strong suspicion that it is. Many instances of tubercle in calves born of tuberculous cows have been recorded from time to time, and the further fact of the steady increase of the disease during several years past is significant. It might be presumed that no breeder would keep in his stock a heifer or a bull which was known to be affected with tubercle. But it happens unluckily that some of the most valuable pedigree stock have been and are so affected; and to sacrifice such animals would involve a serious loss to the breeder, and they are consequently kept in the breeding herd. One great difficulty in dealing with cattle which are affected with tubercle arises from the obscurity of the signs of the disease in the early stage. For a long time the affected animal may continue to feed and improve in condition, and, if a dairy cow, to give the usual quantity of milk; and it is not until the affection has advanced to a serious extent that the condition becomes bad, the milk poor in quality, and a painful hollow cough attracts the attention of the cowman, and makes him suspect that there is something wrong with the animal's lungs, which are the organs

most frequently attacked, although tubercle often invades all the important organs of the body, and commonly affects the lymphatic glands. An expert who is called upon to examine a sire or dam, in order to be able to give an opinion as to the existence of bovine tubercle, must not expect to find all the characteristic features of the disease exhibited. It is, indeed, quite unlikely that an emaciated subject, which is known to be affected with what the cowman calls "grapes," will be submitted for his inspection. On the contrary, when a certificate of freedom from hereditary unsoundness is required, it is certain that the animal in respect of which it is sought will be in good condition, and free from obvious signs of ill health. The examiner, in the first place, will remember that evidence of the existence of tuberculosis in the early stage is to be found chiefly in the glandular system, and he will therefore look with considerable suspicion on the presence of any hard nodules inside the animal's legs, in the groin, and along the course of the superficial veins. Wens, which are glandular tumors at the upper part of the throat, in the space immediately behind the jaw, are generally tuberculous; and no animal in which these or other glandular swellings are detected can claim to be certified as free from indications of tubercle. Examination of the lungs by means of the stethoscope or the ear is an important means of diagnosis, of which the expert will, as a matter of course, avail himself before he arrives at any conclusion as to the presence or absence of tuberculous deposit. It may be objected that if it were the custom to examine breeding cattle for the purpose of excluding those which showed signs

of being infected with tubercle, many incipient cases would escape detection, which is quite true; but, on the other hand, many cattle which are not even suspected, would be found to be diseased and disqualified; and it must also be observed that the obscure forms of the disease which escaped detection one season would probably be found out the next. In any case, the final results of the system of inspection must be beneficial. Sheep and swine are not subject to any forms of hereditary unsoundness, unless the constitutional weakness of respiratory organs of sheep may be classed under that head. Sheep are constantly exposed to severe climatic changes, and as the majority of lambs are born in the season of east winds, it is not, perhaps, much to be wondered at if they become extremely susceptible to disorder of the central breathing organs. It would not be practicable to reject for breeding purposes all sheep which exhibit derangement of the lungs by coughing and quick breathing; but it would be decidedly beneficial to the breed if all rams and ewes which gave evidence of lung disease in an advanced form were taken from the breeding flock and consigned to the butcher.

#### DO OUR DOMESTIC ANIMALS REQUIRE WEAPONS OF DEFENSE?

In a wild state the wolf, representing the canine family, requires his tushes or tearing teeth so as to be able to hunt and tear the animal food necessary to satisfy hunger; but the dog in domesticity requires no such appendage. It is argued by professional and scientific investigators that a bite from a dog suffering

from hydrophobia would not communicate the disease but for these tusks. The hog, in a wild state, requires his tusks in order to defend himself from enemies, even of his own kind; but when in a domestic state he has no use for them. They are no ornament to him; far less are they useful in any sense, besides being dangerous in many ways. How often have we complaints of a breeding sow being torn and lacerated by a ferocious boar, and, in some instances, killed outright, whereas, if the tusks were removed when the animal is three months of age, the boar would have been rendered incapable of injury to either man or beast, and, in consequence of his inability to do injury, would become the reverse of savage. The horned sheep and goat in domesticity no more require the horns as weapons of defense than any one of our domestic animals, although some of our agricultural friends will plead for horns or some other weapon of defense when dogs are bent on mutton for supper. But let me say horns will not serve the purpose. Our American cattle have more horn than is consistent with the amount of beef they produce and the length of time they take to be finished for the market. Intelligent reasoning instructs us that horned cattle are apt to lacerate and kill, even in a playful mood, and how often do we read of some one being gored to death by a ferocious bull or cow. It is because they know their power to do injury and take a pride in driving man and beast from them that they are so bold in mischief. Take from them their weapons of defense and they become docile. No injury can result from depriving a dog, when two months old, of his dangerous teeth; no injury to a hog at three months

to be deprived of his tusks, or a bull calf at one month to have his horns removed. In no instance has it ever been known that injury resulted, but as a reward docility, contentment, and comfort, besides the confidence of the owner in attending to stock incapable of committing injury. Other arguments are not wanting in favor of no horns on sheep or oxen. The amount of phosphate and other animal combinations required to grow horn is a useless waste to the feeder. The agricultural community will soon appreciate the benefits resulting from the practice of depriving animals of the weapons of defense, and enormous horns will soon become a thing of the past.

#### DEHORNING CATTLE.

In order to inform our readers as to the true method of dehorning cattle, we give a sectional view of the anatomical structure of the head and horn of the steer. We only approve of sawing off horns as a necessity. We admit that it is cruel, as we admit that castrating is cruel, or branding etc. We also think that calthood is the proper time to do this work, as the tissue and bone formation have not attained growth, and the operation is comparatively painless compared to sawing off the horns of an aged bull, cow, or steer.

The horn proper is composed of enamel, and has no feeling, but the "pith" as I have termed it in previous communications, has all the accompaniments of animal tissue generally.

The frontal bones extend from the nose at Q to the superior ridge of the skull, presenting a flattened but irregular surface, and entirely bare of muscular or

fleshy covering. The cranium or skull—that portion of the head which contains and protects the brain—is composed of eight bones—two frontal, at B, one parietal,

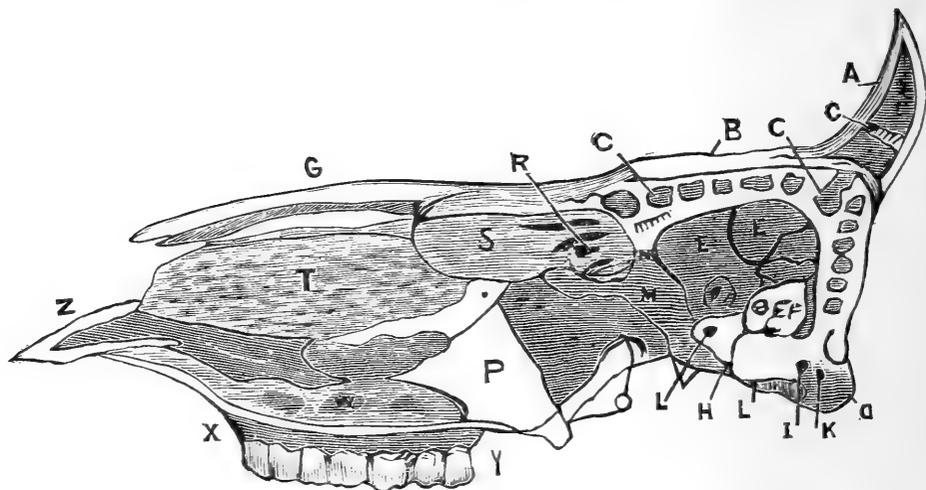


FIG. 67.

two temporal, one occipital, one ethmoid, and one sphenoid. It is from the frontal bone that the horn springs; it is a continuation of the frontal bone. In hornless cattle the expanse of this bone is much narrower at the base of the head than in horned cattle, and contracts a little above the eyes. The frontal sinuses, at C, extend from the eyes to the foramen through which the brain escapes from the skull, and to the very tip of the horn A.

Several of our correspondents have given us their views and experience, pro and con, in regard to de-horning. Some have said that in sawing off the horn they have exposed the dura matter. It is impossible to do this, from the construction of the frontal bone. You would have to cut off the frontal bone, B, which extends from the nasal bone almost to the tip of the

horn. There is a division of the frontal sinus, commencing about half way up the nose; it is wanting in the lower part, where the two nostrils are thrown into one, and the frontal sinus communicating with the nasal, there is one continuous cavity from the muzzle to the horn, and from one nostril to the other. I have often thought that the supposed disease called "hollow horn" had its origin in this fact alone. Correspondents have stated that in sawing off horns at C the hemorrhage has been so great that it could not be stopped. Others have declared that the animals have bled to death. At this particular part of the horn a division of the blood vessels takes place, and branches off, whereas at the lower part of the horn hemorrhage is not so profuse, owing to the fact that only one part of the feeding blood vessel is cut through.

In sawing off the horns, cut level with the frontal bone, shown at B, which extends to the back part of the occiput, parting the hair and cutting clean below the rings of soft horn, and immediately covering the parts with tar or carbolic ointment. No bleeding to speak of takes place and the sensation of pain is not so severe, as there are fewer nerves.

Although we advocate dehorning in calfhood, we do not object to sawing off the horns in adult age, as a safeguard against injury or on the score of economy. We have been held up before the public as one of the "ignorant veterinary surgeons," etc. I think I have given more explicit advice on how to saw off the horns than I ever saw in a newspaper or five-cent circular. Any farmer who has a sharp, fine-tooth saw can do it. Cut clean into the skull, cover with tar or ointment,

and let the animal run.

We have given plain directions for dehorning calves in former articles. Have your knife sharp; when the small protuberance on the calf begins to develop, cut it clean off near to the frontal bone, cover with ointment, and no horn will grow; but the searing iron applied at the instant will stop bleeding; then put on the ointment and keep in the barn a day or two. The part will grow up and no mark is left. There is no pain and little risk. It is the proper way.

#### POLLED CATTLE.

During many years there have been in various parts of the country occasional bovines without horns commonly termed "muleys." These were apparent "freaks" of nature, and never attained designation as a breed. However, there are recognized breeds of polled cattle, as the polled Angus, or Aberdeen Angus, and the Galloways in Scotland, and the Norfolks, or Suffolks, as they are indiscriminately called in England. Professor Youatt says of polled cattle: "So late as the middle of the last century the greater part of the Galloway cattle were horned; they were middle horns, but some were polled. For more than one hundred and fifty years the surplus cattle of Galloway had been sent into the counties of Norfolk and Suffolk. The polled beasts were always favorites with the English farmer, hence it happened in process of time the horned breed decreased and was at length superseded by the polled. They (the English Norfolks) are usually red; some, however, are black, or either of their colors mixed with

white, with a characteristic golden circle about the eyes.

The Suffolk as well as the Norfolk beast undoubtedly sprang from the Galloway, but is shorter in the leg, broader and rounder than the Norfolk, with a greater propensity to fatten and reaching to greater weights. The prevailing and best colors (of the Suffolk) are red, red and white, brindled, and a yellowish cream color. The color of the polled Angus is black. The polled breeds are more valuable as beef animals than as milk producers, though the Suffolks have some reputation for milk. During the past few years considerable herds of polled cattle have been imported into this country and their progeny may be found in most of the western and central States. Public sales of these breeds were held in Kansas in 1882, and it is probable representatives of the herds have been turned among the long horned stock of the plains. The statement is made by our breeders that the progeny of a polled sire mated with horned cattle will in ninety-nine cases in one hundred be hornless. This being true the engrafting of the polled blood into that of horned cattle would seem desirable.

Bulls are often vicious because they are shut up and have no exercise. The Dairyman suggests that a good thing to do in such cases is to get a tread power feed cutter, and make the bull cut the feed for the rest of the stock. This exercise will tame him and make him a surer breeder besides.

#### GLANDERS.

Among the prominent symptoms of glanders may

be mentioned a discharge of purulent matter from one or both nostrils; one or both glands on the inside of the lower jaw bones are more or less swollen, hard and knotty. One or both nostrils are sometimes swollen and glued up by a sticky, unhealthy looking pus, sometimes streaked with blood. On opening the nostrils, pustules and ulcers are seen on the inner surface. The nose may sometimes bleed. The eyes are often prominent and watery; the coat rough and staring if the horse is in clean condition; and the voice more or less hoarse. The appetite is not often impaired. Sooner or later, farcy buds may appear on the head, neck, body or limbs, generally along the inner side of the thighs. In chronic nasal catarrh, or so-called gleet, the glands between the jaw bones are very slightly, if at all, enlarged; they are loose, not hard and knotty, as in glanders. This ailment, which is apt to persist for months, unless properly treated, may leave an animal in an unthrifty state, with a staring coat, disturbed appetite, dullness at work, cough and discharge from one or both nostrils; but there are no pustules or ragged sores or ulcers within the nose, as in glanders. Chronic nasal gleet, however, is apt to run into glanders; and as there is no telling when the beginning is, such a horse, with chronic disease from the nose, should always be looked upon with suspicion, and be kept away from other horses. The difference between glanders and influenza or ordinary horse distemper is so marked that a mistake is not easily made. The more prominent symptoms of distemper are as follows: With signs more or less prominent of a general febrile condition, there is great dullness and debility, frequent

and weak pulse, scanty discharge of high-colored urine, costiveness, loss of appetite, and a yellow appearance of the membranes of the mouth and the eyes. The eyes appear more or less sunken, upper lid drooping and lips hanging, giving the animal a sleepy look; there is cough, soreness of the throat, and labored breathing; the mouth is filled with frothy slime, the legs are cold and sometimes more or less swollen below the knees and hocks. In the advanced stages of distemper, there is a free discharge from both nostrils.

#### PARTURIENT APOPLEXY.

Harman, Ohio: Can you tell what causes after fever in cows? They generally live from two to three days after they drop their calves. They don't appear to show any signs of sickness before dropping them but shortly after become stupid. Do not take any notice of the calf. In the case under consideration the cow minced over her feed and finally got down, often trying to get up, but with all assistance could not. It appeared to me she was weak across the back; only lived after she got down from ten to fifteen hours, and died hard. I opened and found the calf bed swollen; opened calf bed and found it full of ulcers, all kinds of shape, fast to calf bed. They were yellow, and were from two to four inches long and an inch and upwards in diameter. There were forty nine of these ugly things fast on inside of the calf bed. Sometimes there are not quite so many, but often more. Some of our cow and horse doctors say they never knew of one to get well. Often the calf has to be taken from the cow, as she has not strength to deliver it.

Your cows have died of parturient apoplexy, commonly called milk fever, a disease associated with parturition, and occurring from twelve to forty-eight hours after calving. It is a very fatal disease, usually attacking the best milkers, and rarely appearing before the third calving. Treatment in those cases is nearly always unsatisfactory, but the majority of cases can be prevented by limiting the quantity of food between the time the cow runs dry and the period of calving arrives. As the time approaches the cow should be fed upon low diet; if in the winter time a sufficiency of corn and hay should only be allowed, taking care to avoid all stimulating food and watery foods. In summer time put the cow on a very bare pasture, where she can hardly get enough to sustain herself in a healthy condition, and a few days before calving give a cleansing drench two days or so before calving or when you see the pelvis bones slip. Always give the drench suspended in one pound of black molasses and one quart of oil meal gruel, and the same one day after calving, more especially if the cow suffering from parturient apoplexy is fat and in high condition, always give the drench warm. Always see that your cow is in a good easy condition of the bowels, as constipation either in mare or cow only aggravates the disease. Always keep either mare or cow light in food if in high condition previous to parturition as a safeguard and you will never be troubled with milk fever. The ovaries you thought were ulcers found in the uterus after death, are the cotyledons, and serve as an attachment for the placenta or clensing, and by this means establish a connection between the mother and young animal before

its birth. We have answered this query at length as it often happens that we have very ignorant opinions given, as when an examination of the mare or cow has been made after death, and we wish to explain in every case the fallacy of doing so.

#### MISTAKES IN FEEDING STOCK.

Most farmers make two mistakes in feeding stock: they give the store animals too little and the fattening animals too much. I might add very properly that they make three mistakes, as they do not generally consider the conditions of animals in feeding. They often go to extremes and either expose them all the time to the cold or keep them in stables over night and turn them out into the cold during the day. Filth is a condition which will effectually offset food, and the want of water is another. Regularity in feeding means better digestion and assimilation of food than when fed any way and any time. The most damaging condition, because most common, and the severest of all, is exposure to the cold. Constant exposure—that is, out of doors all the time—is not so liable to work mischief as the ridiculous kindness and senseless wisdom of most farmers.

No wonder farmers say: "I have wintered" so many cattle. It is wintering. The other horn of the dilemma is, "I have emptied my barns. I worked all summer to fill them, and I have carried it all out." Now let us see. What per cent. of all this fodder has been actually wasted trying to warm all outdoors through the stock? One-half. This one-half, fed in a warm stable, with no exposure, would have kept the

young animals growing, increased their weight and value, and also the cows. Try it and be convinced, or stay where you are and keep on losing money. I confess I get out of patience with farmers who have stables and do not make the most of them. To turn stock out of a warm stable to stand around the yard, when often the change in the temperature is from ten to twenty degrees, is running too much risk. They are liable to get colds and to get out of condition. A warm stable is a profitable condition. It is a good place to save flesh, and the best kind of a place in cold weather to make it.

In regard to my first proposition, store stock should be fed all of the coarse fodder they will eat, if this is to be their only food. They should be made to grow or there cannot be any profit except what is eked out of them next summer. I like the plan of less coarse fodder and a little grain. Stock do better and I am sure it is the cheaper way. Better sell some of the straw or hay and buy meal to feed in their place. I can make cattle, horses, or even sheep thrive on straw with grain; a gill to sheep and two to four quarts to a cow or a horse, according to size and circumstances. A cow should never have more than six quarts of meal in twenty-four hours, and this should always be divided into two feedings, morning and night. It should be mixed with some coarse food, roots or chaff; or if nothing else is available, cut straw or hay. This will necessitate chewing it so that it will be more completely digested. Let the fattening animals remain in the stable, where they are uniformly warm and free from excitement. There is less danger of accidents

when this is done. Either lead them to drink or take it to them. I am talking now of our smaller eastern ways. In the west such painstaking would be too costly. There corn is mostly fed in the husk or on the cob to secure mastication. Our profit lies in our care and saving.

## GLOSSARY.

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- Abdomen.*—The Belly, or that Part of the Body which Lies Between the Thorax and the Bottom of the Pelvis.
- Abortion.*—The Expulsion of the Young from the Womb Before the Natural Period of Delivery.
- Abscess.*—A Collection of Matter.
- Absorbents.*—The Lacteal and Lymphatic Vessels.
- Acute.*—Severe in Character and Rapid in Course.
- Aggravated.*—Made Worse.
- Albugo Oculi.*—Partial Dimness of the Cornea of the Eye, with White Spots.
- Alkali—Alcali.*—Term for a Substance which Has Properties the Reverse of Those of an Acid, and with which it Combines so as to Neutralize its Activity and Form a Salt. It has an acrid, urinous taste and caustic quality; it changes vegetable dyes to green, renders oil miscible with water, and is distinguished from an earth by its greater solubility.
- Alteratives.*—Medicines to Correct a Morbid Habit, and Restore It to a Healthy Function.
- Alvine.*—Belonging to the Belly, Stomach, and Intestines; Applied to the Fæces, or Dung.
- Amnion.*—The Internal Membrane of the Ovum.
- Amaurosis.*—A Species of Blindness.
- Anasarca.*—Watery Effusion into the Cellular Tissue—Dropsy of the Limbs.
- Anastomosis.*—To Communicate with One Another; Applied to the Connection of Blood Vessels and Nerves by Transverse Branches.
- Anodyne.*—Medicine to Allay Pain and Produce Sleep.
- Anthelmintic.*—A Remedy for Worms.
- Anti-Spasmodics.*—Medicines to Prevent Spasms or Convulsions.
- Antiperistaltic.*—The Vermicular Contraction of the Intestinal Tube when That Takes Place in a Direction from Behind Forwards.

- Antiphlogistic.*—Against Inflammation. Applied to Medicines Plans of Diet, etc., which Counteract Inflammation by Depressing the Vital Powers.
- Antiseptic.*—Counteractive of Putrefaction.
- Aorta.*—The Great Artery which Arises from the Left Side of the Heart, and Gives Origin to all Other Arteries Except the Pulmonary.
- Aphthous.*—Having Aphthæ or Blisters on the Skin or Mucous Membranes.
- Appendices Epiploicæ.*—Masses of Fat Attached to Feet by Pedicles to the Folds of Peritoneum which Support the Intestines.
- Arthritic.*—Pertaining to Joint Diseases.
- Ascites.*—A Collection of Fluid in the Cavity of the Belly.
- Astringent.*—Binding.
- Ataxic.*—Showing Irregularity in the Functions of the Body, or in the Symptoms of a Disease.
- Atrophy.*—A Wasting or Emaciation, with Loss of Strength; Defect of Nutrition.
- Auricle.*—Attending to the Sounds in Different Parts of the Body, in Order to Form a Judgment of the Condition of these Parts.
- Autopsy.*—Examination After Death.
- Bishoping.*—Fraudulently Marking a Horse's Teeth.
- Blain.*—A Disease in which there are Ulcers on the Mouth and Sides of the Tongue.
- Blood Spavin.*—Enlargement of the Sac which Contains the Lubricating Fluid of the Hock Joint.
- Bog Spavin.*—Blood Spavin Intensified.
- Bone Spavin.*—A Bony Enlargement of the Lower Part of the Hock Joint.
- Bots.*—The Larvæ of the Gad-fly.
- Bovine.*—Relating to Cattle.
- Bronchia.*—The Branches of the Windpipe.
- Bronchitis.*—Inflammation of the Bronchial Tubes.
- Bronchocele.*—A Disease Characterized by a Swelling in Front of the Windpipe.
- Buccal Membrane.*—The Lining Membrane of the Mouth.
- Clitoritis.*—Morbid Enlargement of the Clitoris.
- Cæcum Caput Coli.*—Part of the Union of the Blind Gut with the Remainder of the Large Intestines.

- Catheter*.—A Tube Used to go Through the Urethra into the Bladder to Draw Off the Water.
- Calculus*.—A Stone in Some Internal Organs.
- Canula*.—Name of a Tubular Instrument Introduced by Means of the Stilette. Any Fluid Present May be Evacuated by It.
- Cantharides*.—Spanish Flies.
- Capped Hock*.—A Swelling of the Point of the Hock Behind.
- Capillaries*.—Small Blood Vessels Connecting the Minute Arteries and Veins.
- Cardiac*.—Pertaining to the Heart.
- Cataract*.—A Disease of the Eye, in which the Rays of Light are Prevented from Passing to the Retina in Consequence of Opacity of the Lens.
- Catarrh*.—Common Cold.
- Cathartic*.—A Purgative.
- Caries*.—Ulceration of the Bone.
- Cavity*.—A Hollow, such as the Cavity of the Belly, or of the Chest, or of the Head.
- Cerebral*.—Pertaining to the Brain.
- Cerebriform*.—Having an Appearance Like Brain Matter ; Applied to a Form of Cancer.
- Cervical*.—Pertaining to the Neck.
- Cholochrome*.—The Coloring Matter of Bile.
- Chorea*.—A Disease Characterized by Constant and Convulsive Movements of the Body.
- Chronic*.—Long Standing.
- Chyle*.—A Milky Fluid Derived from Food by Means of Digestion.
- Chylopoetic*.—Belonging to the Stomach and Intestines.
- Cineritious*.—Like Ashes. Applied to the Outer or Cortical Substance of the Brain.
- Coagulate*.—To Curdle or Congeal.
- Coffin Bone*.—The Last Bony Segment of the Limb, which is Enclosed in the Hoof.
- Colic*.—A Spasmodic Action of the Muscular Coat Over Certain Parts of the Intestines.
- Comatose*.—Drowsy.
- Conjunction*.—The Mucous Membrane of the Eyelids and Front of the Eye.
- Contagious*.—Catching.

- Contagion.*—Transmission of Disease by Contact with Morbid Matter.
- Constipation.*—Bound Bowels.
- Convalescent.*—Progress Toward Recovery.
- Convulsion.*—Violent Shaking of the Body or Limbs, such as Occurs in Epilepsy, Chorea, etc.
- Coronet.*—The Prominence or Ridge Along the Upper Part of Hoof Where it Joins the Leg.
- Cornea.*—The Clear Transparent Part on the Front of the Eye.
- Corrugated.*—Wrinkled.
- Cortical.*—Belonging to the Bark of Plant. Applied to the Outer Layer of the Kidney and Brain.
- Coryza.*—Flow of Water from the Nose—Cold in the Head.
- Couching.*—An Operation for Cataract.
- Coup de Soleil.*—Sunstroke.
- Cranium.*—The Bony Cavity which Contains the Brain.
- Cretaceous.*—Chalky.
- Cul-de-Sac.*—A Blind Pouch.
- Curb.*—An Enlargement of the Back of the Hock, and a Strain of the Ligaments of the Tendon.
- Cuticle.*—The Skin.
- Cystitis.*—Inflammation of the Bladder.
- Decoction.*—Extraction of the Virtues of a Substance by Boiling.
- Decassation.*—Union in the Shape of an X or Cross. Applied to the Crossing of the Optic Nerves.
- Depilation.*—Loss of Hair. Spontaneously, or by Art.
- Depurants.*—Medicines Supposed to be Capable of Purifying the Blood by Removing those Constituents which Interfere with its Purity.
- Desquamation.*—Peeling or Scaling Off of the Skin.
- Dewlap.*—The Loose Hanging Skin at the Lower Part of the Ox's Neck.
- Diabetes.*—Excessive Urination.
- Diabetes Insipidus.*—Urine, Profuse and Tasteless.
- Diabetes Mellitus.*—Urine, Profuse and Containing Sugar.
- Diaphoretic.*—A Medicine which Increases the Sensible Perspiration.
- Diaphragm.*—The Muscular Partition Between the Chest and the Abdomen.
- Diarrhœa.*—A Purging or Looseness.
- Dipterous.*—Having Two Wings; Applied to Insects.

- Distemper.*—An Epidemic, Catarrhal Fever.
- Diuretic.*—A Medicine that Increases the Urinary Discharge.
- Diverticulum.*—A Blind Tube Leading of the Course of a Longer One.
- Dorsal.*—Belonging to the Back.
- Ductus.*—Arteriosus, a Vessel Leading from the Pulmonary Artery to the Posterior Aorta, and which is obliterated at birth.
- Dysentery.*—The Flux.
- Dyscrasia.*—A Bad Habit of Body.
- Dyspnœa.*—Difficult Breathing.
- Dystokia.*—Difficult Parturition.
- Echymosis.*—A Livid Black or Yellow Spot, Produced by Blood Effused into the Connective Tissue.
- Echinococcus.*—A Bladder Worm Usually Met in the Internal Organs.
- Emaciation.*—Loss of Flesh.
- Emphysema.*—A Term Applied to the Presence of Air in the Areolar Tissue, or to Diseased Enlargement of the Ultimate Air Cells.
- Emprosthotonus.*—A Variety of Tetanus, in which the Body is Bent Forward by the Contraction of the Muscles.
- Emollient.*—Softening, Relaxing.
- Emunctory.*—An Organ whose Office is to give Exit to Matters that Ought to be Excreted.
- Enemata.*—Injections, Clysters.
- Engorgement.*—Morbid Accumulation of Blood in any Organ.
- Enteritis.*—Inflammation of the Bowels.
- Entozoa.*—Worms that Live in the Animal Body.
- Enzootic.*—Applied to Disease Peculiar to a District.
- Epidermis.*—The Scurf, Skin.
- Epileptic.*—Anything Relating to Epilepsy.
- Epilepsy.*—A Disease which Comes on Suddenly, and is Attended with Violent Convulsions.
- Epiphysis.*—Part of the Bone Separated from the Shaft in Early Life by Gristle, which Afterwards Changes into Bone.
- Epithelium.*—The Layer of Cells on the Surface of Mucous and Serous Membranes.
- Evolution.*—A Term Applied to a Theory of Non-Sexual Generation, According to which the First Created Species Contain Within Themselves all the Individual Species of their Parent, and Generally Used as a Word by Breeders in a

- Refined Way, Meaning in Heat, or Coming in Season.
- Epizootic*.—A Disease Prevailing among Animals.
- Escharotic*.—Caustic—The Property of Destroying Flesh.
- Exudation*.—Discharge of Humors from the Body.
- Farcy*.—A Stage of Glanders Caused by Obstruction of the Absorbent Vessels.
- Fistula*.—A Bad Sore on the Withers, from Neglected Saddle Galls, or on the Head, known as Poll-Evil.
- Flatulent*.—Wind in the Bowels.
- Fætid*.—A Bad Smell.
- Fœtus*.—The Young of Any Animal after it is Fully Formed.
- Founder*.—An Inflammation of the Foot.
- Fundament*.—The Lower Opening of the Bowels.
- Gangrene*.—Beginning, or the First Stage of Mortification.
- Garget*.—Inflammation of the Udder.
- Gastralgia*.—Pain in the Stomach.
- Gestation*.—Pregnancy, or the Season of Fœtal Life.
- Glanders*.—A Discharge from the Nostrils, Terminating in Complete Obstruction of the Absorbent Vessels and Causing Death. The Disease is Contagious.
- Glands*.—Minute Organs in the Body for the Modification and Secretion of Fluid, such as the Urine, Tears, Bile, etc.
- Glottis*.—The Oblong Aperture Between the Vocal Cords of the Larynx, and Through which the Air Passes to the Lungs.
- Granulation*.—Small, Reddish, Conical, Flesh-like Shoots that Form on the Surface of Suppurating Sores.
- Grease*.—Inflammation of the Skin of the Heels.
- Haw*.—A Small Body at the Inner Angle of the Eye, which is Rapidly Drawn Across the Ball of the Eye to Protect it from Injury.
- Hæmaturia*.—Bloody Urine.
- Heaves*.—Rupture of the Air Cells of the Lungs.
- Hemiplegia*.—Paralysis of One Side Only.
- Hemorrhage*.—Flow of Blood, Bleeding.
- Hernia*.—A Protrusion of the Intestines Through an Opening in the Belly.
- Hide Bound*.—Dryness of the Skin.
- Hoose*.—The Common Cold when it Attacks Cows.
- Hydatid*.—A Cyst Containing a Clear Liquid—A Bladder Worm.
- Infectious*.—Capable of Communicating Disease.
- Infusoria*.—An Order of Vermes of the Lowest Organization,

and Found in Putrefying Liquids.

*Inflammation*.—A Local (Physiological) Excitement ; the Part Takes on a More Active Blood Circulation, and is Hot, Swollen, and Painful.

*Ingesta*.—Substances Introduced into the Digestive Organs.

*Inoculation*.—Imparting a Disease by Depositing its Morbid Product Beneath the Skin.

*Inspiration*.—Inhaling the Breath.

*Integument*.—The Skin.

*Interdigital Space*.—Space Between the Clefts of the Hoof in Cloven-Footed Animals.

*Iris*.—A Membrane Stretched Across the Anterior Chamber of the Eye, and which Gives it its Color ; it is Pierced in its Centre by the Pupil.

*Lachrymal*.—Belonging to the Tears—Applied to Parts Engaged in the Secretion and Transmission of the Tears.

*Lacteals*.—Veins Arising from all Parts of the Small Intestines by Capillary Tubes. Their Mouths Open into the Cavity of the Guts and Absorb the Nutriment from the Food.

*Laminae*.—Folds or Leaves, Applied to the Leaves in the Third Stomach of Ruminants, and to the Horny and Sensitive Folds by which the Hoof-wall is Attached to the Deeper-Seated Parts.

*Lampas*.—A Swelling of the Gums.

*Larynx*.—The Upper Part of the Windpipe.

*Laryngitis*.—Inflammation of the Upper Part of the Windpipe.

*Lock-Jaw*.—A Violent Contraction of the Muscles of the Jaw, Suspending Motion.

*Lumbar Region*.—Pertaining to the Loins.

*Luxation*.—Dislocation of a Joint.

*Lymphatics*.—A System of Vessels Engaged in Taking up Lymph Throughout the Body.

*Malaria*.—Miasma. Noxious Emanations from the Earth, especially in Marshy Districts.

*Mallenders*.—A Scurvy State of the Skin.

*Mammalia*.—That Class of Animals that Suckle their Young.

*Mange*.—A Painful Eruption of the Skin.

*Medullary*.—Relating to the Marrow, or Analogous to Marrow.

*Megrims*.—A Rush of Blood to the Head, Causing the Animal to Stagger and Fall.

*Melanosis*.—A Disease in Which Tumors are Developed, Con-

- taining a Large Amount of Black Pigment.
- Membrane*.—A Thin White Flexible Skin Formed by Fibers Interwoven Like Network, and Serving to Cover Some Part of the Body.
- Meteorization*.—Swollen Up with Air.
- Morbid*.—Not Sound and Healthy.
- Mortification*.—The Death and Putrefaction of One Part of the Body while its Remainder is Alive.
- Mucus*.—Fluid Secreted by a Mucous Membrane.
- Multipolar*.—Having Many Prolongations.
- Muscle*.—The Organs of Motion, Consisting of Bundles of Fleshy Threads.
- Nares*.—The Openings of the Nose, Anterior or Posterior.
- Nasal Gleet*.—A Thickened Discharge from the Nose.
- Nasal Polypus*.—A Tumor Hanging from the Nostril.
- Nausea*.—A Sickness at the Stomach, with an Inclination to Vomit.
- Navicular Disease*.—A Growing Together at the Joint Formed by the Coffin Bone and the Lower Posterior Bone, in Connection with the Navicular Bone.
- Nephritis*.—Inflammation of the Kidneys.
- Nucleüs*.—The Centre of a Tumor or Morbid Concretion. A Minute Cell within a Cell.
- Omentum*.—Folds of Serous Membrane Passing from an Abdominal Organ to Another One So-called.
- Opiate*.—A Medicine which Acts like Opium in Producing Sleep; an Anodyne.
- Ophthalmia*.—Disease; Inflammation of the Eye.
- Ovarian*.—Belonging to the Ovary.
- Overreaching*.—Striking the Fore Leg with the Shoes of the Hind Feet.
- Ozæna*.—A Discharge of Matter from Ulcers on the Nose.
- Parenchymatous*.—Belonging to the Texture of a Glandular or Other Organ.
- Pathology*.—Diseased Pathology—That Branch of Medicine whose Object is the Knowledge of Disease.
- Paroxysmal*.—A Fit of Any Disease.
- Parturition*.—Giving Birth to Young.
- Pastern*.—The Part of a Horse's Leg Between the Joint Next the Foot and the Coronet of the Hoof.

- Pelvis*.—The Basin or Large Cavity which Terminates the Trunk containing the Urinary and Genital Organs.
- Peritoneal Cavity*.—The Sac of the Peritoneum, or Lining Serous Membrane of the Abdomen.
- Petechiæ*.—Small Purple Spots which Appear on the Skin and Mucous Membranes in the Course of Certain Maladies. They are Attended with Great Prostration.
- Periosteum*.—The Membrane which Surrounds the Bones.
- Pharynx*.—The Back of the Mouth.
- Phlebotomist*.—One who Bleeds from the Veins.
- Phlegmon*.—A Circumscribed Inflammatory Swelling, with Increased Heat and Pain, and Tending to Suppuration.
- Pleural Cavity*.—The Sac of the Pleura, or Lining Membrane of the Chest or Lungs.
- Pleurothotonus*.—A Variety of Tetanus, in which the Body is Curved Laterally by the Stronger Contraction of the Muscles on One Side of the Body.
- Pleuro-Pneumonia*.—Inflammation of the Lungs and Pleura.
- Polarity*.—That Property which Disposes the Particles of all Kinds of Matter to Move in a Regular and Determinate Manner when Affected by Other Agents.
- Poll*.—The Highest Point of the Head, Marked by a Transverse Bony Ridge.
- Prognosis*.—A Judgment Formed Regarding the Future Progress and Termination of any Disease.
- Probang*.—A Long Slender Piece of Whalebone, with a Piece of Sponge at One End for Examining the Gullet, or Removing any Obstruction in It.
- Probe*.—An Instrument with which the Depth and Extent of Wounds are Tried.
- Pudenda*.—The Parts of Generation.
- Pulmonary*.—Belonging to the Lungs.
- Pumiced Foot*.—A Foot Where the Sole is Level with or Below the Side of the Hoof.
- Purgative*.—A Medicine for Evacuating the Bowels.
- Pus*.—The White or Yellowish Matter Generated in Ulcers and Wounds in the Process of Healing.
- Putrefaction*.—The Natural Process by which Animal and Vegetable Bodies are Disorganized and Dissolved.
- Quarantine*.—The Time During which Men or Animals Comin from a Country where any Contagious Disease Exists are

Kept from Intercourse with the Inhabitants of the Country.

*Quinsy*.—Sore Throat.

*Quitter*.—A Fistula on the Coronet.

*Quidding*.—Dropping the Partly Chewed Food.

*Rabies*.—Hydrophobia.

*Rectum*.—The Straight Gut; the Last of the Intestines.

*Ringbone*.—A Bony Enlargement of the Foot.

*Roaring*.—Noisy Respiration.

*Ruminant*.—An Animal that Chews the Cud.

*Salivation*.—An Increased Discharge of Mucus from the Mouth.

*Sallenders*.—Scurfy Eruption on the Inside of the Hock Joint of the Hind Leg.

*Sand Crack*.—A Separation of the Laminæ of the Hoof.

*Schneiderien Membrane*.—The Mucous-Membrane Lining of the Nose.

*Scouring*.—A Loosening of the Bowels.

*Sinew*.—A Ligament which Binds the Bones Together.

*Slinking*.—Abortion; Miscarriage.

*Scolex*.—The *Ascaris Lumbricoides*—An Intestinal Worm.

*Sensorium*.—The Common Centre of Sensations.

*Septum Ventriculosum*.—The Muscular Partition Between the two Ventricles of the Heart.

*Serous Membranes*.—A Class of Delicate Membranes which form Closed Sacs, met with in the Chest, Abdomen, and Spinal Canal.

*Sprain*.—The Violent Stretching of a Ligament or Tendon.

*Superfetation*. Impregnation when the Mare is Already Pregnant.

*Spaying*.—Removing the Female Genitals (Ovaries).

*Sphincter*.—A Name Given to Several Annular Muscles, which Constrict or Close Certain Natural Openings.

*Splint*.—A Bony Enlargement Below the Knee.

*Sternum*.—The Breast Bone.

*Tetanus*.—Locked Jaw.

*Traumatic*.—Pertaining to Wounds.

*Through Pin*.—A Wind Gall on the Hock.

*Thrush*.—A Softening of the Frog of the Foot.

*Thymus Gland*.—A Sweet Bread of the Butcher. An Organ Situated in the Anterior Part of the Chest in the Mediastinum, and Usually Absent in Adult Life.

*Tympanum*.—The Drum of the Ear.

*Trephine*.—An Instrument for Making Openings in Flat Bones. It Consists of a Circular Saw, Centre Pin and Handle, and Removes a Circular Portion of the Bony Plate.

*Trituration*.—Reducing to Powder.

*Trocar*.—An Instrument for Removing the Water in Dropsy, or the Wind in Hoove.

*Tympanites*.—Drum Belly, or Symptoms of Windy Colic.

*Ulcer*.—A Sore on the Surface.

*Umbilical Cord*.—The Navel String.

*Urethra*.—The Channel Through which Urine is Discharged from the Bladder.

*Uterus*.—The Womb.

*Vagina*.—The Passage Leading to the Womb.

*Vertebra*.—One of the Back Bones.

*Vena Portæ*.—A Vein which Receives the Blood from the Stomach, Intestine, Spleen, and Pancreas, and Breaks up Again in the Substance of the Liver.

*Ventricle*.—Literally a Little Belly; a Name Given to Various Small Cavities.

*Vertigo*.—Giddiness.

*Vibrissæ*.—The Hairs that Grow at the Entrance of the Nostrils and Other Outlets.

*Virus*.—A Morbid Poison; a Principle Inappreciable to the Senses, which is the Agent which Transmits Infectious Diseases.

*Viscera*.—The Entrails; Internal Organs.

*Warbles*.—Lumps on the Back Caused by an Insect.

*Withers*.—The Upper Part of the Shoulders.

*Wheezing*.—Asthmatic Breathing.

*Whirlbone Lameness*.—Lameness in the Hip Joint.

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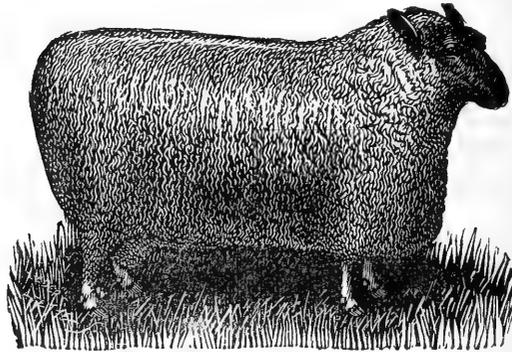
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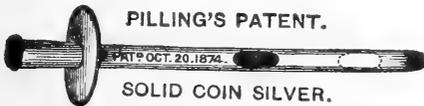
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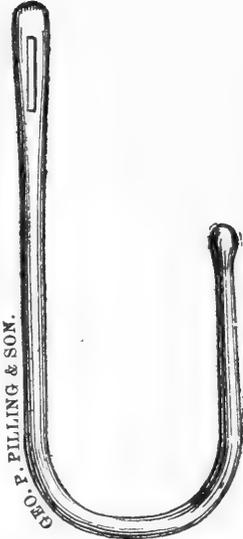
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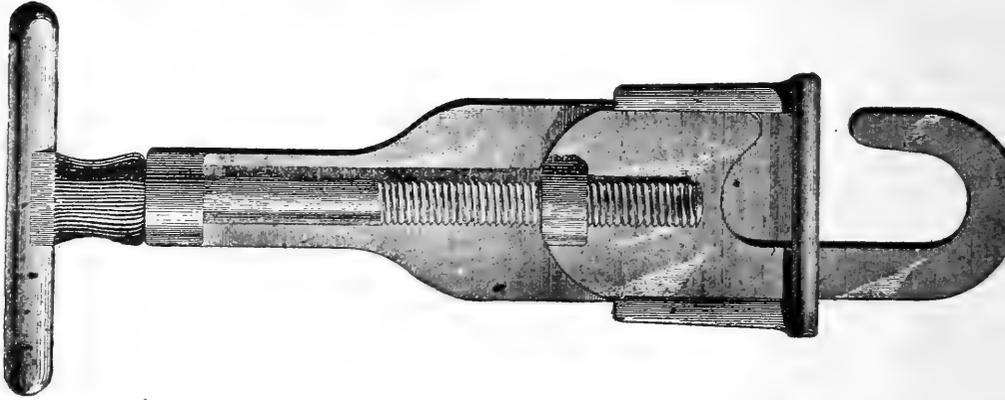
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We will furnish Dr. A. Lantard's work on Animal Castration, if ordered with the Ecraseur, for \$1 extra, or if ordered separately the work will be sent post paid upon receipt of the usual price, \$2.

The following are from the many testimonials which we are constantly receiving :

CHICAGO, January 19th, 1888.

DR. H. W. PRATT: I can recommend your Ecraseur as far superior to any that I have used.

Yours truly, J. R. YORK, V. S.

CHICAGO, November 3rd, 1887.

JAMES MANUFACTURING COMPANY: I have much pleasure in saying that this simple and practical instrument has given perfect satisfaction, and that I can warmly recommend it to my fellow practitioners.

TH. SCHREDER, M. D., V. S., 108 Dearborn Ave.

**PRICE OF ECRASEUR, \$5.00.** Address,

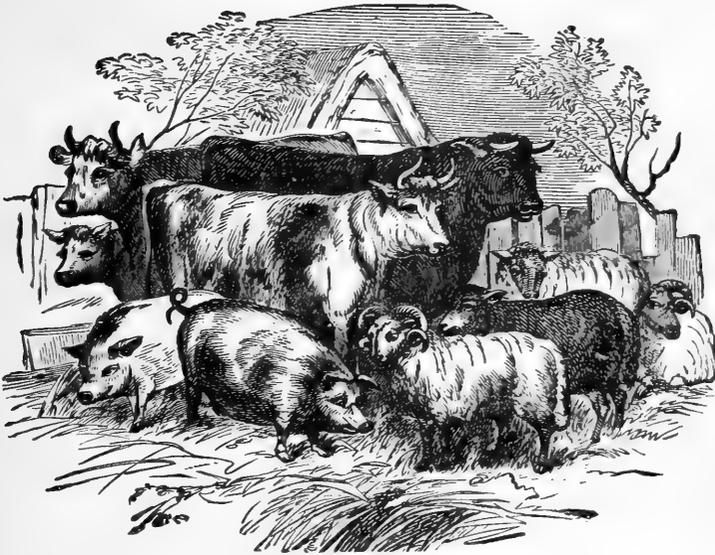
**JAMES MANUFACTURING COMPANY, 214 State Street, Chicago, Ills.**

We have given Dr. H. W. Pratt's Ecraseur a fair unbiased trial and find it easy and safe. We do not require to press the testicle through a complicated chain, causing an animal to suffer unnecessary pain, we only slip the curve of the Ecraseur round the spermatic cord well up in the scrotum, give a turn or two of the screw, and the work is done. There is not a drop of blood lost. No scirrhus tumor can form as no ragged laceration has taken place to the end of the spermatic cord. The instrument being so easily cleaned no blood poisoning follows, as it is beautifully nickel plated so that it will not rust or give off corroded poison, as does brass. It suits our principle of castration standing. An original or ridgling is always safe and surest done standing. We run no risk in injuring the animal by throwing. Every Stock Breeder can castrate his own stock as well as the most experienced. No colt can be ruptured by tearing or laceration, as there is no straining or pressure on the part.

It is the cheapest instrument yet invented. We will send post paid, to any address on receipt of \$6.50, The Stock Breeders' Manual and Ecraseur. Every Stock Breeder his own Castrator.

# STUART'S

## COMPOUND VETERINARY REMEDIES



—FOR THE—

Treatment of Disease, Lameness or Injury in Horse,  
Cattle, Sheep, and Hogs.

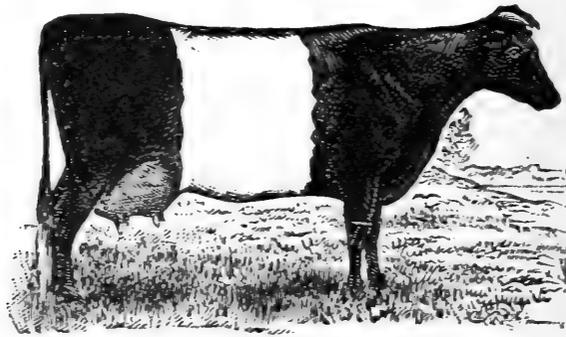
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DR. J. STUART, V. S.,

152 Prospect St.,

CLEVELAND, O.

# GARGOLINE.



Swelling, Inflammation, Soreness, Hardness or Garget in the udder is cured quickly by the use of Gargoline. Cures Cracks or Scratches in the Teats or Pustular Eruptions on the udder, or Scale Sores, or Pox, making it a pleasure to the cow to be milked instead of pain. It is none poisonous to young animals, and is the only liniment known to Stock Owners that will cure Garget, Snake Bites, Sores or wound made by flies or other insects. Prevents the cow pox, from spreading in the herd. We send it South by the gross.

Every Stock Owner that has used it once will use it again.

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PRICE, \$1.00 PER BOTTLE.

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**DR. J. T. STUART, V. S.,**

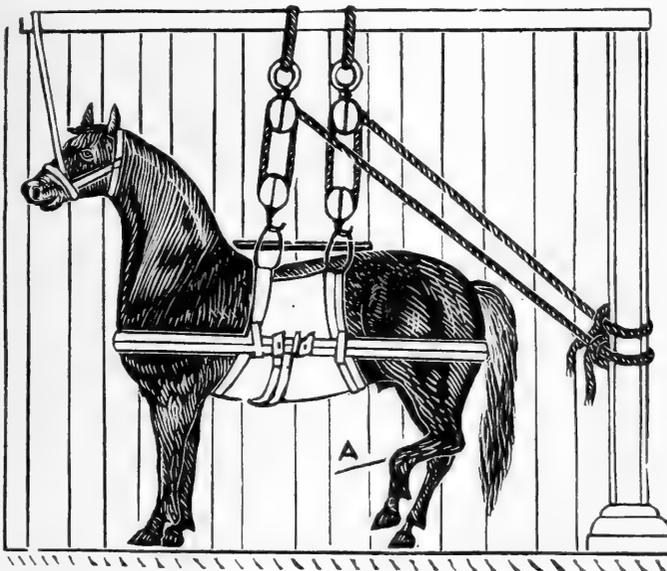
152 Prospect Street, - CLEVELAND, O.

# STUART'S COMPOUND HOOF OINTMENT

As prepared by James Stuart, is the best invigorator for growing and strengthening the hoof, will spread contracted hoof in a short time if caused by Fever, Inflammation, Founder, Tread or Injury, will heal Quarter Crack, Sand Crack or Thrush, and has been the means of preventing Lock Jaw by being pricked with a nail. Every stock owner ought to keep it on hand as it is unparalleled to cure foul feet in Cows and Sheep.

## MY COMPOUND CONDITION POWDERS

Have never been excelled by any preparation getting the name of condition powders. I am able to guarantee that my COMPOUND CONDITION POWDERS have saved more animals than any other preparation ever in possession of any stock owner. They remove worms without purging or weakening the condition of the animal. One tablespoonful in feed with one teaspoonful of salt morning and evening will clean the bowels of Bots, Worms, or Gravel from the kidneys. Purify the blood. Soon cleanse the skin from all unhealthy diseases, Farcy, Eczema, Mange, Dandruff and Scurf. Blood Poisoning by strengthening the blood, overcoming its impurity brings the animal into a good state of health and gives no check to young and growing stock.



## COMPOUND HEALING OINTMENT.

Will heal a lacerated wound, in shorter time without changing the color of the hair than any other remedy ever used. Will cure Scratches, Grappy Greased heels, Mud Fever, Harness Galls, Lacerated by rusty barb wire, Ulcers, or foul feet in cattle. Has healed deep cuts and broken legs with no other ointment, and in every case did not leave a scar.

**DR. J. STUART, V. S.,**

152 PROSPECT ST.,

CLEVELAND, O.

# STUART'S NON-POISONOUS SHEEP DIP.



This Dip can be used freely on sheep and lambs, as the best invigorator for promoting the luxurious growth of fine long wool, showing a texture that commands the best price. It not only grows a fine heavy fleece by keeping the skin clean and healthy, but destroys Ticks, Lice, and their embryo, whereby the health and comfort of sheep and lambs is not interfered with whenever Stuart's non-poisonous dip is used. The acarus scabiei, or scab insect is quickly destroyed, and scab in a flock has been cured by one application, and fly struck sheep or lambs are cleaned and skin cured by one application. And every abrasion of the skin is quickly healed, destroying all maggots and eggs that may be adhering to the wool, therefore instead of growing a fleece weighing 4 or 5 lbs., 10 to 14 lbs. is not an extraordinary weight when Stuart's dip has been used. The proper name is Palm Oil Dip. As that forms the basis that gives to every fleece that wonderful protection against chills, and renders the fleece impervious to wet where other dips absorb the wet, and in cold weather is the cause of so much disease and death in flocks. Another great benefit wherever the face cover is used and saturated with Stuart's Dip, Grub in the head is unknown. The Ostrus Ovis or Gad Fly will not come near the flock, even when the face and head of sheep or lambs is rubbed with the dip, lambs are free of grubs.

We see the flock congregated in a corner keeping their noses close to the ground tormented by the insects, loosing flesh when they ought to be feeding in ease and quietness. The Sarcophaga Canaria or flesh fly that deposit and breed in a dirty fleece, is eradicated by one application. The dip is used to destroy Fleas and Mange on Dogs.

The acaria that infest the skin of the horse, in the shape of large blue lice, (Hæmatopinus of the horse), also the Hog Louse or (Malopinus of the hog), all which and their embryo is destroyed by one application of Stuart's Non-poisonous Sheep Dip, that destroys Scab Matter, Scurf, Dandruff or Lice, on the skin of Horse, Cattle and all Animals. Warranted to cure without injury to animal life.

Sold at \$1.00 per Gallon.

Any animal can lick itself as it is non-poisonous. The Cash must accompany the order.

***Stuart's Compound Condition Powders, \$1 per Box.***

***Compound Healing Ointment, \$1 per Box.***

***Compound Carbolic Ointment, \$1 per Box.***

***Stuart's Sheep Dip, \$1 per Gallon.***

***Ossidine, \$1 per Box.***

All Veterinary Medicines Prepared to order by

## JAS. T. STUART,

152 PROSPECT STREET, - - - CLEVELAND, O.

# STUART'S OSSIDINE

For the treatment of Lameness in Horse and Cattle cannot be excelled. Cures Splints, Spavin, Side Bone, Ringbone, Curb and all Bone Enlargements, Elbow Tumors, Sweeny, Collar Galls, Fistula on the Withers, Pollevil, Enlarged Glands, Thrush or swelling of any kind; does not leave any blemish, does not require any antidote. The horse can work all the time while under treatment. No other remedy known to the Veterinary Profession can compete with it either for rapid treatment or quick recovery. No firing iron needed as it never fails to cure, leaving a scar on the part as long as the horse lives, reducing the price of the Animals. Needs no costly Antidote as Glycerine, Arnica or Opium.

It is peculiar in its action by being painless, therefore, there is no irritation to ruffle the temper of any animal while under treatment. Price per Box, \$1.00.

Cheapest remedy for the above mentioned diseases ever offered to horsemen, can be used on a mare in colt as there is no pain, or on a colt with bent joints two days old. Ring-worm on cattle is cured by one application.

## TESTIMONIALS.

We have not resorted to the unprincipled practice that we know has been resorted to, in order to get up testimonies by several Proprietary Medicine Manufacturers, by giving gratis samples of their medicines so as to get parties to perjure themselves for favor. Every testimonial comes unsolicited and speaks for itself.

My mare was lame for one year and has been treated by different competent Veterinary Surgeons with no good done her. I had her examined by Dr. G. Stuart, V. S., who prescribed a box of Ossidine, I used it as directed, and the first application I knew a difference in her traveling, the lameness gradually disappearing and in fourteen days she was as sound and free of the lameness as ever she was. I have driven her every day since, sometimes long drives. The Ossidine did not blemish or take a hair off, which makes it all the more wonderful to say nothing of the small expense of only \$1.00.

C. W. SHERMAN,

433 Superior Street, Cleveland, O.

My horse on which I used the dollar box of Ossidine is as sound as the dollar I paid for it, he was lamed when starting for the last two years. Thanks to Dr. G. Stuart, V. S., It did not blister so as to leave a blemish or take a hair off.

JAS. WATSON, Leesville, O.

My horse that had the sweeny is well, and the shoulders is filling up all right, walks and trots without showing any stiffness. He did not seem to feel any irritation when we rubbed it well in, it did not take a hair off.

H. C. WILSON, Marion, O.

Sprained pastern and swelled leg. I used the Ossidine as was directed, and in one week my mare was sound. It did not blemish which makes it all the more valuable.

J. A. MASON, Ashtabula, O.

## UNSOLICITED TESTIMONIALS

In favor of Ossidine Ointment that we received by express.

Enclosed find \$1.00 for which send me one box of Ossidine Ointment. I have used one box, I like it very well. It has done more for a spavined mare I have, then I ever expected could be done. I am gratefully yours,

ED. JONES,

Botzum Station, Summit Co., O.

From Dr. T. Forney, V. S., Leetonia, O.

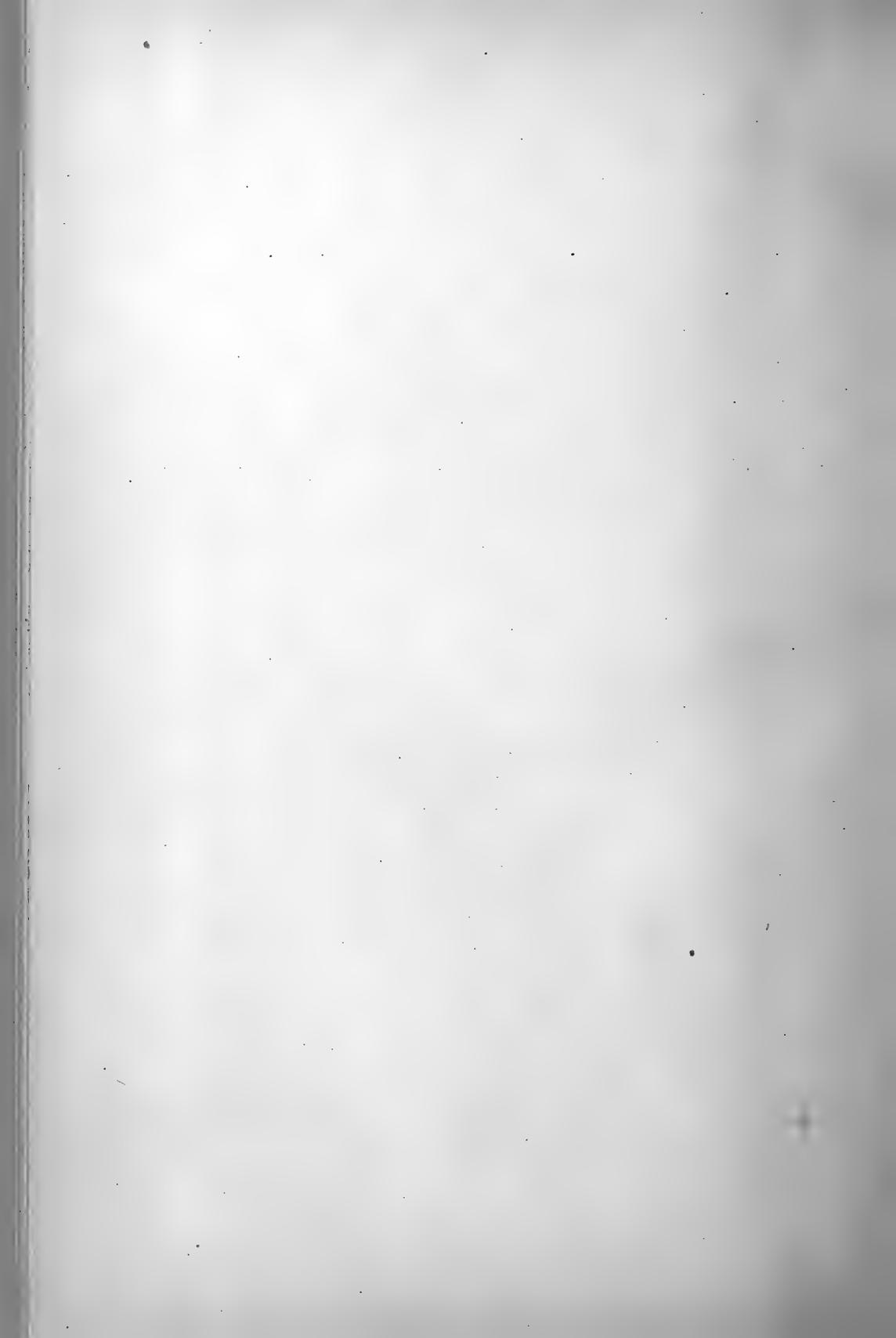
I recommend your Ossidine Ointment whenever I can, Ossidine is the boss when rightly applied. Dr. T. Forney is a very successful Surgeon.

From O. L. Russell, Solon, O.

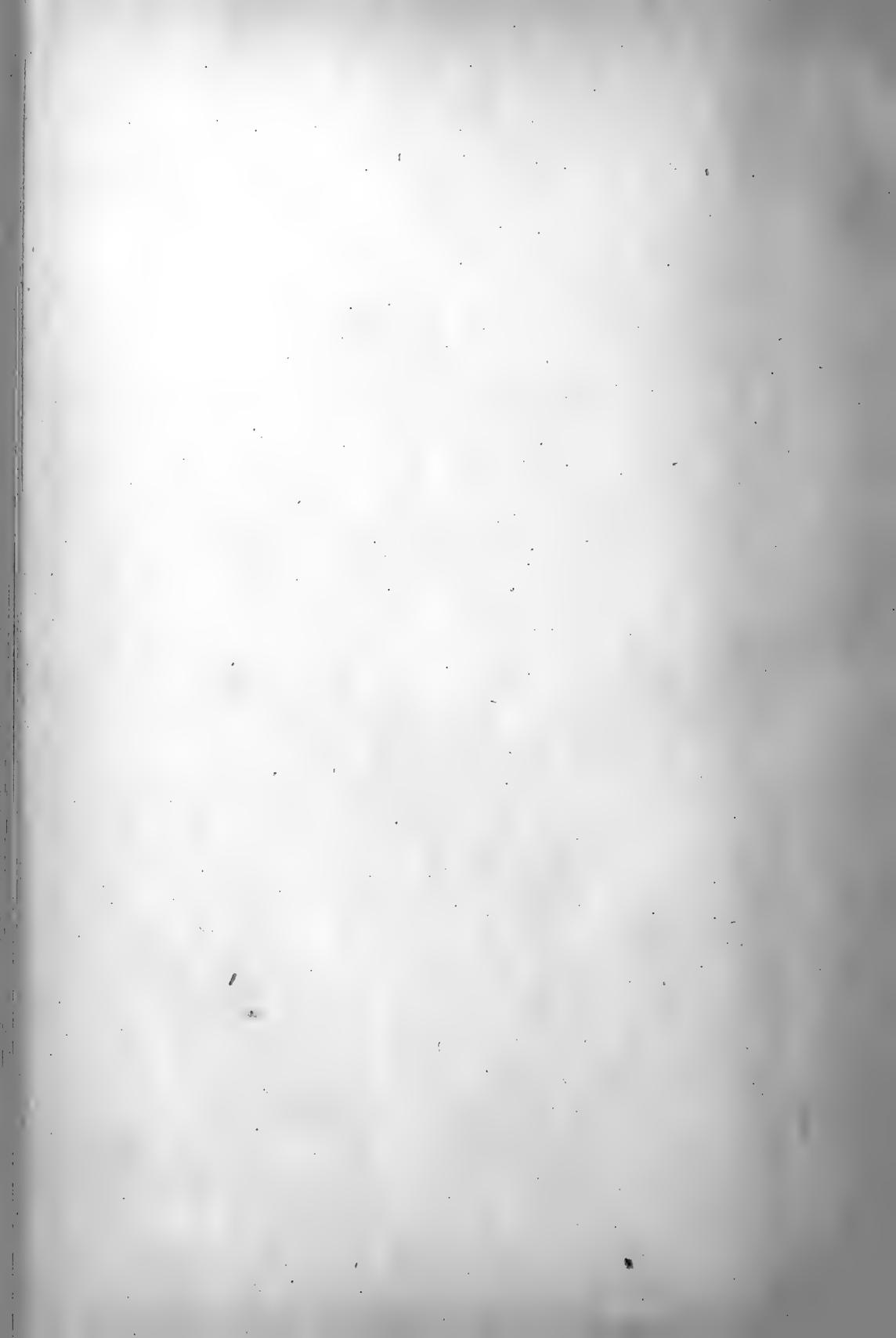
I have used Ossidine Ointment on Spavin and Ringbone, and am well pleased with it.

From M. A. W., Glenville Race Track.

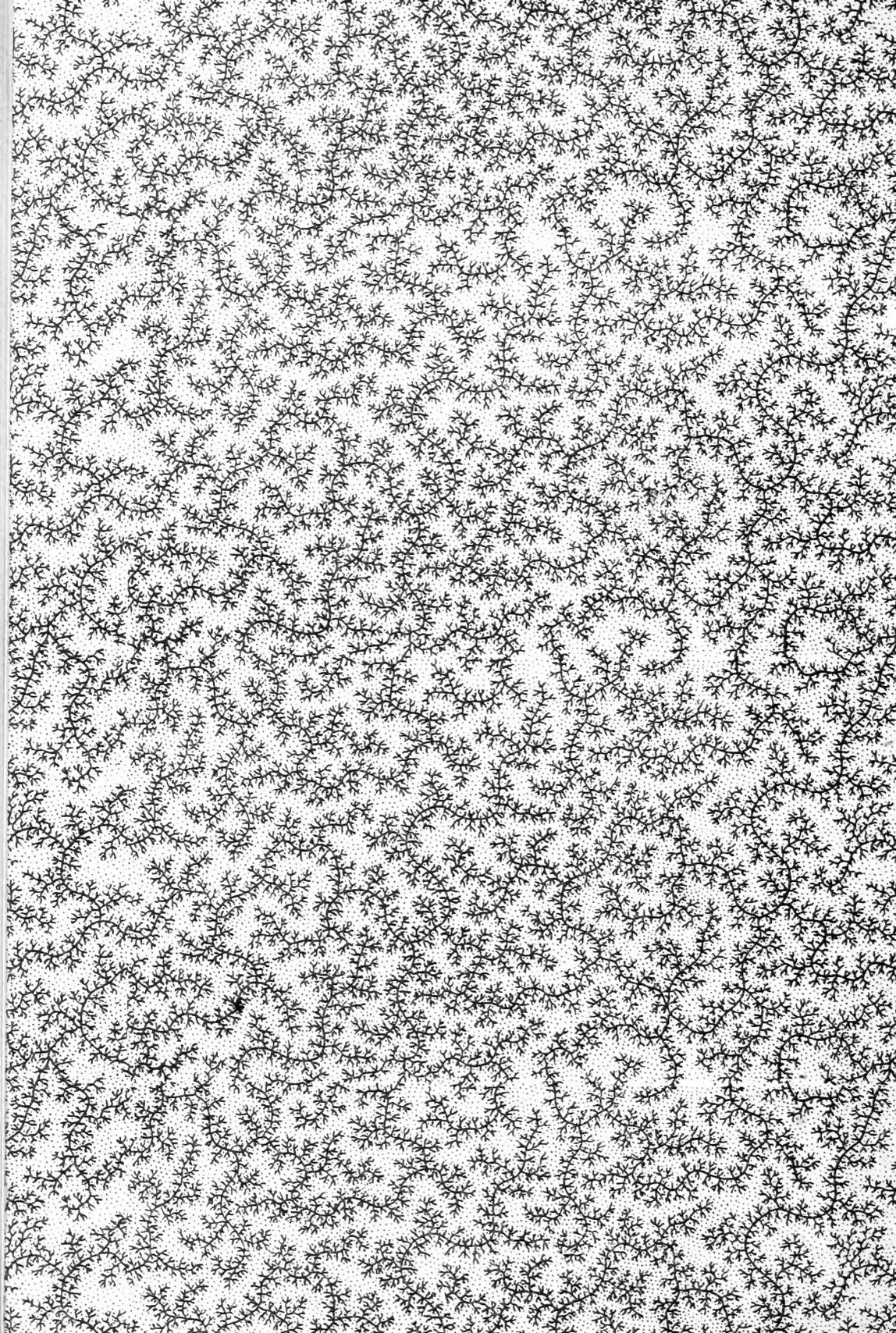
Jas. Stuart send me another box of your Ossidine Ointment. My horse got lame at the home stretch by striking his knee after we rubbed him dry. I ordered the Ossidine Ointment rubbed on, and in 30 minutes he trotted his next heat without ever showing a lame step, and has not been lame since.

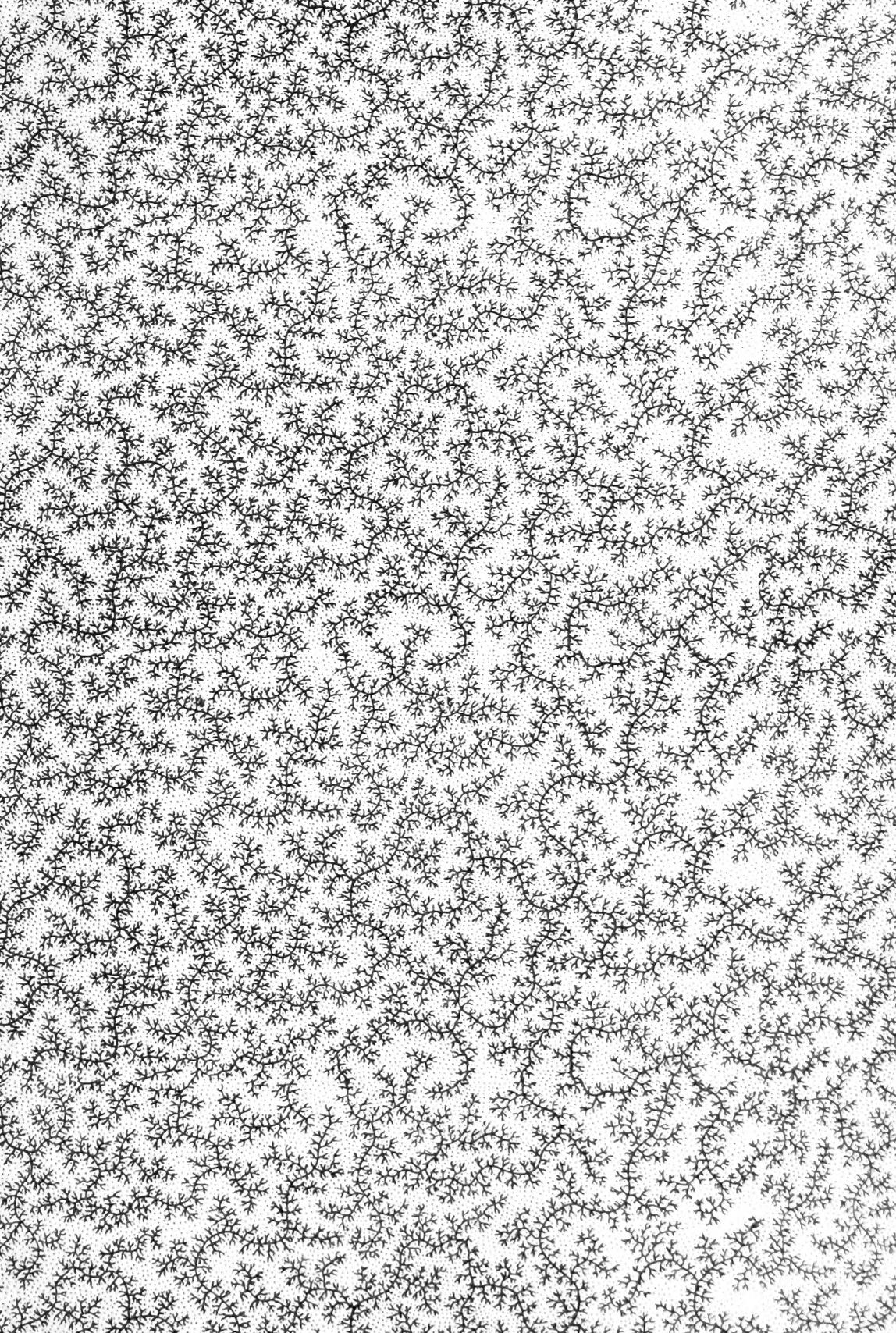












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