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The Veterinary Science.

(*Revised and Enlarged.*)

The Anatomy, Diseases and
Treatment of

Domestic Animals

Horses, Cattle, Sheep, Pigs, Dogs and Poultry

Also containing

*A Full Description of Medicines
and Receipts.*

BY

J. E. HODGINS, V. S., V. D.

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AND

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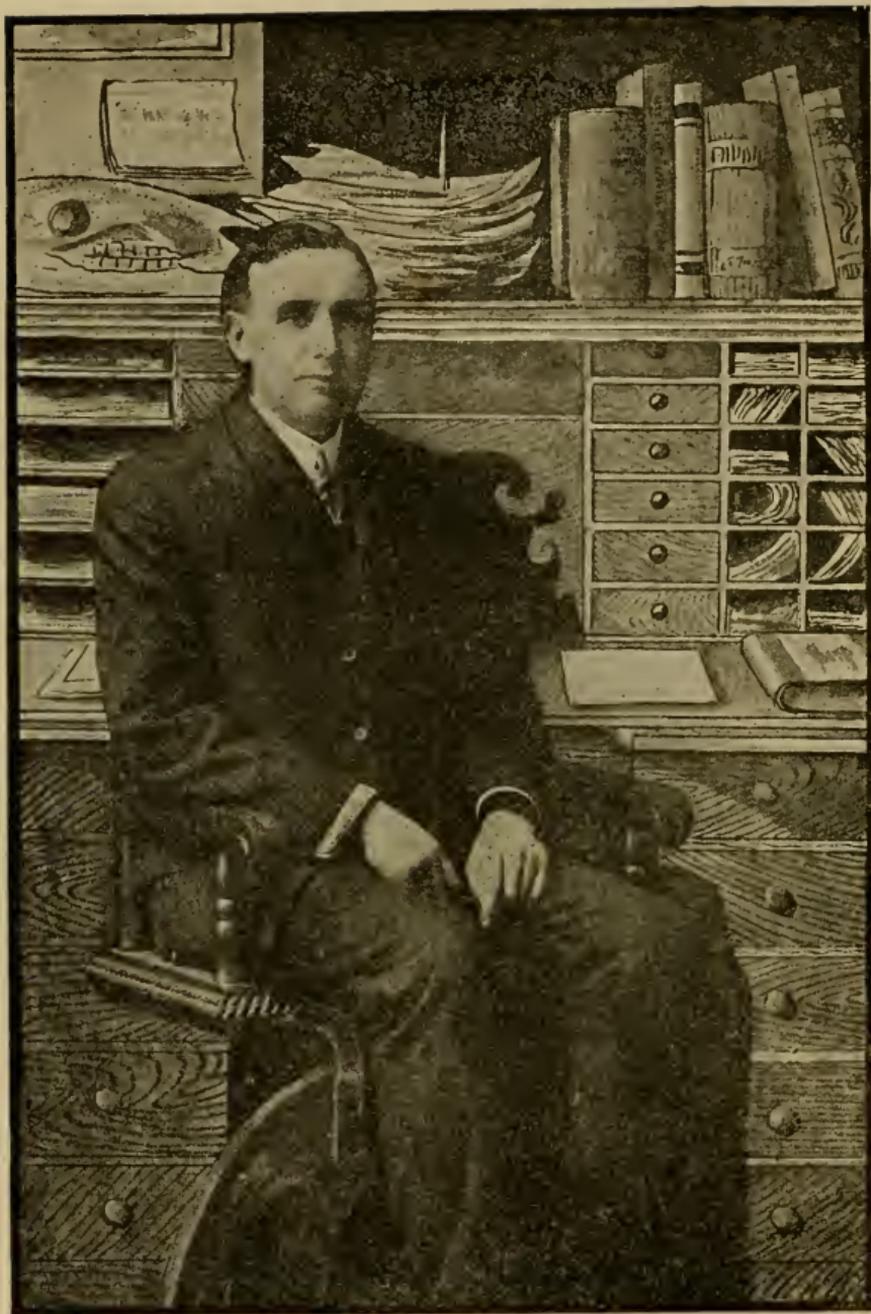
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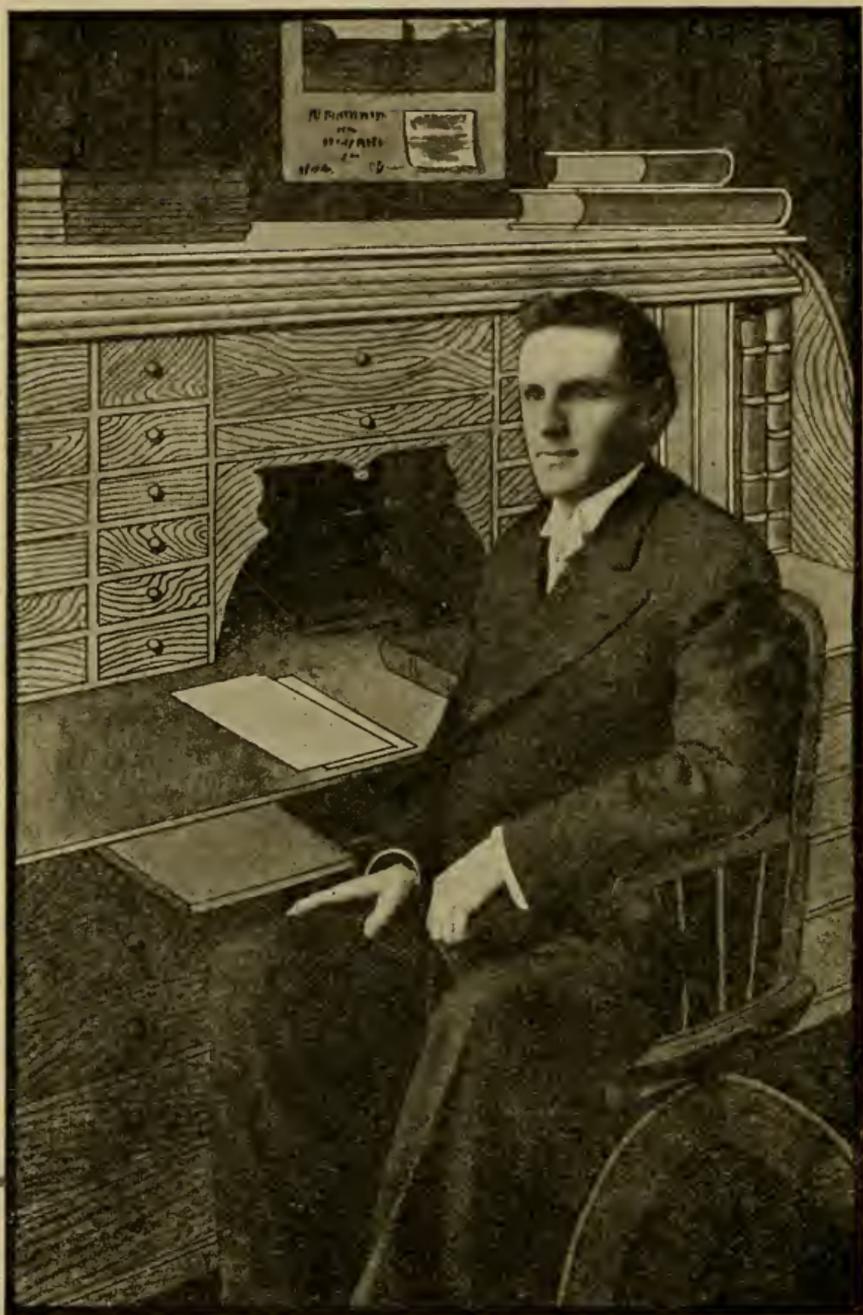
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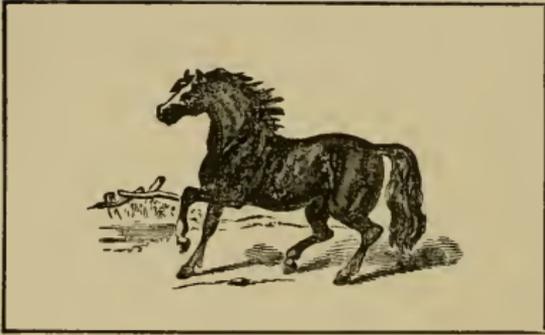
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T. H. HASKETT, D. V. D.



PREFACE

AT THE request of some of the leading stockowners and prominent farmers of Canada and the United States, and believing that a work of this kind has long been wanted by those interested in domestic animals, the authors have undertaken the publication of *THE VETERINARY SCIENCE* in the simplest English language. They have endeavored to make it a profitable and interesting study for stockowners and their sons, who, by carefully consulting its pages, will find it to contain information of untold value.

Part I. contains the practical anatomy or conformation of the horse, and should be carefully studied.

The diseases and treatment of the horse follow in Part II. Chapter I. lays the plan of how to examine a sick horse, and as the reader proceeds it will be found simple in the extreme. Mistakes in dealing with a case can hardly be made, as the causes, symptoms and treatment of the diseases are so fully explained that the stockowner has but to follow the directions laid down.

The comparative anatomy, diseases and treatment of cattle in Part III. will likewise be found as simply and satisfactorily explained as that of the horse.

The diseases and treatment of sheep, found in Part IV., are fully dealt with, and it will be found by persons who read and study this part of the book that sheep are as easily treated as any of the other animals. The same may be said of the diseases and treatment of pigs, dogs and poultry, found in the same Part.

The medicines and receipts that constitute Part V. are a very important part of the study; they are fully and practically explained. The receipts for making liniments, lotions, powders, blisters, etc., are very valuable to everybody, especially those interested in stock, to which it may now be said the farmer looks for a livelihood.

The index, as will be seen, is a prominent feature of the book, being an index of symptoms as well as of diseases. This makes it very easy to find out from what an animal is suffering. Finding the symptom in the index directs you exactly to that part of the book in which that particular disease is treated.

London, Canada.

J. E. HODGINS, V. S. V. D.
T. H. HASKETT, D. V. D.

The Veterinary Science is equivalent to a thorough practical course in a Veterinary College, and copies of this book can be obtained from the publishers. [See title page.]

PREFACE TO THE REVISED AND ENLARGED EDITION.

IN presenting to the public a revised and enlarged edition of *THE VETERINARY SCIENCE*, it gives the authors a peculiar pleasure to acknowledge the gratification which the flattering reception of former editions afforded them. The importance of having such a work retain its simplicity of expression, but at the same time remain comprehensive, concise and abreast of the times in the latest and most approved methods of treatment, is sufficient apology for what they have undertaken to do in presenting this edition.

They have endeavored, in the revision of the text, as well as in the many additional subjects and diseases dealt with, to adhere strictly to the original object in view, namely, that of using so far as possible the "simplest English language." This they believe is a very important and commendable characteristic of the work worthy of their best efforts.

An introductory chapter, while not dealing with disease or its treatment, is added to serve the purpose of merely introducing the student to domestic animals in a general way. This, they believe, will not only familiarize him to some of the more important characteristics that these animals possess and thus fit him to more easily understand the matter contained in the pages that follow, but in addition, will increase his interest, as well as help to concentrate his mind upon the subject as a whole.

Many illustrations and plates have been added, and while these no doubt embellish the text and improve the general appearance as a whole, the object in view has been to further simplify, by pictorial method, the presentation of facts connected with the physical construction of the animals treated, as well as the causes, symptoms and treatment of disease.

The general arrangement of former editions has been retained, although it has been felt necessary to make some minor changes. Part IV. has been subdivided and reconstructed, making reference to diseases treated more in accordance with the general construction of the whole.

The merits of the present edition are cheerfully submitted to the decision of a public judgment; and should the motive of the authors, in undertaking the revision and enlarging of *THE VETERINARY SCIENCE* to render it more acceptable to those interested in the care and treatment of our domestic animals meet with approval, they will feel amply repaid for their labors.

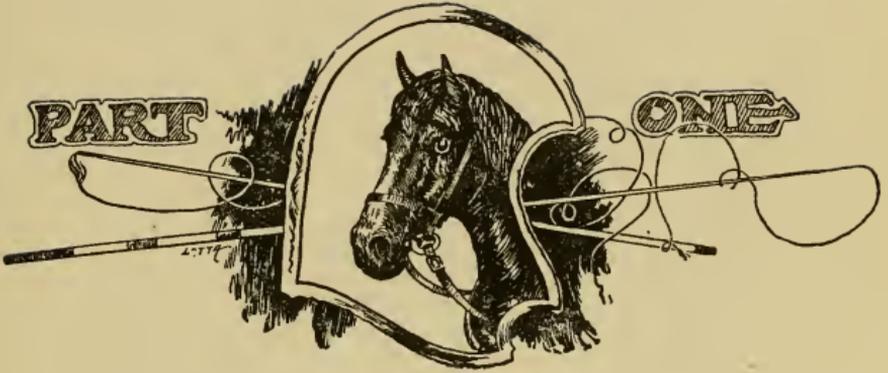
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THE AUTHORS.

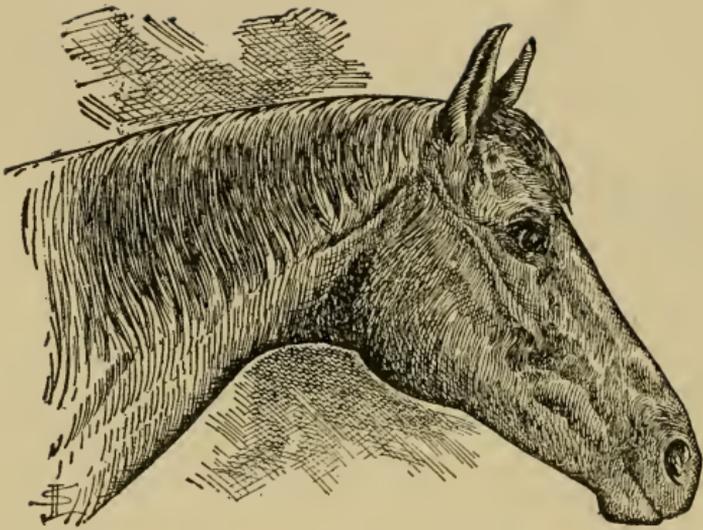
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PART



ONE



A TYPICAL HEAD.

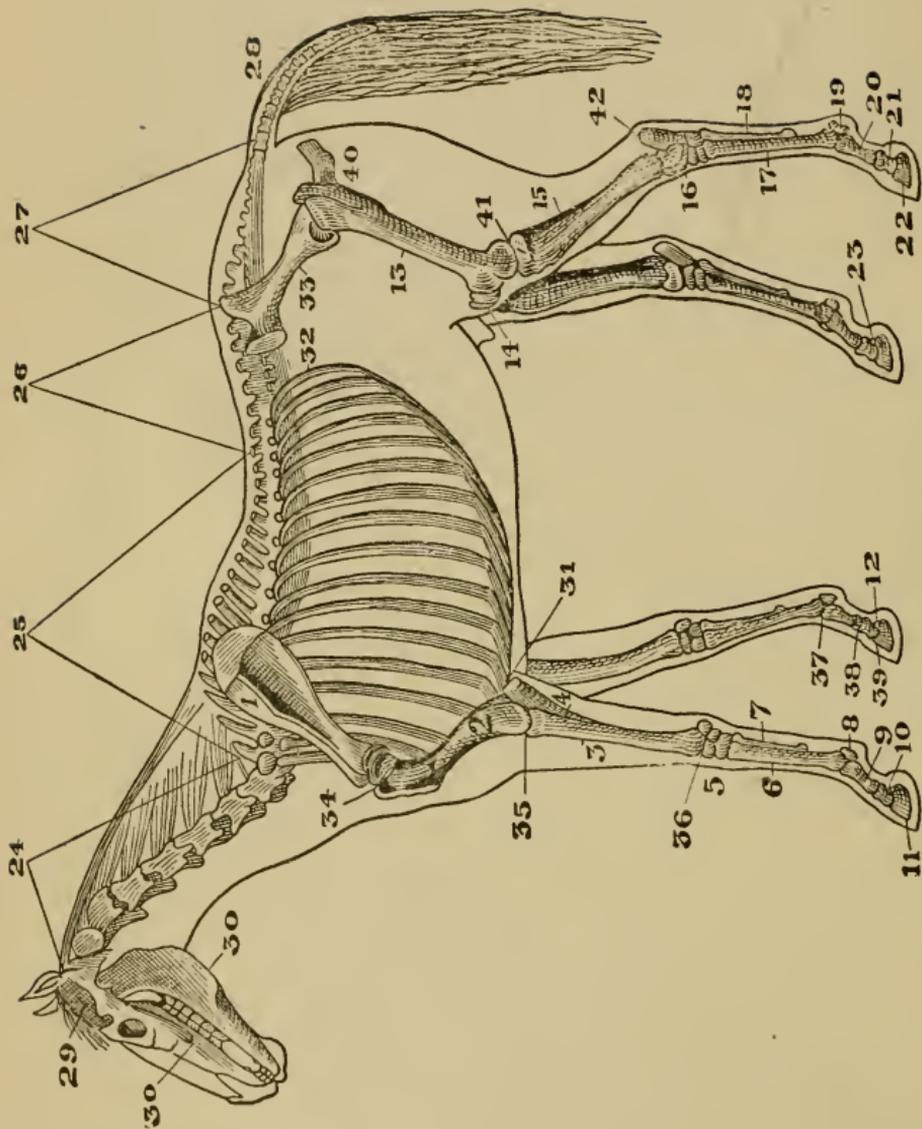


PLATE I.—SKELETON OF A HORSE.

EXPLANATION OF PLATE I.

SKELETON OF THE HORSE.

This cut gives the names of all the joints and bones in the body, also the number of bones in each section.

Names marked according to numbers.

- | | |
|---|--|
| <ol style="list-style-type: none">1. Scapula, or shoulder blade.2. Humerus, or shoulder bone.3. Radius, or bone of fore-arm.4. Ulna, or bone of fore-arm.5. Carpus, or knee (contains 8 bones).6. Metacarpal, or large shin bone.7. Small Metacarpals, or splint bones (2 in number), 1 on each side.8. Sesamoids, or fetlock bones, 2 small bones at the back of the joint.9. Os Suffraginis, or large pastern bone.10. Os Coronæ, or small pastern bone.11. Os Pedis, or foot bone.12. Os Naviculare, or shettle bone, situated behind the coffin-joint, and is the seat of the coffin-joint lameness.13. Femur, or hip bone.14. Patella, or stifle bone.15. Tibia and Fibula, or thigh bones, the Fibula being a small bone running down just outside the Tibia.16. Tarsus, or hock joint (contains 6 small bones).17. Metatarsal, or large shin bone.18. Metatarsals, or small shin bones (being 2 in number).19, 20, 21, 22 and 23 receive the same names in the hind leg as 8, 9, | <ol style="list-style-type: none">10, 11 and 12 in the front leg, being the same from the fetlock down.24. Cervical region, or neck bone (being 7 in number).25. Dorsal region, or back bones (being 18 in number) to correspond with the 18 pairs of ribs.26. Lumbar region, or small of the back bones (being 6 in number).27. Sacral region, or rump bones (being 5 in number).28. Coccygeal region, or tail bones (being 18 in number).29. Cranium bones, or bones that protect the brain.30. Upper and lower jaw bones.31. Sternum, or breast bone.32. Ribs, 18 pairs.33. Pelvis, or hip bones.34. Shoulder joint.35. Elbow joint.36. Carpus, or knee joint.37. Fetlock joint.38. Pastern joint.39. Coffin-joint, which is situated within the hoof.40. Hip joint.41. Stifle joint.42. Tarsus, or hock joint. The joints receive the same name from the hock down in the hind leg. as from knee down in the front leg. |
|---|--|

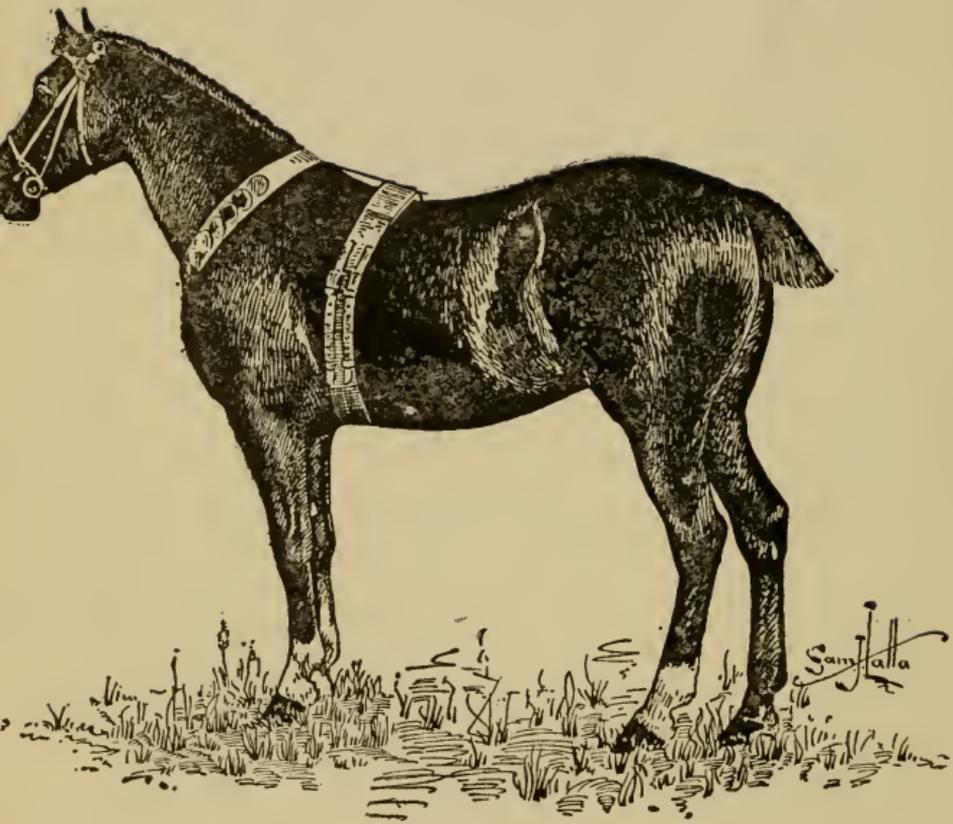


FIG. 1—A HACKNEY

THE VETERINARY SCIENCE

PART I.

ANATOMY OF THE HORSE.

CHAPTER I.

BONE.

BONES are hard, yellowish-white, insensitve *objects* which form the skeleton of animals. Living bone is bluish pink, insensitve and elastic. Exposure to air causes it to become diseased and blackened, very sensitive and painful.

Bones are made up of two kinds of matter—animal, which makes the bone tough and elastic, and earthy, which makes it hard and brittle. In young animals the animal matter forms one-half of the substance, which afterwards diminishes to one-third as the animal advances in age. This is why old animals' bones are easier to fracture and harder to mend.

1. **Covering of Bone.**—Bones are covered by a tough, fibrous, inelastic membrane called periosteum, which can be seen by examining the bone of an animal which has just died. The only exception to this is at the joints where one bone articulates with another, and where a tendon or muscle plays over a bone; here we find its place taken by articular cartilage.

2. **Contents of Bone.**—Red marrow is found in the extremities or near the ends of bones, while white marrow is found in the shaft.

3. **Classes of Bone.**—Bones are classed as long, flat and irregular. Long bones are found in the extremities or legs, and serve as levers for traveling and pillars to support the body. It is well to remember, that each long bone is divided into a shaft and two extremities. Flat bones are found where vital organs need protection. Example: Shoulder blade and ribs, to protect the heart and lungs; pelvic or hip bones, to

protect the bladder, rectum and other urinary and genital organs; also the cranial bones, to protect the vital organ called the brain. Irregular bones are found in the spinal column and in the joints, such as the knee or carpus hock or tarsus, where great strength is required.

4. Head Bones.—In speaking of the different points of importance in connection with the head bones of the horse, suppose a cross or longitudinal section of the head is made, it will be noticed that it is full of cavities or sinuses. The uses of these are to lighten the head and also to warm the air as it passes into the nostrils on its way down to the lungs. It will also be found full of foramen or small holes through which the nerves from the brain and various blood vessels pass to the organs situated in the head, such as the tongue, lips, and the various glands in and around the head.

Then there are the cavities in which the eyes are situated, one on each side of the head, called the orbital fossa. In examining this fossa you will find a small opening or foramen, through which the optic nerve passes in coming from the brain to the eye. This is the nerve of sight. Then the most important part of all to consider is the cranial cavity in which that very important organ is situated called the brain, which controls all the various functions and movements of the body.

Another important point is the situation of the drum of the ear. It is situated in the hardest bone found in the whole skeleton, called the petrosal. The nerve that gives the function called hearing comes from the brain down to the petrosal bone and enters by a small foramen or hole into the drum of the ear to give hearing. This nerve is called the auditory nerve.

5. Cervical or Neck Bones.—These bones, are seven in number. The first and second bones proceeding from the head receive special names. The first one is called the atlas, from which the head is suspended and to which it is attached; it somewhat resembles the body of a bird with wings extended. The next bone receives the name of dentata. This is the bone which allows the head to turn in any direction, hence it is sometimes called the axis or pivot of the neck. Between these two bones, on the upper side, is the only place where the spinal cord is not covered with bone—a spot about the size of a twenty-five cent piece. Here is where the

operation of pithing is performed in destroying the horse. It is done by running a sharp instrument, such as a knife, fairly in the center of the neck, about four inches behind the ears, and passing in this hole through the coverings of the spine into that very vital organ called the spinal cord, causing death instantaneously. The next four bones receive no name, and are about the same in size and length. The last, or seventh bone is only about one-half the length of the preceding ones and receives no special name.

6. Dorsal or Back-Bones.—Dorsal bones are eighteen in number. The chief point of interest about them is the height of the spines on the upper part of the bones. These large spines form the withers of the horse, as will be noticed in the skeleton. On either side of these bones the ribs are attached, eighteen pairs corresponding with the number of bones in this region.

7. Lumbar or Small-of-Back Bones.—These bones are six in number, and they are situated immediately above the kidneys.

8. Sacral or Rump Bones.—There are five of these bones in the young horse. They become united and form one in the adult. These are situated between the upper hip bones and help to form the rump of the horse. Beneath these bones the bladder is situated.

9. Coccygeal or Tail Bones.—These are eighteen in number. The principal point of interest in these is that they become smaller as they proceed towards the point of the tail.

10. Hip or Pelvic Bones.—These are three in number, viz.: Ilium, ischium, and pubis. The largest is the ilium, passing upward and forward, the outer part of it forming the pin of the hip or outer angle. The back or posterior part of this bone forms a third of the articular surface of the round joint and also helps to form the upper wall of the pelvic or hip cavity. The ischium passes back from the round joint and helps to form the floor of the pelvic cavity. It can be felt in a horse that is poor in flesh, projecting out below the tail on each side. The pubis, the smallest of the three bones, is situated immediately in front of the ischium bone and forms the floor of the pelvic cavity.

11. Sternum or Breast Bone.—This bone is small and short in the horse and is situated on the lower side of the chest

cavity. The principal points to be noted in this bone are that it is the softest one in the horse, and that the first eight pairs of ribs are attached to it on either side. This bone, in the horse, resembles a small, flat boat.

12. Ribs.—There are eighteen pairs of ribs. They form the lateral wall of the thorax or chest cavity and afford protection to the heart and lungs. They are attached above to the dorsal region of the back bone; below, the first eight pair are attached to the sternum, or breast bone; these are called the true ribs of the horse; the next ten pair are not attached to the sternum below, the lower ends being free. They are continued downward and forward by a small piece of cartilage or gristle, and are just slightly attached to the breast bone; these are called the false ribs. Note that, starting with the first rib, they get longer until the ninth rib is reached; they then get shorter, the last rib being only a few inches long.

13. Number of Bones in the Skeleton of a Horse.—Thirty-eight bones are found in the head of a colt, not including the teeth, but in after life a great many bones become attached to each other by a process called ossification.

Head	38
Spinal column	54
Pelvic cavity or hips, three pair or six single.....	6
Ribs, eighteen pair	36
Breast	1
Both front legs	42
Both hind legs	38
Ear, bones very small and unimportant, 3 in each ear..	6

Total, not including the teeth.....221

The teeth are dealt with separately in Chapter XV.

CHAPTER II.

CONSIDERATION OF JOINTS.

THE various structures which enter into the formation of joints are the extremities of bone, ligaments, cartilage, and sometimes muscles which help to support the joint. All articular joints are supplied with a synovial membrane, which secretes the synovia or joint oil for lubricating the joint.

1. Cartilage. Cartilage, or what is familiarly called gristle, is of two kinds, viz.: articular and fibrous. The fibrous is not of much importance and does not need much consideration; it is found in various parts of the body. The articular cartilage, which covers over the ends of bones where they form a joint, is of more importance.

2. Ligaments.—Ligaments are strong fibrous bands found principally around joints. They are of two kinds, capsular and binding. A capsular ligament is a thin membrane, attached around the end of each bone, which helps to form a joint, and is, as it were, air-tight. These ligaments serve the purpose of keeping the joint oil from escaping and assist in holding the bones together. The synovia membrane is situated on the inside lining of this ligament. It secretes the joint oil. Binding ligaments are generally found on each side of the joint and are very strong bands of fibrous tissue. They serve the purpose of holding the bones of the joint firmly together.

There is a very important ligament called the ligamentum nucha. It supports the head when the muscles are at rest and extends from the pole of the head backward under the mane and is here attached to the spine of the dorsal vertebræ or, commonly called, the withers of the horse. This ligament is chiefly made up of fibro elastic tissue, and will stretch much the same as a piece of elastic. This ligament can be plainly seen in plate I., although not specially marked. In operating on a case of poll evil there is always a danger of cutting it off unless the operator be careful.

I. THE IMPORTANT POINTS OF JOINTS IN THE LEGS.

3. Shoulder Joint.—This joint is formed by the lower end of the shoulder blade, or scapula, and the upper end of the humerus or shoulder bone. This is a ball-and-socket joint, and has a strong capsular ligament. It is held to its place also by several large muscles, the most important one being the flexor brachii, which passes down over the shoulder joint through a pulley-like process on the bone. It is held down by a binding ligament which is supplied by a synovial membrane, or sack. This is the seat of what is called shoulder joint lameness. The motion of this joint is outward or inward, backward or forward.

4. The Elbow Joint is formed by the lower part of the humerus and the upper part of the radius and ulna. It has a capsular ligament and binding ligaments, one on the inside and one on the outside. The action of this joint is only forward and backward, or flexion and extension. It has no side motion.

5. Carpus, or Knee.—This is a very important joint, constructed of eight bones, having two rows, four in each, held together by strong, short ligaments. Thus there are three separate articular surfaces in this joint. The top side of the upper row articulates with the bone of forearm; this surface gives the most motion to the knee. Another articulation between the two rows of bones gives slight motion to the knee, but not so much as the upper articular surface. Between the lower part of the lower row of bones and the upper part of metacarpal, or shin bones, is another articular surface which gives slight motion to the knee. This joint has a large capsular ligament, and has binding ligaments inside and outside. The action of this joint is the same as elbow joint.

6. Fetlock Joint.—This is formed above by the lower part of the shin, or metacarpal bone, and below by the upper part of the large pastern bone. At the back of this joint there are two small bones called the sesamoid bones. This joint has a capsular and two lateral binding ligaments. The motion of this joint is backward and forward, same as knee.

7. Pastern Joint.—This joint is situated just above the hoof, and is formed by the lower end of the large pastern bone and the upper end of the small pastern bone. It has a

capsular and lateral binding ligaments, same as fetlock joint. It also has the same motion as fetlock joint, and is sometimes the seat of what is termed a high ringbone.

8. Coffin Joint.—This joint is situated within the hoof of the horse. It is formed above by the lower end of the small pastern bone, and below by the upper part of the foot bone, or os pedis. Immediately behind this joint, and articulating with the other two bones, is the navicular, or shuttle bone—it gets its name from its likeness to the shuttle of a sewing machine. This bone when diseased is the seat of navicular disease, or otherwise called coffin-joint lameness. It is also affected with what is sometimes called a low-down ringbone.

II. JOINTS OF HIND LEG.

9. Hip Joint.—This is a ball-and-socket joint, similar to shoulder joint. It has a capsular ligament and what is called a round ligament, in the joint, holding the head of the bone in the socket. This can be seen plainly by examining the joint. This is an important ligament, as it often becomes strained, being the seat of hip joint lameness. It is also held together by the heavy muscles of the hip. Its motion is similar to that of shoulder joint.

10. Stifle Joint.—This joint is formed above by the lower end of the femur, or hip bone, and the upper end of the tibia, or thigh bone. These two bones in front form a pulley-like surface on which the patella, or stifle bone, is situated. This bone, when the joint is in motion, glides up and down over the pulley-like surface. It sometimes becomes displaced, and this is termed dislocation of the stifle bone. This is an important point to notice about this joint. It has a capsular and lateral, or binding ligaments; also three very important ligaments, called the straight ligaments, which hold the stifle bone to its place as it plays upon the pulley-like process of this joint. The motion is backward and forward, same as elbow joint.

11. Hock or Tarsus Joint.—This joint contains six bones. The two upper bones, one of which is a pulley-like bone placed in front, and the other one placed behind, forms that part of the hock which is called the point of the hock to which the muscles of the gamb are attached. It can be easily seen or felt. The upper surface of these two bones articulate

with the lower extremity of the tibia, or thigh bone, and forms a true articulation of the hock joint. This part is what gives most of the motion to the joint. Below these are three other small, flat bones, placed one upon the other, having articular surfaces between them. These are called the cuneiform bones of the hock. Immediately behind these three small bones is what is termed the cuboid bone. This bone also articulates with the cuneiform bones, helping to form the articular surface of the hock. The lower articular surfaces help to give a small amount of motion to the joint. This joint is the seat of the disease termed spavin.

12. Fetlock, Pastern and Coffin Joints are similar to those in front leg.

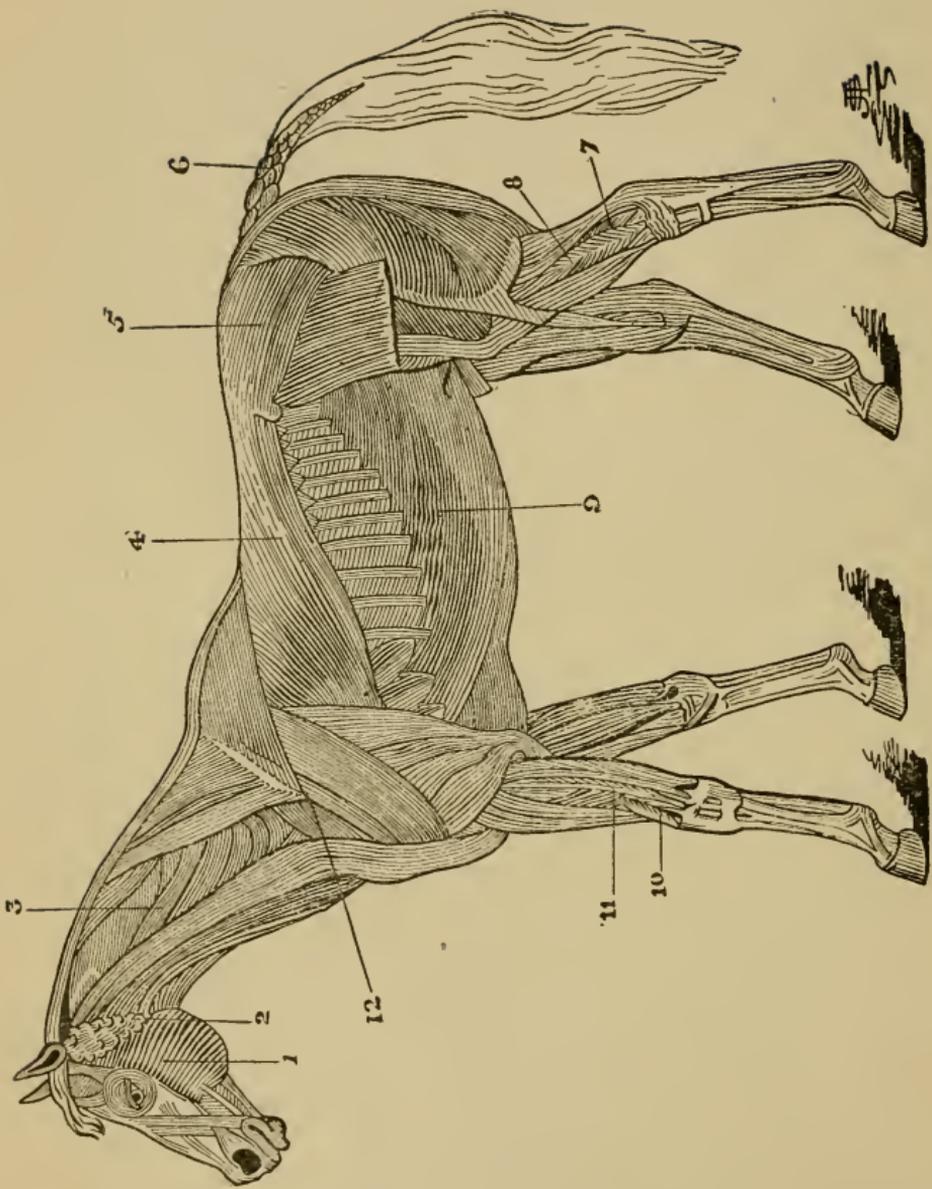


PLATE II.—MUSCLES OF THE HORSE.

EXPLANATION TO PLATE II.

MUSCLES OF THE HORSE.

This cut shows the external muscles of the body after the skin and the Pannisulus Carnosus muscle or the muscle which shakes the skin has been removed.

1. External muscles of the head, the chief action of which is to assist in masticating the food by moving the jaws, cheeks and lips.
2. Paratoid gland. Its location is shown owing to its importance. See further particulars in Chapter VII.
3. Neck muscles divided into two groups, one on each side.
4. Back muscles divided into two groups, one on each side.
5. Gluteal or hip muscles divided into two groups, one on each side.
6. Coccygeal muscles of the tail.
7. Flexor muscles or muscles of the hind leg, which assist in raising the leg.
8. Extensor muscles of the hind leg, which assist in bringing the leg forward.
9. Extensor muscles of the front leg, which assist in bringing the leg forward.
10. Flexor muscles of the hind leg, which assist in raising the leg.
11. Shoulder muscles.

CHAPTER III. THE MUSCULAR SYSTEM.

COMMONLY CALLED FLESH.

MUSCLES are the chief organs of motion, each being separated from the other by a thin, delicate membrane made up of connective tissue, which forms a sheath for the muscle. A muscle is divided into two parts, viz.: muscular and tendinous. The muscular part is the larger of the two. It is sometimes called the belly of the muscle. This portion is known as muscular tissue, and has a reddish, meaty color. At both ends of the muscle there is a tendinous part, or the hard, white portion of the muscle which becomes attached to the bone. All muscles are attached to two or more places on different bones, and, because of their contraction, the joints of the body are moved. They are well supplied with nerves, which give strength and feeling, and also well supplied with small blood vessels, from which the muscle is fed. Muscles are found in separate groups, all of which have different actions to perform. There are two kinds of muscles—voluntary and involuntary. The voluntary muscles are under the control of the will of the animal; example—the muscles of the legs, hip, back, head, and neck. The involuntary muscles are beyond control of the animal, and will act even though the animal were asleep—such as those of the heart, the large muscular curtain which separates the chest cavity from the abdominal cavity, which is one of the great muscles of breathing; also the muscles around the chest which assist in breathing.

1. **Voluntary Muscles** are in groups. The first one we call attention to, after removing the skin, is the panniculus carnosus not shown in plate II. which is a thin muscle almost entirely covering the body, and is sometimes accidentally removed by a careless person in skinning the animal. The action of this muscle is to shake the skin when flies or something bother the horse. This muscle is not shown in plate II., it having been removed in order to show the more important ones. At the head there is a group of muscles which assist in chewing, or masticating, the food. Around the throat is

another set of muscles, sometimes called the muscles of the gullet, or pharynx, which assist in swallowing. The neck muscles are divided into two groups, one on each side. The action of these are to raise and lower the head, also to turn the neck and head from side to side. The muscles of the back are generally divided into two groups, one above the spinal column and the other below. The muscles above the spine assist the animal in running, jumping and rearing. The muscles below the spine are sometimes called the lumbar, or psoæ, situated below the lumbar bones, or the bones of the small of the back. The action of these muscles is to assist the animal in getting up. These muscles are important, for when paralyzed the horse cannot use his hindquarters. Below these muscles are the kidneys.

2. The Gluteal Muscles, or the muscles of the hip, are very large, filling in around the hip bones. The action of these is much the same as those of the back, as they assist in jumping, running, rearing, and in raising the hind leg.

3. The Abdominal Muscles, or belly muscles, are four large, flat muscles on each side of the abdomen, or belly. The outer edge of these muscles is attached to the outer ends of the false ribs, also to the processes of the lumbar bones and the outer angles of the hip bones. They unite below to what is called the linea alba, a hard, white fibrous cord, and are attached in front to the back part of the breast bone. They pass back in the center of the belly and are attached to the front of the pubic bones, called the lower bones of the hip cavity. About ten inches from where it is attached here, passing forward, is a small slit, or hole, which is called the navel, or umbilical opening. Here the navel vessels pass in and out during the foetus life, or before the colt is foaled. This is a point of importance to note, for sometimes at the time of birth this opening does not close and allows the bowels to come down and form what is known as navel, or umbilical rupture.

Before finishing the description of this group of muscles a very large, important ligament should be noted, which is found spread all over the abdomen, or belly, of the horse. It is of a yellowish color and about one-eighth of an inch thick, attached in front to the back of the breast bone and to the hip bones behind. This is the first structure seen after removing the skin from the belly. This ligament gives great

support to the organs contained in the abdominal cavity. The action, or uses, of the abdominal muscles are to support the organs contained in the abdominal cavity, to flex the backbone and assist in the passing of the fæces, or manure. In the mare these muscles assist her in foaling, or parturition.

4. The Coccygeal, or Muscles of the Tail.—Here there are four that are important—one situated on the upper side of the tail when it is straight out, the action of which is to raise the tail; two, one on each side of the tail, have the power of drawing the tail to either side; the fourth is situated under the tail and is the smallest one of the four. Its action is to draw the tail down.

5. The Shoulder Muscles are very large and powerful. There are only three of great importance, viz.: Two situated on the outside of the shoulder blade are important as they are the muscles affected in the disease called sweeny. The other important one is that which passes down over the shoulder joint through the groove or pulley-like surface on the shoulder bone. This is a long, powerful muscle, attached above to the lower end of the shoulder blade, down through the groove mentioned to the upper part of the bone to the fore arm, or radius, at the front side. Its chief point of importance rests in its action in raising the front leg, where it passes through the pulley-like surface mentioned, when it becomes injured or diseased; it is the seat of shoulder joint lameness.

6. Muscles of Front Leg, from shoulder down, are divided into two separate kinds, viz.: the extensor and flexor muscles.

The *extensor muscles* are those which bring the leg forward. These muscles, above, are attached to the bones around the elbow joint, passing down in front of the arm bones. About three inches above the knee they become changed into the tendinous part of these muscles, or what is called the cords of the leg. Some of them are attached to the knee joint, while others pass over the front of the joint and are held down to their place by a band or ligament, forming a loop, as it were, for this muscle to glide into when the leg is in action. Each one of these loops through which the muscles pass are supplied with a synovial membrane to secrete the synovia, or oil, which lubricate it during action, the same as in the joint. This is a point of importance, as sometimes, on account of injury or strain of this part of the

joint through which the muscle plays there may be found a small, puffy enlargement containing oil secreted by the synovial membrane. This disease is called a bursal enlargement.

The *flexor muscles* are situated at the back part of the leg, attached above to the back part of the elbow joint, passing downwards at the back part of the leg. About two or three inches above the back part of the knee joint they become tendinous, and from there down to the back part of the foot bone, where two of the principal muscles are attached; these form what is known as the back tendons, or cords, of the leg. Some of them become attached to the back part of the knee, same as the muscles on the front part of the leg, while the other two principal tendons pass through a loop formed by ligaments, the same as those mentioned in the front part of the knee. In tracing these tendons down from the knee to the fetlock, notice that they pass through another large loop or sheath formed at the back of the fetlock, where some of the fibres are attached, while others continue down at the back part of the pastern bones, and are attached to the os pedis, or foot bone. These tendons are important, because when they are strained the fact is spoken of as the strain of the back tendons. The action of these muscles is to flex the leg, bend the knee, pastern joints and fetlock.

7. Muscles of Hind Leg.—These are also divided into two groups, extensor and flexor.

The *extensor muscles* are situated in front of the hind leg. They are attached above, around the stifle joint, and pass downward in front of the thigh bone, one being attached to the front part of the hock. The other passes through sheaths, or loops, supplied by a synovial membrane, formed by ligaments, to hold the muscles firm in front while the leg is in action. In tracing them down, in front of the shin bone to the fetlock, note that they pass through loops, or sheaths, and continue down in front of the pastern bones to where they are attached. The action of these is to bring the leg forward.

The *flexor muscles* of the hind leg are attached, above, around the back part of the stifle joint. In tracing them down it will be found that they become tendonous. Two of the principal ones pass down to that part of the hock joint, which sticks up behind, known as the cap. These form what

is called the gamb of the leg, and are partly attached at the point of the hock, the other part passing down to the fetlock joint through a loop, or sheath, along the back part of the pastern bones, and are attached to the os pedis, or foot bone. This muscle, from the hock down, forms one of the back tendons of the hind leg. Another important muscle is found passing down underneath those already mentioned, through a loop, or sheath, at the back part of the hock, where it is supplied with a synovia sack. This is a point of importance, because when it becomes strained it is the seat of what is called thoroughpin. It then passes down the back part of the shin bone beneath the other tendon already mentioned, through the loop at the fetlock to the back part of the os pedis or foot bone, where it is attached. The action of these muscles are to flex or bend the fetlock and raise the hock joint in traveling.

8. Involuntary Muscles, or muscles not under the control of the will. The first to notice are those of breathing or respiration. They form a group situated around the chest in such a way as to be the means of increasing or decreasing the size of the chest cavity. When these muscles expand the chest cavity is enlarged, causing the air to rush into the lungs, known as inspiration. On the other hand, when these muscles contract the air is expelled from the lungs, known as expiration.

The diaphragm is a muscular curtain which separates the chest from the abdominal cavity. It also assists greatly in drawing the air in, when it contracts. This muscle also assists in passing manure, and in the mare foaling. It separates the heart and lungs from the bowels, liver and stomach. This muscle should be carefully examined. It can be seen by opening any dead animal.

There is one muscle which is both voluntary and involuntary. It is situated in the penis, surrounding the urethra, or the tube, which carries the urine from the bladder to the penis in the male animal. Its action is voluntary while the animal is passing urine, or water. It acts involuntary during sexual intercourse, forcing the semen down through the penis.

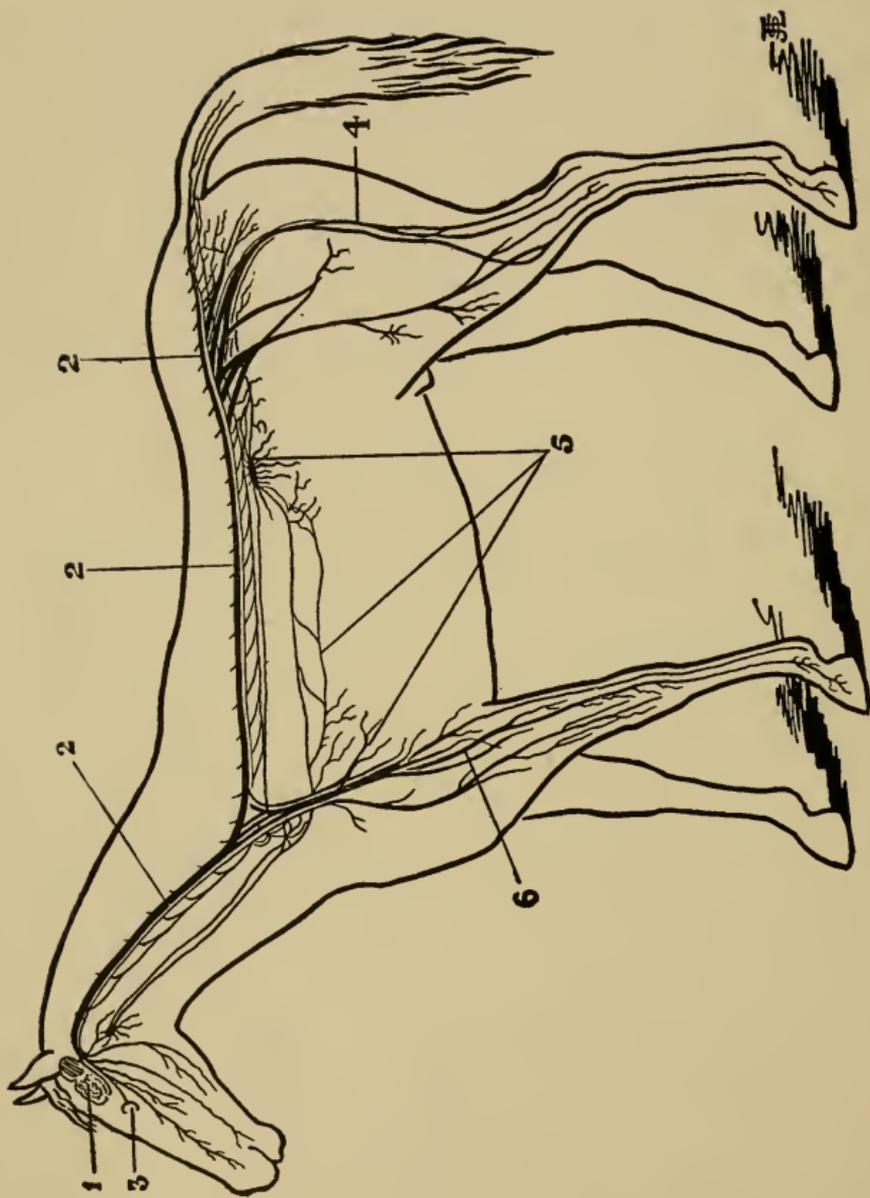


PLATE III.—THE NERVOUS SYSTEM OF THE HORSE.

EXPLANATION TO PLATE III.

NERVOUS SYSTEM OF HORSE.

This cut shows where the Brain, Spinal Cord and Principal Nerves of the Horse are located.

1. Brain.
2. 2. Spinal cord.
3. Optic nerve or the nerve of sight.
4. Nerves of the hind leg.
5. Sympathetic nerves which supply all the organs of the body.
6. Nerves of the front leg.

CHAPTER IV.

THE NERVOUS SYSTEM.

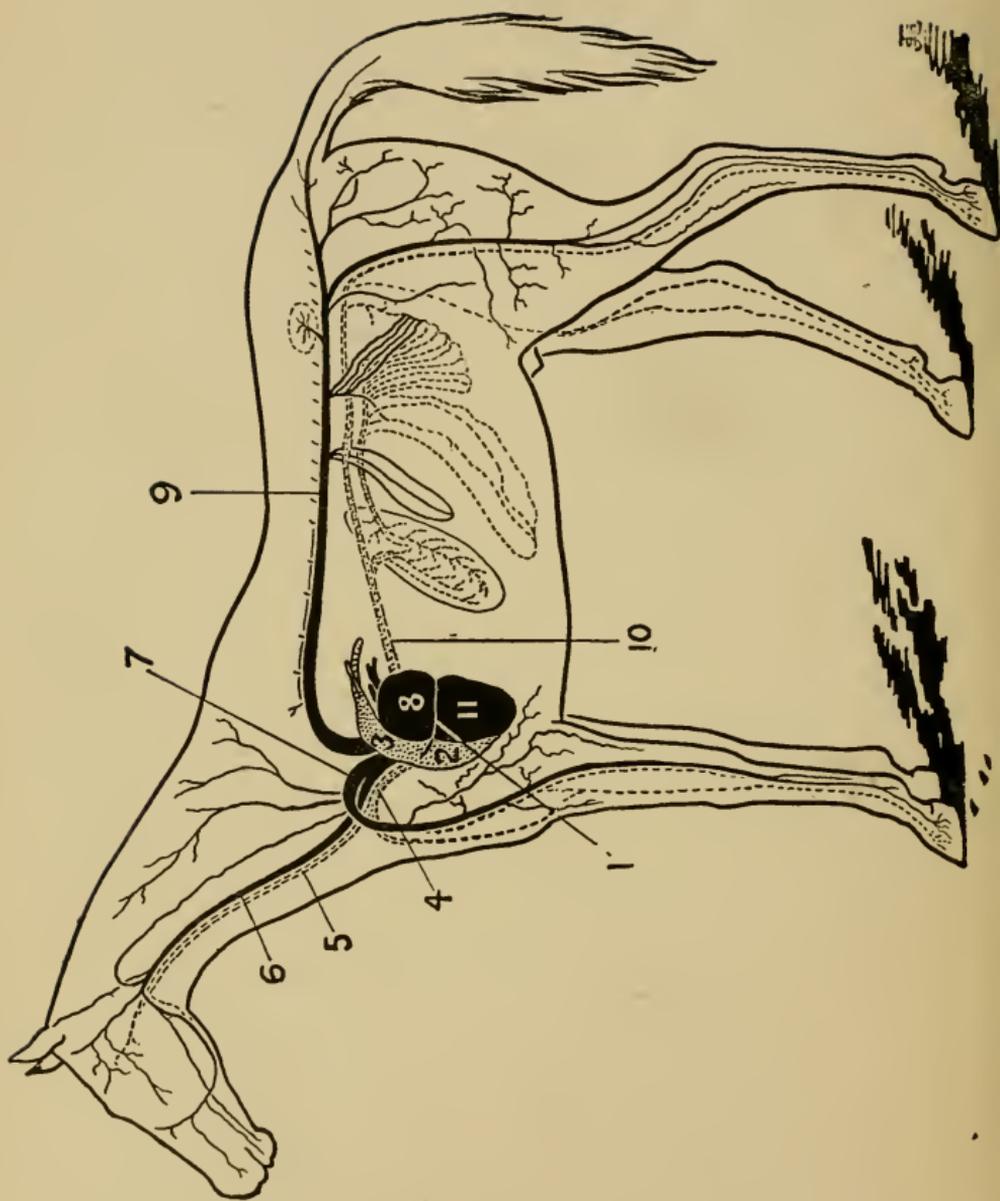
THIS system is a very important set of organs controlling the motion of the various members of the body and supplying the different senses of feeling, seeing, hearing, smelling and tasting. The two principal organs of the nervous system are the brain and the spinal cord.

1. The Brain.—The brain is the centre of the whole nervous system, and is situated in the cranial cavity, surrounded by three delicate membranes, the outer one being attached to the inner wall of the cranial cavity. It contains several important nerves called the cranial nerves, which are given off from the brain and passed down through the various foramen or openings in the head to supply the different organs situated there. The optic nerve passes down to the eye, giving the sense of sight. The auditory nerve passes down to the drum of the ear to give the sense of hearing. The olfactory nerves, which give the sense of smell, are situated in the mucous membrane lining the nose. The nerves passing down to the tongue give the sense of taste. Other nerves pass down to the lips, teeth, mouth and face, giving motion and feeling to the parts mentioned. Others pass down to the gullet or pharynx, giving it the power of swallowing.

2. The Spinal Cord.—Passing from the spinal cord, which is situated in the opening of the bones of the back, are numerous small nerves to supply the muscles of the neck, giving it motion and feeling. Nearly opposite the shoulder blade, or withers, the spinal cord gives off a large bunch of nerves, part of which supplies the heart and lungs with nervous power. This is a point of importance, for if the spinal cord becomes injured in front of these nerves immediate death is the result. The other part of this bunch of nerves supply the shoulder, chest, and muscles of the front legs. Passing backwards along the spinal cord is found the sympathetic system of nerves, which go to supply the bowels, stomach, liver, kidneys, and other organs situated in the abdominal cavity. Continuing backwards along the

spinal cord, to about opposite the hip bones, is another set of nerves, one of which goes to supply the rectum, or back bowel; this gives the power of passing manure. Others go to the womb and bladder; these assist in urinating by contracting the bladder. Other nerves pass to the small organs situated in the pelvic cavity; some of these nerves pass down to the hind legs, supplying them with nervous power. The remainder of the nerves of the spinal cord go to supply the tail.

Nerves have the appearance of bunches of white thread held together by connective tissue.



EXPLANATION TO PLATE IV.

HEART AND CHIEF BLOOD VESSELS OF THE
HORSE.

1. Heart.
2. Right ventricle.
3. Right auricle.
4. Anterior vena cava.
5. Jugular vein.
6. Carotid artery.
7. Anterior aorta.
8. Left auricle.
9. Posterior aorta.
10. Posterior vena cava.
11. Left ventricle.

CHAPTER V.

CIRCULATORY SYSTEM.

THIS is an important system because of it being the means by which the various parts of the body are fed or nourished.

I.—ORGANS OF THE CIRCULATORY SYSTEM.

The principal organs to consider are the heart, arteries, capillary vessels, veins, and the very important fluid they carry, called the blood.

1. The Heart.—The heart is the principal organ of circulation; it weighs about six and one-half pounds in the average horse and acts as a force pump to force the blood through the vessels already named. It is made of strong muscular tissue, which acts involuntarily, and is situated between the lungs, which are divided by what is known as the mediastinum. This is a division between the lungs made up of two folds, the heart being between them. The bottom end, or apex, of the heart is downward and rests just above the breast-bone; the base, or upper part, is directed upward and to the left side, the left lung having a hollow on its inside for the heart to work in. There is a covering or sack around the heart which helps to protect and support it in its place. It is attached above to the back-bone and below to the bones of the sternum, or breast-bone. This sack is made up of fibrous tissue and is of a whitish appearance; inside it is smooth, and supplied with numerous small glands which secrete an oily substance called serous fluid. This lubricates the outer wall of the heart and the inner wall of the sack so that in action it does not irritate the walls. The cavity in the heart is divided into two parts, the right and left sides; each of these parts is again subdivided. The upper cavity is called auricle and the lower cavity ventricle; thus there are the right and left ventricle and right and left auricle. The right auricle communicates with the right ventricle by an opening in the septum, or partition in the right side of the heart. This opening is guarded by a valve to keep the blood from flowing back into the auricle. The left

auricle communicates with the left ventricle, same as on the right side. The right side of the heart is sometimes called the venous; this side contains only impure blood. The left side is sometimes called the arterial side. It deals with pure blood only. This side of the heart is very much stronger and thicker than the right side.

2. Arteries.—Arteries are strong tubes the purpose of which is to carry the blood *from* the heart. For this reason it is apparent that all arteries carry pure or arterial blood with but one exception. The pulmonary artery carries the blood from the right ventricle to the lungs and consequently carries impure or venous blood. Each time the left ventricle contracts it causes a wave, as it were, to pass all through the arteries. This contraction takes place when in a healthy condition about 38 to 40 times every minute and gives rise to what is known as the pulse. This wave, or beating, may be detected at any point where the artery is situated so closely to the surface as to affect the outside of the body sufficient to be felt by placing the finger on the point, consequently the pulse may be counted at any of these points. Place your forefinger on the lower edge of your own lower jaw directly under the corner of your mouth. At this point an artery passes out over the jaw bone and therefore runs very close to the surface, making it quite possible to feel the wave caused by the contraction of your own heart, quite distinctly. Near this point on the jaw of the horse the pulse is most conveniently felt and counted.

The walls of the arteries are composed of elastic tissue and after death are always lying open. Blood is never found in them after death because they continue to contract sufficiently long enough to force all the blood through them.

3. Veins.—Veins are tubes—in construction not so strong as the arteries—the purpose of which is to carry the blood from all parts of the body to the heart. The heart wave does not affect the veins and consequently the pulse cannot be detected by placing the finger on an exposed portion of one of them. It is also apparent that all veins carry impure or venous blood with but one exception, viz.: the pulmonary vein, the purpose of which is to conduct the purified blood from the lungs to the heart.

4. Capillaries.—The capillaries form a connecting link between the arteries and veins. Toward the end, the arteries

break up into very small ones which run into the capillary network of the body. These are numerous, very small vessels about 1/1000 of an inch in diameter. Their walls are very thin and cannot be distinguished except under a microscope. They are found in all parts of the body. As the blood passes slowly through these small vessels, the nourishment is absorbed from it through the very thin walls to supply the tissues of the body. When the blood passes through this capillary network it again enters into larger vessels called the veins, which carry it on its way back to the heart.

II.—THE BLOOD.

The blood is that which carries nourishment to all parts of the body, and also carries away all the waste material of the body, where it is thrown off in the form of urine, which is secreted from the blood by the kidneys. We find the waste material also thrown off in sweat or perspiration through the skin, and also by the lungs. The blood varies in color in the different parts of the body—in the arteries it is a bright red, while in the veins it is a dark red color.

III.—COURSE OF THE BLOOD.

Briefly speaking, the blood is pumped by the heart to all parts of the body, passes through the capillary system where it parts with its nourishment, is collected and returned to the heart by the veins, is again pumped by the heart to the lungs where it is purified and returned to the heart to again commence the circuit as before.

To trace the blood through the heart it is convenient to commence at the right auricle into which chamber the blood is carried by the anterior and posterior vena cavae. These empty the impure blood of the body into the right auricle of the heart. It is there guarded by two small valves at the mouth of each vein, while the right auricle contracts, forcing the blood down through the hole in the septum into the right ventricle. It is here guarded by a valve to keep the blood from flowing back, while the right ventricle contracts and forces the blood up into the pulmonary artery, which passes only two or three inches above the heart and divides into two branches, one to the right lung and the other to the left. These again divide into other small arteries, **which flow into what is known as the capillary network.**

This network is situated around the air cells of the lungs, where, by a process, the blood gives off carbonic acid gas, which is breathed out along with the air. The blood takes in the oxygen from the pure air, which changes the color of the blood from a black red to a bright red. This is a point of importance to note as it shows that stables should be well ventilated so that animals can have plenty of pure air. The blood now flows into the pulmonary veins, which carry the pure blood back to the heart to be emptied into the left auricle. Here these veins are guarded with valves to prevent the blood from flowing back while the left auricle contracts to force the blood down through the opening mentioned before into the left ventricle. This opening is also guarded by valves to prevent it from flowing back while the left ventricle contracts, with great force, to drive the blood up into the common aorta, the largest artery in the body. This artery passes above the heart two or three inches, and, just below the backbone. It breaks into branches, one passing forward and supplying the parts of the body in front of the heart, the other branch passing backward under the spinal bones, supplying the parts of the body behind the heart.

The branch which goes forward runs just a few inches under the spine where it breaks into other branches, some going to supply the shoulder and front leg; the other branches being two large ones, pass on each side of the neck under the jugular vein. They are called carotid arteries. These give off small branches, as they pass up the side of the neck, to feed the muscles and other parts thereof, while just below the butt of the ear, this artery breaks into three large branches, which go to supply the brain and different parts of the head. The branch which runs backward from the heart is a very long, large artery, passing just below the spine, between the kidneys, breaking up about six inches behind them into four large branches—two on the left and two on the right side. That on the left goes to supply the left hip and organs in the pelvic or hip cavity, while the other passes down the left leg to supply it with blood; that on the right side helps to supply the right hip and pelvic cavity, while the other passes down the right leg. This large branch, in passing back along the spine, gives off small branches—one to the liver, one to the spleen, one to the stomach, branches to the large and small bowels, and one to each kidney.

In starting at the head to trace the blood back to the heart, we find it carried from the head by two very important vessels called the jugular veins; these are important because it is from these veins that the animal is bled. The veins which run up the inside of the front leg, carrying the blood back from the leg, unite with the jugular veins, forming what is known as anterior vena cava, which empties into the right auricle of the heart. In tracing the blood back from the hind leg, a large vein is found on the inside of the leg, passing up under the hip, where it unites with the veins of the hip region, forming what is known as the posterior vena cava. As it passes forward it takes in veins from the various organs such as the stomach, liver, kidneys, spleen, and small bowels, and finally empties into the right auricle of the heart. This is the complete circulation of the blood.

IV.—HOW TO TELL WHEN AN ARTERY IS CUT.

There are two important points in which arteries differ from veins, consequently there are two important differences in bleeding from veins and arteries. When an artery is cut two characteristics are noticeable, (1) the blood flows in spurts or throbs because of their being directly effected by each contraction of the heart; (2) the blood is of a much brighter color because of being pure and fresh from the purifying process in the lungs. On the other hand should a vein be cut the character of the bleeding is the reverse. The blood (1) flows in a comparatively steady stream because of the veins being unaffected by the heart beats, and (2) being impure or on its way to the lungs to be purified is of a much darker color. Arteries are always found deep-seated and well protected with muscles and bone; as, for instance, the large arteries of the legs always pass down on the inside of the leg very close to the bone, and on account of this large arteries are very rarely injured.

CHAPTER VI.

LYMPHATIC SYSTEM.

THIS is also known as the absorbent system. It is closely connected with the blood vessels, and is made up of very fine minute tubes and glands. These convey from the tissues of the body a clear fluid known as lymph, and pours it into the blood of the veins as it is on its way back to the heart. These glands are found all through the body; for instance, there is a large group inside the thigh or stifle joint of the horse, and another large group inside the shoulder. It is important to note these, as they sometimes become inflamed and the leg is swollen. They are then the seat of the disease called weed in the leg, or lymphangitis.

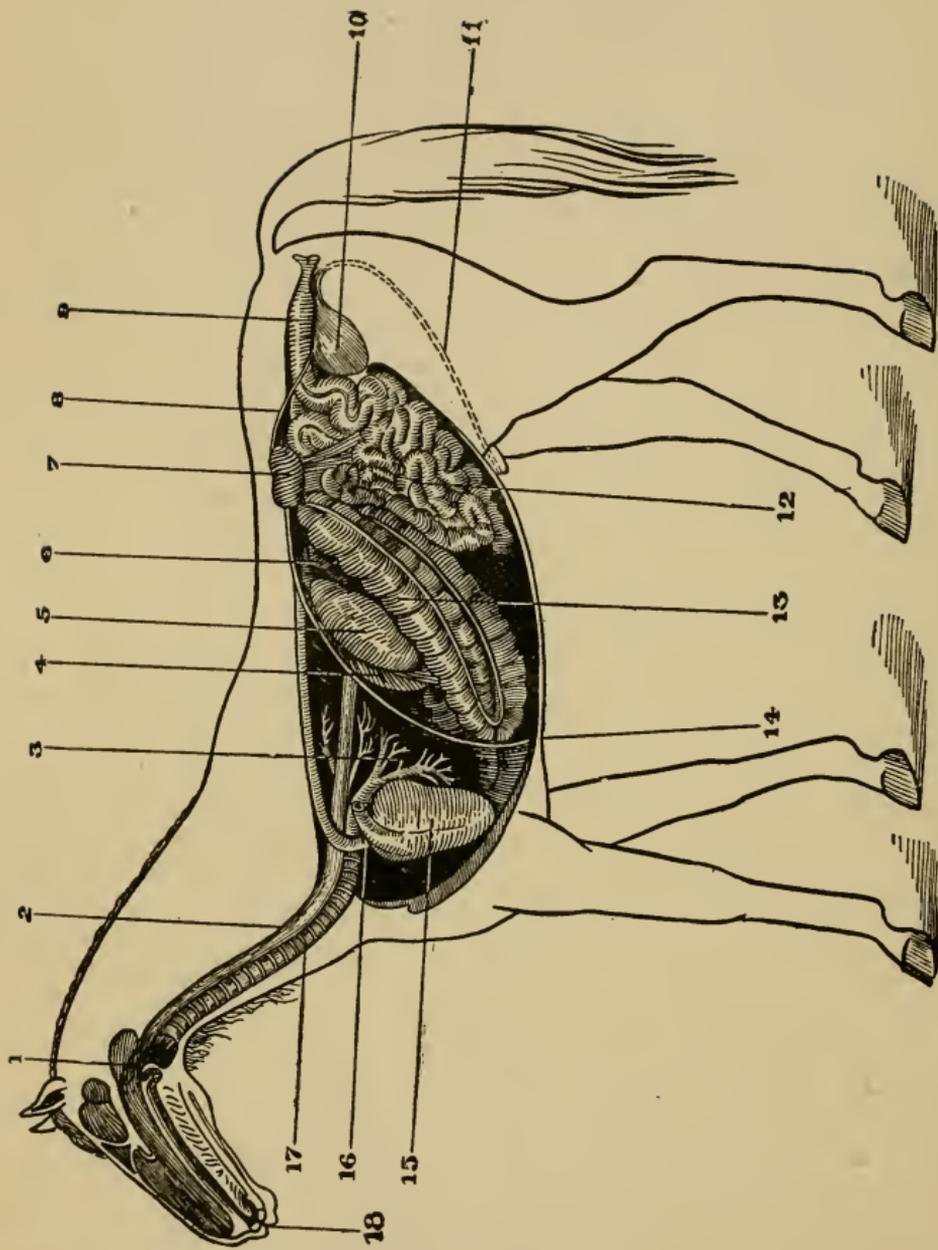


PLATE V.—INTERNAL ORGANS OF THE HORSE.

EXPLANATION OF PLATE V.

INTERNAL ORGANS OF THE HORSE.

This cut shows the position of each organ in the body.

- | | |
|---|--|
| 1. Pharynx, or throat. | 9. Rectum, or back bowel. |
| 2. Œsophagus, or the tube which carries the food to the stomach. | 10. Bladder. |
| 3. Right lung. | 11. Urethra. |
| 4. Spleen. | 12. Small bowels. |
| 5. Stomach. | 13. Large bowels. |
| 6. Liver. | 14. Diaphragm, or curtain which separates the stomach and bowels from the lungs and heart. |
| 7. Kidney. | 15. Heart. |
| 8. Ureter. This is the tube which carries the water or urine from the kidneys to the bladder. There is one tube to each kidney. | 16. Common Aorta, which is the largest artery in the body. |
| | 17. Trachea, or wind pipe. |
| | 18. Mouth. |

CHAPTER VII.

THE DIGESTIVE SYSTEM.

THE whole digestive track from the mouth to the anus, which is situated just below the tail, is sometimes called the alimentary canal.

L—ORGANS OF THE DIGESTIVE SYSTEM.

The principal organs of the Digestive System are the divisions of this canal—the mouth, pharynx, or gullet, œsophagus, or the tube which leads from the gullet to the stomach and the intestines, or bowels, and the glands connected with them.

1. The Mouth.—The mouth is an oval cavity at the commencement of the alimentary or digestive canal. In front of the mouth are the lips, one above and one below; at the sides are the cheeks. The mouth is lined with what is known as the mucous membrane, in which are several small openings from the glands, which are situated around the mouth. Through these the saliva is poured. On the upper part of the mouth the mucous membrane is thrown into ridges, or folds, from eighteen to twenty in number. This is a point of importance in connection with bleeding a horse with lampers. It is never safe to bleed back of the third bar because there is a large artery which runs down through the roof of the mouth and enters up through a hole in the bone just before it reaches this bar. The tongue, which has the chief nerves of the sense of taste, is situated in the mouth; this organ also has a very important part to perform in masticating the food and mixing it with saliva. The teeth, which also take a very active part in the masticating of food, are dealt with under the heading of "Teeth."

2. Salivary Glands.—These are the glands which secrete the saliva that is poured into the mouth while the animal is eating. There are only three pairs of much importance. One large pair, one on each side of the throat below the ears, known as the Parotid glands, fill up the space between the jaw bone and the neck. This pair has tubes passing around

and under the lower jaw and up into the cheek muscles, entering the mouth opposite the fourth molar tooth. These tubes, known as steno's ducts, are about as large as straws and convey the saliva from the gland into the mouth. The next pair are situated under the pair first mentioned. Their tubes enter into the bottom part of the mouth. The third pair are situated under the tongue, one on each side. They pour their secretion into the mouth by several small openings near the front under the tongue. This can be seen by examining closely. This is a very important fluid in connection with the digesting of the food.

3. The Gullet is a cavity situated just behind the mouth. It is chiefly made up of muscles which perform the act of swallowing the food. It is lined with the continuation of the mucous membrane of the mouth.

4. The Oesophagus, or the continuation of the gullet, is a tube extending from the gullet to the stomach, and is used to carry the food to that organ. It is made up of two coats, the muscular and the mucous. The former contains fibres which, when once the food enters the tube, contract behind it, forcing it along to the stomach. Its lining is a continuation of the mucous membrane of the mouth and gullet. In tracing the tube down the neck from the gullet, note that it passes down the left side of the neck, entering the thoracic, or chest cavity, between the lungs over the heart through the large muscular curtain known as the diaphragm, then enters the stomach an inch or two after passing the diaphragm.

5. The Stomach.—This organ is very small in the horse in comparison with that of the ox. It holds only about four gallons, and is situated just behind the curtain which separates it from the lungs. It lies mostly to the left side. The walls of the stomach are composed of three coats. That on the outside is called the serous membrane, a name applied to membranes which line closed cavities, such as the abdominal, or belly cavity. The inside lining is a continuation of the mucous membrane lining the organs before mentioned. The lining in the left part of the stomach or the part where the food is prepared for digestion is the same color as that of the mouth. The lining of the right part of the stomach, which is the true digestive part, is of a deep red color resembling velvet, and when placed under a microscope has the

appearance of a honey comb. When the stomach is empty this membrane is thrown into loose folds. Several small openings may be noticed through which the gastric juice and pepsine from the glands, situated in the walls of the stomach, enters. These are very important fluids as they assist greatly in digesting the food. The third coat is known as the muscular coat, being made of muscular fibers, situated between the two coats already mentioned. Its action is to give the stomach a churning motion, rolling the food round and mixing it with the juices. The opening to the stomach is guarded by a valve which prevents the food from passing back through the gullet. There is also a valve at the opening of the bowels, preventing any coarse, undigested food from entering them. The stomach is held in its place by five large ligaments, and is well supplied by blood vessels and nerves. Digestion of food takes place very quickly in the horse in comparison to other animals. Frequently a change of food or working too soon after eating will interfere with the digestion, thus setting up what is known as indigestion. This is a very painful disease in the horse. After the food is acted upon by the juices in the stomach it changes into what is known as chyme, which pass into the bowels.

6. The Bowels.—They are divided into two parts—the large and small.

The **small bowels** are seventy-two feet in length, about one inch in diameter, and are made up of three coats, the same as the stomach. The serous coat on the outside contains small glands which secrete an oily material to lubricate the outside of the bowels, which comes in contact with the inner walls of the belly. This prevents friction when the bowels are being jolted around in the belly. The muscular coat, made up of muscular fibers, is situated between the other two coats, the same as in the stomach; its action is to contract the bowels, giving it motion to carry the food along through them. The mucous coat is a continuation of the mucous coat of the stomach. Along this coat are found small glands known as villi and lacteal; these absorb the nourishment from the food as it passes along through the bowels and pours it into the blood. The small bowels are attached on the upper side to what is known as the mesentery, which is attached above to the back-bone. It can be seen in any of the smaller animals upon examination. About six inches

from the stomach, in the bowels, are found two openings. One of these receives the hepatic duct, a tube used to carry the bile from the liver to be poured in on the food as it passes through the bowels. The other hole is for the duct of the gland known as the pancreas. It secretes a clear fluid known as the pancreatic juice. These juices act on the food in the first part of the small bowels, changing it into chyle. After this, the action of the rest of the bowels is to absorb the nourishment out of the food as it is passing back. The small bowels and stomach, when in a healthy condition, should be found empty one hour after food has been eaten. The small bowels are situated mostly on the left side just behind the stomach.

The **large bowels** have three coats the same as the small ones. The first part of the large bowels is known as the blind bowel and is about three feet long; this is generally the first thing to fly out in opening a horse's belly. Its use is to act as a reservoir to hold the water and fluid parts of the food; from this organ the water and fluid parts are mostly taken up into the system. The next part of the large bowels is known as the large colon; it lays along the floor of the belly, is about nine feet long, and is doubled on itself three times. In this bowel the solid part of the food is found. Here it is worked about by the contraction and expansion of the muscles of the bowel and the nourishment taken from it, after which it is worked back out of this bowel and enters what is known as the floating colon. This is about ten feet long and about two inches in diameter, or double the size of the small bowel. It is thrown into folds or pleats, and as that portion of the food containing no nourishment passes through it is worked into balls which pass back and are emptied into the rectum or back bowel. This part is situated at the back part of the belly and pelvic cavity behind the small bowels and like them is suspended by a sheet or fold to the backbones.

The **Rectum or Back Bowel** is sometimes known as the straight bowel. It is about eighteen inches long and forms the last part of the intestines. Its coats are a continuation of those of the large bowel but each is thicker and heavier. Above this bowel are the bones of the rump, below it, in the horse, the bladder and other small glands. Below the rectum of the mare are situated the **womb** and the **vagina**, the latter

being the passage into the womb from the outside. The bones which help to form the hip cavity are situated at the sides and at the back immediately under the tail is what is known as the anus. The use of the rectum is to hold the balls as they pass back from the floating colon. When the rectum becomes so full that there is pressure on the sides of the wall thus stimulating the nerves the muscular coat contracts and forces the contents back toward the anus. At the same time the muscles of the anus dilate or open, causing the fæces or manure to pass out.

II.—THE GLANDS CONNECTED WITH THE DIGESTIVE SYSTEM.

The glands which assist in digestion are the liver, the pancreas and the spleen.

8. The Liver is the largest gland in the body and is situated between the stomach and the diaphragm. The liver of the horse weighs from ten to twelve pounds. It is of a dark brown color, well supplied with muscles and nerves, and is held in place by several strong ligaments. A bitter, greenish colored fluid called the bile is secreted from the liver and emptied into the digestive system where it plays an important part in its action on the food. There is no gall bladder in the horse but simply a tube passing from the liver to the small bowel into which it empties the bile about six inches behind the stomach. It is important to note that it is in this tube that gall stones sometimes collect.

9. The Pancreas is another very important gland. It is of a grayish, fatty color, and may be found near the backbone in front of the kidneys. The pancreas secretes a clear, colorless fluid called the pancreatic juice. This fluid, like the bile from the liver, also plays an important part in the digestion of the food. It is carried down from the pancreas by a duct or tube emptying into the small bowel just behind that from the liver.

10. The Spleen is a long, flat gland about fifteen inches in length, situated along the left side of the stomach and to which it is closely attached. It is of a grayish red color and feels quite soft. It is ductless, there being no secretion passing from it. The function of this gland is not clearly understood, but by many it is supposed to regulate the temperature of the stomach during the process of digestion and to act as a reservoir for the blood. Some speak of it as the

burying ground of the red corpuscles. It is well supplied with blood vessels and nerves and weighs in the average horse from two to four pounds.

III.—MEMBRANES OF THE BODY.

Membranes of the body are spoken of as Mucous or Serous.

11. Mucous Membrane.—All open cavities of the body are lined with mucous membranes, as, for example, the lining all through the alimentary canal of the digestive organs. The lining of the respiratory or breathing organs is of mucous membrane, as also is that of the urinary and genital organs or those which produce the young animals.

12. Serous Membranes form the lining of closed cavities, that is air-tight cavities, those that do not communicate at all with the air. The peritoneum, situated between the bowels and the wall of the abdomen, is an important example. The pleura which lines the chest cavity and the lungs is another. A third, less important, may be found in the brain.

Serous membrane is always made up of two coats, the inner being attached to the organs contained in the cavity and the outer closely lining the inside of the cavity in which it is found. An oily fluid is always secreted from the inner side of these membranes. This fluid lubricates the surfaces, and thus prevents soreness or inflammation that would otherwise result from the friction caused by the moving of one coat on the other. These membranes are very important and should be very carefully noted, as they sometimes become chilled and inflamed and thus the source of further inflammation. Inflammation of the pleura is called pleurisy. Inflammation of the peritoneum, the membrane connected with the bowels, is called peritonitis. It is a very dangerous disease, much more so than pleurisy.

IV.—THE PROCESS OF DIGESTION.

The food is taken into the mouth by the lips and front teeth. Here it is masticated or chewed by the teeth with the assistance of the tongue, at the same time receiving from the salivary glands a digestive fluid called the saliva which softens and prepares it for digestion. After being thoroughly ground up and mixed with saliva it is rolled into a ball at the back part of the tongue, where by the action of the

muscles of the gullet it is grasped and forced downward into a tube, the muscular fibres of which act in such a manner as to force it onward into the stomach. Here it is rolled about and thoroughly mixed with the gastric and pepsine juices which act upon it chemically, changing it into what is known as chyme. From the stomach it passes up into the front part of the small bowel, where it receives the secretions from the liver and the pancreas. These also act chemically upon the food, changing the chyme into what is called chyle. By the action of little villi and lacteals situated in the coatings of the bowels the chyle or nourishment is absorbed from the food and carried into the veins which conduct it to the heart. The heart forces it forward through the arteries into the capillaries. These are minute hairlike tubes forming a connecting link between the arteries and veins. They are found in all parts of the body and it is through their thin walls that the body receives nourishment for life and strength.

CHAPTER VIII. THE RESPIRATORY SYSTEM.

I.—ORGANS OF RESPIRATION.

THESE are commonly known as the organs of breathing. They comprise the nostrils, nasal chambers, larynx, trachea, bronchial tubes and the lungs.

1. The Nostrils.—The nostrils are two openings, one on each side of the nose. They are held open by the aid of cartilage or gristle, and muscles. About one and one-half inches up the nostril on the under side is a small opening about the size of a grain of shot. Through this opening the tube or duct which carries the tears down from the eyes empties into the nose. The nostril is lined with a thin delicate skin which changes into mucous membrane as it passes up into the chambers of the head.

2. Nasal Chambers—Chambers of the Head.—These give passage to the air from the nostril into the larynx or Adam's apple. There are two of these chambers, divided in the center by a thin partition or cartilage called the septum nasi. These communicate with the sinuses of the head. The horse cannot breathe through the mouth on account of the formation of the throat, and this compels him to always breathe through the nostrils. This is a point which should be remembered.

3. Larynx or Adam's Apple.—This is a box made of cartilage, or gristle. It gives passage to the air and also the organ of voice. It is situated in the floor of the gullet. This box has an opening on its upper side, guarded by a valve, which is always open except when the animal is swallowing food or water. When the food is being swallowed it passes over the valve which closes the opening while the food passes over it. This is important, for if the valve does not close properly, thus allowing either food or water to drop into the windpipe, the animal will have a fit of coughing. This is sometimes referred to as "the food going the wrong way." On the outside of this box of cartilage are found several small muscles which help to hold it in its place. It is lined inside by a continuation of the same membrane as that of the cham-

bers of the head. The vocal chords which come into play when the animal is whinnying are found along the inside of this box. These chords are not nearly so well marked as in the human being, and if they or the cartilage of the larynx become affected it generally gives rise to the disease called roaring.

4. Trachea or Windpipe.—This is a tube which carries the air down from the larynx to the bronchial tubes in the lungs. It is made up of forty or fifty rings of cartilage which are united to each other by strong elastic ligaments. They give to the windpipe its flexibility, that is, the power to bend in any direction almost like a piece of elastic. From Adam's apple the windpipe enters the chest where it terminates into two small tubes, one going to the right lung and one to the left. These are called the bronchial tubes.

5. Bronchial Tubes and Air Cells.—These are made up of the same material as that of the windpipe, but are only about half the size. After passing into the substance of the lungs they break up into other small tubes which pass all through the lungs and terminate into what is known as the air cells. These small tubes and air cells are lined inside by a very thin mucous membrane, a continuation of the membrane lining the other organs already mentioned. Just inside this thin mucous membrane is found the capillary network of the lungs, and while the blood is slowly passing through this network of vessels it gives off to the air in the air cells carbonic acid gas and takes in the oxygen from the pure air while it is in the lungs.

6. The Lungs are the most important organs of respiration or breathing. They are spongy, yellowish organs, two in number, one situated on the right side and the other on the left. The right lung is the largest because of the left one having a hollow in its side for the heart. The lungs are separated by a partition known as the mediastinum, by the heart which is in the folds of this partition, and also by the large blood vessels and œsophagus. They are made up of light elastic tissue and are full of air cells and tubes. While the animal is alive they are very large and fill up nearly the whole chest cavity, but after death they collapse and are not nearly so large. Between the lungs and the ribs is found a serous membrane called the pleura or the lining membrane

of the chest. It is made up of two folds, one being attached around the outer part of the lungs while the other is attached to the ribs at the side and at the back to the large curtain which separates the lungs from the bowels. The little glands situated in this membrane secrete an oily fluid which serves to lubricate these parts while the lungs are working in the chest so as not to cause friction. When this membrane becomes inflamed from a chill or injury it sets up the disease called pleurisy.

The trachea, or windpipe, bronchial tubes and air cells are sometimes compared to a tree, the windpipe being the trunk while the bronchial tubes and air cells represent the branches and leaves of the tree. The lungs are largely supplied by blood vessels and nerves.

II.—BREATHING.

Breathing in the horse consists of first drawing the pure air in and then forcing the impure air out. These two acts are performed by the muscles of the chest. Some of these contract in such a manner as to dilate or enlarge the chest cavity. Because of the space between the lungs and chest being air-tight the lungs themselves enlarge and the air rushes in to fill up space. The act of forcing the air out is performed by these muscles which relax while others contract in such a manner as to close the chest cavity and make it smaller; thus the lungs become smaller and force the air out. The act of breathing is performed by a horse in perfect health sixteen times a minute.

CHAPTER IX.

URINARY SYSTEM.

THIS system consists of the kidneys, ureters, bladder and urethra. The action of these organs is to deal with the urine or what is commonly called the water of the animal, which is a watery fluid secreted by the kidneys. It varies in color, according to the condition of the animal's blood.

1. **The Kidneys** are two in number—one on the right side and one on the left side, and are situated just below the small of the back—the right one being the furthest ahead. In shape, they are long and narrow, and resemble the liver in color. In cutting one of the kidneys open, it is found to be full of glands and tubes, which secrete the urine from the blood while it is passing through the kidneys. These tubes pass to the center of the kidneys, where they empty the urine into what is called the pelvis. The glands are largely supplied with blood vessels and nerves. The use of the kidneys are to secrete the urine from the blood, which contains a large amount of what is known as ureaic acid, and if not taken out of the blood by these glands, acts as poison to the system.

2. **The Ureters** are the tubes which carry the urine down from the pelvis of the kidney to the bladder. They are two in number—one situated on the right side of the pelvic or hip cavity and the other on the left side close to the walls—and they enter one on each side at the upper part of the bladder. They are only about the size of an ordinary straw.

3. **The Bladder** is situated in the pelvic or hip cavity. When it is full it sometimes stretches out into the abdominal or belly cavity. It consists of a body and neck. The body is the large part, and is placed in front; the neck being at the back part of the bladder. This is where the urine or water passes out of the bladder. The bladder is made up of three coats, somewhat similar to that of the bowels. The serous coat is a continuation of the serous coat found in the belly

cavity lining the bowels. The inside is lined with mucous membrane which is thrown into folds when the bladder is empty. Another coat is found, between the two membranes above mentioned, called the muscular coat, the action of which is to contract the bladder when the animal wants to urinate. The bladder is held in place by ligaments. The rectum lies above the bladder, which in the horse rests on the floor of the pelvic cavity. Its position in the mare differs from that of the horse. Instead of the rectum or back bowel being immediately above it, as in the horse, the womb is just above the bladder or between it and the rectum. The bladder acts as a reservoir in which to store the water until it is full; it then presses on the walls and nerves, giving a peculiar sensation to these parts, causing the walls to contract, forcing the water into a tube which carries it from the body. This tube is called the urethra. The neck of the bladder is simply an opening at the back part, and is guarded by a valve which prevents the urine from dripping out except when the animal is passing its water.

4. The Urethra is the tube which carries the water from the bladder out of the body. It is situated much differently in the mare than in the horse. In the mare it is very short, passing from the neck of the bladder along below the womb and vagina, which is the passage from the outside into the neck of the womb. It opens up into the underside of this passage about four inches in from the outside. This opening is guarded by a small thin valve, and can be felt by passing the finger along the under side of the passage which leads into the womb. In the horse this tube is a great deal longer than in the mare. It commences at the bladder, passes along below the rectum or back bowel to just below the anus. Here this tube bends downward and forward and passes into the penis, continuing down to the end, where it terminates. Its purpose is to carry the urine from the bladder out of the body and to perform certain duties in connection with the genital organs. Its lining is a continuation of the membrane of the bladder.

CHAPTER X. GENITAL ORGANS.

THESE organs in the horse reproduce the young. To bring forth the young there must be two animals, one the horse or male, the other the mare or female. In other words, there must be one of each sex, male and female.

I.—THE MALE.

The genital organs of the horse are as follows: The scrotum or bag, the testicles, the spermatic cord, the vesiculæ seminales or the pouches which hold the semen, the urethra, the penis and the sheath.

1. The Scrotum.—The scrotum is the sac or bag which contains the testicles. It is situated between the hind legs, and is covered on the outside by a very fine soft skin. Passing up in the center under the sheath and scrotum is a well marked line in the skin called median raphe. This can be plainly seen when the horse is on his back. It continues up, gradually getting fainter until it reaches the anus. Under the skin are layers of white fascia or tissue, which can be seen by cutting through the scrotum. There is a partition in the scrotum separating the two testicles. The size of the scrotum is affected very much by the weather. In cold weather its fibres contract, causing it to get very much smaller, while in warm weather the fibres relax, causing it to become very much larger. The scrotum contains, supports and protects the testicles.

2. The Testicles.—The testicles are the organs which secrete the semen. They are two in number, one situated on the left side, the other on the right. They are oval in shape, and are attached above to the spermatic cord. Before the animal is born the testicles are situated in the abdominal or belly cavity and attached to the serous membrane which has already been spoken of in connection with that cavity. At or about the time of birth, there takes place what is known as the descent of the testicles into the scrotum. In their downward course,

they pass through a slit or small opening at the back part of the muscles of the belly, where they are attached to the under part of the hip bone. These slits or openings are known as the inguinal rings. They can be felt in the horse by pressing the fingers well up into the groins. The descent of the testicle is an important point to be remembered. If the testicle does not descend into the scrotum the horse is known as a rig or ridgeling horse. In this case the testicle is not found in the scrotum. At the front part of the testicle there is a small ridge called the globus major, and at the back of it is another small ridge called the globus minor. Passing between these two ridges is another well marked ridge called the epididymis. These can be easily seen by examining the testicle after the animal is altered or castrated. The substance of the testicle is made up of small glands and fine tubes. These tubes, as they pass towards the back of the testicle, form into larger tubes and finally unite to form one called the vas deferens.

3. Spermatic Cords.—Spermatic cords, or the cords of the testicles, are attached above to the inguinal rings or openings mentioned before. They are about five or six inches long and have the testicles attached to them below. In each cord is found a small muscle which goes by the name of the spermatic muscle, the rest of the cord being made up of the spermatic artery, veins and nerves. Running up at the back of these cords is found a tube called the vas deferens. Around the spermatic cords and testicles is a serous membrane, one layer being attached to the testicle and cord, while the other is closely attached around the inside of the scrotum or bag. In this membrane are small glands which secrete an oily fluid to lubricate the parts, preventing friction when they are jolted about in the scrotum. This fluid flies out as soon as the scrotum is cut. This is important, because sometimes from a slight injury the glands will secrete a large amount of this fluid, thus causing the scrotum to look large and swollen. This disease is known as hydrocele or water in scrotum or bag.

4. Vas Deferens.—These tubes are two in number and are situated just behind the spermatic cords. They are about the size of a straw and quite hard. They carry the semen up the back part of the spermatic cord through the inguinal rings before mentioned. They then pass backward and upward, one on each side, to the upper part of the bladder, where they empty

into two small pouches or sacs, called the *vesiculæ seminales*. These store up the semen as it is secreted by the testicles, and when full present the appearance of a pear.

5.—Vesiculæ Seminales.—These sacs or pouches are situated at the upper side, over the neck of the bladder, one on each side. They have the *vas deferens* emptying into them at the front end, while at the back end of each is a small opening that leads out into another small tube which passes backward and empties into the urethra, mentioned before as carrying the water out from the bladder. These sacs or pouches store up the semen or seed of the horse. During sexual intercourse, these sacs or pouches contract and force the semen through the little tubes mentioned out into the urethra, leading down through the penis.

6. The Penis.—The penis is the main organ of sexual intercourse. Its substance is formed of what is known as erectile tissue, which, under certain circumstances, becomes enormously distended with blood. Passing up the under side, there is what has already been mentioned, the urethra, or the tube, which carries the water or urine out of the body, and also in the act of intercourse carries the semen. This tube is used for two purposes, as we have already mentioned.

7. The Sheath.—The sheath is a loose process of skin which passes downward from the scrotum or bag, generally from about four to six inches, according to the size of the animal. It is attached to each side, leaving a hole or opening in the centre through which the penis passes. The outside of the sheath is covered by a thin, delicate skin, similar to that of the scrotum. It is lined inside by a membrane containing many small glands, which secrete a thick dark fluid to lubricate this passage. Sometimes this fluid collects in here and has the appearance of tar. This is important, for when it collects to a large extent the sheath should be washed out.

8. The Semen.—The semen or seed of the horse is a light fluid which when examined under a microscope, is found to contain small objects called spermatozoa. These move about, and when in the womb meet the ovum of the female, which is secreted by a gland called the ovary. When these two small objects unite, they form the *fœtus*, or what may be called the animal in its first stage.

II.—THE FEMALE.

The female genital organs, or organs of the mare, are very different from those of the horse. They are known as follows: The ovaries, the fallopian tubes, or the tubes which carry the ovum from the ovaries to the uterus or womb, the uterus or womb, the vagina, and the vulva.

9. The Ovaries.—The ovaries in the mare correspond to the testicles in the horse. Each is about the size of a pigeon's egg, and resembles it much in shape. They are held in place by ligaments, and at the back part are provided with tubes leading from them called the fallopian tubes. The ovaries secrete the ovum or egg. This is a very minute body, which when examined under the microscope is found to be only 1-150th of an inch in diameter.

10. The Fallopian Tubes.—The fallopian tubes are two canals, one on each side. They pass backward and upward, and enter into the front part of the uterus or womb. These small tubes are simply used to carry the ovum or egg up from the ovaries and empty it into the womb or uterus.

11. The Uterus or Womb.—The uterus or womb is a muscular sac situated in the hip cavity, bounded above by the rectum, below by the bladder, and on either side by the walls of the hip cavity. It is divided into what is known as a body and a neck. The body of the womb is very small, being only about four to six inches in length and a couple of inches in diameter when the animal is not pregnant. Near the front end, at the upper side, there are openings by which the ovum enters. When the animal becomes pregnant, the body of the womb becomes enlarged and passes forward and to the left side of the belly or abdominal cavity. It continues to enlarge as the time of pregnancy passes on, until the foetus, or young, has attained its full size. After the mare has had her young the womb begins to get smaller until it attains its natural size again. The womb is very largely supplied with blood vessels and nerves. This is especially so when the animal is pregnant, as it takes a large amount of blood to nourish the foetus, or young animal, before birth. It is made up of three coats. The inner is called mucous membrane, and in the mare, while pregnant, is covered with numerous small processes about the size of peas, to which the placenta or cleaning of the foal is attached. The muscular coat is next to that of the mucous coat, and lies between the outer and inner coats of the womb.

It is made up of muscular fibres, and is strong and thick in the womb, much thicker than it is in the bowels or other organs already mentioned. This coat supports and protects the fœtus or young while it is being carried in the womb, and at the time of parturition, or what is commonly known as foaling, this coat also comes into use. It contracts the womb very forcibly on the foal, while the neck of womb lies open, thus helping to force the foal out of the womb. This is important as the contraction of this coat produces what is known as labor pains. Lying outside, and covering around the womb, is a serous coat, a continuation of the serous coat of the bowels. The womb is held in place by strong ligaments attached to the sides, and from there to the hip bones. These are called broad ligaments. At the back part of the womb is the neck. It consists of an opening, formed by a projection, about the size of an egg. This has a hard, gritty feeling when the animal is not in season. The neck at this time is closed. The neck of the womb is under control of the muscle around it, and this muscle is under control of the nerves of the womb. When the mare comes in season, this muscle is relaxed to a certain extent, thus allowing the neck to open wide enough for the passage of a couple of fingers. By working around it with the fingers at this period it can be forced wide enough to admit a man's hand. If the mare is put to the horse at this time, and becomes pregnant or with foal, the muscle in the neck of the womb contracts, firmly closing it. It remains closed until the time of foaling. When, at the time of foaling, the labor pains come on, the muscle in the neck dilates, allowing the neck of the womb to open large enough for the foal to pass out. The neck of the womb can be felt easily by oiling the hand and passing it into the passage to the womb. It will be noticed, too, that the neck spoken of projects into the passage.

12. The Vagina and the Vulva.—These two organs together make up the passage which leads into the womb from the outside. In the young mare they are separated by a thin curtain, or partition, made up of mucous membrane. This curtain is found about four inches from the outside, and is known as the hymen. It is destroyed, or should be, when the mare is first put to the horse, although it is broken down in other ways, and in some cases it will disappear of its own accord. The part of the passage in front

of the hymen is called the vagina. This passage, in structure, resembles the womb, but is not so strong. There are numerous glands situated along the inner coat or lining which secrete a fluid to lubricate it. The principal use of this organ is to guide the penis during sexual intercourse, and at the time of foaling serves as a passage for the foal. That part of the passage behind the hymen is known as the vulva. It is about four inches long and about two or three inches high, varying according to the size of the mare. In front, it is separated from the vagina by the hymen membrane. It resembles the vagina in structure, and is also provided with little glands in its inner coat to secrete a fluid to lubricate the passage. At the back part of the vulva, or around the outside, is what is known as the lips of the vulva, one on each side of the opening. The outside of the lips is covered by a very fine skin. Just below the skin, they consist of erectile tissue, which is the same kind of tissue as that of the penis of the horse. This tissue is found more abundantly in the lips of the vulva of the young mare than in those of an old mare. The opening between these lips is situated just below the anus, or the opening where the back bowel ends. At the back part of the vulva, on the under side, is an opening, or hole, about large enough for the passage of a man's finger. Through this hole the tube leading from the bladder enters into the passage and allows the urine, or water, to pass into the vulva, through which it runs out of the body. The clitoris is situated on the under side of this passage, just inside the lips. It can be seen in the mare when she works the vulva after passing water. Just below the clitoris are found two or three small glands which secrete the fluid that passes away when the mare is horsing.

13. Mammary Glands.—Mammary glands, or what is known as the mare's bag, are two in number, situated between the thighs, young animal. In the young mare they are very small, but after the mare is with foal a few months these glands begin to get large, until at foaling time they attain their largest size. They are covered outside by a thin, smooth skin. The substance of them consists of small glands and tubes—the glands secrete the milk from the blood, while the tubes retain or hold the milk until it is drawn away from the bag either by milking or by the young animal's sucking. During the time of suckling the young, the glands are largely supplied with

blood, from which the milk is secreted. On the under side of each gland is found the teat, or that part taken hold of by the young when sucking. The end of the teat is pierced by several small holes, through which the milk passes.

III.—THE FOETUS, OR YOUNG ANIMAL BEFORE BIRTH.

We must here first speak of the ovum, or egg, which is secreted by the ovary of the mare. Every time she comes in season (which occurs every three weeks during the hot weather) this ovum, or egg, passes down the tubes before mentioned into the womb, where it remains a few days and then dies if she is not put to the horse; but, if during the time this ovum is in the womb she is put to the horse and one of the spermatozoa from the semen of the horse comes in contact with it (the ovum) and a union of these takes place, then the rest of the semen dies and passes away, and the neck of the womb contracts gradually until it is perfectly tight. These two little bodies begin to grow when united and form the fœtus, or foal. The fœtus may be for convenience divided into three parts, viz: the fœtus proper, the navel string, and the cleanings, or placenta. The cleanings, or placenta, is the part which is found covering the foal and is attached to the little pea-like elevations on the inside of the womb. This covering is found to be full of small blood vessels which finally unite to form two larger vessels, known as the navel veins. These carry the blood up through the navel opening of the foal and then to its heart. By the action of the heart it is forced all through the body of the foal and returned again to the heart. It is then forced down another artery to the navel opening, along the navel cord, into the cleaning or placenta again, where it is distributed through the small blood vessels. When the blood comes down this cord from the foal it is in its impure state, and while it is passing through these small vessels in the cleaning it comes very close to the small blood vessels in the womb. The blood is cleansed and nourished from the blood of its mother by a process similar to that which was spoken of when speaking of the lungs. The fœtus, or foal, does not grow so fast the first month as it does later on. At the age of seventeen weeks the first hair appears on the lips and the tip of the tail. Between the thirty-fifth and the fortieth week the foal begins to show signs of life, and is completely covered with hair. After this time it grows very rapidly and may be seen mov-

ing around by watching the flank closely. The mare carries her foal eleven months, but in some cases an aged mare has been known to carry her foal over twelve months. In rare cases young mares may lack a few days of eleven months.

IV.—HOW TO TELL WHEN A MARE IS WITH FOAL.

The first sign of pregnancy or being in foal is her ceasing to come in season at the end of three weeks. If felt at the flanks she will be peevish and cross, and also ugly to other horses. She usually feeds and thrives better at this period. At the end of three or four months she begins to get larger at the flanks, and gradually continues getting larger until foaling time. Mares that are fed on hard feed and worked do not usually get as large as mares fed on rough feed and not worked. At about the fifth or sixth month the foal begins stirring in the womb. This may be detected by watching the flank closely, especially after the mare has had a drink of cold water. The movement of the foal may also be felt by pressing the hand against the flank on the left side. At about the sixth month in the young mare the mammary glands, or bag, begins to get large, and gradually gets larger until the time of foaling.

V.—SIGNS OF FOALING.

The muscles and ligaments gradually become relaxed until there is quite a hollow at each side of the tail. The vulva gets quite large at foaling time and wax usually runs from the teats of the mare a few days before. A few hours before foaling she walks around and acts quite uneasy until the labor pains come on, when her restlessness increases to getting up and down and forcing. This continues until what is known as the water bag comes out and breaks. The labor pains then increase, and she lies down, forces violently, until the front legs and head of the foal appear. It then soon slips out, the cleaning generally coming with it. Sometimes the foal comes backward. This is harder on the mare. If the mouth of the foal is examined immediately it is found to contain what is known as the melt, which resembles a piece of liver.

CHAPTER XI.

THE SKIN.

THIS is the membrane which covers the body. It consists of two layers and is covered with hair, fine or coarse, long or short, according to its position or the purpose which nature intended it to serve. The outer layer is called the epidermis, the inner the dermis.

1. **The Epidermis.**—The epidermis is the outer layer. It is not supplied with nerves and blood vessels, its purpose being merely to protect the inner layer. This layer undergoes a continual process of being made up and passing away in dandruff.

2. **The Dermis.**—The dermis or true skin lies under the epidermis. It is well supplied with nerves and blood vessels, part of the nerves being the nerves of touch. This fact accounts for its becoming so very sensitive and painful when through injury of any kind the outer layer is scraped off. It is attached to the body by a layer of white tissue known as the areolar tissue, this being that which is cut through when the animal is being skinned. The thickness of the skin varies in different parts of the body, being thinnest in the under parts. The sweat glands are situated in the dermis.

3. **Hair.**—There are three kinds of hair on the horse:—the common, the finest of the three, covers most of the body; that of the mane and tail, coarse and long; and that growing on the muzzle or nose and the lips, long and usually black, known as cat hairs.

On the inside of the front legs, just above the knee, and on the inside of the hind legs, about the hock, are rough horny spots. These are called chestnuts.

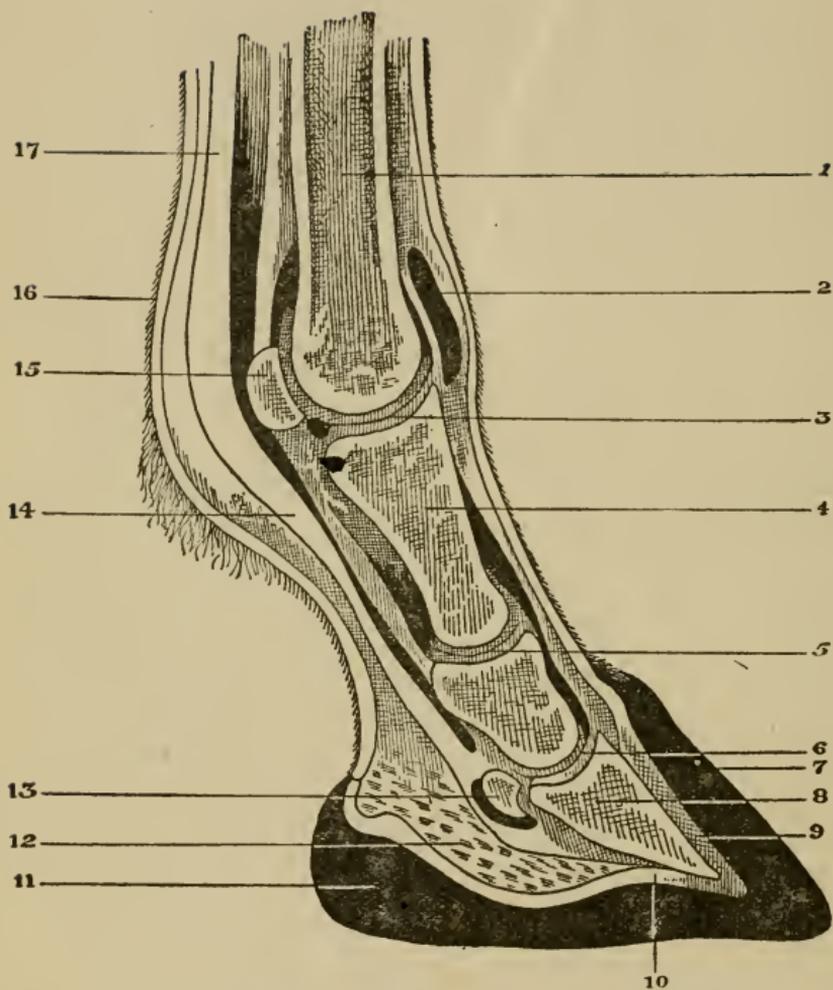


PLATE VI.—CROSS SECTION OF THE FOOT OF THE HORSE.

EXPLANATION OF PLATE VI.

FOOT OF THE HORSE.

This cut represents the foot of a horse sawed from above the fetlock down through the center of the foot. It shows the structure of the foot, the name of each part being given according to number.

- | | |
|--|---|
| 1. Lower end of large metacarpal, or shin bone. | it is the seat of a low-down ringbone. |
| 2. Bursa, which secretes the joint oil that lubricates the place where the tendon, or cord, on the front of the leg passes down over the front of the fetlock joint. This is important as it sometimes gets injured and becomes enlarged. It is then called a puffy or bursal enlargement, and is of the same nature as a wind gall. | 7. Wall of the hoof. |
| 3. Fetlock joint. | 8. Os Pedis, or foot bone. |
| 4. Large pastern bone. | 9. Quick of the foot, or sensitive wall. |
| 5. Pastern joint. This joint is important, for when diseased it is the seat of a high-up ringbone. | 10. Quick of the foot, or sensitive sole. |
| 6. Coffin joint. This joint is important for when it is diseased | 11. Frog of the foot, or horny frog. |
| | 12. Fatty Frog. |
| | 13. Coffin, or navicular bone. This is important for when diseased it is the seat of coffin joint lameness. |
| | 14. Back tendons below fetlock |
| | 15. Fetlock bones (2 in number) one on each side of the joint. |
| | 16. Skin. |
| | 17. Back tendons above fetlock. |

CHAPTER XII.

THE HOOF.

A THOROUGH knowledge of the construction of the hoof is very important to enable the student to deal properly with lameness of the horse. The hoof corresponds to the finger nail of man. It is divided into three distinct parts: the wall, the sole, and the frog.

1. **The Wall.**—The wall is that part of the hoof seen when the foot is resting flat on the ground. It is divided into the toe, the quarters, the heels and the bars. The toe forms the front, and is the thickest and strongest part of the wall. The quarters are situated at the side. The walls are not nearly so thick here as at the toe, but are almost straight up and down. The heels are situated at the back part of the foot. From the heel is a process of hoof, which looks like a bar, passing forward between the frog and the sole of the foot; this can be seen plainly by raising up the foot. There is one of these at each side of the frog. They act as braces to the heel and the quarters of the wall; these are called the bars. Covering the outside of the wall is a fine membrane called the periople which gives the hoof its polished appearance. This can be seen best when the hoof is well washed off, as it is after traveling through wet grass. This membrane keeps the moisture in the hoof and protects it from water. This is a point of importance in shoeing horses, as it is very injurious to file the wall too much. Around the top part of the wall, where it unites with the skin, is a groove which contains a white band, called the coronary substance, or band. This nourishes the wall of the hoof, or, in other words, it is from this that the wall of the hoof grows. The under part of the wall, or that which rests on the ground in the unshod animal, or the part to which the shoe is nailed in the shod animal, is called the spread of the foot. On the inside of the wall, attaching it to the bone of the foot called the *os pedis*, is the part called the quick, or sensitive laminae. It is important to note this when driving nails in shoeing. The nail should not be driven into this membrane nor should

it be even pressed upon, for it is very sensitive. When a nail has been driven so as to injure this membrane it is a common expression to say "you have pricked that horse's foot."

2. The Sole.—The sole is a thick plate of horn which helps to form the under part of the hoof. It is situated between the inner border of the under part of the wall already mentioned and the front of the frog. The under part of the sole is concave, or hollowed out. The upper part of the sole is attached to the under part of the *os pedis* bone, or bone of the foot, by a membrane called the quick, or sensitive sole—this membrane is merely a continuation of the sensitive laminae. The outer part of the sole is attached to the inner part of the wall. When pared down a white ring is seen where the sole and the wall is united. At the back part of the sole there is a notch the shape of the letter V; in this notch the frog is situated. It is important to remember when shoeing never to let the shoe rest on any part of the sole; neither is it well to pare off too much of the barky-looking substance of the sole, as this helps to keep the moisture in the foot. When this is taken off it allows the moisture to escape and the hoof becomes dry and contracted.

3. The Frog.—The frog is the prominent spongy horn found in the V-shaped notch in the back of the sole. It is wide at the back and helps to form the heel of the foot; the pointed part in the front is called the apex of the frog. The under part of the frog is triangular in shape and has a hollow in it called the cleft of the frog. There is a hollow at each side of the frog, between it and the bars, called the commissures of the frog. On the upper part is a membrane, known as the sensitive frog, which attaches it to the under part of the *os pedis*, or foot bone. This membrane is simply a continuation of the sensitive sole spoken of in connection with the sole. The back part of the frog is the widest part and spreads out to form the heel.

To obtain the best idea of the structure of the foot, get a hoof and the bones of the leg as far up as the fetlock, and saw them down through the center. This will show the exact conformation. The shape of the hoof differs; large draft horses are apt to have what is termed a flat foot, while in road horses the chief trouble is what is known as **contracted feet and weak heels.**

CHAPTER XIII.

THE EAR.

THE ear of the horse is divided into several parts. The inner part, or drum of the ear, is situated in the hardest bone of the body, called the petrosal. The nerve which passes into the drum of the ear and gives the sense of hearing, is called the auditory nerve. From the drum a small opening passes out into the outer part of the ear; this is the portion which is seen on top of the head. It is made up of a membrane known as the cartilage, which gives the ear its stiffness. This cartilage is covered by a fine, delicate skin, covered on the outside by fine, short hair. Situated on the inner side of the outer ear are numerous long hairs projecting outward, the use of which is to keep foreign bodies from dropping into the ear. The ear is moved backward and forward by small muscles which are attached around it.

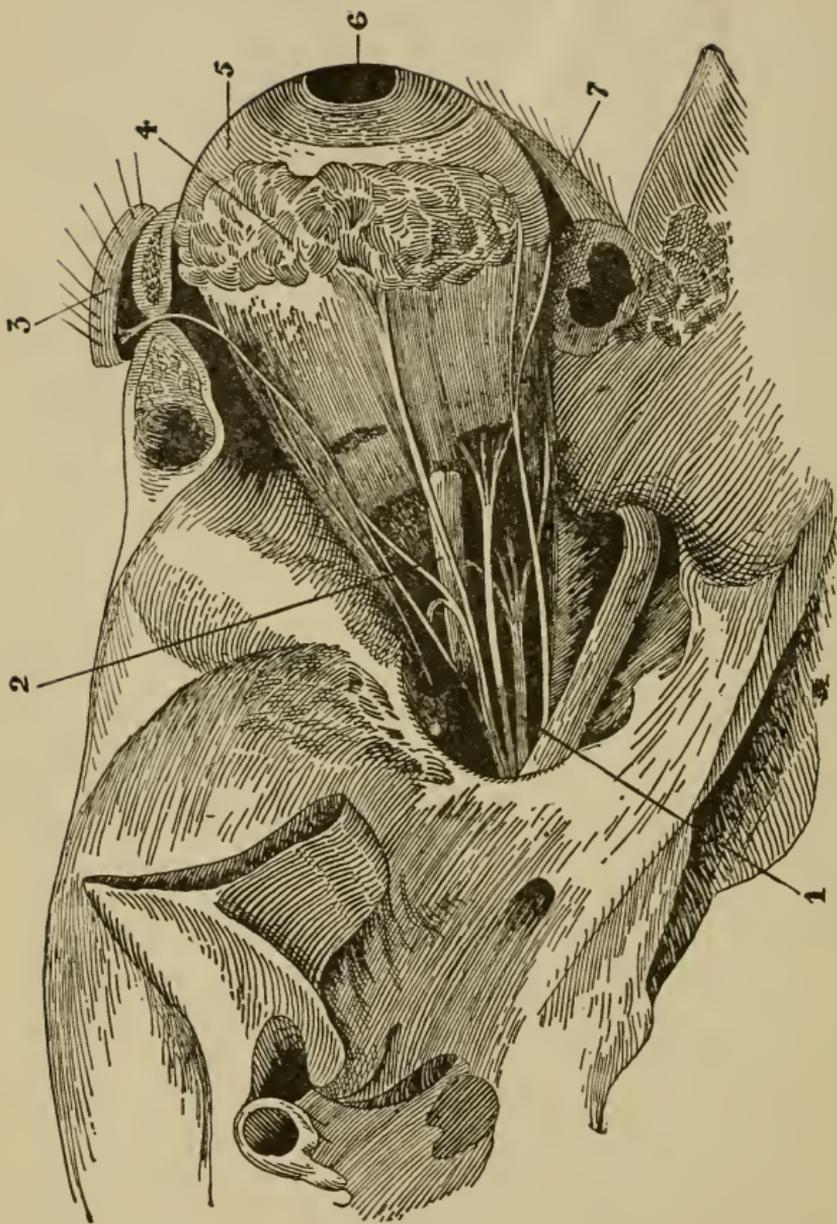


PLATE VII.—THE EYE.

EXPLANATION TO PLATE VII.

1. Nerves which control the movements of the eye.
2. Optic nerve which gives the sensation of sight.
3. Upper eyelash.
4. Glands which supply tears and moisture to the eye.
5. White of the eye.
6. Pupil.
7. Lower eye lid.

CHAPTER XIV.

THE EYE.

THE eye is the chief organ of sight. It is situated in the orbital fossa, mentioned in the chapter on the bones of the head. It is chiefly made up of several coats around the outside, and in the centre by the humours of the eye. On the inner side of these coats is a thin membrane called the retina, which contains the branches of the optic nerve. This receives the reflections of objects as they pass through the humours of the eye and from which the sensation passes along the optic nerve to the brain. The oblong opening seen in the middle of the eye is known as the pupil. If a horse be led from a dark stable into the light and the pupils of the eyes watched closely, it will be noticed that they get smaller; but on returning it to the stable the pupils will be noticed to dilate or get larger, thus it is seen that the pupils do not always remain the same size. The chief use of the pupil is to gauge the sight. At the back part of the eye are several muscles attached from around the eye to the bones in the fossa. These muscles move the eye and assist in holding it to its place. Around the front part are two movable curtains, one above and the other below, called the eyelids, the use of which is to open and close the eye, and also to protect it from injuries. Around the free border of the eyelids are what is known as the eyelashes, which keep foreign substances from falling into the eye. Situated in the inner angle is what is known as the haw of the eye; this membrane also helps to protect it. In the corner of this angle is a small duct or opening, through which a fluid called the tears passes down into the nasal tubes, from whence it is carried down through the bones of the head and emptied into the under part of the nostril or nose. A small gland is situated on the upper part of the eye. This gland secretes the tears which lubricate the eyes. The color of the eye is generally brown, but in some cases it is white. It is then called a walled eye.

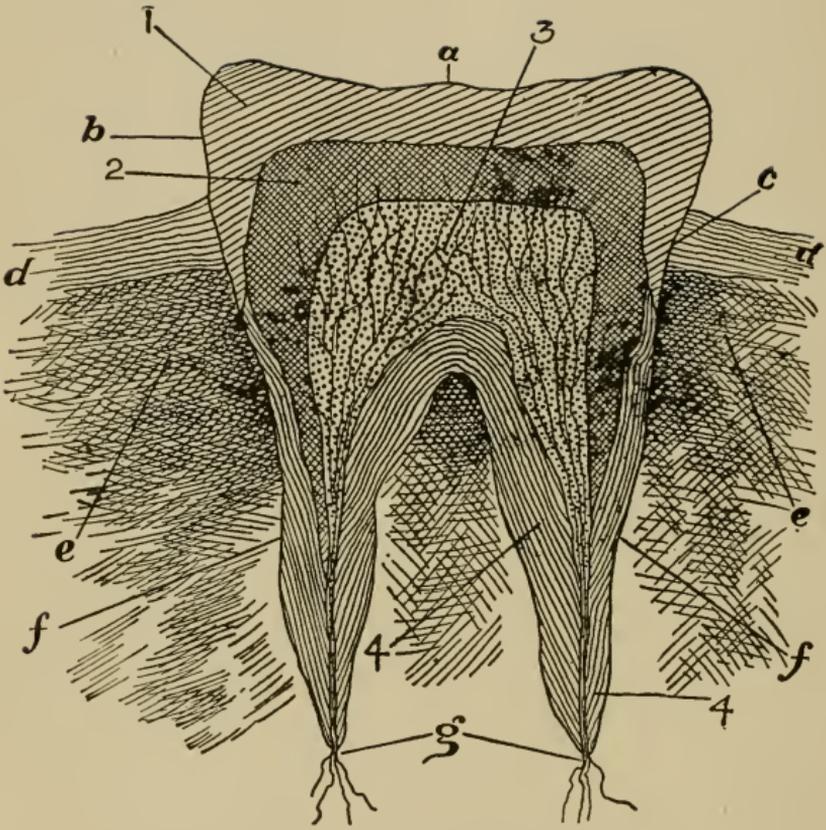


PLATE VIII.—CROSS SECTION OF A TOOTH.

EXPLANATION OF PLATE VIII.

COMPOSITION OF TEETH.

1. Enamel.
2. Dentine.
3. Pulp.
4. Crusta Petrosa

PARTS OF A TOOTH.

- a. The table.
- b. The crown.
- c. The neck.
- d. The gums.
- e. The jaw.
- f. The fangs.
- g. The nerves and blood vessels.

CHAPTER XV.

THE TEETH.

THE teeth are situated in the upper and lower jaws. They are made of the same tissue as bone but contain $10\frac{1}{2}$ per cent. more of earthy salts. This fact accounts for their extreme hardness. Unlike bone they can stand exposure to air and friction without becoming diseased. Teeth are used to masticate or chew the food, and because of the constant change in their formation and appearance they serve as a guide in telling the age of the horse.

I.—COMPOSITION OF THE TOOTH.

A tooth is made up of three hard substances, viz: dentine or ivory, enamel and crusta petrosa.

1. The Dentine or ivory is situated in the upper part around the pulp or nerve cavity. It is of a yellowish color and largely supplied with nerves which pass through it from the pulp cavity.

2. The Enamel is the hardest substance of the tooth, and covers the outside of all the exposed part. This substance is characterized by its whiteness and, unlike the dentine, contains no blood vessels or nerves. If part of the enamel is broken off it is never replaced, and the tooth below the broken part generally becomes decayed.

3. The Crusta Petrosa is found in the fang or root and the parts situated below the gum. It is the softest part of the tooth.

II.—PARTS OF A TOOTH.

Each tooth is divided into four parts, viz: the body or crown, that part above the gum; the table, the part that comes into wear on the top; the neck, the part to which the gums are attached; and the fangs or roots, the parts situated down in the bone.

III.—CLASSES OF TEETH.

There are three kinds of teeth found in the horse, viz: the incisors, the canine, and the molars.

4. The incisors or front teeth, situated in the front part of the mouth just inside the lips, are twelve in number, six above and six below.

5. The canine or bridle teeth are often absent in the mare. They are four in number, two in the upper and two in the lower jaw, one on each side a couple of inches back from the front teeth. They are from a quarter to three-quarters of an inch above the gum, are round and pointed and of no particular use. They resemble the eye teeth of other animals.

6. The molars or back teeth are twenty-four in number, six on each side in the upper and six on each side in the lower jaw. With these the food is ground and masticated.

IV.—WOLF TEETH.

Wolf teeth are two small, round, pointed, temporary teeth which vary in size in different animals, situated one on each side in front of the molars or back teeth in the upper jaw. They commence to grow soon after birth and if not pulled or knocked out usually decay and drop out between the ages of five and eight years. These teeth affect the eye, causing it to look dull and run water. They should be pulled out when first noticed.

V.—SETS OF TEETH.

The horse has two sets of teeth. The milk teeth are temporary and are those that the colt sheds, while those that come in and remain without being shed, are called the permanent teeth. The cutting of the teeth of the foal varies, but at or within nine days after birth he has four front teeth, two in the centre above and two below, and in the back part of the mouth twelve molars. At from seven to nine weeks four more incisors or front teeth appear, one at each side of the two centre teeth in each jaw. At nine months he gets the last of his milk or temporary teeth, these being the corner teeth, two in the upper side and two in the lower side of the jaw. At this time he has his full set of milk or temporary teeth, consisting of twelve molars or grinders and twelve incisors or front teeth, six above and six below, making twenty-four in all. As the colt advances in age he sheds all these teeth. He then commences to get his permanent teeth. When the age of one year is reached, four permanent molars appear, two in each jaw, one on each side, behind the three

temporary teeth. At two years of age he gets four more back molars, one on each side of each jaw. When the age of two years and nine months is reached the two middle teeth of the temporary incisors, or front teeth of each jaw, fall out, and are replaced by two permanent incisors in each jaw; thus at the age of three years these four permanent incisors are up and in wear. At this age, the first eight molars, two on each side of each jaw, are shed and replaced by eight permanent molars. At four years of age he sheds four more front teeth next to those shed at three years, and these are replaced by four more permanent incisors or front teeth. At this age, too, he sheds the four remaining temporary molars or grinders, which are replaced by four more permanent molars. He also gets four more permanent molars at the back of the mouth. Thus at the age of four years the colt has a full set of permanent molars, consisting of six on each side of each jaw, making twenty-four in all. At five years of age he sheds the four remaining temporary incisors or front teeth, which are replaced by four permanent incisors, known as the corner teeth. It is well to become familiar with the time at which the colt sheds his different teeth, for sometimes the caps or shells of the teeth do not fall off when they should. These should be watched, for they greatly interfere with feeding and should be removed with a forceps. At five years of age the canine or bridle teeth make their appearance; thus at the age of five years the colt has all his teeth or what is known as a full mouth.

VL.—TABLE OF THE TEETH.

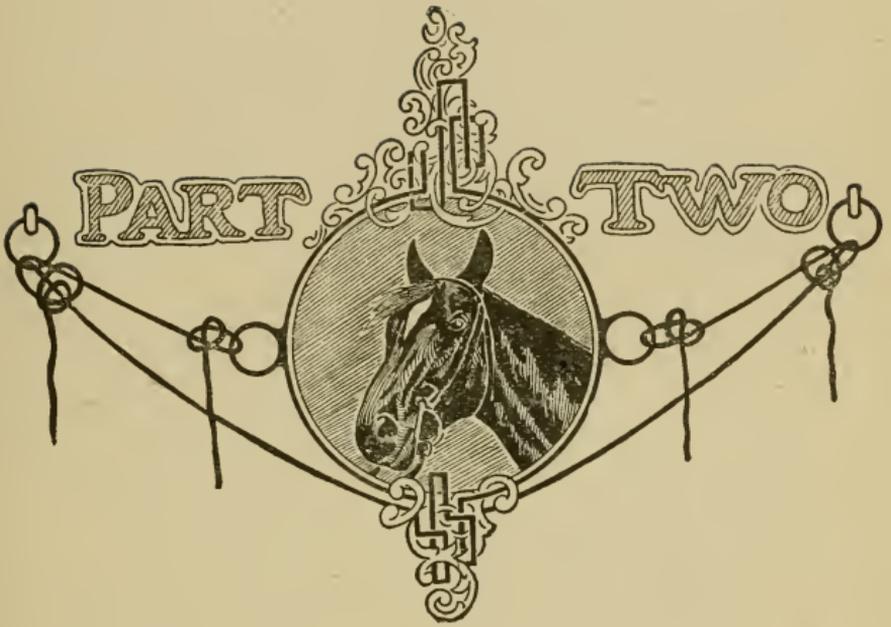
AGE.	INCISORS OR FRONT TEETH.		MOLARS OR GRINDERS.	
	Temporary or Milk Teeth.	Permanent.	Temporary or Milk Teeth.	Permanent.
The foal at or soon after birth.....	4	0	12	0
The foal at nine weeks	8	0	12	0
The foal at nine months	12	0	12	0
The colt at one year	12	0	12	4
The colt at two years	12	0	12	8
The colt at three years	8	4	4	16
The colt at four years	4	8	0	24
The colt at five years	0	12	0	24

At five years of age his bridle, or canine teeth make their appearance. These are four in number; thus at the age of five years a horse has a full mouth of teeth, numbering forty in all.

How to tell the age of a horse by his teeth is fully explained hereafter in this book when treating of the examination for soundness of horses.

It is advisable to become familiar with the anatomy, or structure of the horse, which has been explained in very simple language, because the better the anatomy is understood the easier it will be to become familiar with diseases and their treatment.





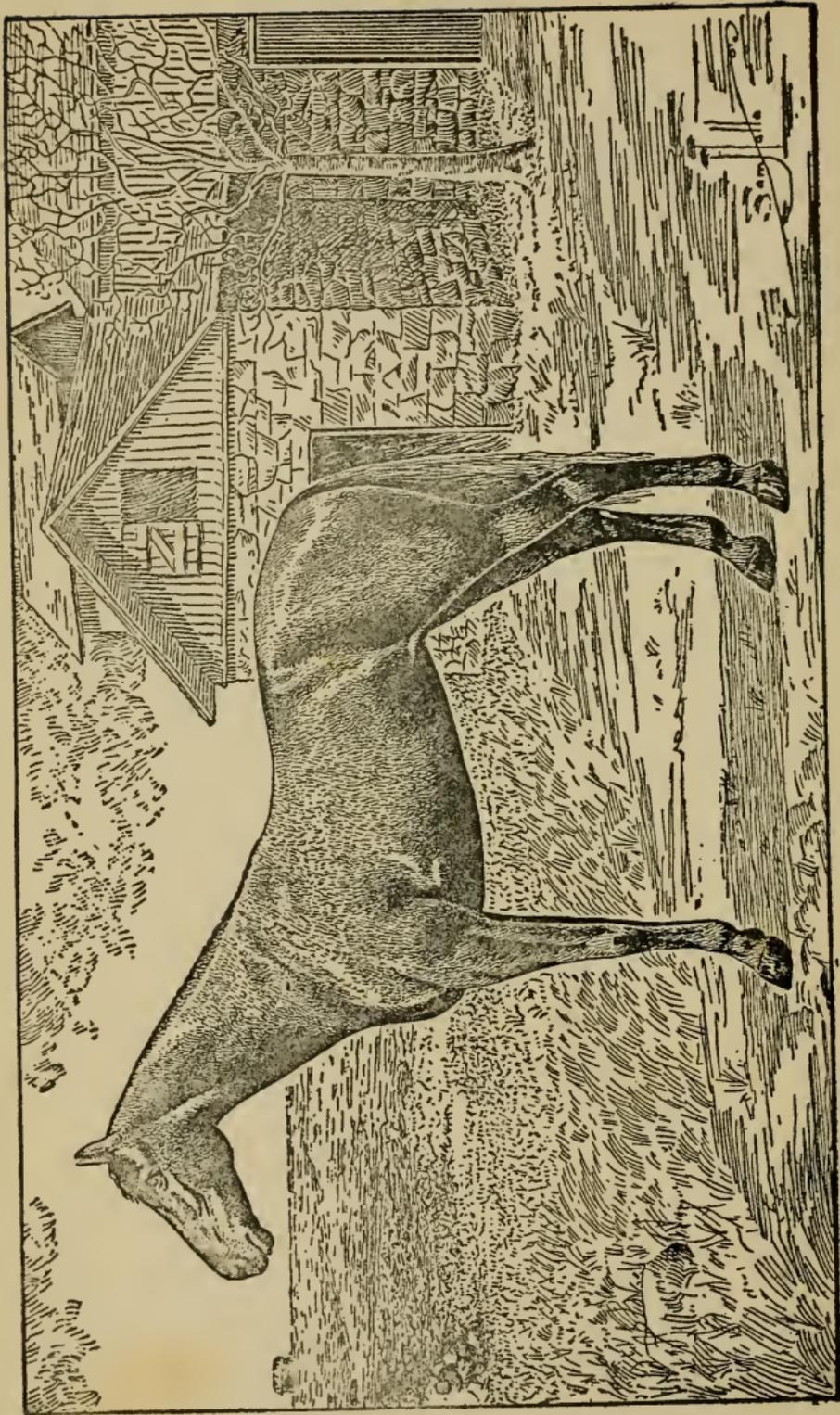


FIG. 2.—BUILT FOR SPEED.

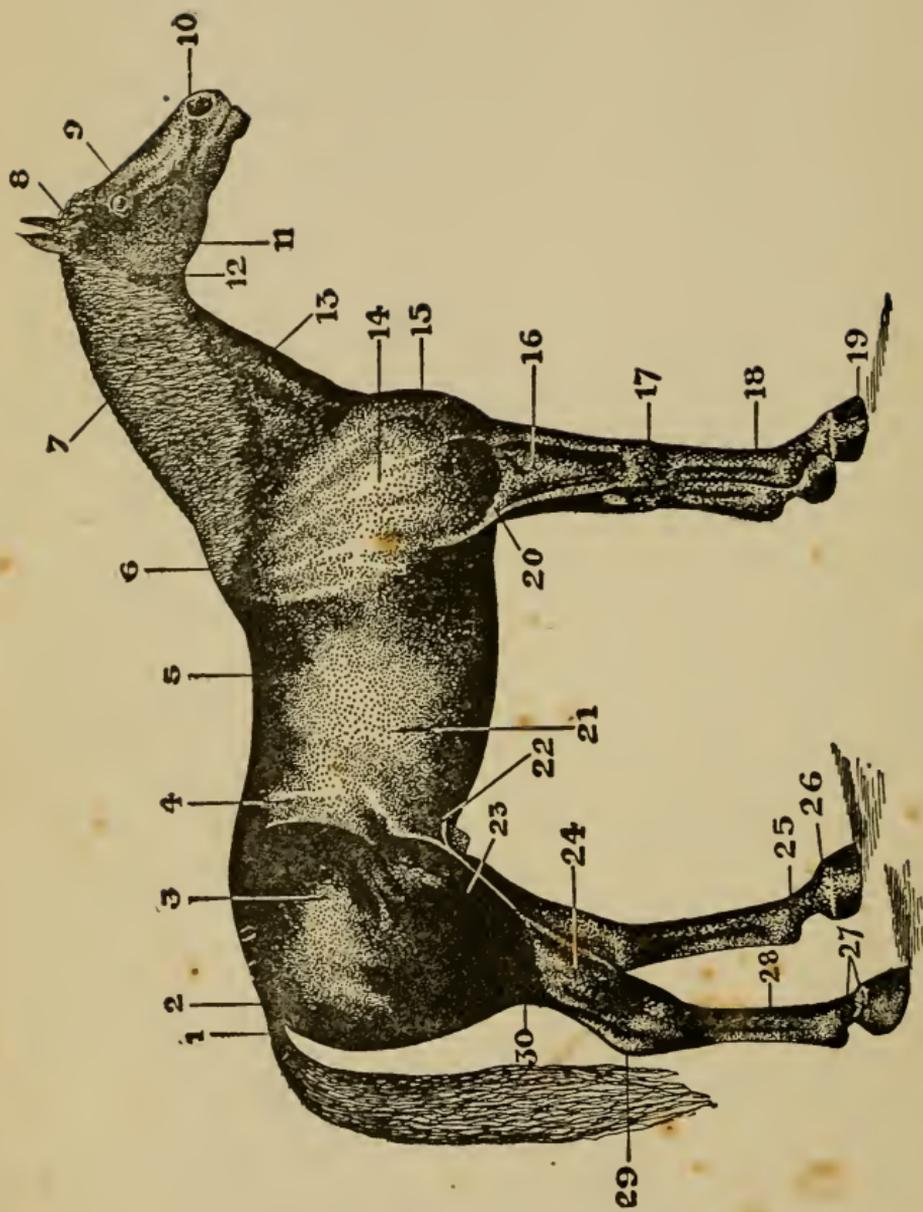
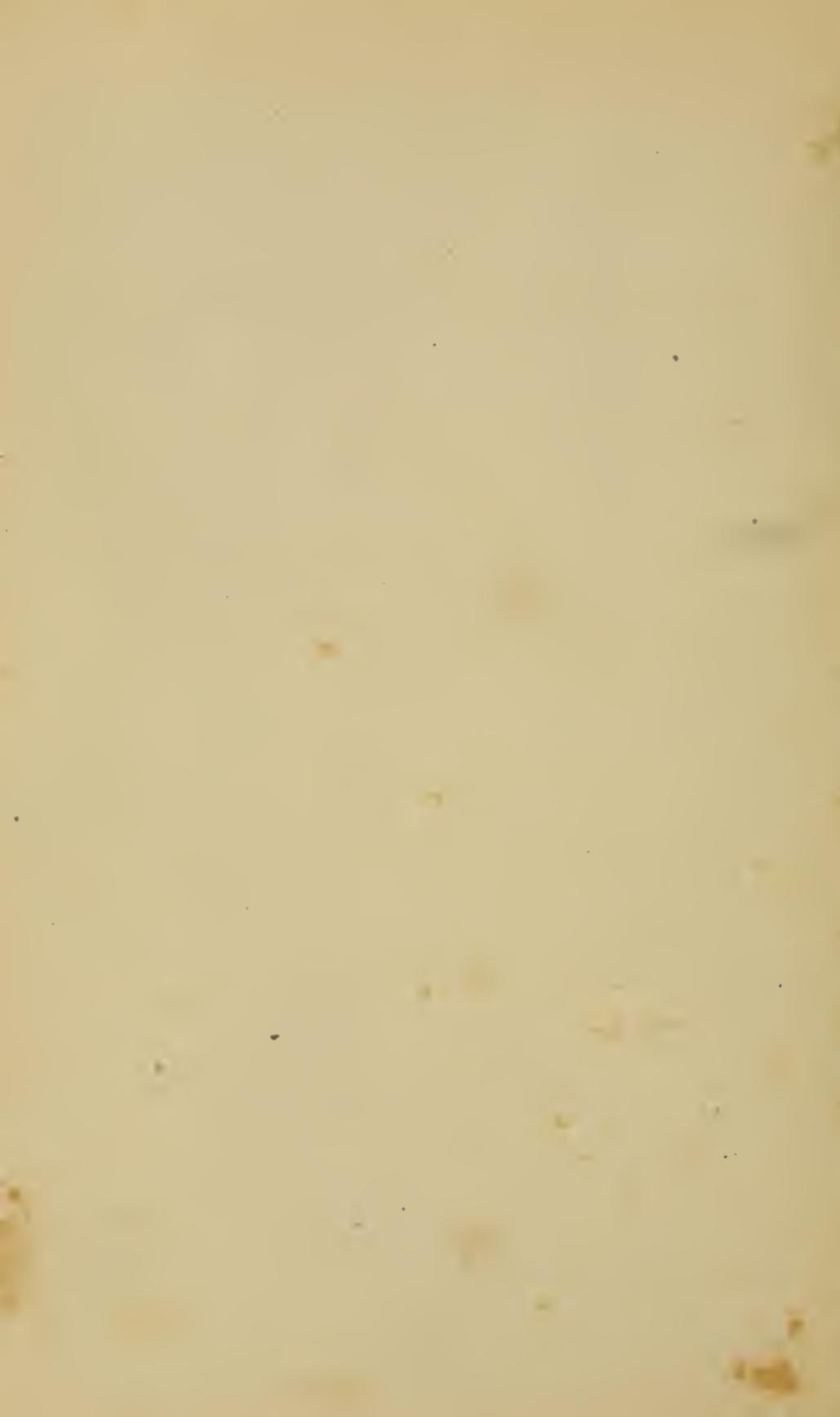


PLATE IX. TERMS USED IN SPEAKING OF THE HORSE.

EXPLANATION OF PLATE IX.

- | | |
|-------------------------|-------------------|
| 1. Dock. | 16. Arm. |
| 2. Croup. | 17. Knee. |
| 3. Hip. | 18. Shin. |
| 4. Loin. | 19. Toe. |
| 5. Back. | 20. Elbow. |
| 6. Withers. | 21. Belly. |
| 7. Mane. | 22. Flank. |
| 8. Foretop or Forelock. | 23. Stifle. |
| 9. Forehead. | 24. Thigh. |
| 10. Nose. | 25. Fetlock. |
| 11. Jaw. | 26. Coffin. |
| 12. Throat. | 27. Pastern. |
| 13. Neck. | 28. Cannon Bones. |
| 14. Shoulder. | 29. Hock. |
| 15. Breast. | 30. Hamstring. |



PART II.

DISEASES AND TREATMENT OF THE HORSE.

CHAPTER I.

QUESTIONS TO ASK AND HOW TO EXAMINE A SICK HORSE.

1. The History of the Case.

It is always well to inquire carefully into the history of a case before attempting an examination, provided of course in such cases as an accident where the cause is quite apparent and prompt action is necessary. This will aid in more intelligently arriving at a reasonable conclusion as to nature of the disease and the particular organ affected.

2. Questions.

The following are given merely as suggestions. Common sense of course is necessary to be exercised in individual case. In general these are satisfactory. First: How long has the animal been sick? Second: How has he been acting? Third: Have you any idea of or reason to believe what is the cause of the ailment? Fourth: What were these causes?

3. Consideration of Symptoms.

Should the animal stand with his head hanging down, eat very little, breathe heavily and cough, it is reasonable to conclude that the respiratory or breathing organs are affected.

Should he be in severe pain, get up and then lie, roll about in the stall and be slightly bloated it is quite likely to be some trouble in connection with the stomach or bowels.

Again if there is a straddling gait and frequent attempts to make water, if the penis is allowed to pass out and then drawn in, accompanied by stamping of the hind legs, you may come to the conclusion that the urinary organs—the kidneys or the bladder—are not in a healthy condition.

4. The Examination.

A thorough acquaintance with the history of the case obtain in a similar manner to that outline will be sufficient to direct you to the proper organs requiring careful examination.

Try the pulse. It is conveniently and generally taken upon the small artery crossing on the under side of the jaw about the middle. Your own pulse may be felt at about the same position on your own jaw. When in good health the pulse of a horse ranges from 38 to 40 beats per minute, or in other words, the heart beats at this rate. The serious nature of the disease in a general sense is determined by the degree in which the pulse varies from this what may be termed standard rate. It may be faster or slower, regular or irregular. The case is very serious should the pulse run as high as 100 or be irregular. An irregular pulse may beat fast for two, three or four beats, then slow, etc.

The Temperature is another very important matter for consideration. This is obtained with a fever thermometer which may be had from any reliable dealer in medical instruments. After seeing that the mercury is not in sections or out of place in the tube (this sometimes happens while carrying the thermometer in the pocket or in a case. See, too, that the mercury is down to 99° or lower) place it in the anus and allow it to remain for five minutes. Should the temperature be 102° to 104° the case would be considered ordinary, but should it run from 105° to 107° the case would be considered quite serious.

CHAPTER II.

DISEASES OF THE RESPIRATORY OR BREATHING ORGANS.

1. Simple Catarrh or Cold in the Head.

This disease is a running or discharge from the nose and sinuses of the head. It first commences with congestion of the mucous membrane, or what is commonly known as the lining membrane of the nose and head. This congestion is then followed by an inflammation and dryness of the membrane, which in a few days is followed by a discharge of a watery nature. Later on as the disease progresses this turns to a thicker fluid of a whitish or yellowish color, varying according to the severity of the case.

Causes.—The most common, perhaps, is exposure or sudden change in the weather, such as that of the fall and spring, or standing in a draft, while warm, after driving. It is generally found in horses that are in poor condition, the system being run down by poor feeding or overwork.

Symptoms.—The animal appears to be dull and does not eat very well. The hair stands out and looks rough; pulse, not much affected; the throat shows soreness when you press on it. There are also discharges freely from the nostrils. The breathing is about natural, and usually the animal does not make quite so much urine, or water, as under ordinary conditions.

Treatment.—As a general thing the treatment is quite simple. Make the horse as comfortable as possible in the stable. See that plenty of pure air can get in, and that his stall is kept nice and clean. Feed plenty of soft food such as warm bran mashes, boiled oats, or scalded chopped oats. It is a good plan to boil some flax seed and put a teacupful of the juice and boiled flax seed in with the food two or three times a day, according to how much this seems to loosen the bowels. In all cases of this kind it is well to keep the bowels open with soft food. In bad cases it is best not to work the animal very much—just enough for good exercise. Give him

a teaspoonful of the following mixture, three times a day in his food, but if he will not take it in his food put it on his tongue with a large spoon. This can be done by drawing tongue forward with one hand and putting the spoon well back into the mouth with the other, then turning it over. Hold the mouth shut until the medicine gets wet, so that he cannot spit it out.

Saltpetre or Nitrate of Potash.....	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root	¼ pound.

Mix thoroughly and give a teaspoonful three times a day, morning, noon and night.

In some cases when the discharge continues very long it is well to change the treatment and give a teaspoonful of ground sulphate of iron twice a day, night and morning, in his feed until the discharge stops. If his throat is sore rub it well two or three times a day with white liniment. In cases when the discharge is not checked it terminates in what is known as chronic catarrh, or nasal gleet.

2. Nasal Gleet or Chronic Catarrh.

In this disease there is a glary discharge from one or both nostrils. It is a chronic inflammation of the sinuses of the head, and the discharge varies much according to where the disease is situated and the length of time it has been going on.

Causes.—First, neglected catarrh as mentioned in the previous section may terminate in nasal gleet or chronic catarrh, especially if the animal has not been treated properly, such as being allowed to run out in the cold without being properly fed, or being allowed to run out at a straw stack. It may be caused by a severe blow on the bones of the head over the sinuses, or from a bad tooth. Sometimes a tumor will cause it or it may be the result of some foreign substance, such as food or a piece of stick becoming worked up through the nose into the sinuses. It may be caused by coughing, thus causing the food to fly up into the sinuses.

Symptoms.—This disease is sometimes mistaken for glanders. The animal at first may be in pretty good spirits, but if the disease is allowed to run on he will soon get thin and run down on account of the constant discharge from the nose. There is a discharge of a yellowish color from one or both nostrils. The lining of the nose is slightly reddened and

in some cases is of a yellowish color. In order to tell whether the sinuses are much affected tap on the bone over the sinuses with the finger; if this makes a dull sound as if the sinuses were full, you may conclude that they are diseased; but if a hollow drum-like sound, you may come to the conclusion that the sinuses are not much affected and there is more hope of recovery. As the disease continues, the animal becomes very much weaker; the discharge has a very bad smell, showing that the bones of the head are becoming affected. If a bad tooth is causing the trouble, the discharge comes only from one nostril. He will not eat very well; sometimes, after taking a bite, he will throw the food out of his mouth. The breath has a very bad smell and the horse will soon run down in condition. To distinguish this disease from glanders, notice first, that the discharge in glanders is of a greenish color and will sink in water, while the discharge in nasal gleet will float on water; second, the lining inside of the nose, if the animal has glanders, will be covered with small ulcers. Again, the temperature in suffering from nasal gleet will be about normal, but if from glanders will run as high as 103° or 105°. In doubtful cases you might even apply the Mallein Test, fully described in Chapter XV.

Treatment.—This disease is not, as a general thing, easily treated. If the animal is thin and run down in condition, it is well to build him up with good food, regular exercise, pure air and the following mixture:

Ground Sulphate of Iron	¼ pound.
Ground Sulphate of Copper	¼ pound.
Ground Gentian Root	¼ pound.

Mix thoroughly and give a teaspoonful twice a day, night and morning, on his tongue or in his feed. Wash the nostrils twice a day with warm water. If you conclude that the sinuses are much affected or that some food or foreign substance is causing the trouble, the treatment will then be different. The animal should be thrown and secured with a rope. Strip a piece of skin about an inch in diameter from the bone with a knife and with a trephine bore a hole through the bone into the sinuses. This is easily done, the bone at this point being thin and soft. Little pain is caused and but little risk of danger is run. See fig. 3. When the hole is made the pus will discharge and with it generally comes the cause of the trouble. Make the hole as near the lower part of the sinus as possible so as to allow the discharge all to

come out. Keep it open as long as you can by passing your finger into it, and also by injecting into it warm water containing a few drops of carbolic acid. Do this with a syringe once a day. Use 10 drops of carbolic acid to a pint of water. If the disease is caused by a bad tooth, have the tooth pulled out, and follow with medicines mentioned above.

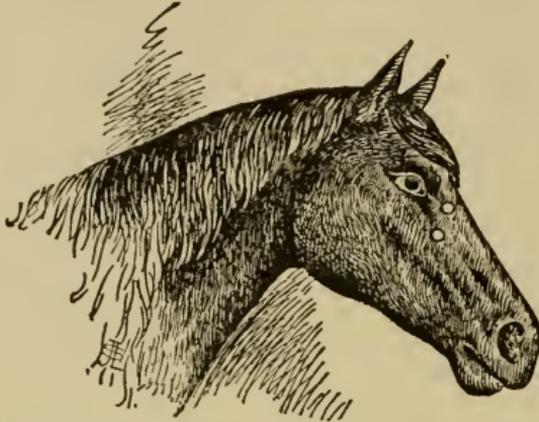


Fig. 3.—Showing the Proper Position to Bore for Abscess.

3. Abscesses of the Bones of the Head.

The only treatment is to bore a hole with a trephine through the bones of the head into the abscess and thus allow the matter or discharge to escape. Inject into the hole with a syringe a little warm water containing a few drops of carbolic acid, twice a day, until healed; use the carbolic acid—10 drops to a pint of water.

4. Nasal Polypi or Small Tumors.

These are situated around the nose and chambers of the head, and are sometimes found around the throat. They are usually attached by a neck to the membrane lining these organs.

Causes.—They are said to be due to some change in the system, but the cause is not clearly understood.

Symptoms.—The symptoms are rather peculiar. The animal has difficulty in breathing, and sometimes acts as if suffocating. He may even fall down, and in some cases will get up and for a while appear better. The above symptoms then return.

Treatment.—Examine the throat carefully by looking into the mouth. Use a mouth speculum to hold it open, pass

the hand back in the mouth and feel for these little tumors. Look into the nose, and if they are in reach remove them by tying a thin, strong string tightly around the neck or roots of the tumor, allowing it to drop off of its own accord. If you cannot get at the tumors it is a hopeless case.

5. Laryngitis or Inflammation of the Throat.

Causes.—These are similar to those of catarrh. Exposure, standing in a draft while warm, a number of horses being kept in a poorly ventilated stable, or injuring the throat in giving a ball of medicine will cause this disease. Sometimes it occurs in the form of an epizootic, and sometimes a number of animals become affected at the same time without any apparent cause.

Symptoms.—The animal appears dull; the throat is swollen; if he goes to drink, the water will run out through the nostrils when he tries to swallow. When the throat is examined and pressed on it causes him pain, as shown by his jerking back. If pressed hard it will cause a fit of coughing. Notice that he swallows frequently and holds his head in a peculiar position, as if trying to favor his throat. He does not care to eat much, but what he gets should be soft food, as it hurts him to swallow. If the pulse is very much quicker than natural, and the above symptoms present, you have a very severe case. The mouth is hot and dry and has a sticky feeling; he also breathes a little heavier than natural. The bowels are usually a little costive and the urine or water a little scanty. This in fact is the case in nearly all the diseases of the air passages. In two or three days, if the case is progressing favorably, there will be a discharge from the nostrils, which is a good sign. This disease usually takes from ten to twelve days to run its course, but after this the animal should not be worked hard for some time, as it is apt to develop into what is known as roaring or bronchitis.

Treatment.—As in all other diseases of the air passages give plenty of pure air, have the stable well ventilated, clothe the body according to the season of the year and if the legs are cold have them well hand-rubbed and bandaged. Give the following mixture:

Saltetre or Nitrate of Potash	$\frac{1}{4}$ pound.
Chlorate of Potash	$\frac{1}{4}$ pound.

Mix these thoroughly together and give a teaspoonful on his tongue three times a day. Rub the throat well with white

liniment three times a day. In severe cases it is also well to take three tablespoonfuls of mustard, two tablespoonfuls of flour and enough vinegar to make the mixture like a paste. Rub this around the throat every night and leave it on till morning. Give plenty of cold water, a little at a time but often. Feed lots of hot mashes with a little boiled flax seed; this will have a laxative effect on the bowels. Instead of putting on mustard, a hot poultice of linseed and bran may be used and left on all night. In very severe cases, and when the animal's life is threatened by choking, it is well to perform an operation known as tracheotomy, as described in Chapter XV. When this operation is performed it gives the horse immediate relief because the air is drawn through the tube instead of the nostrils. To tell when to take the tube out, place your hand over it, thus causing him to breathe through the nose. When he breathes clearly enough through his nose to suit you, take the tube out of the windpipe and draw the skin together over the wound with a couple of stitches. Then treat as an ordinary wound. Of course, this operation is seldom needed except in extreme cases.

6. Chronic Cough.

When no other disease can be noticed it is said to be a case of chronic cough.

Causes.—It may result from laryngitis or a neglected cold. Sometimes a horse may have this kind of cough for some time before he takes heaves, or broken wind. A cough of this kind is generally worse during changeable weather and is sometimes more noticeable after eating and drinking or after being brought out of the stable.

Treatment.—Give the following powder:

Tartar Emetic	$\frac{1}{8}$ pound.
Camphor	$\frac{1}{4}$ pound.
Ground Digitalis	$\frac{1}{4}$ pound.
Elecampane	$\frac{1}{4}$ pound.

Mix thoroughly and give one teaspoonful night and morning in the feed or on the tongue. A teaspoonful of oil of tar in his feed or on his tongue, three times a day, is also recommended.

7. Roaring.

Breathing with a loud and unnatural sound upon any violent exertion principally marks this disease. More air

passes into the nostrils than can pass into the lungs, this being due to the wasting of the muscles of the larynx, or Adam's apple. This condition causes the passage through the larynx to be smaller than natural. The air rushing through this small passage into the lungs acts on the vocal cords, thus causing this peculiar sound.

Causes.—This disease sometimes follows laryngitis, distemper or influēza, especially if the horse be put to work too soon after recovering from them. It may also be hereditary, that is when the sire or dam of the horse has been affected with roars. It may be caused by tight reining. Horses with very long necks and narrow jaws are liable to become roarers.

Symptoms.—So long as the animal is not excited he is almost free from it, but if he is worked or driven hard he will show it quickly.

Treatment.—If this disease is once well established it is incurable, but in cases where the disease is just developing, give

Iodide of Potash	¼ pound.
Nitrate of Potash or Saltpetre.....	¼ pound.

Mix thoroughly and give a teaspoonful twice a day, night and morning, in his feed. Blister the throat with

Ground Spanish Flies or Cantharides.....	1 dram.
Binioid of Mercury	½ dram.
Vaseline, or Lard	1 ounce.

Mix thoroughly together and apply around the throat. Rub in well and grease in three days afterwards. If he is not better in a month, blister again. In very bad cases it is sometimes well to perform tracheotomy, leaving the tube in the throat all the time except when taken out to clean, which should be done about every second day. We have known horses to work very well for a long time with the tube left in the throat that would be entirely useless without it. This operation is described elsewhere under the head of "Tracheotomy."

8. Spasms of the Muscles of the Larynx or Adam's Apple.

This disease is not very often met with, but we find it sometimes affecting old horses.

Cause.—The cause of this disease is not known.

Symptoms.—The animal may appear in perfect health when he will be seized suddenly with a violent fit of cough-

ing, will reel, stagger, and sometimes even fall to the ground. After a few minutes it passes off and the animal seems as well as ever.

Treatment.—Give a good dose of physic:

Bitter Aloes .....	..1 ounce.
Ginger	1 teaspoonful.
Bicarbonate Soda	1 teaspoonful.

Dissolve in a pint of lukewarm water and give as a drench. Allow the animal to stand quiet the next day after giving this drench, and follow up with a teaspoonful of bromide of potash in his feed every morning.

9. Bleeding from the Nose (Epistaxis).

This disease is not so commonly met with in the horse as it is in man.

Causes.—It is generally the result of some injury, or in running or fast trotting horses from violent exertion sufficient to cause the rupturing of some of the blood vessels in the nose. It is also more frequently met with in horses in high condition.

Symptoms.—It is very important to decide whether the blood comes from the nose only or from the lungs. If the blood comes from both nostrils it is generally from the lungs, but if the bleeding is from the nose it usually runs from one nostril only. Put your ear to the windpipe and listen. If the blood comes from the lungs there will be a gurgling sound heard in the lungs, but if from the nose this sound in the lungs will not be heard. When the blood comes from the lungs the breathing is affected, which is not the case when bleeding from the nose.

Treatment.—If not bleeding very much bathe with cold water until it stops, but if bleeding much plug the nostril with cotton batting saturated with white lotion. Remove in twelve hours.

10. Bleeding of the Lungs (Haemoptysis):

This is generally a symptom of some other disease, but a horse in high condition and not used to work may be affected if put to severe exertion when he is not used to it. It is mostly found in trotting and racing horses when they are not properly taken care of. The blood may come from the lining of the air cells or from the lining of the tubes of the lungs.

Symptoms.—As a usual thing it is not very hard to find out where the blood is coming from. It comes through both nostrils. The animal also coughs, breathes quickly, and is generally very weak. The pulse beats very quickly, but weak. By applying the ear to the windpipe a peculiar gurgling sound may be heard every time the animal breathes.

Treatment.—Keep him standing very quietly. Apply cold water or ice to the sides and chest. Be very careful how you drench when treating this disease, for horses are very easily choked when the lungs are diseased. Give as a drench:

Turpentine1 ounce, or 4 dessertspoonfuls.

Raw Linseed Oil½ pint.

This acts as a styptic to stop the bleeding. The following may be given:

Tincture of Chloride of Iron....1 dram, or 1 teaspoonful.

Mix in a pint of cold water, shake well, and give as a drench every night and morning. If the legs are cold rub well and bandage them. Allow plenty of fresh air and blanket according to the season of the year. In some cases this disease is treated by giving

Sweet Spirits of Nitre....1 ounce, or 4 dessertspoonfuls.

in a pint of cold water, three times a day, morning, noon and night, until the animal is relieved. This disease is sometimes followed by inflammation of the lungs.

11. Congestion of the Lungs.

This is a rushing of blood to the lungs because of a chill or some other cause, filling up the arteries and veins in the lungs and causing them to become gorged with blood. It is always found before inflammation of the lungs, that is, if the congestion is not relieved it terminates in inflammation.

Causes.—This disease may be the result of standing in a draft while warm, of getting a cold drink of water while the animal is warm, or of putting the horse to severe exertion, such as running, trotting, or drawing heavy loads, when the system is not in proper shape to stand it. It sometimes follows such diseases as catarrh or influenza.

Symptoms.—These vary much according to the cause. If from fast or hard work, the symptoms are well marked. The patient becomes sluggish, trembles at the flank, breathes heavy. The nostrils are dilated or enlarged; pulse, quick and weak. The lining around the eyes and nose becomes very

much reddened. By placing your ear to the sides of the chest or to the windpipe a peculiar gurgling noise may be heard. The legs and ears are cold. If following a case of catarrh or influenza the affected animal will refuse his food and tremble all over the body. The ears and legs are cold, the mouth hot and pulse quick and weak. By placing your ear at the sides you will hear a wheezing sound. He stands, as he is generally found standing in all lung troubles, and if he does lie down will get up immediately. If the disease is not soon checked it will develop into inflammation of the lungs.

Treatment.—Whatever is done in the way of treatment must be done quickly. This is not a very fatal disease, but a simple one to treat if taken in time. Keep well supplied with good, fresh air, and always be careful to avoid a draft. Keep the body well covered according to the time of the year, and give

Sweet Spirits of Nitre....1 ounce, or 4 dessertspoonfuls.
Laudanum½ ounce, or 2 dessertspoonfuls.

Put in a pint of cold water, shake well and give as a drench, being careful not to choke the animal in giving it. Have the legs well hand rubbed, if cold, and bandaged; and if the animal is in high condition and full of blood it is well to give, with the above drench,

Fleming's Tincture of Aconite.....10 to 15 drops.

Also put a mustard plaster on the sides over the lungs. Take ¼ lb. of mustard, with 3 or 4 tablespoonfuls of flour and enough vinegar or warm water to make it into the form of a paste. Rub this well over the sides of the chest with the hand, and in some cases it is well to rub the front of the chest as well as the sides. In some cases hot water cloths held up to the sides are beneficial. If he is not relieved in a couple of hours give another drench, the same as that mentioned above. Repeat the drench every two hours until the animal gets relief. It is also well to give him only a mouthful of cold water at a time, but give it to him often. Feed him soft food, and after he begins to get better, exercise him a little by walking him around; also give the following mixture:

Ground Gentian Root.....¼ pound.
Nitrate of Potash, or Saltpetre¼ pound.

Mix thoroughly together and give a teaspoonful three times a

day in his feed. Gradually bring him back to his natural feed and work again.

12. Inflammation of the Lungs (Pneumonia).

This disease is an inflammation of the lung substance itself and is quite commonly met with. The lungs in their natural state will float on water. In the first stage of this disease the lungs are filled with blood and serum, and they are of a dull reddish color; at this stage, if the animal dies, the lungs will still float on water. As the disease develops the lungs change to a dark, grayish appearance; if the animal dies and the lungs are put in water they will sink.

Causes.—The causes are much the same as those of congestion of the lungs and generally affect horses kept in a poorly ventilated stable, which has a tendency to weaken the lungs. Sudden changes in the weather, such as there are in the fall and spring, are liable to cause this disease. It is also sometimes caused by keeping a horse in a warm stable and then turning him out in pasture to lie on the cold ground;

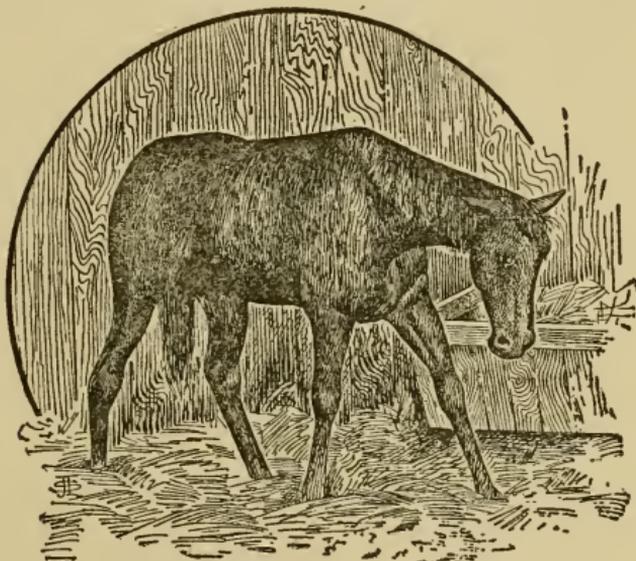


Fig. 4.—Position Assumed During an Attack of Pneumonia.

by becoming wet and chilled during a cold rain storm; by having a horse clipped and exposed to the cold; by standing in a draft while warm; by inhaling smoke; or by driving against a cold wind too soon after having influenza, distemper, or any of those weakening diseases. It also frequently follows congestion of the lungs.

Symptoms.—The symptoms of inflammation are much the same as those of congestion of the lungs, only more noticeable. There is, generally, very little trouble in telling the disease. Shivering takes place first and after the shivering ceases the body becomes hot. The ears and legs are first hot and then cold. The mouth is sticky and the breathing is affected, but not so much as in a pure case of congestion of the lungs. The pulse is quick, ranging from fifty to seventy-five beats to the minute, being stronger than in a case of congestion. The horse does not care to eat, stands up all the time, with head hanging down and ears lopped over, and in hot weather he perspires freely around the chest. The eyes have a glossy appearance and are very red around the inside of the eyelids. As the disease proceeds the horse breathes heavier and sometimes is noticed to sigh, as if in distress. The bowels become costive, and the manure has a glossy appearance. By placing your ear to the side of the chest a grating sound may be heard similar to that produced by taking hold of some of the hair of your head, just above the ear, and grating it between the thumb and finger. If the horse is loose in a stall he will move around till he gets his head to a door or window, which shows that he wants fresh air. By tapping the finger on the chest over the lungs a dull sound is produced. If the lungs are not affected, this would make more of a hollow sound. If the disease is going to terminate fatally the pulse runs up to 100 beats per minute and is so weak as to be hardly felt. The breathing is very heavy, the nostrils make a flapping noise, and the flank draws in and out almost like that of a heavy horse, the appetite is entirely gone and the breath smells very bad. He, however, still persists in standing, and notices nothing. As death approaches the mouth becomes cold, the pulse cannot be felt. Near the last he may lie down, which will cause him to breathe very much heavier. He again staggers to his feet, breaks out into a cold, clammy sweat all over the body, and finally staggers, falls, and dies. If the case, on the other hand, is more favorable, the animal eats a little and notices things around him, and the above symptoms gradually disappear. It generally takes from 9 to 12 days to run its course, and, as a usual thing, is treated satisfactorily if taken in time.

Treatment.—Clothe the body according to the season of

the year. If the animal affected is in high condition use sedatives, such as

Fleming's Tincture of Aconite.....8 to 10 drops.
Laudanum $\frac{1}{2}$ oz. or 2 dessertspoonfuls.

Mix in a pint of cold water and give as a drench every three hours until the distressing symptoms have ceased and inflammation seems pretty well checked. If he seems to be weak after this, give

Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Whisky1 wine glass full.

Mix with a pint of new milk or gruel and give three times a day, morning, noon and night, until he seems stronger. Then when he is getting better and needs a tonic to build up his system and keep the kidneys in good action in order to relieve the lungs as much as possible, give

Nitrate of Potash or Saltpetre..... $\frac{1}{4}$ pound.
Ground Gentian Root $\frac{1}{4}$ pound.
Ground Aniseeds $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day. While sick feed on soft food, mixing a little boiled flax seed with it to keep the bowels regular. If very thin in condition it is best not to use much of the aconite and laudanum, but commence the stimulants sooner than if he were in high condition. Apply mustard and hot water cloths to the sides and chest, and be sure to allow the horse to have plenty of fresh air by having the stable well ventilated; be careful, though, not to allow any draft to strike him.

13. Pleurisy.

Pleurisy is an inflammation of the lining of the inside of the ribs and over the lungs. This is a serious disease if not taken in time and allowed to develop.

Causes.—The causes are similar to those of inflammation of the lungs, and it is often found that this and inflammation of the lungs come together. The chief causes are exposure to cold, standing in a draft, washing the body and not properly drying it or injuries to the ribs in any way.

Symptoms.—The first symptom is shivering, the pulse being quick and strong—much stronger than with congestion or inflammation of the lungs. This is sometimes called a wiry pulse. There seems to be great pain and heavy breathing, which is noticed very much at the flanks. At the commencement of the disease he will lie down, but, as a

general thing, he will stand up most of the time. Try to make him cough and he will suppress it as much as possible. Instead of coughing out loud, as in other lung troubles, the cough will be more like a long, heavy groan. The reason for this is that he tries as much as he can to keep from moving his chest. The ears and legs are cold, but sometimes one ear is hot and the other cold. He has a tucked up appearance, and there will be a hollow line right along the bottom of the false ribs and up towards the point of the hip. Press on his sides and it causes him great pain, or turn him around short and he will groan with pain. If not checked promptly it will terminate in what is known as hydrothorax, which means a filling up of the chest cavity with a watery fluid.

Treatment.—The treatment is very much similar to that of inflammation of the lungs. Apply cloths wrung out of hot water to the sides if in warm weather, but if in cold weather mustard is best and easiest kept on. Clothe the body well and see that he is allowed plenty of fresh air without being in a draft. At the commencement if there appear to be much pain, give

Fleming's Tincture of Aconite.....8 to 10 drops.
 Fluid Extract of Belladonna.....½ dram, or 30 drops.
 Laudanum½ ounce, or 2 dessertspoonfuls.

Mix in a pint of cold water and give as a drench. Continue the above drench every two hours until relieved of the pain. If he seems weak after this give

Sweet Spirits of Nitre1 ounce, or 4 dessertspoonfuls.
 Whisky1 wine glass full.

Mix in a pint of gruel and give as a drench three times a day, morning, noon and night, until he begins to recover nicely, then use the following medicine to keep the kidneys working freely, as this will have a tendency to keep water from forming in his chest:

Saltpetre, or Nitrate of Potash.....¼ pound.
 Ground Gentian Root¼ pound.
 Ground Aniseeds¼ pound.

Mix well and give a teaspoonful three times a day. During sickness it is well to feed the animal with soft food, with a little boiled flax seed in it to keep the bowels free. Give a little cold water to drink in small quantities, and give it often—every hour or two.

14. Water in the Chest (Hydrothorax).

This generally follows a case of pleurisy. In some cases there may be several pails of a watery fluid around the lungs

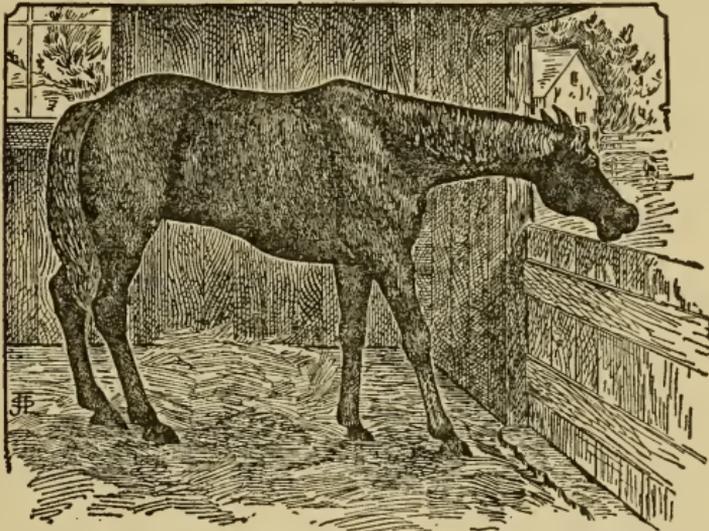


Fig. 5.—A Horse Suffering from an Attack of Water in the Chest (Hydrothorax.)

in the chest cavity. When there is such a large quantity as this it generally ends fatally.

Causes.—Pleurisy.

Symptoms.—After the pain and soreness from pleurisy has passed off the fluid commences to collect around the chest. This causes heavy breathing, the nostrils becoming large, sometimes making a flapping noise. He breathes quickly, and draws in and out at the flank worse than during a bad case of heaves. The pulse becomes quicker than in pleurisy, and very weak, beating from 75 to 100 beats per minute. The blood in the jugular vein seems to flow back toward the head instead of flowing down, causing this vein to move every time he breathes. By putting your ear to the chest nothing can be heard except above the water. If loose he will try to move to the door or window to get the pure air. In some cases he will act like this for several days, not eating very much, and gradually getting worse. Near the last his ears and legs get very cold, and all other symptoms keep increasing. He, however, tries to stand on his feet till the very last.

Treatment.—If the animal will take food give him good, strong food, such as oats and hay, and it is well to mix a little of the boiled linseed with the oats to keep the bowels regular. Keep him quiet and blister his sides well with a strong mustard plaster. Give the following:

Saltetre or Nitrate of Potash.....	¼ pound.
Ground Gentian Root	¼ pound.
Ground Sulphate of Iron	¼ pound.
Iodide of Potassium	¼ pound.

Mix thoroughly and give a teaspoonful every five hours. It is also recommended by some to puncture near the bottom of the chest, between the eighth and ninth rib, with a small trocar and cannula, and let the fluid out of the chest. This operation is not very successful in the horse, and we would not advise it to be done, although it is sometimes successfully performed in human beings.

If the horse dies and you cut into the chest you will find a great quantity of the fluid collected around the lungs, in some cases as much as three pailfuls.

15. Bronchitis.

This is an inflammation of the lining of the bronchial tubes.

Causes.—Sometimes bronchitis is caused by driving a horse fast when he is in a weak condition, by inhaling smoke, by a sudden change in the temperature, by choking because of food passing down the windpipe, or by giving a drench which, instead of passing down into the stomach, goes down the windpipe. This disease is oftener seen in the city than in the country.

Symptoms.—There is a peculiar dryness of the throat, increased breathing, and a wheezing noise in the windpipe. The animal seems quite dull, and does not eat as well as he should. If the disease is allowed to develop the pulse becomes quick and weak, and the legs and ears, after a time, become cold. He seems very much depressed and weak, and if the weather is warm perspires freely around the chest and flanks. Because of not eating very much he will become very gaunt, and it will be noticed that he does not lie down. If made to move around he will start to cough.

Treatment.—If in good condition and strong, give the following mixture:

Fleming's Tincture of Aconite.....	5 to 8 drops.
Laudanum	½ ounce or 2 dessertspoonfuls.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.

Mix in a pint of cold water, shake well and give as a drench. Give a drench every two or three hours until he seems relieved. If very weak, instead of this, it is best to give

Whisky1 wine glass full.
Ale or Beer½ pint.

Give every three hours until he seems relieved, then proceed with the following:

Saltpetre or Nitrate of Potash¼ pound.
Tartar Emetic⅛ pound.
Ground Gentian Root¼ pound.

Mix thoroughly and give a teaspoonful three times a day. Feed soft feed with a little boiled flax seed to keep the bowels free. Give cold water in small quantities, but often; this will have a good effect on the throat. Apply mustard or hot cloths wrung out of hot water to the chest. Clothe the body well, according to the season of the year, and see that the animal has pure air to breathe without being in a draft. In all lung diseases be careful when drenching not to choke the animal.

16. Broken Wind or Heaves.

Broken wind or heaves is similar to asthma in man.

Causes.—It generally develops in horses that are ravenous feeders, that overload the stomach and are inclined to carry a large belly. This affects the stomach, and the same nerve that helps to supply the stomach with nerve power also helps to supply the lungs. This accounts for its affecting the lungs when the stomach is affected. Inferior foods, such as musty hay (clover hay being the worst), or musty oats, are apt to produce it, or it may be caused by a neglected cold. This disease is rarely found in cavalry horses, as they are fed on the very best of food.

Symptoms.—This disease is easily detected when it is well established. There is a peculiar way of breathing—a long inspiration followed by a short expiration and a jerking motion at the flank. The nostrils are enlarged and the muscles of the belly come greatly into play. On a damp, hot, sultry day the symptoms are much increased, and may become very alarming, so much so that the animal may even appear to suffer from inflammation of the lungs. Examine the pulse, however, and it will be found that they are beating about natural. In heaves there is a loud, hacking, painful,

internal cough which seems to come from the lungs; this is noticed more after eating or drinking; it is noticed, too, particularly after being brought out of the stable in the morning, but after working a while it will not be so bad. If this disease is suspected when examining for soundness, give a good feed, a pail of water and a good gallop. If affected it can then be noticed plainly. In some cases it can be relieved for a short time by giving a large dose of Fleming's tincture of aconite, 10 to 15 drops in a drench, mixed with a pint of raw linseed oil. This is sometimes done by horse traders to relieve the animal while trading, and in some cases they even pour shot into him, which relieves him for a time. Five drops of juice of premania on the tongue will also relieve the case for five or six hours.

Treatment.—When heaves once get well established it is incurable, but it can be helped by careful feeding. Feed regularly, and give lots of oats to eat and very little hay, so as to keep him gaunt. Water often—four or five times a day—not more than a pail at a time, and never allow him to get a large feed of hay or a large drink of water at a time. The best treatment of medicine is to give first a physic of from 8 to 10 drams of bitter aloes dissolved in a pint of water, with a tablespoonful of ginger and soda given as a drench, and to allow him to stand in the stable for a day; this will clean his bowels and stomach out. After this feed carefully and give of the following mixture:

Ground Gum Camphor	$\frac{1}{4}$ pound.
Powdered Nux Vomica	$\frac{1}{4}$ pound.
Bicarbonate Soda	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Elecampane	$\frac{1}{4}$ pound.

Mix well and give a teaspoonful three times a day in his feed, or on the tongue with a spoon.

17. Pleurodynia.

This is a rheumatic condition of the muscles around the chest. It is not very common.

Cause.—Exposure to cold when the animal is recovering from pleurisy or other weakening lung diseases is the most frequent cause.

Symptoms.—There is great pain and difficulty in breathing, showing symptoms somewhat similar to pleurisy. Press on the sides and he shows even more indication of pain than

in pleurisy. Examine his pulse and it will be found that they are about regular, whereas in pleurisy they would be beating quick and hard. The grating sound heard in pleurisy cannot be detected.

Treatment.—If the weather be warm or if kept in a warm stable, wring a woolen blanket out of hot water, wrap it around his chest and cover up with a dry blanket to keep the heat in. This blanket would be better heated by wringing it out of the hot water every hour. While the blanket is being changed rub the sides well with white liniment. Give

Sweet Spirits of Nitre.....1 ounce, or 4 dessertspoonfuls

in a pint of cold water three times a day, morning, noon and night, until the soreness has passed off pretty well, then follow up with a diuretic to act on the kidneys.

Nitrate of Potash or Saltpetre..... $\frac{1}{4}$ pound.

Ground Gentian Root $\frac{1}{4}$ pound.

Mix thoroughly and give a large teaspoonful three times a day in his feed or on his tongue with a spoon.

18. Spasms of the Diaphragm.

This disease is sometimes called Thumps on account of the peculiar thumping noise made in breathing.

Causes.—It generally results from being put to very severe exertion, such as in running, trotting, heavy drawing, or such like, too soon after eating. It is also said to be caused by buckling the girth of a saddle too tight. It is more liable to be noticed shortly after recovering from some weakening disease.

Symptoms.—There is a thumping noise plainly heard by listening at the back part of the lungs. In most cases the noise can be heard while standing near the animal. It is often mistaken for palpitation of the heart, but by examining with the ear along the side it will be found that the noise made is too far back to be affecting the heart, and it might almost be thought, by the peculiar noise made, that some person was inside tapping with a hammer. There is difficulty in breathing. He sweats freely and seems in pain.

Treatment.—In an ordinary case give an anti-spasmodic.

Sweet Spirits of Nitre....1 ounce or 4 dessertspoonfuls.

Laudanum1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench

every two hours until the animal is relieved of the thumping noise. If warm weather, apply a woolen blanket wrung out of hot water to the chest, with a dry one outside of it. If cold weather it is better to apply a mustard plaster around the back part of the chest and cover the body well. In some cases, after giving a few doses of the above mixture, if he does not get relief, it would be well to give

Spirits Turpentine1 ounce, or 4 dessertspoonfuls.
Raw Linseed Oil.....1 pint.

Mix and give as a drench. After he is getting better feed well and give regular exercise, and bring him gradually back to his regular work.

19. Rupture of the Diaphragm.

This is rupture of the curtain which separates the lungs from the bowels, and, if the rupture be large enough to let the bowels pass through in unto the lungs and heart, death soon follows.

Causes.—Pulling a heavy load up a steep hill, or high jumping may cause rupture of the diaphragm. Sometimes it results from acute indigestion, when the stomach is full of gas, or from getting up and down. An animal may sometimes lie down a little too heavy, causing a great strain on the curtain, causing it to become ruptured.

Symptoms.—There is a frothy spume from the nostrils, very heavy and quick breathing and a breaking out in sweat over the body. The pulse runs up very high—sometimes as high as 100 beats per minute—and gets very weak. There is an appearance of suffocating, and if ruptured to any great extent the symptoms gradually get worse; the legs and ears get cold, when death relieves him.

Treatment.—Little can be done in this case, except to give

Laudanum.....1 ounce, or 4 dessertspoonfuls.

Mix in a pint of water and give as a drench. This may be given once in a while only to relieve the pain.

CHAPTER III.

DISEASES OF THE MOUTH, TEETH, SALIVARY GLANDS AND GULLET.

I. THE MOUTH AND TEETH.

1. Irritation When Shedding Milk Teeth.

This trouble is generally at its worst when the horse is between the ages of three and four years.

Causes.—It is the result of shedding the temporary teeth.

Symptoms.—There is a general weakness accompanied by a tendency to sweat easily. He feels poorly and becomes gaunt and thin. The hair stands up and presents a rough appearance. The bowels are costive, as indicated by oats almost whole being found in the manure.

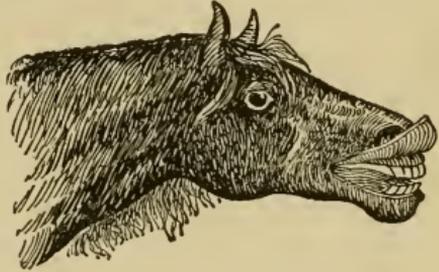


Fig. 6.—A Common Symptom of Irritation.

Treatment.—Make a thorough examination of the teeth both front and back—for shells and caps, and if any be found remove them with a pincers or forceps. Give the following mild laxative:

Raw Linseed Oil½ pint
in a drench. Feed on soft food, using the following tonic powder:

Ground Gentian Root¼ pound.
Ground Sulphate of Iron¼ pound.

Mix thoroughly and give a dessertspoonful twice a day in the feed or on the tongue.

2. Lampas.

Lampas is common in young horses. Strictly speaking it is not a disease, being simply the result of irritation of the gums.

Causes.—It is simply the result of shedding the temporary teeth.

Symptoms.—There is a swelling of the gums in the upper part of the mouth, behind the front teeth. Here, too, they are red and pressure of the finger indicates that they are quite sore.

Treatment.—Harsh treatment should be avoided as the swelling usually disappears of its own accord as soon as all the teeth are shed and new ones come in. It is well to cut the gums in a few places with a sharp knife. This relieves the congestion and soreness. Rub a couple of times a day with alum water—about two teaspoonfuls of alum to a pint of water. Care must be taken to avoid cutting back of the third bar or ridge in the roof of the mouth because of the danger of cutting the large artery situated at this point, which when cut, bleeds very freely. If by accident this artery be cut, stop the bleeding in the following manner: Place a large piece of cotton batting in the roof of the mouth directly over the cut. Bandage through the mouth and over the nose in such a manner as to hold the batting firmly against the opening from which the blood is flowing. Tie him up so that he cannot eat. After twenty-four hours the bandage may be safely removed.

3. Parrot Mouth.

This is not a disease but simply a deformed mouth. The upper jaw is longer than the lower, causing the teeth of the upper to project over those of the lower. These projecting teeth generally get very long. It is always well to examine a horse's mouth before purchasing for fear of trouble of this kind. A horse with a parrot mouth should never be turned out to pasture, as it is impossible for him to graze because of the front teeth not coming together properly. In some cases, however, such make very good workhorses if they are kept in the stable and fed on hay and oats. Horses of this kind are considered to be unsound.

4. Wolf Teeth.

These are two small teeth found in the upper jaw in front of the grinders, one on each side. Their presence affect the eyes, causing them to run water and look dull. In some cases if very large they interfere with eating.

Treatment.—They should be removed. Put a twitch on the horse's nose and pull them out with a wolf-tooth forceps.

5. Sharp Edges on the Teeth.

The grinders of the upper jaw are wider than those of the lower and pointed to the outside, while those of the lower are narrow and pointed in toward the tongue. This condition, when present, may be observed by opening the horse's mouth and drawing the tongue out to one side. Continual grinding causes the outer edges of the upper teeth to become sharp on the outside, so much so that they cut the cheek, and for the same reason those of the lower jaw become sharp on the inside and thus cut the tongue. If sharp teeth be suspected, place a twitch on the horse's nose. While an assistant holds the twitch, raise the head slightly and draw the tongue forward to one side with one hand, hold the cheek out with the other. Notice whether or not the tongue and cheek are cut, and also whether the edges of the teeth are very sharp. If such be the case the horse's mouth requires floating (filing of the teeth). This operation is easily performed. Leave the twitch adjusted and place a speculum in the mouth to hold it open. Run a float or tooth rasp along the outer edge of the upper and along the inner edge of the lower teeth, several times. It is not well to do too much filing, just enough to take off the sharp edges and thus prevent them from cutting the tongue and cheek. If filed too much, the grinding of hay or other hard feed is interfered with.

6. Decayed Teeth (Caries).

Decayed teeth are not so often found in the horse as in the human being. Horses seldom, if ever, suffer from toothache.

Causes.—It generally results from the biting of some hard substance, thus either breaking or cracking the outer covering of the pulp, which being exposed soon commences to decay.

Symptoms.—A horse affected with decayed teeth is unable to properly masticate his food. While eating he suddenly throws the food out of his mouth, fumbles his tongue about a little, then begins again. Should the water be cold, he will take a long time to drink, being compelled to stop several times in drinking a pailful. When being driven he holds his head to one side, favoring that side in which the decayed tooth is situated. His breath smells bad and he falls

off in condition. If the tooth be in the upper jaw and the roots affected, there will sometimes be a running from that nostril over the tooth.

Treatment.—Open the mouth with a speculum, pass the hand back and examine the teeth to ascertain which tooth is affected. While making the examination it is always best to use a twitch as it assists in keeping him quiet. When the affected tooth is located remove it with a large molar forceps. After pulling keep the tooth, opposite the one pulled, filed down so that it will not irritate the gum of the opposite jaw. Feed on soft food for a few days until the gum is healed. Should the horse be in poor condition give some of the following tonic powders to build him up:

Ground Gentian Root.....	$\frac{1}{4}$ pound.
Ground Sulphate of Iron	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful twice a day, in the food or on the tongue with a spoon.

7. Split Teeth.

The molars or grinders of the upper jaw are more likely to split than those of the lower jaw. It does, however, sometimes occur to those of the lower jaw. The split part of an upper tooth generally turns to the outside and cuts the cheek while that of a lower tooth generally turns to the inside and cuts the tongue.

Causes.—A split tooth is generally the result of biting upon some hard substance—a nail or stone—which is taken into the mouth with the food.

Symptoms.—There is of course great difficulty in eating. He is much afraid when an attempt is made to examine the mouth, jerks his head back quickly and shows signs of soreness about the jaws. Run the hand along the outside of the upper jaw. A little pressure opposite the point at which the split tooth is situated causes him to jerk his head back quickly, an indication of the soreness at this point. When eating he fumbles his food about in the mouth but in a few minutes throws it only partly chewed. In a short time he tries again with the same result. Place a twitch on the nose and proceed to examine the mouth by drawing the tongue forward and holding the cheek back with the other. Look carefully back along the grinders. If the split be found in

the upper side of the jaw you will find it to be worked outward and in some cases stuck into the cheek, but if in the lower it will be worked inward and stuck into the tongue.

Treatment.—The treatment is simple and easy in the majority of cases. First remove the split part with a forceps, then run a float or tooth rasp several times along any sharp edges and smooth them off. Should the horse be thin or in poor condition follow up with tonic powders.

8. Hanging the Tongue Out of the Mouth.

This is a miserable habit instead of a disease, and when once formed cannot be cured.

Causes.—Injuries to the cheek or tongue are usually the cause of this habit. These injuries may be the result of sharp teeth.

Symptoms.—In the majority of cases the habit is formed gradually. He begins by merely holding the end of the tongue between the teeth while at work. The habit grows until finally while the bit is in the mouth he often allows the tongue to hang out three or four inches on one side or the other.

Treatment.—Examine the mouth carefully. If the teeth are found to be sharp, float or file them in order to prevent their cutting the tongue. If caused by a soreness of the tongue dress it with alum water—two teaspoonfuls of alum to a pint of water. This generally effects a cure if taken in time. Certain kinds of bits are recommended for this habit, but as a general rule they prove failures.

9. Cribbing and Wind Sucking.

This is a habit of chewing the manger, a fence, a post or other such object and at the same time sucking wind into the stomach. These two habits usually accompany each other, but occasionally one is acquired without the other. Cases are sometimes found where a horse sucks wind and yet does not bite upon anything.

Causes.—Sometimes a colt learns this habit by seeing the mother or other horses do it. It may be caused from soreness of the front teeth, a regular habit being finally formed by beginning first to bite the manger to relieve them.

Symptoms.—The front teeth are worn off from biting and there is a continual hanging onto the manger. In some

cases the stomach and bowels are so inflated with wind as to cause a severe case of colic or indigestion, while in other cases there is simply a hanging onto the manger with the teeth.

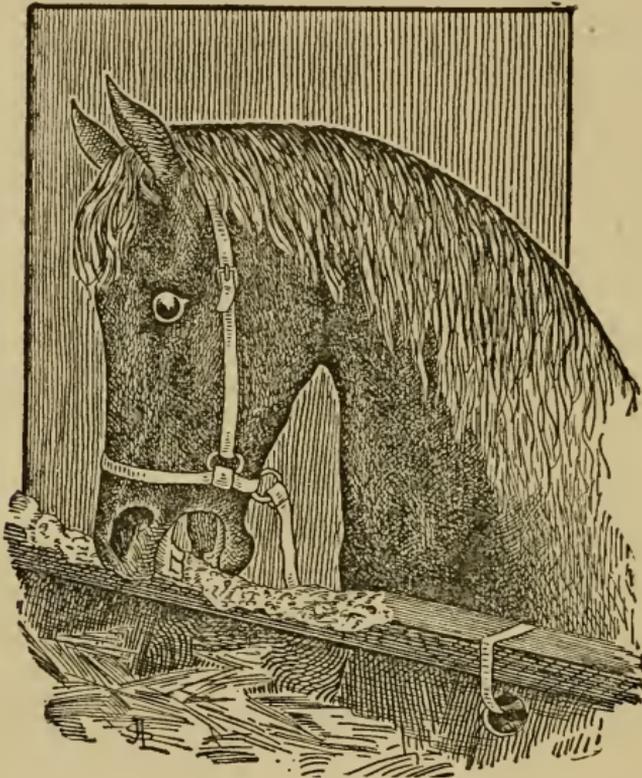


Fig. 7.—A Crib Sucker.

Treatment.—When first noticed it is best to put the cribber or windsucker into a box stall, feed him his hay off the floor and his grain from a pail or box which should be removed as soon as he is done eating, so that there is nothing to grasp with the teeth.

Examine the teeth to see if there be anything wrong with them. If sharp, causing soreness, file them down. If a milk tooth not properly shed, remove it. Turning out to pasture in the spring when the grass is good will often cure this habit. If the animal is old and has been a cribber for

some time, the best treatment is to adjust a muzzle over the mouth, removing it only to give sufficient time to eat.

10. Foreign Substances in the Mouth.

Sometimes a piece of stick becomes fastened across the roof of the mouth. This prevents proper eating. There is a continual working of the tongue round in the mouth and if the obstruction be not removed there will be a "falling off in flesh." In such cases examine the mouth carefully and remove with pincers or the fingers.

Barley or Wheat Beards.—When horses are fed on barley, wheat straw or chaff containing beards the mouth should be examined every week or two, for in a great many cases the beards get so lodged in the mouth that the animal cannot remove them with his tongue.

Symptoms.—The horse does not feed well, his breath is bad and his mouth seems sore when you handle it; he becomes gaunt and thin.

Treatment.—In all cases where food of this kind is being fed examine the mouth carefully at regular intervals. If any beards are found remove them with the finger and wash the sore place with alum water twice a day until it heals up. Use two teaspoonfuls of alum to a pint of water.

11. Injuries to the Tongue.

The tongue is sometimes injured by pulling too hard on it when drawing it out of the mouth. It may even become paralyzed in this way. Little can be done for this; merely give very soft food, so soft that he can almost drink it. Give also a teaspoonful of powdered nux vomica three times a day on the tongue with a spoon. Pulling back, when tied by the bit, may injure the tongue. In some cases it is almost cut off. If there is no chance of the tongue being healed it is best to remove it with a knife and apply Monsel's solution of iron to stop the bleeding, if any. Then bathe with a little alum water three or four times a day for a few days, until it heals. Use one teaspoonful of alum to one pint of water. Feed on soft food for a few days, while it is healing. Should it not be necessary to remove the tongue, treat it same manner as after removal.

12. Inflammation of the Tongue (Glossitis).

This is not a very common disease.

Causes.—It is sometimes caused by handling the tongue rough, by pulling too hard when taking it out of the mouth, or by giving irritating medicines which are not diluted enough with water; by eating poisonous grasses or sometimes by a thorn sticking in the tongue.

Symptoms.—There is a flow of saliva from the mouth. The animal cannot chew his food well, and there is difficulty in swallowing and breathing. The tongue becomes red and is painful when pressed upon, is very much swollen, and in some cases sticks out of the mouth. There is a general feverish condition and after a few days small boils containing matter begin to form around the tongue. The lining covering the tongue becomes dry and cracked in several places. If not relieved he will soon die of starvation, because of being unable to eat.

Treatment.—If caused by a thorn or any foreign substance, remove it and give a dose of laxative medicine, say a pint of raw linseed oil. Bathe and gargle the tongue with the following:

Laudanum	1 ounce, or 4 dessertspoonfuls.
Pulverized Alum	1 teaspoonful.
Water	1 pint.

Gargle or bathe the tongue three or four times a day, and blister in the space under the jaws with a mustard plaster. If the tongue is swollen very much it is well to lance it with a knife and allow the watery matter to escape, and also to open those of the little boils that have matter in them and let it escape. Feed soft food with plenty of boiled flax seed in it, as it has a soothing effect on the tongue. Follow up with the following powder:

Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Pulverized Alum	$\frac{1}{8}$ pound.

Mix thoroughly and give a teaspoonful on the tongue three times a day. These medicines serve two purposes—to gargle and heal the tongue as well as build up the system.

13. Aphthae or Thrush.

At certain times this is a very common disease.

Causes.—Certain kinds of food will cause one kind of aphthæ, but the kind usually met with is infectious, meaning that the disease is communicated from one horse to another through the air, from stable to stable.



Fig. 8.—Aphthae or Thrush.

1. Ulcers or Blisters on the Tongue.
2. The Inner Lining of the Lips.

Symptoms.—The horse at first appears to be dull and feeds poorly, has a slight cough, runs down in condition, and sweats easily when working. A number of little pimples, like small blisters, make their appearance all over the tongue and on the inside of the lips and cheeks. These pimples or blisters are found all the way through the lining of the gullet, stomach and intestines, and in some cases the animal gets quite feverish and unable to do any work.

Treatment.—Give a half pint of raw linseed oil in a drench. This will loosen the bowels and help to carry off the disease. A dessertspoonful of ginger is a good thing to give with the oil, after which give the following:

Bicarbonate Soda	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day on the tongue with a spoon. Gargle the mouth out with alum water—two teaspoonfuls to a pint of water—with a sponge three times a day, until the pimples disappear. While the mouth is sore feed on soft food containing plenty of boiled flax seed to keep the bowels loose.

14. Injuries to the Lips and Cheeks.

The lips and cheeks often become bruised or cut in various ways. If the skin be considerably broken it is best to stitch it up with a needle used for sewing up wounds. Place a twitch on the nose to keep the patient quiet. Use carriage

trimmer's twine, or a piece of white wrapping twine. Put a stitch about every half inch, and it is best to tie a separate knot for each stitch. Bathe with warm water two or three times a day, after which apply the white lotion. If the skin is not broken bathe and apply the white lotion as mentioned above.

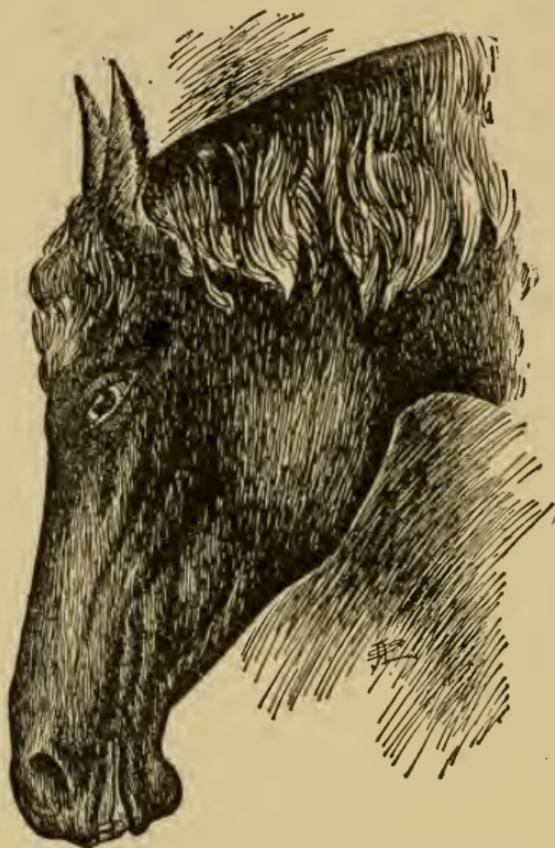


Fig. 9.—Paralysis of the Lips and Cheeks.

15. Paralysis of the Lips and Cheeks.

This is not a very common disease, although it is met with occasionally. It is an injury to the nerves which supply the lips and cheeks with motion.

Causes.—It is sometimes the result of wearing a heavy poke in the pasture, or of being tied in the stable with a heavy halter. Any kind of an injury affecting the nerves will produce it. Cold weather will sometimes bring it on.

Symptoms.—The animal is unable to use his lips in eating or drinking, or in fact in any other way. They hang flabby and loose, and in most cases look as if swollen. It is, however, only the looseness that gives them a swollen appearance. When drinking he is compelled to put his head deep into the pail so that the water covers his lips and nose, this being the only way he can drink.

Treatment.—In all cases remove the cause. Keep the strength up as best you can by feeding soft food which can be easily chewed. It is best to keep him in the stable and give the following medicine:

Powdered Nux Vomica $\frac{1}{4}$ pound.
Ground Gentian Root $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day. Hand rub his cheeks three times a day and apply the white liniment after each rubbing. It generally takes from two to six weeks to recover from this disease.

II. THE SALIVARY GLANDS AND GULLET.

16. Slavering or Frothing at the Mouth.

Causes.—It is generally caused from something in the feed. A heavy dose of aconite, or in fact anything that stimulates the secretion of the salivary glands will cause it.

Symptoms.—There is a continual dripping of the saliva from the lips.

Treatment.—Change the feed and wash the mouth out with alum water two or three times a day—two teaspoonfuls to a pint of water. If this does not prove sufficient give a good physic:

Bitter Aloes8 drams.
Bicarbonate Soda1 teaspoonful.
Ginger1 teaspoonful.

Mix in a pint of water and give as a drench. Allow the horse to remain in the stable the next day. This will generally stop the slavering.

17. Thickening of the Parotid Gland.

This is usually called thick glands.

Causes.—Tight reining will cause the parotid gland to

become thick. Sometimes it remains thick after distemper. Inflammation of the gland may also cause this condition.

Symptoms.—A heavy thickening behind the jaw bone and below the ear is the most noticeable symptom.

Treatment.—Blistering is the best treatment. Use the following mixture as a sweat blister:

Iodine	1 dram.
Iodide of Potassium	1 dram.
Vaseline, or lard	1 ounce.

Mix thoroughly together and there will be enough to blister the glands on both sides of the throat. Rub it in well, then tie his head up so that he cannot rub his neck. After three days grease with some lard and keep greasing every third day till the blister is off. If by this time the swelling has not gone down it is advisable to repeat the blister.

18. Inflammation of the Parotid Gland.

This is the salivary gland situated below the ear and between the back part of the jaw bone and the neck.

Causes.—It generally results from a bruise of some kind.

Symptoms.—There is a large, painful swelling just below the ear, on the affected gland of either side. It is so painful the horse can hardly eat or drink, and he stands with his head poked out.

Treatment.—Bathe profusely and frequently with hot water containing a little vinegar and saltpetre. After rubbing dry apply white liniment and rub it in well. Next apply a poultice of boiled turnips and bran, or linseed meal and bran, about half and half. Change the poultice three times a day, and bathe and rub with liniment each time the poultice is changed. This will check it and drive it away. If it does not check the inflammation the gland will fester, form matter and come to a head. It is well to let it come pretty well to a head before attempting to open it. It is ready to lance or open when there is a soft spot from which the hair generally falls. When you press your finger on this spot then take it off, the matter presses the skin back to its place quickly. With a sharp knife or lance give the skin over the soft spot a little nick. This may be done without any danger of bleeding. Press the matter all out and keep on bathing and poulticing till the swelling has entirely gone down. When healed

up, and if the gland remains a little thick, blister with the following:

Iodine	1 dram.
Iodide of Potassium	1 dram.
Vaseline or lard	1 ounce.

Mix thoroughly together and apply one-half of the mixture. Rub it well and tie the horse's head up so that he cannot rub it. Leave till the third day, then grease with some lard, and keep on greasing for a few days until the blister is healed. Then with some warm water and soap wash the grease off and, after drying, use the remaining half of the blister as before. During the sickness feed and water from a high manger. On account the throat being so sore feed mostly soft feed which can be easily swallowed. Give the following powder for a tonic and diuretic to act on the kidneys:

Nitrate of Potash, or Saltpetre	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix together and give a teaspoonful twice a day in the feed or on the tongue.

19. Paralysis of the Gullet or Pharynx.

Not being able to swallow neither food nor water makes this a very serious disease, but fortunately it is not often met with in the horse.

Causes.—It is generally caused by an injury to the throat.

Symptoms.—The animal takes food into his mouth, chews it and prepares it for swallowing, and then spits it out without making any effort to swallow; he tries to drink, but is again unable to swallow. Examine the throat and nothing appears to be wrong, no swelling, and apparently not the least bit sore. He seems eager to eat and drink, but cannot. He falls off greatly in condition, gets very weak and will soon die from starvation.

Treatment.—If a very valuable animal and worth the expense, treat him with a stomach pump. The juice from boiling hay and gruels made out of chopped oats, new milk and eggs should be pumped down into the stomach. In this way he may be kept alive until the muscles of the gullet have regained their strength of swallowing. Put a teaspoonful of nux vomica in the gruels three times a day. This is a nerve stimulant, and will help the muscles to regain the power of

swallowing. In addition to this hand rub the throat well around the gullet and apply white liniment five or six times a day until better.

20. Choking With Oats.

This is generally found in old horses that are very greedy feeders and not used to getting oats regularly.

Causes.—A horse having been out at pasture then brought in and given a feed of oats sometimes goes at it very greedily, fills his mouth and tries to swallow it without chewing it properly, thus causing him to choke.

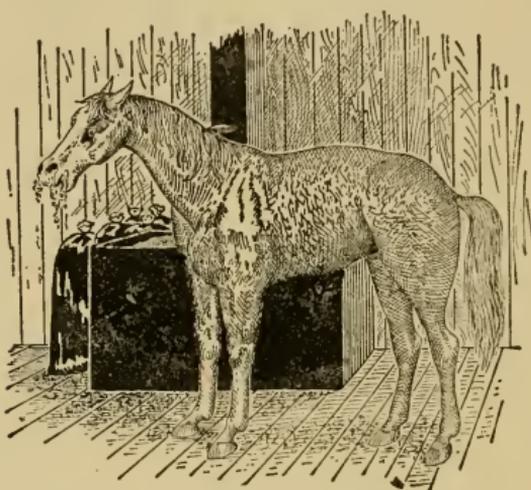


Fig. 10.—A Horse Choking with Oats.

Symptoms.—He refuses to eat his oats. Examine the box and there is very little of the oats gone. He slobbers at the mouth and coughs. Watch him for a few minutes. He gags and draws the muscles of the neck stiff and bends the neck down as if he were trying to force it up from his throat. He takes violent fits of coughing for a few minutes, and in some cases he throws out a frothy substance probably mixed with a few oats. These symptoms continue until he is relieved.

Treatment.—In some cases a drench of raw linseed oil will work around the oats and make them slippery so that he will be able to cough them out or swallow them down. It is also well to hand rub him along the neck, and thus help to start the oats down to the stomach. He generally gets entirely over it in a few hours. After a few hours, if not

relieved it is best to put a twitch on his nose, put a gag in his mouth, and pass a probang down his throat (the probang is a long tube used for relieving horses and cattle in choking). Relieve him without using the probang if you can. It is advisable, after bringing a horse from pasture, when giving him his first feed of oats, to dampen with water, as he is not so liable to choke when the oats are damp. After a horse has once choked he is more liable to choke again. To prevent this, scatter the oats well, and have a few large, round stones put in the feed box so that he cannot get a large mouthful at a time. A horse will very rarely choke on any kind of fruit or vegetables, such as apples, potatoes and carrots, but if he does, treat as above.

21. Dilitation or Enlargement of the Oesophagus.

The Oesophagus is the name of the tube which carries the food from the gullet to the stomach.

Causes.—Choking may cause the tube to become enlarged, forming a pouch or sack in which the food often becomes lodged, thus again producing symptoms of choking.

Symptoms.—This enlargement can be seen if in the neck region.

Treatment.—It can sometimes be relieved by rubbing on the enlargement with the hand. This causes the food to pass down into the stomach, thus relieving him. It also can be relieved by drenching with raw linseed oil.

22. Swelling Around the Head and Throat.

This swelling may be noticed around the horse's head and throat just after he has been turned out to pasture for a few days. It looks quite alarming when first seen.

Causes.—It is caused by an increased flow of blood to the head when not being used to having his head to the ground grazing.

Symptoms.—There is a loose swelling around the jaws and throat. It is not at all painful, and he seems perfectly healthy in every other way. If brought in for a night and fed from a high manger, so that he is compelled to hold his head up, the swelling usually disappears, leaving him all right by the morning.

Treatment.—In some cases no other treatment is necessary. Allow him out only a short time each day to graze

until he is used to it. If the blood appears to be in bad condition give a few doses of the following:

Sulphate of Iron $\frac{1}{4}$ pound.
Sulphur $\frac{1}{4}$ pound.

Mix thoroughly and give a dessertspoonful in a little grain night and morning.

CHAPTER IV.

DISEASES OF THE STOMACH AND THE BOWELS.

I. THE STOMACH.

THE stomach of the horse is very small in proportion to that of other animals. It is the principal organ of the digestive system, the important duty of which is to abstract from the food sufficient nourishment to sustain life; consequently any disarrangement of this organ or interference with its proper function is liable to terminate in serious illness.

1. Acute Indigestion.

Acute indigestion is one of the most common diseases of the horse.

Causes.—A heavy feed of rich food such as bran, oats or hay, especially if not used to such feed, is liable to cause an attack, in fact the eating of wheat or any other kind of grain may have the same effect. Working too soon after a large meal, a change of food or even a change of work such as from

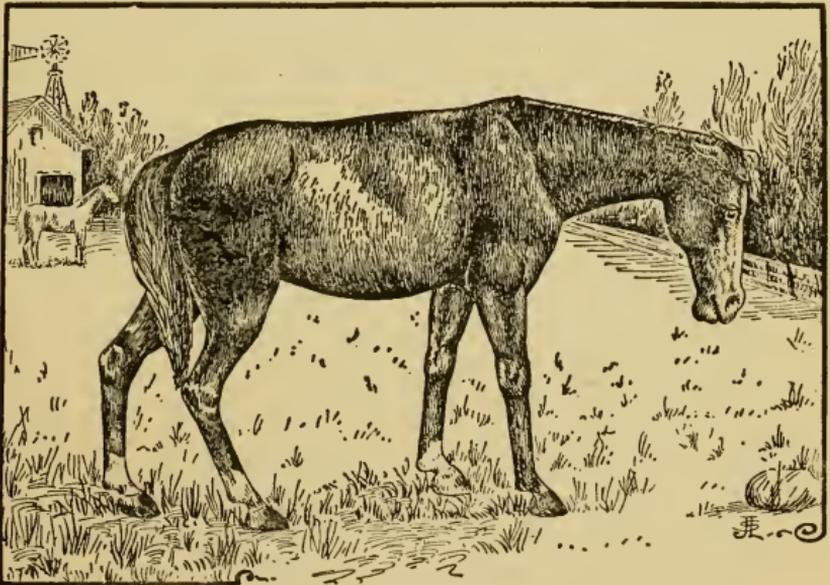


Fig. 11.—Suffering from Acute Indigestion.

that of the farm to driving on the road, may account for it; while the turning of a horse into a field of clover, alfalfa especially, is almost certain to result in a serious attack of acute indigestion.

Symptoms.—Suppose a case such as is often met with on the farm. The farmer intends to take a journey of fifteen or twenty miles. The night before he gives his horse an extra heavy feed, and if used to feeding on cut feed he probably changes to hay. The next morning he gets up early and gives another heavy feed before hitching up. The horse starts off at a lively gait but in a few minutes he becomes dull and sweats freely around the belly and chest. He passes manure in small quantities and it may be noticed that he even scours. If allowed to stop he shows signs of cramps or pains in the belly and may attempt to lie down. He looks round at his side and an examination discloses the fact that he is slightly bloated. As the journey proceeds he becomes duller and the bloating increases. He finally reaches the journey's end and by this time he is in such pain that it is a difficult matter to unhitch him. As soon as he is taken into the stable the symptoms become violent. He lies down, tries to roll on his back, then jumps to his feet, looks at his flank and again lies down. He paws first with one foot, then with the other, perspires freely all over the body because of the pain and repeats these symptoms until he gets relief. Tapping with the finger on his side, etc., will produce a drum-like sound, showing that gas is present. Sound the stomach and bowels with the ear and very little noise is heard, nothing more than the tinkling of gas. He is noticed to pass gas per anus, which is a good sign. The heat of the body, the legs and ears is about natural. This point should be noted, for with inflammation of the stomach or bowels, the legs and ears are always cold and clammy. His pulse beats from 50 to 75 per minute, and moderately strong, whereas with inflammation the pulse is strong and wiry. He is also noticed to breathe heavily and quick, caused by the stomach being so distended with gas that it presses heavily on the lungs. By placing your ear to the bottom part of his neck you will hear a belching of wind; this is a symptom peculiar to this disease only. It generally takes from twelve to twenty-four hours to run its course. In some cases if not so bad as the case outlined, the symptoms are not so distressing. He will be noticed to leave his feed and commence pawing, then lie

down quietly, probably for a few minutes, then get upon his feet again, take a few bites of feed, paw, and lie down again. He may seem easy for a few minutes, but the pain comes on again. If you examine his bowels you will hear them working pretty well, but you will also hear gas passing through them. The pulse is changed but little, probably five or ten beats faster than it should be, and the heat of the body, and of the ears and legs is about natural. In a case of this kind, if the animal does not get relief he will probably show these symptoms for days, or even a week, before getting worse. It is not well to allow him to suffer too long if he does not get relief of his own accord.

Treatment.—This disease is more common and also more fatal in heavy than in light horses. Rupture of the stomach, or inflammation sometimes follows it unless relief comes promptly. If you are driving or working the animal when he takes sick, take him to the nearest stable, put him in a box stall where he will have room to roll round without hurting himself, and make him as comfortable as you can. Give the following:

Sweet Spirits of Nitre	...1 ounce or 4 dessertspoonfuls.
Laudanum	.....1 ounce or 4 dessertspoonfuls.
Raw Linseed Oil	.....1 pint.
Bicarbonate of Soda	.....1 dessertspoonful.
Ginger	.....1 dessertspoonful.

Mix, shake well and give as a drench. Give an injection of four quarts of luke-warm water and a little soap, with a teaspoonful of turpentine in it. Have his belly well hand rubbed and apply a mustard plaster—half a pound of mustard, four tablespoonfuls of flour and enough vinegar to make it into a paste. Apply this well over the stomach and clothe the body according to the season of the year, but do not allow anything to eat till he gets relief, as this will only make him worse. In bad cases it is best to have some person stay with him to keep him from hurting himself by rolling about. Keep him as quiet as you can, and never, in any case, run him or keep him walking around. If this dose does not relieve him in an hour and a half, give the following:

Bitter Aloes	.....8 drams.
Sweet Spirits of Nitre	...2 ounces or 8 dessertspoonfuls.
Ginger	.....1 dessertspoonful.
Bicarbonate Soda	.....1 dessertspoonful.

Dissolve in a pint of luke-warm water, shake well and give as a drench. If he does not get relief in two hours after

this drench, follow up every two hours by drenching with the following :

Laudanum	1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Dissolve in a pint of warm water and give as a drench every two hours. Also give an injection every couple of hours, and have the belly and legs well hand-rubbed.

In severe cases heat a half pail of salt well, put it in a grain bag, tie half way down, and place it over the small of his back; then cover him up with a blanket to keep the heat in. Change for more hot salt every hour, heat being a good thing to keep down the pain and prevent inflammation from setting in.

In a case where the horse is but slightly affected allow him to stop work and give the following:

Bitter Aloes	8 drams.
Sweet Spirits of Nitre	1 ounce or 4 dessertspoonfuls.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Dissolve in a pint of warm water, give as a drench, and follow up with:

Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Bicarbonate Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Dissolve in a pint of warm water and give as a drench every four hours until relieved. Blanket him well and allow him to stand in the stable for a few days, till the physic is worked off. When recovering, feed on soft food, such as bran mashes, and give him all the luke warm water he will drink. In all cases of stomach trouble, warm the drinking water, as it has a good effect on the stomach. In severe cases, which finally prove fatal, the following symptoms are noticed: The patient gradually gets worse, begins to bloat very badly and breathes very heavy. His ears begin to droop over, the pulse runs up to 90 or 100 beats per minute, and is so weak that you can hardly feel it. He does not lie down so often, but walks round in his box. His whole body trembles. His legs, ears and nose gradually become cold as death approaches. The inside of his mouth is cold and clammy and he strains as if trying to pass something, but nothing comes. He finally staggers, falls and dies. During the whole course of this disease, it will be noticed that he makes water in small

quantities, but often. Do not be misled by this symptom, as it is caused by the swollen stomach and bowels pressing on the bladder.

It is a very important matter to become very familiar with the causes, symptoms and treatment of this disease, as it is so frequently met with.

2. Rupture of the Stomach.

This is generally met with during a severe attack of acute indigestion.

Causes.—A horse suffering from acute indigestion will, because of the pain, sometimes throw himself down on his side. The stomach being so distended or swollen with gas is unable to resist the sudden jolt of falling. It consequently breaks open or becomes ruptured.

Symptoms.—The animal suddenly becomes very bad—much worse than before. The pulse beats faster but weaker. The whole body soon becomes a mass of perspiration. The bowels and stomach become swollen; the legs, ears and nose begin to get cold. These symptoms are alarming and indicate approaching death.

Treatment.—A rupture of the stomach proves fatal in a very short time, consequently there is no treatment that will effect a cure. All that can be done is to make the patient as comfortable as possible and relieve the pain by giving an ounce of laudanum in a pint of luke-warm water.

3. Gastritis or Inflammation of the Stomach.

This is not a very common disease and is very rarely met with among horses.

Causes.—The giving of arsenic or other irritating medicines, the drinking of brine and feeding upon poisonous weeds or branches and leaves of the yew tree are among the more common causes.

Symptoms.—A constant desire to lie down and get up again, accompanied by a tendency to sweat freely, indicates severe pain. In the first stages, the pulse is high and wiry but gradually becomes weaker as the disease progresses. Many of the symptoms, noticeable during an attack of inflammation of the stomach, are very similar to those of inflammation of the bowels which occasionally accompanies it. Inflammation of the stomach, however, is not nearly so fatal.

Treatment.—In order to make the treatment as effective as possible it is very important to ascertain the cause. This

is more especially so if due to poison, as antidotes should then be given. Should the patient be much depressed give:

Whisky1 wineglassful.
Marshmallow Root1 ounce.

Steep the marshmallow root in a pint of boiling water, after which it should be allowed to cool. Repeat every half hour until relieved.

Should it be ascertained that the inflammation is due to mercury poisons, give, as a drench, in considerable quantities, the white of eggs and wheat flour mixed in lukewarm water. Apply a mustard plaster of one-half pound of mustard mixed with sufficient vinegar to make a paste. Rub this in well over the stomach. Clothe the body well and make him as comfortable as possible. When convalescent feed soft food—warm mash, etc., until the soreness leaves the stomach. If there be but little depression and much severe pain, give an ounce (four dessertspoonfuls) of laudanum with the marshmallow instead of the whisky.

4. Chronic Indigestion.

Chronic indigestion, sometimes called dyspepsia, is quite a common disease among horses, especially during the time of shedding their teeth.

Causes.—It may result from a disordered state of the bowels or liver, or from a young horse's failure to chew his food properly during the time he is shedding his teeth. It is often the result of feeding dusty clover hay, of irregular feeding and watering or of high feeding.

Symptoms.—The symptoms are not alarming. There is, however, a gradual falling off in condition and weakness, together with a tendency to sweat easily. The coat is dry and dusty, and he does not seem to have any ambition. The manure is of a dark clay color, and he is sometimes attacked with little fits of colic or pain in the bowels. Licking the walls and manger and apparently a craving appetite are also symptoms that are sometimes noticeable.

Treatment.—Give him a change of feed and a dose of physic consisting of the following:

Bitter Aloes8 drams.
Bicarbonate Soda1 dessertspoonful.
Ginger1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Allow the animal to stand in the stable until the physic

passes off. Feed on soft food and follow up with the following mixture as a tonic:

Ground Gentian Root	¼ pound.
Bicarbonate Soda	¼ pound.
Ginger	¼ pound.
Sulphate of Iron	¼ pound.

Mix thoroughly and give a teaspoonful three times a day in the feed or on the tongue with a spoon. This will build him up and start him to gain.

5. Bots.

These are found clinging to the inside of the stomach, and we have rarely examined a horse's stomach without finding at least a few. They are sometimes found in large numbers and in such cases are no doubt a positive injury.

Causes.—During the summer months it is quite a common thing to see the bot-fly or gadfly annoying the horse. The object of the fly is to deposit its eggs upon the hairs of the under portion of the head and neck and about the legs. When biting or rubbing his legs he takes these into his mouth, from which they pass into the stomach. Here they become attached to the lining membrane and develop until spring, when they let go their hold and pass through the bowels with the manure, after which they rapidly develop into the full-grown bot-fly.

Symptoms.—The first noticeable symptom is that he is not doing well, although he has a ravenous appetite. What he eats seems to do him but little good. It may be noticed, too, that he frequently holds his head up and moves and twists his upper lip.

Treatment.—Give the following mixture:

Raw Linseed Oil	1 pint.
Spirits of Turpentine	1 ounce or 4 dessertspoonfuls.

Shake well and give as a drench once a week until relieved. Allow him to remain idle after each drench. Give



Fig. 13—Bots. 1. The Female Fly. 2. Magnified Head of the Bot. 3. The Bot. 4. The Male Fly. 5. Showing Method of Attaching the Egg to a Hair.

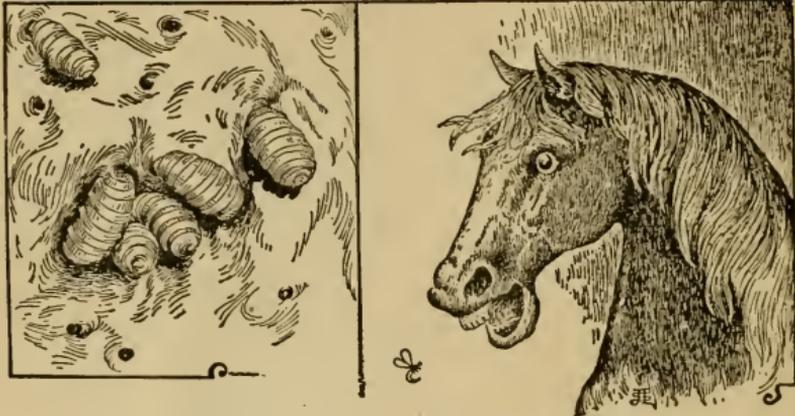


Fig. 12.—Bots. 1. Showing Bots Clinging to the Stomach. 2. A Horse Aggravated by a Female Fly.

a teaspoonful of ground sulphate of iron in his feed twice a day.

II. THE BOWELS.

6. Spasmodic Colic.

This is a spasmodic contraction of the muscular fibres of the coats of the bowels, or in other words, cramps of the bowels. It usually affects the small bowels, although the large bowels are sometimes affected.

Causes.—The principal cause is a change of food, for example, the giving a feed of roots when the animal is not used to it, especially if frozen. A cold drink of water when the animal is hot will cause it. Sometimes it results from giving physic or from a sudden change in the weather. Some horses become, as it were, subjected to this disease, more especially if the stomach is not digesting the food properly. Although very painful while it lasts, it is not very fatal, and usually passes off quickly. If not attended to, the chief danger is inflammation. It then becomes a very serious matter.

Symptoms.—The attack comes on very quickly. In some cases the horse will paw, cringe, look at his side, and throw himself to the ground as if in great pain, roll around and try to balance himself on his back. If the weather be hot, he will sweat very much. He may lie quiet for a few minutes, get up, and may appear all right. He may eat a little, but the pain comes on again, and acts in the same manner as

before. He generally passes manure in small quantities, and also makes his water, which is a good sign. Put your ear to his side. The working of the bowels is about natural, except

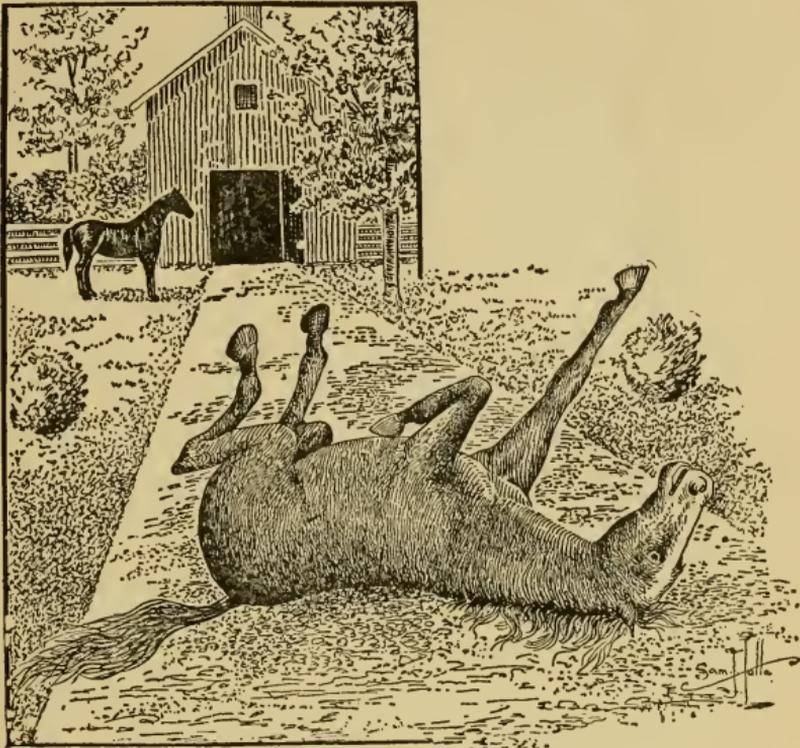


Fig. 14.—Rolling During an Attack of Spasmodic Colic.

when severe pain comes on. The pulse, when he is at ease, is about natural, but during the time he has pain it then beats very much faster, probably 60 or 65 beats per minute. With inflammation the pulse gradually goes up and stays up until it is checked. Press on his bowels; if colic, it seems to relieve him, but if inflammation it causes more pain. As a general thing the attack does not last very long—probably two or three hours. In some cases, however, we have seen it last as long as ten or twelve hours, but the symptoms in such a case would not be so severe.

Treatment.—A student was once asked at a certain veterinary college, what he would do if he were sent for in a case of this kind. He said that he would go as fast as he could for fear the case would be all over before he got there.

The favorite remedy for colic is:

Sweet Spirits of Nitre ...	1 ounce or 4 dessertspoonfuls.
Laudanum	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench.

Another good remedy is:

Raw Linseed Oil	1 pint.
Spirits of Turpentine.....	1 ounce or 4 dessertspoonfuls.

Mix and give as a drench.

Here is another:

Fleming's Tincture of Aconite.....	10 drops.
Whisky	1 wineglassful.

Mix in a pint of lukewarm water and give as a drench. In cases of this kind it is best to have some person stay with the animal for fear he gets cast on his back or hurts himself. In severe cases the belly should be well hand rubbed, and cloths wrung out of hot water should be applied to the belly. You may get good results by applying a mustard plaster over the bowels. Any of the above drenches, except the oil and turpentine, may be given every hour until the animal gets relief. As soon as the pain ceases give a dose of physic consisting of:

Bitter Aloes	8 drams.
Ginger	1 dessertspoonful.
Bicarbonate Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. This will cure the irritation and work off the cause of the trouble.

In each of the drenches mentioned it is well to use the ginger and bicarbonate of soda.

7. Wind or Flatulent Colic.

This and acute indigestion are much the same. The stomach is generally affected in this disease as well as in indigestion.

Causes.—Because of some derangement of the digestive organs the food forms gas which fills the bowels and causes extreme pain. In the majority of cases it is caused by a change of some kind in the food. Aged horses are more frequently affected.

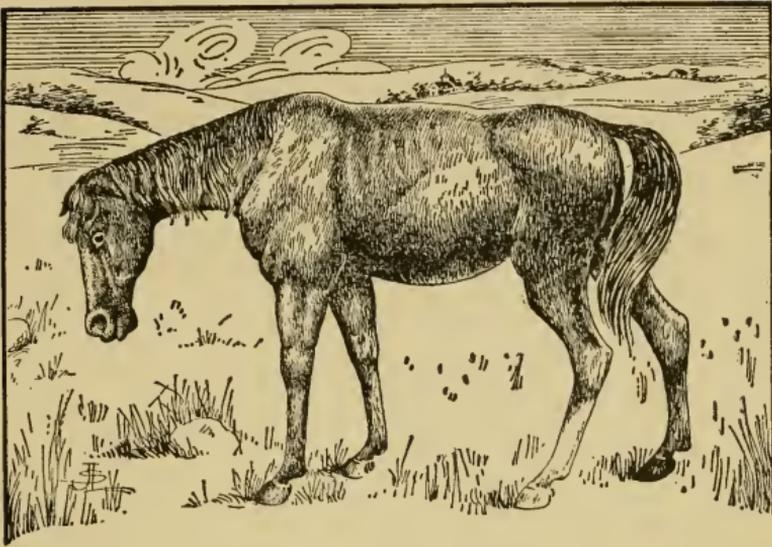


Fig. 15.—Flatulent Colic.

Symptoms.—The symptoms of this disease somewhat resemble those of acute indigestion, except that the gas is formed in the large bowels instead of the stomach. The animal lies down and rolls. The belly becomes bloated with gas. Notice, too, that there is no belching of wind from the stomach as there is in acute indigestion.

Treatment.—Give injections freely of four quarts of lukewarm water, a little Castile soap and a dessertspoonful of turpentine. For a drench give:

Spirits of Turpentine	...1½ ounces or 6 dessertspoonfuls.
Laudanum	.....1 ounce or 4 dessertspoonfuls.
Raw Linseed Oil	.....1 pint.
Bicarbonate Soda	.....1 dessertspoonful.
Ginger	.....1 dessertspoonful.

Shake well together and give as a drench. Follow up with the following:

Sweet Spirits of Nitre	....1 ounce or 4 dessertspoonfuls.
Ginger	.....1 dessertspoonful.
Bicarbonate Soda	.....1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench every hour until there is relief. It is best in this case to have someone to stop with the animal to keep him from hurting himself or from getting cast. Hand-rub the belly well, and in severe cases apply a mustard plaster to the bowels. Place

one-half pail of hot salt in a bag over the kidneys; this will have a tendency to move the gas in the bowels and will help to keep down inflammation. If a bad case, after the animal has been relieved, it is best to follow up with a dose of physic, consisting of:

Bitter Aloes8 drams.
 Bicarbonate Soda1 dessertspoonful.
 Ginger1 dessertspoonful.

Dissolve in a pint of lukewarm water and give as a drench. Allow him to stand in the stable the next day. Feed on soft, light feed. This will generally prevent another attack of colic.

8. Inflammation of the Bowels (Enteritis).

This is very common and is, perhaps, one of the most fatal diseases of the horse.

Causes.—It sometimes follows a severe attack of colic, especially if not checked in the earlier stages. It may be caused by eating food containing clay or sand, which has a tendency to irritate the bowels. Eating pea straw or drinking stagnant water may cause an attack. Exposure to cold after a long, exhausting drive, resulting in a chill which rushes the blood in upon the bowels, may set up congestion, followed by inflammation.

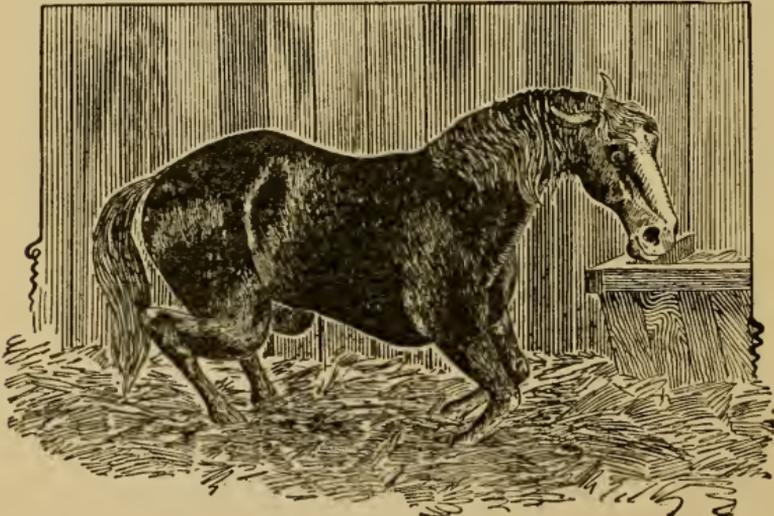


Fig. 16.—Cringing During an Attack of Inflammation of the Bowels.

Symptoms.—The attack comes on very suddenly. The affected animal begins to tremble, paws with one foot and

then with the other. He turns the head round to the side, cringes and lies down. There is not a minute's ease as in colic. He soon gets up, walks round and looks at his side. If the pulse be taken at this stage of the disease, it will be found to be about 45 beats per minute, full and bounding. His legs and ears are hotter than they are when well. He passes slimy looking manure in small quantities. The pain continues to increase and the symptoms become more noticeable. He is not easy for a moment. The pulse runs up to about 75, but still remains full and bounding, not variable as in colic. It still increases as the disease advances. He sweats freely, and the lining of the eyes becomes very much reddened and angry looking. His legs and ears are first hot, and then cold, while the pain continues to become more severe. At this stage the ears begin to lop over and there is a very haggard look on the face, indicating extreme agony. In a few hours he becomes a pitying sight to see. If you sound his bowels at this stage, the slightest movement can not be heard—merely a jerking and trembling all through the insides. He begins to breathe heavy, and his ears and legs feel cold and clammy. The symptoms as outlined continue, and should he make water, it will be red and bloody looking. If there be any passage from the bowels, it will be mostly slime. In eight or ten hours, if the disease be not checked, mortification will set in, and the patient becomes quiet and easy. He, however, continues to sweat and breathe heavily. In some cases he will try to eat and once in a while he will be noticed to walk round. In this stage he does not lie down. The surface of his body, his ears, his nose, his lips and legs get colder and have a death-like feeling. The pulse now is up to 100 beats per minute, and so weak as to be scarcely felt, showing that his heart is merely fluttering. The haggard look of the face becomes more marked. He strains a few times, as if trying to pass something, but nothing comes. He will keep on his feet as long as he can, but finally staggers, falls and dies. This disease generally runs a course of from 10 to 15 hours, but in some cases we have known a horse affected with it to live as long as two or three days after being attacked. In such a case only a small portion of the bowels was affected.

Treatment.—This disease, if taken as soon as the animal is noticed sick, may be sometimes cured, but the treatment must be quick and careful, for, if the disease once gets a

couple of hours the start, it is then a hopeless case. Give the following:

Laudanum	1 ounce or 4 dessertspoonfuls.
Extract of Belladonna	1 dram or 1 teaspoonful.
Fleming's Tincture of Aconite.....	10 to 15 drops.
Bicarbonate Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water, and give as a drench. The purpose of this drench is to relieve the pain and check the inflammation. Repeat every hour until the animal gets relief. Apply plenty of heat to the body by using large woollen blankets, wrung out of hot water. Hold these up to the belly and apply a half pail of hot salt in a grain bag to the back. In every case, after using the hot blankets, apply a mustard plaster, consisting of:

Mustard	½ pound.
Vinegar	Enough to make it like paste.

Rub this well over the belly. Do not give physic or injections in cases of this kind, as they only irritate the bowels, doing more harm than good. It is always best to keep the bowels quiet. If the animal is in good condition it is well to take 4 quarts of blood during the first stage of the disease; but if this is done do not give so much aconite. For after treatment feed on soft feed containing flax seed, which has a soothing effect on the bowels. After death the bowels will be black, thickened and full of watery fluid.

9. Constipation of the Bowels.

Sluggish bowels loaded with food and manure constitute constipation.

Causes.—It is often a symptom of some other disease affecting the liver or stomach. It may follow distemper or influenza, which often leave the bowels unable to do their work, or it may be the result of paralysis of the bowels. Sometimes the eating of over ripe and inferior food—pea straw or barley straw will cause it. A large tumor growing on the inside may press on the bowels and thus prevent their proper action.

Symptoms.—Little manure passes through, and what does come will be in little hard balls. The animal looks unnaturally full and shows slight signs of pain. He sometimes looks round at his sides or lies down and rolls. The pulse is but slightly changed. Put your ear to his side and but very little movement of the bowels is noticeable. He eats

but little and looks dull and dumpy. His water is of a thick, yellow color. Examine his rectum or back bowel by oiling your hand and passing it in through the anus. This can be done easily and without any danger. You will find it full of hard, dry manure.

Treatment.—Commence by giving a good dose of physic, consisting of:

Bitter Aloes8 to 10 drams.
Sweet Spirits of Nitre1 ounce or 4 dessertspoonfuls.
Powdered Nux Vomica1 teaspoonful.

Mix in a pint of lukewarm water and give as a drench. In twenty-four hours follow up with the following drenches:

Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Powdered Nux Vomica1 teaspoonful.
Bicarbonate Soda1 dessertspoonful.
Ginger1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench every five or six hours until the pain is relieved. If the bowels have not begun to move by this time follow up with a drench of one pint of raw linseed oil. Clean the manure from the rectum or back bowel with your hand twice a day, and give an injection of four quarts of lukewarm water containing a little castile soap. As soon as the pain is relieved, and the bowels are working, it is well to give the following powder:

Ground Gentian Root $\frac{1}{4}$ pound.
Ginger $\frac{1}{4}$ pound.
Bicarbonate Soda $\frac{1}{4}$ pound.
Powdered Nux Vomica $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day in his feed or on his tongue with a spoon. The powders are intended to strengthen and tone the bowels and build up the system. Feed on soft feed containing plenty of flax seed, which is especially good for weak bowels. During treatment for constipation, should the physic not seem to be effective, a little exercise will often start it to work.

10. Diarrhoea.

This is a condition the very opposite to constipation, there being the passage of a large amount of fluid manure, due to the congested state of the bowels. Horses of weak conformation—narrow chested and gaunt looking—are more frequently affected than those having a rugged frame and a good constitution.

Causes.—As a general thing diarrhoea is the result of improper feeding. A too sudden change from light food of poor quality to heavy rich food often accounts for it. The feeding of roots—turnips or carrots—especially if frozen, the drinking of stagnant water which acts as a blood poison, an overdose of physic (superpurgation) are some of the many causes which might often be avoided. Sometimes severe cases are the result of sand being taken into the stomach because of feeding in pasture where the grass is short, sand having an irritating effect. Excitement is a common cause, especially with race horses or excitable road horses.

Symptoms.—Diarrhoea is very easily detected, there being a passage of much watery looking manure. An examination of the pulse shows it to be but little affected at first, but if the disease is allowed to run on it becomes quick and weak. He has a poor appetite and soon becomes gaunt and weak looking. In time the legs become colder than usual, and because of the irritation and spasms of the bowels there will be slight pain. The appearance of pain is a serious symptom, indicating that the congested condition of the bowels unless relieved may terminate in inflammation.

Treatment.—In many cases it will be only necessary to change the food, clothe the body according to the season, and give a little medicine. Ascertain as nearly as possible the cause. If it be irritation—the result of eating sand or some other indigestible substance—give the following:

Raw Linseed Oil	½ pint.
Laudanum	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix and give as a drench. This will assist nature to get rid of that which is the cause of the trouble. If the presence of sand or other irritable substances is not suspected, give:

Tincture of Catechu	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of ordinary coffee and give as a drench. Repeat every four or five hours until relieved. It is quite probable that the patient will exhibit signs of being thirsty. Give him lukewarm water containing a handful of flour frequently but in small quantities. Feed dry feed and keep him as quiet as possible. In severe cases it is well to apply a mustard plaster over the bowels and a bag containing a half pail of hot salt over the kidneys.

II.—DIARRHOEA IN YOUNG ANIMALS.

Causes.—Exposure to cold or lying upon the damp ground in the spring or fall may bring it on because of the chilling effect on the bowels. Should the mother's milk be very rich, or on the other hand very weak, it will have a tendency to affect the foal in this way. Hot milk from the mother when overheated from working hard acts in the same manner.

Symptoms.—Passage of much fluid manure, which sticks around his legs and tail, is an important symptom. The patient becomes weak, sickly and very gaunt, and his coat will be staring.

Treatment.—If the mother's milk be weak, try to improve it by giving plenty of nourishing food. Should the cause be mother's milk when she is heated, always milk a little out before the foal gets a chance to suck.

If a strong foal, give:

- Castor Oil1 ounce or 4 dessertspoonfuls.
- Laudanum10 to 15 drops

If this does not relieve him in five hours, follow up with

- Laudanum10 to 20 drops.
- Brandy or Whisky...½ to 1 ounce or 2 to 4 dessertspoonfuls.

Mix with some of the mother's milk and give as a drench three times a day. In severe cases keep the foal warm and apply a light mustard plaster to his belly.

12. Bloody Flux (Dysentery).

This disease affects the lining of the large bowels, in which large ulcers are formed. These bleed and cause the manure to be streaked with blood.

Causes.—It is often the result of a severe attack of diarrhoea, of pasturing on wet, marshy lands, of eating hay on such lands, or of using impure water.

Symptoms.—The passages from the bowels are streaked with blood and have a bad smell. Sometimes slime comes away with the manure. The appetite is poor and in some cases entirely gone. The pulse is weak and about 50 beats per minute. Colicky or cramping pains in the bowels accompanies these symptoms.

Treatment.—This disease is in some cases treated without success, and bad cases are considered very serious. Give the following:

- Raw Linseed Oil½ pint.
- Castor Oil½ pint.
- Laudanum1 ounce or 4 dessertspoonfuls.

Mix, shake well, and give as a drench; then follow up with the following:

Laudanum1 ounce or 4 dessertspoonfuls.
Tincture of Catechu1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench three times a day—morning, noon and night—until the disease subsides. Clothe the body well, according to the season, and feed soft feed containing plenty of boiled linseed, and take the chill off the drinking water for a few days. After the first symptoms begin to pass off give the following powder:

Ground Gentian Root $\frac{1}{4}$ pound.
Sulphate of Iron $\frac{1}{4}$ pound.

Mix well together and give a dessertspoonful twice a day.

13. Twist in the Bowel (Volvulus).

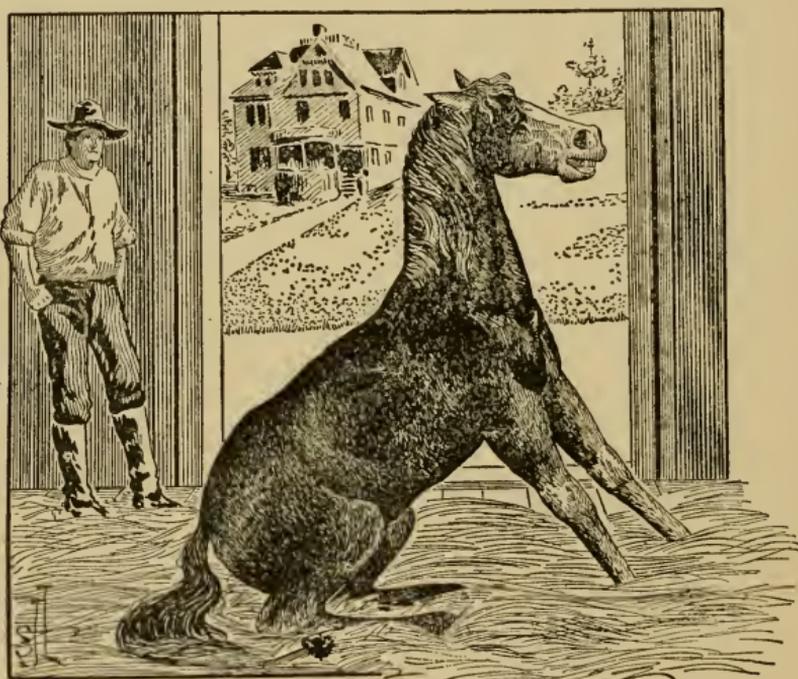


Fig. 17.—Sitting upon the Haunches—Twist in the Bowels. (Volvulus.)

This is not a very common disease, although it is met with sometimes.

Causes.—It may be due to a severe attack in which there is colic, much pain and cramping of the bowels, causing the

animal to roll about a great deal. It generally affects young animals.

Symptoms.—These are very similar to those of inflammation of the bowels, and for this reason it is very difficult to distinguish one from the other. There is no passage on account of the twist in the bowels. There is a tendency to sweat freely. He sits upon his haunches, and seems to be in great distress. The pulse runs up but gets weaker and weaker. There is generally a slight appearance of bloating, on account of there being no passage. In two or three hours the twisted bowels become inflamed and the animal suffers from severe pain until he dies.

Treatment.—Should there be positive indication of a twist in the bowel, all that can be done is to relieve the pain by giving an ounce or four tablespoonfuls of laudanum every hour. Should the symptoms be such as to make it impossible or uncertain to decide, then the treatment should be exactly the same as for inflammation of the bowels.

Examination after death will show a half hitch on the bowel and a black and inflamed condition for a foot or more on each side of it.

14. Intussusception.

This condition of the bowels is generally found in foals living on milk. It is the result of one bowel slipping inside of the other.

Causes.—It is difficult to say just what causes it. In some cases it is supposed to be due to cramps.

Symptoms.—These are similar to those of colic. There will be pain and loss of appetite for a few days. The bowels do not work well and after a few days, in some cases, that part of the bowel slipped inside the other begins to sluff and pass off in the manure. The bowel heals in a short time and the animal gradually recovers. When intussusception is suspected give to a fairly well developed foal:

- Raw Linseed Oil.....½ teacupful
- Laudanum1 dram or 1 teaspoonful.

Mix in some of the mother's milk and give as a drench. The dose must be given in proportion to the size of the foal. After this give:

- Laudanum.....1 dram, or 1 teaspoonful
- Sweet Spirits of Nitre1 dram or 1 teaspoonful.
- Bicarbonate of Soda1 teaspoonful.
- Ginger1 teaspoonful.

Mix in a little of the mother's milk, and give as a drench every four hours until the animal gets relief.

15. Balls Found in the Bowels (Calculi).

These are chiefly made up of lime and vary in size from that of a marble to those large enough to weigh twenty pounds. A piece of iron, or brass, or something of the kind, which has a tendency to collect the lime, is sometimes taken into the stomach with the drinking water. These balls are the result of a constant formation of the lime about the foreign substance.

Causes.—Feeding the sweepings of a mill floor or such like is the more general cause. They are more frequently found in the large bowel and may take a long time to accumulate before being large enough to stop the passage.

Symptoms.—The first noticeable symptom is wind colic, after which, sooner or later, as the ball gets larger, there is a complete stoppage of the passage. This causes inflammation which generally terminates in death in from twenty-four to forty-eight hours.

Treatment.—During first symptoms give a good dose of physic. If balls are suspected it is always best to make an examination by oiling the hand and passing it into the rectum. Should balls be found it is generally an easy matter to remove them with the hand. Should the removal of the balls be impossible, nothing can be done except to relieve the pain by giving doses of one ounce or four dessertspoonfuls of laudanum every couple of hours.

16. Rupture of the Rectum or Back Bowel.

This is a very serious injury, but in some cases recovery is possible, especially if the rupture be on the upper side of the rectum.

Causes.—Rupture of the rectum is generally the result of an accident. A shaft during a runaway, a broken piece of fence rail, a splinter of a board of such like may enter through the anus into the rectum and cause the rupture.

It may be the result of mal-address-penetration of the wrong passage during service of the stallion.

Symptoms.—If by accident there is generally sufficient exterior evidence of the injury—cuts, bruises or bleeding from the anus. If by mal-address there is bleeding from the

anus. Stoppage of the passage, also, generally attends rupture of the rectum. The extent of the injury may be ascertained by making a careful examination with the oiled hand.

Treatment.—Carefully remove any slivers, splinters or pieces of foreign matter that may have been left in the wound. Remove the manure from the rectum three or four times a day, being careful to oil the hand well. After each operation give an injection of a little warm water and soap. This has a soothing effect on the wound and helps to keep the bowels regular. Feed soft food in small quantities in order to keep the bowels as nearly empty as possible and still allow sufficient nourishment to sustain life. Give the following:

- Raw Linseed Oil½ pint.
- Laudanum1 ounce or 4 dessertspoonfuls.

Mix and give as a drench. Should there seem to be pain after this treatment give one ounce or four dessertspoonfuls of laudanum, as a drench, in a little lukewarm water every four hours. If the animal be very fleshy give five to ten drops of Fleming’s tincture of aconite to keep down the inflammation.

17. Tumors or Abscesses of the Rectum.

This disease is not very common.

Causes.—It may result from a costive condition of the bowels. Injuries caused by rudely inserting the hand or an injection pipe may develop into abscesses or tumors.

Symptoms.—These are most noticeable during the passing of manure, which causes severe pain, so severe indeed at times that the animal lies down. A large tumor or abscess often causes straining which results in the passage of nothing from the rectum.

Treatment.—Make a careful examination with the hand well oiled. Should there be evidence of an abscess containing matter, pierce or lance it with a small knife to allow the matter to escape. If a tumor that can be got at, remove by cutting it out with a knife. The ecraseur (an instrument supplied with a chain for squeezing it off) is often useful in such cases.

For after treatment give raw linseed oil and mix boiled flax seed with the feed to keep the bowels loose.

18. Protrusion of the Rectum or Back Bowel.

This is often met with. It is a miserable looking sight, especially when the protruded portion is allowed to remain out for some time and become swollen.

Causes.—A horse in jumping a fence may get caught and lie with his belly half over. The extreme pressure of his weight upon the fence in this position may cause it. Extreme cases of bloating, as with wind colic or acute indigestion, sometimes causes sufficient pressure to force the rectum out. It has been met with in cases of diarrhœa, being the result of straining. Constipation, however, is the great cause of protrusion. The straining is so great in passing manure as to frequently press the rectum out. A mare while foaling or an old stallion while being castrated may strain sufficiently hard as to bring about the same result.

Symptoms.—A red mass of bowel hanging from the anus, varying in extent from three inches to three or four feet and in some cases even more than this.

Treatment.—Place a twitch on the horse's nose. While one attendant holds up one of the front feet to keep him from kicking and another holds the tail out of the way, cleanse the protruding bowel thoroughly by washing it well with lukewarm water. When satisfied that it is thoroughly clean, oil well all over with sweet oil. Commence by returning the bowel in at the anus, after which it should be pushed well back into the body with the hand and arm according to the amount protruding. The tail must be held down tight over the anus for an hour or so after the operation, until straining has ceased, to prevent its coming out again. It is well to place straw or boards under the hind feet to keep the rear end of the body higher than the front. Give:

Raw Linseed Oil1 pint.
Laudanum1 ounce or 4 dessertspoonfuls.

This will act upon the bowels and also relieve the pain. Shake well together and give as a drench. Feed soft feed containing plenty of boiled linseed to keep the bowels loose. If constipation be the cause of protrusion give:

Bitter Aloes8 drams.
Ginger1 dessertspoonful.
Bicarbonate of Soda1 dessertspoonful.

Mix with a pint of lukewarm water and give as a drench.

19. Peritonitis.

Peritonitis is an inflammation of the serous membrane which forms a lining to the inside of the belly and over the outside of the bowels.

Causes.—Exposure to cold after some weakening disease is the more general cause. A colt who, after being castrated, is allowed to remain out in a cold rain, or to remain standing in a cold east wind or to walk through a river when warm, is liable to develop peritonitis. It may also be the result of a severe bruise on the belly.

Symptoms.—There are indications of slight pain. The patient lies down, stretches himself out and moans, sweats freely if in warm weather, gets up again, moves about and appears to be very weak. The breathing is heavy—almost as heavy as in a case of inflammation of the lungs. The pulse increases to 70 or 80 per minute but is very weak. Should the disease remain unchecked the ears and legs become cold. The ears lop over and there is every indication of extreme weakness—in fact when once down he seems to have scarcely sufficient strength to regain his feet. Place your ear to the side and you notice that the bowels are working only slightly. Press with your hand over the bowels and the pressure seems to cause pain. There is no appetite and the manure in many cases has a very glossy appearance.

Treatment.—Give

Raw Linseed Oil	1 pint.
Laudanum	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	5 to 10 Drops.

Mix and give as a drench. Apply plenty of heat to the belly by means of woolen blankets wrung out of hot water. Follow with a mustard plaster over the bowels and a bag containing a half pail of hot salt over the back. Feed soft food containing plenty of flaxseed to keep the bowels regular. Should the pain continue to be severe after giving the first drench, follow with

Laudanum	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	5 to 10 Drops.

Mix in a pint of lukewarm water and give every two hours as a drench until the pain is relieved. Sometimes this disease is followed by dropsy—the collection of water in the belly.

20. Dropsy of the Belly.

This is a collection of a watery fluid in the belly around the bowels, generally resulting from inflammation of the membrane mentioned in the preceding section.

Symptoms.—There is extreme weakness; pulse, quick and weak; muscles of the body, soft and flabby; belly, apparently swollen and pressure upon it with the hand indicates the presence of the watery fluid mentioned. The bowels are constipated but in some cases there is a fairly good appetite.

Treatment.—Give remedies that tend to absorb the fluid. Encourage the appetite by giving plenty of good food. Give

Iodide of Potassium	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{2}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.

Mix thoroughly together and give a dessertspoonful three times a day. Exercise the patient a little each day. It is recommended in severe cases to tap the lower part of the belly with a trocar and cannula. This operation, however, does not prove very successful with the horse.

21. The Eating of Too Much Wheat.

This is very dangerous, especially if the horse be not used to getting wheat and eats a large quantity of it. The wheat swells and at the same time causes gas to form in the stomach. After a time it changes to a tough doughlike mass, causing acute indigestion, which often terminates in acute founder.

Treatment.—As soon as it is ascertained that a quantity of wheat has been eaten the horse should not be allowed any water or food for twenty-four hours. Keep him quiet during this time, after which he may be given plenty of lukewarm water and soft feed. If acute indigestion follow the eating of wheat give treatment as outlined under that disease; if it result in founder then treat as we have outlined in the section on that disease.

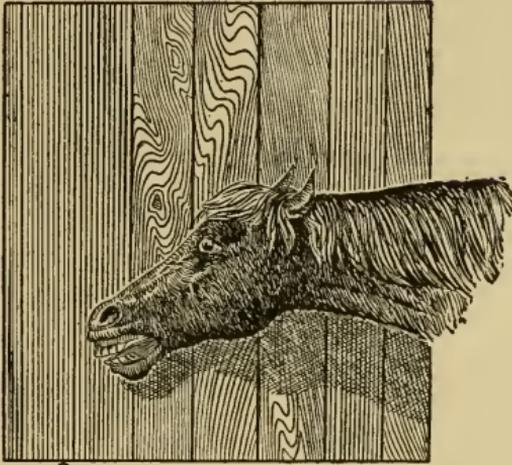
22. Long, Round Worms (*Lumbrici*).

Fig. 18.—Rubbing the Nose—A Symptom of Worms.

Symptoms.—A horse troubled with these worms does not do well. He soon falls off in condition and frequently passes some of them in the manure. If very many are present they cause attacks of colic and we have known cases in which these worms have accumulated to such an extent as to form a ball in the small bowels, stopping the passage and killing the animal.

Treatment.—Get rid of the worms by giving:

Raw Linseed Oil $\frac{1}{2}$ pint.
Spirits of Turpentine..... 1 ounce or 4 dessertspoonfuls.

Mix and give as a drench once a week. In addition to this give a teaspoonful of sulphate of iron in the feed twice a day. This is the best remedy known for worms.

23. Pin Worms.

These are short, fine worms about an inch or two long and only affect the rectum or back bowel.

Symptoms.—A horse affected with pin worms usually feels fairly well. He, however, falls off in condition; his coat becomes dry and dusty; he rubs his tail and there is a white slimy matter visible around the anus.

Treatment.—If in good condition give a physic of

Bitter Aloes	8 drams.
Bicarbonate of Soda	1 teaspoonful.
Ginger	1 teaspoonful.

Mix in a pint of lukewarm water and give as a drench. After this clean out the rectum with the hand and inject the following:

Quassia Chips	$\frac{1}{2}$ pound.
Rain Water	1 gallon.

Mix and boil down to one half gallon. Strain off the chips and inject with a syringe. Keep the injection in the rectum for half an hour by holding down the tail. Clean out the rectum and repeat the injection once a week. This is a cheap and sure cure. Medicine taken through the mouth does but little good as it never reaches the worms.

CHAPTER V.

DISEASES OF THE LIVER AND THE SPLEEN.

THE causes, symptoms and treatment of diseases of these two organs are so much alike that they are here treated together.

1. Congestion and Inflammation of the Liver.

Causes.—High feeding with but little exercise is the usual cause of this disease, although an abscess is also accompanied by congestion and inflammation.

Symptoms.—There are symptoms of pain. The afflicted animal looks round at his sides and lies down frequently. He does not roll, however, as in cases of disease of the bowels. The breathing is heavy and quick; the pulse, quick but weak. The bowels are usually costive and the manure black and slimy looking. The linings of the mouth and the eyes are yellow—much the same as in a case of jaundice. The urine is green, resembling the bile from the liver, and there is usually a lameness of the off front leg.

Treatment.—If the patient be in good condition give

Bitter Aloes8 drams.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Laudanum1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench. Apply a mustard plaster, well rubbed in, to the under part of the belly and clothe the body well according to the season of the year.

Follow with

Iodide of Potassium1 pound.
Nitrate of Potash or Saltpetre½ pound.

Mix thoroughly together and give a teaspoonful three times a day in the feed or on the tongue with a spoon. Should the cause be high feeding with little exercise it is necessary to feed light, soft feed and roots—carrots for example—and give regular exercise.

2. Yellows (Jaundice).

This is, probably, the most common disease of the liver.

Causes.—Inflammation, stoppage of the passage in the tube leading from the liver to the bowels by gall stones, abscess, in fact any disorder of the liver which may prevent it from performing its function of extracting the bile from the blood will cause yellows or jaundice. Such weakening diseases as influenza or distemper may leave this organ in such a state as to bring about the same result.

Symptoms.—There is a dullness and loss of appetite. The bowels are constipated and the manure is of a dark clay color. The lining of the mouth and that of the eyes is quite yellow, thus giving rise to the name yellows or jaundice.

Treatment.—Turning out to grass in the spring of the year is often all that is necessary to effect a cure. Should this be impracticable and the animal be in good condition, give:

Bitter Aloes4 drams.
Calomel½ dram.

Put the calomel on the tongue with a spoon and wash it down with a drench made by mixing the bitter aloes in a pint of lukewarm water. It is sometimes a good plan to mix it in the form of a ball, instructions for which are fully given with the receipts in the latter part of this book:

Follow with:

Iodide of Potassium¼ pound.
Nitrate of Potash or Saltpetre.....½ pound.

Mix well together and give a teaspoonful three times a day. The feed should be soft and nourishing—boiled oats, scalded chop stuff, or bran—containing plenty of boiled flaxseed. Roots—carrots, etc.—make a good addition to this diet. This treatment if carefully followed and accompanied by a little gentle exercise each day generally effects a cure.

3. Bile Stones (Biliary Calculi).

Horses are not so frequently afflicted with this disease as man. Bile stones, however, may exist in large numbers, to such an extent as to stop the flow of bile from the liver, thus forcing it back to be again absorbed by the blood. Jaundice is the result.

Causes.—The formation of bile stones usually results from high living with little exercise.

Treatment.—Give the following physic:

Raw Linseed Oil	1 pint.
or	
Bitter Aloes	8 drams.
Water (luke-warm).....	1 pint.

The bitter aloes will dissolve readily in the water. Follow with:

Diluted Hydrochloric Acid.... $\frac{1}{2}$ dram or $\frac{1}{2}$ teaspoonful

Mix in pint of water and give as a drench two or three times a day. The purpose of the acid is to dissolve the stones, thus allowing them to pass away. Light feeding and regular exercise should attend this treatment.

4. Enlargement of the Liver (Hypertrophy).

Aged horses are more frequently troubled with enlargement of the liver than young ones.

Causes.—It is more generally the result of faulty feeding than anything else.

Symptoms.—There is a gradual falling off in condition and continual change from diarrhoea to constipation and vice versa. The lining of the mouth as well as that of the eyes becomes a yellowish color. These symptoms are followed by a lingering death.

Treatment.—Regular and judicious feeding with regular exercise will sometimes arrest the progress of the disease, although no treatment can effect an absolute cure.

5. Inflammation of the Spleen.

This disease is met with more frequently in very warm climates such as that of the Southern States.

Causes.—It is impossible to determine with any degree of certainty what causes inflammation of the spleen.

Symptoms.—These are similar to those of colic. There is a dull, languid feeling as indicated by a tendency to allow the head to hang lower than usual and the ears to lop over. The appetite is poor; the pulse high but weak. He lies down, rolls, and after regaining his feet appears to be much easier for a time.

It is a very difficult matter to form a positive opinion in regard to the presence of this disease before an examination is made after death.

Treatment.—Should inflammation of the spleen be suspected, give:

Raw Linseed Oil1 pint.
Laudanum1 ounce or 4 dessertspoonfuls.

Shake well and give as a drench. Apply a mustard plaster to the belly, opposite to the stomach and spleen. Keep the body warm by clothing according to the season. Continue treatment with the following drenches:

Laudanum1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.

Mix in a pint of water and give every two hours until relieved.

CHAPTER VI.

DISEASES OF THE URINARY ORGANS.

THE urine, sometimes called stale, is separated from the blood by the kidneys, from whence it is carried into the bladder by the ureters. Nephritis is an inflammation of the Kidneys, Cystitis of the Bladder. Inflammation may be acute or chronic, and as the symptoms are somewhat different these conditions are treated separately.

1. Acute Inflammation of the Kidneys.

Causes.—Exposure to cold—standing out in cold rain storms such as we have in Canada in the spring and fall or lying on the cold, damp ground—is the commonest cause. Violent exertion such as that of racing or carrying a heavy weight upon the back may so injure the kidneys as to cause acute inflammation; so, too, may large quantities of certain medicines that act directly upon them.

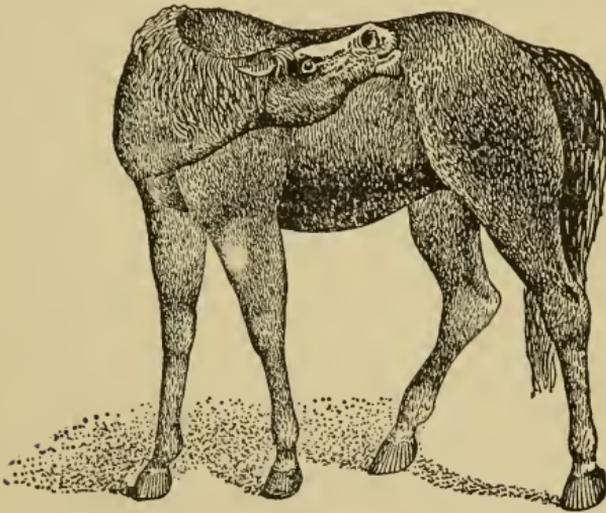


Fig. 19.—Acute Inflammation of the Kidneys.

Symptoms.—There is a feverish condition accompanied by a full, bounding pulse running from 60 to 80 per minute. The mouth is hot and dry, the breathing heavy, and there is a tendency to sweat freely. The patient looks round at his

sides and in some cases puts his nose right upon the side opposite the kidneys. He sometimes cringes, lies down carefully, stretches out and moans, apparently in great distress. He frequently lies quietly for half an hour at a time, there being no attempt to roll on the back as in diseases of the bowels. Pressure of the hand over the loins causes pain. But little rumbling or movement can be heard in the bowels and there is but little passage from them. There is a frequent desire to pass water which comes in small quantities, generally red and tinged with blood. If not relieved in two or three days these symptoms gradually become more violent, the urine is almost entirely blood, and death is liable to take place in a day or two.

Treatment.—The treatment to be effectual must be prompt. Any delay endangers the life of the animal. Give the following:

Raw Linseed Oil	1 pint.
Laudanum	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	10 to 12 drops.

Mix and give as a drench. Apply woolen blankets, wrung out of hot water, over the small of the back and cover these over with dry blankets to keep the heat in and cause the animal to sweat. Always apply mustard plaster over the back after the blankets are taken off. It is also recommended to apply a newly-flayed sheep skin over the loins, leaving it on for twenty-four hours. Keep the patient as quiet as possible.

Should this treatment not be effectual, follow with:

Laudanum	1 ounce or 4 dessertspoonfuls.
Extract of Belladonna	½ dram or 30 drops.
Fleming's Tincture of Aconite.....	10 drops.

Mix in a pint of lukewarm water and give as a drench every two hours until relief comes.

It is very important to remember that in cases of inflammation of the kidneys, medicines, such as saltpetre or sweet spirits of nitre, that act directly upon the kidneys should not be given. These organs should be allowed to remain as quiet as possible.

For after treatment give a teaspoonful of bicarbonate of soda in the feed three times a day. The diet should be of soft feed containing plenty of boiled flaxseed. Should the bowels be costive give an injection of warm water and a

little soap two or three times a day. This will have a soothing effect as well as tend to promote their regular action.

2. Chronic Inflammation of the Kidneys.

Causes.—Excessive and frequent use of medicines that have a stimulating effect upon the kidneys or the eating of large quantities of such food as pea or oat straw, which also acts directly upon the kidneys and among the causes more generally met with.

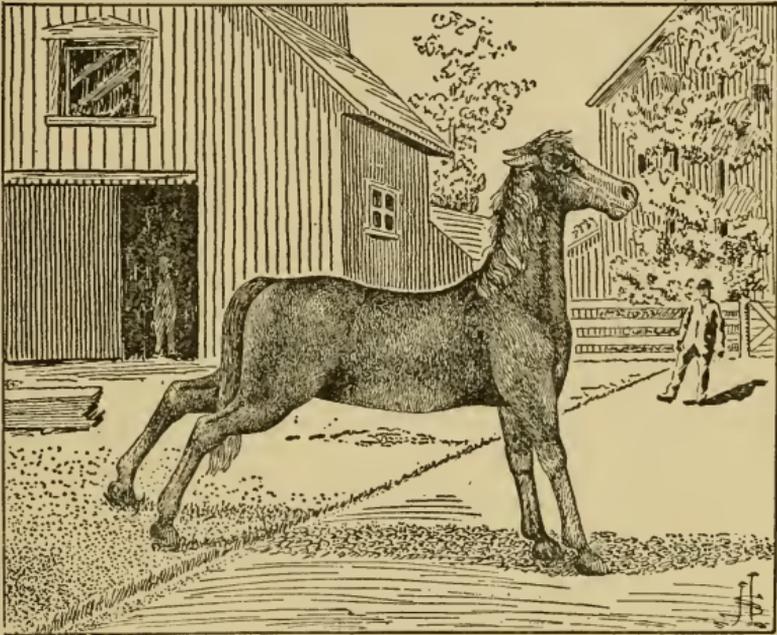


Fig. 20.—Position Assumed in Chronic Inflammation of the Kidneys.

Symptoms.—There is uneasiness as shown by frequent change of position from lying down to standing and vice versa. The hind legs are generally swollen, and while standing are placed far apart and as far back as possible. The pulse is but slightly affected. The urine is passed in small quantities, sometimes quite natural but sometimes streaked with blood. There is a stiffness in walking and pressure of the hand on the back indicates soreness.

Treatment.—Give a pint of raw linseed oil as a drench, and if there is much pain it is well to put in one ounce or four dessertspoonfuls of Laudanum and five drops of Flem-

ing's Tincture of Aconite. Feed on soft food containing plenty of boiled flaxseed and give a teaspoonful of bicarbonate of soda three times a day in the feed. Place a half-pailful of hot salt in a bag over the kidneys and keep this changed every hour until he gets relief. Give regular exercise and continue treatment with the following powders:

Nitrate of Potash or Saltpetre.....	¾ pound.
Ground Gentian Root	¾ pound.
Sulphate of Iron	¾ pound.

Mix and give a teaspoonful three times a day in feed.

3. Diabetes.

In diabetes the food is converted into sugar and passes off through the kidneys.

Causes.—It is the result of a weakened state of the system generally, such as that following some other weakening disease. It may also be the result of eating musty food.

Symptoms.—One of the most noticeable symptoms is the intense thirst, very large quantities of water being required to satisfy it. A case is known where the affected animal drank thirty-eight gallons of water in five hours. There is noticeable dullness and loss of appetite. The passage of urine is abundant and of a clear color, the coat dusty and finally hidebound. The decline is gradual and certain, finally ending in death.

Treatment.—Change the diet, and if in summer time, turn out to grass. If at any other time of the year give plenty of cooked feed, such as boiled oats or scalded chop stuff. Give pure water to drink in small quantities, but often, and

Tincture of Iodine ½ dram or ½ teaspoonful.

Mix in a pint of water, give once a day for four or five days, until there is a change for the better, after which use the following powders:

Sulphate of Iron	¾ pound.
Ground Gentian Root	¾ pound.

Mix and give a teaspoonful three times a day in the feed or on the tongue with a spoon.

4. Ischuria.

This is a condition in which the horse is unable to pass urine.

Cause.—It is the result of the failure of the kidneys to perform their duties.

Symptoms.—The principal symptom is the absence of the passing of urine.

Treatment.—Give one ounce (four dessertspoonfuls) doses of Sweet Spirits of Nitre three times a day until the passage of urine is re-established. Follow with:

Ground Gentian Root¼ pound.
Nitrate of Potash or Saltpetre.....¼ pound.

Mix well together and give a teaspoonful in the feed, three times a day until well.

The inability to pass urine may be the result of another condition. The kidneys may act properly but the water may be retained by the bladder. This may result from the following

Causes.—Spasms or contraction of the neck of the bladder, calculi or bladder stones working up into the neck of the passage may prevent the passage of urine. A horse will sometimes hold his water for such a length of time as to cause it. This is sometimes the result of being afraid of splashing the legs when making water upon the bare floor.

Symptoms.—There are frequent attempts to urinate or make water but without success. The pain is severe, so much so as to cause groaning. He stamps his hind feet and becomes very uneasy, sometimes lying down frequently. If the affected animal is a male he passes his penis in and out.

If there be any doubt as to the presence of this condition, oil the hand and pass it into the back bowel or rectum. As soon as the hand is up to the position of the bladder it is an easy matter to ascertain whether the bladder is greatly distended with water.

Treatment.—Should the cause be want of bedding to prevent the splashing of the legs shake some straw over the floor and give:

Laudanum1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre....1 ounce or 4 dessertspoonfuls.

Mix in a pint of water and give as a drench. If after half an hour there is not relief and a passage of urine, the water should be taken from the bladder with a catheter. This is a limber tube made for the purpose. This operation is easily performed on the mare. Oil the hand and pass it along the floor of the vulva for about four inches; at this point on the under side a small hole can be felt. Sometimes the passing of the finger about an inch into this hole causes her to

strain sufficiently to pass water. Should this not be the case pass the catheter carefully into the bladder through the small hole and drain off the urine. If the affected animal be a male, pass the catheter through the hole in the penis into the bladder and empty it. It is well to put a little sweet oil on the instrument before using it, as this will prevent friction and make the operation easier to perform.

One operation of this kind is generally sufficient.

5. Inflammation of the Bladder.

Causes.—Inflammation may be the result of injury such as that received in a difficult case of foaling. Exposure to the weather—cold rains or lying upon the damp ground may cause it.

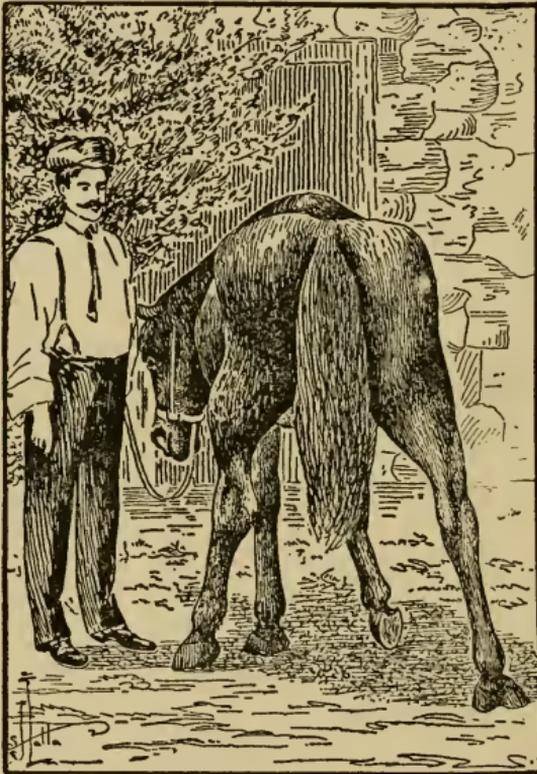


Fig. 21.—Suffering from Inflammation of the Bladder.

Symptoms.—The animal walks with a straddling gait, and makes water often, in small quantities. The urine is sometimes streaked with blood.

Treatment.—Give the following:

Laudanum1 ounce or 4 dessertspoonfuls.
 Raw Linseed Oil1 pint.

Mix and give as a drench. Apply heat over the small of the back in the form of a mustard plaster; also apply mustard around the back part of the belly. Keep the animal quiet and feed boiled linseed to act on the bowels. If there is not relief in two hours, give the following:

Laudanum1 ounce or 4 dessertspoonfuls.
 Fleming's Tincture of Aconite.....5 drops.

Mix in a pint of lukewarm water and give as a drench, repeating every two or three hours until relieved. Continue treatment with the following powders:

Ground Gentian Root¼ pound.
 Bicarbonate of Soda¼ pound.

Mix and give a tablespoonful twice a day in the feed.

6. Stones in the Bladder (Calculi).

These stones are more frequently found in the bladder. They may, however, be found in the kidneys, in the tubes leading from the kidneys into the bladder or in the tube leading from the bladder.

Causes.—It is usually the result of certain kinds of feeding. Turnips are liable to cause them. Should the drinking water contain a great deal of lime, calculi may be the result.

Symptoms.—The animal is uneasy and has colicky pains, which are more severe just after passing water. In some cases when there are a number of these stones, the animal after making water will pass blood. He may make water naturally for a few times, and then pass blood again.

Treatment.—Give plenty of soft feed containing plenty of linseed to loosen the bowels. Give:

Diluted Hydrochloric Acid.....½ dram.

Mix in a pint of water and give as a drench three times a day. The action of this acid is to dissolve the stones. Continue the use of this until the animal is better.

7. Inversion of the Bladder.

This is met with in mares only, and generally at the time of foaling.

Causes.—Severe straining forces the bladder inside out through the vulva from which it hangs.

Treatment.—If noticed at the time it occurs it may be turned back and pressed into its natural position with the hands and fingers. This will be much more difficult should it become swollen and enlarged. Should there be much pain, give:

Laudanum.....1 ounce or 4 dessertspoonfuls.
Raw Linseed Oil1 pint.

Follow every two hours until relieved with a drench of one ounce or four dessertspoonfuls of laudanum in a pint of water.

8. Dribbling of the Urine (Euniesis).

Causes.—This may arise from one or both of the following causes, viz.: Irritation of the bladder or paralysis of the neck of the bladder.

Symptoms.—The principal symptom is a constant dribbling of the urine.

Treatment.—Give a teaspoonful of powdered nux vomica twice a day. Should the urine appear thicker than usual give a teaspoonful of nitrate of potash or saltpetre in the feed once a day. Continue this treatment for a week or two.

9. Paralysis of the Bladder.

Causes.—Paralysis of the bladder is more frequently noticed in animals that are very poorly kept. It usually results from a weakened condition of the system or exposure to cold.

Symptoms.—In a pure case of paralysis it is impossible for the affected animal to pass water as the bladder is without power to contract. As a consequence there is much pain because of the great expansion of the bladder to contain the amount of urine which is not carried off in the usual manner. This great distension of fullness may be felt by oiling the hand and passing it into the rectum.

Treatment.—Draw the water off with a catheter (a limber tube made for the purpose) every night and morning and give the following:

Powdered Nux Vomica $\frac{1}{4}$ pound.
Ground Gentian Root $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day in the feed until the power to pass urine has been regained.

CHAPTER VII.

DISEASES OF THE GENITAL ORGANS OF THE HORSE.

1. Inflammation of the Testicles.

Causes.—This usually results from an injury of some kind—a kick or a blow, striking the legs (as with a trotting stallion), etc. The testicles may be injured by lying down.

Symptoms.—The symptoms are quite noticeable. There is much pain. The testicles are swollen and very sore. There is stiffness of movement and the gait is straggling. The horse will not lie down.

Treatment.—Give physic consisting of

Bitter Aloes	8 drams.
Fleming's Tincture of Aconite	10 to 12 drops.
Laudanum	1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench.

Bathe the testicles with warm water and then apply a hot poultice to them, consisting of half linseed meal and half bran. This poultice can be held to its place by means of cords over the back. Change the poultice every two or three hours and keep bathing well with warm water. Clothe the body well and, if there is desire to eat, give plenty of soft feed containing boiled flaxseed. Should this not bring relief, follow with:

Laudanum	1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench three times a day until better.

2. Dropsy of the Scrotum, or Bag (Hydrocele).

With dropsy a large amount of fluid collects in the scrotum, causing it to look large and flabby.

Causes.—It often follows a case of inflammation of the testicles.

Treatment.—Give iodide of potassium—a teaspoonful twice a day in the feed. In some cases it is recommended to draw the fluid off by tapping the scrotum with a small trocar

and cannula. It is better, however, to try to absorb the fluid (by using medicines) before tapping, as it is not so likely to return.

3. Injuries to the Penis.

Causes.—The penis of a stallion or gelding is often injured by being hit with a whip or stick when protruding from the sheath or by being frost-bitten. That of a stallion is sometimes injured by being handled roughly or by receiving too many mares.

Symptoms.—There is a considerable amount of swelling, so much so as to prevent the penis from being returned to the sheath. There is of course much soreness.

Treatment.—Bathe well with warm water until the swelling subsides. Tap, with a small sharp penknife, the swollen parts to allow the water and blood to run off. This will help to reduce the swelling. Next oil the penis well and if possible return it to the sheath so that it may have the benefit of the natural heat of the body. It may be kept in position for a few hours at a time by plugging the opening of the sheath with cotton batting. Bathe, oil and replace the penis two or three times a day until it regains its strength, and give the following:

Ground Sulphate of Iron $\frac{1}{4}$ pound.
Powdered Nux Vomica $\frac{1}{4}$ pound.

Mix and give a teaspoonful three times a day in the feed until the animal can draw the penis back into the sheath himself.

4. Swelling of the Sheath.

Causes.—Swelling may result from what is known as a dirty sheath. Bad blood and disordered kidneys may cause it.

Symptoms.—There is swelling about the sheath and hind legs. The urine is thick and yellow.

Treatment.—With warm water and soap wash out the inside of the sheath and grease it with lard. Give a physic ball, or drench, mentioned in the receipts at the back of this book. Give the following powders:

Nitrate of Potash or Saltpetre $\frac{1}{4}$ pound.
Sulphur $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day in the feed. Allow a little exercise every day and the swelling will soon disappear.

5. Growths on the End of the Penis.

These growths are of various kinds and prove very troublesome and painful when urinating or making water.

Causes.—It is not possible to state positively what is the cause in many cases. Sometimes, however, a growth may result from the neglectful treatment of a sore.

Treatment.—Should this growth not be very large it may be burned off with caustic potash. Wash carefully with warm water and soap, then touch the affected part with a stick of caustic potash. This will burn it and in time a scab will form. When the scab falls off repeat the operation until the growth has disappeared. Dress every day until healed with white lotion.

6. Warts Around the Sheath.

Warty growths about the sheath may be got rid of in two ways, viz.: by cutting with a cord or a sharp knife. To remove with a cord it is only necessary to tie it tightly round the wart to stop circulation through it, when it soon drops off. Should they be cut off with a sharp knife the injured spot should be burnt with a stick of caustic potash. These operations as a general rule do not cause the loss of much blood.

7. Clap or Gonorrhoea.

Causes.—This disease is caused by intercourse with a diseased mare.

Symptoms.—The penis is sore and swollen and there is a slight discharge of a matter-like substance. Mares with which the horse has intercourse when in this condition will also become affected, as the disease is contagious.

Treatment.—Do not allow the service of mares until recovered. Wash the penis with lukewarm water and a little castile soap. Dry with a soft cotton cloth and apply to the outside and inject into the penis the following:

Sulphate of Zinc	2 drams or 1 teaspoonful.
Sugar of Lead	2 drams or 1 teaspoonful.

Dissolve in a pint and a half of lukewarm water and shake well. Use a sponge and saturate the penis thoroughly. Continue the treatment every day for a week or so until recovery. Give the following powder:

Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.
Sulphate of Iron	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix and give a teaspoonful three times a day in the feed.

CHAPTER VIII.

DISEASES OF THE GENITAL ORGANS OF THE MARE.

1. Diseases of the Ovaries.

Enlargement is the most common affection of the ovaries.

Causes.—The causes are not known.

Symptoms.—The mare is very irritable and continually in season. She falls off in condition and if served does not get with foal. This in fact is a frequent cause of being barren.

Treatment.—If the mare is in good condition give a physic consisting of:

Bitter Aloes	8 to 10 drams.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Allow her to stand in the stable a couple of days after the drench, and follow up with a powder of:

Iodide of Potassium	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre.....	$\frac{1}{2}$ pound.

Mix thoroughly and give a teaspoonful three times a day.

2. Whites (Leucorrhœa).

This disease is met with mostly in old mares that are in poor condition and that have ceased to breed. There is a white glary discharge from the vulva behind, which looks like curdled milk. This discharge has a bad smell. The animal falls off in condition, becoming thin and weak.

Treatment.—Wash out the passage thoroughly clean with a sponge. Use hot water and soap and have the hand well oiled. It may be done with an injection pump and several pails of lukewarm water.

After bathing, wash the womb with the following lotion:

Sulphate of Zinc	1 teaspoonful.
Sugar of Lead	1 teaspoonful.
Powdered Alum	1 teaspoonful.

Mix in a pint of lukewarm water, and with a sponge rub the inside of the womb with this lotion every second day till the discharge stops. Give the following powders:

Sulphate of Copper	$\frac{1}{4}$ pound.
Sulphate of Iron	$\frac{1}{4}$ pound.

Mix and give a teaspoonful twice a day in the feed; feed on rich food and give regular exercise, and, as a general thing, she will soon be all right. It is very dangerous to put the mare to a horse while in this condition as there is a possibility of the horse catching it. Should she be served, however, and should the horse become affected, it constitutes what is known as clap or gonorrhœa. See Chap. VII., Sect. 7.

3. Barrenness.

This is a condition in which it is impossible to get the mare with foal.

Causes.—It is the natural consequences of some defect in the reproductive organs such as diseased ovaries or contraction or closure of the neck of the womb. It may be the result of misplacement of the womb so that the neck becomes twisted to one side.

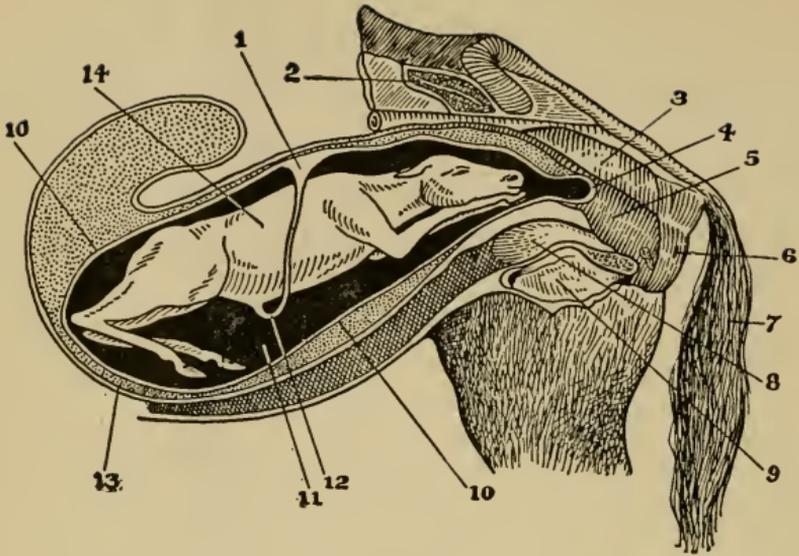
Symptoms.—The main symptom of course is the failure to get the mare with foal.

Treatment.—Pass the oiled hand into the passage and examine the neck of the womb. If it is found that the opening is closed or contracted it may be gradually opened with the fingers. Should this be difficult saturate a sponge with extract of belladonna, press it against the neck of the womb so as to bathe it with the medicine. In one hour after this the opening may be easily made because of the relaxing effect of the medicine upon the muscles. Allow service of the horse after this and it is usually successful.

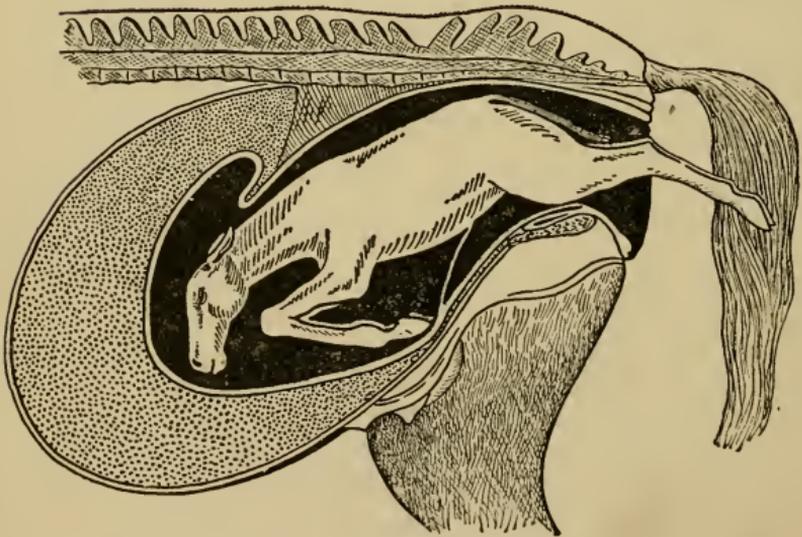
Should the neck of the womb be twisted to one side, straighten as nearly as possible and allow service at once.

Should barrenness be the result of diseased ovaries nothing can be done.

Sometimes a change of horses is effective. **A mare** that will not breed to one horse will sometimes be fruitful to another. Mares will breed as young as two and as old as twenty; some even older than this.



No. 1.



No. 2.

EXPLANATION OF PLATE X.

POSITION OF FOAL IN WOMB.

No. 1.

This plate illustrates the natural position of the foal living in the womb, showing the natural way it should come --front legs and head first.

- | | |
|--|--|
| 1. Navel string. | 10. Cleaning, placenta or after-birth. |
| 2. Rump bones. | 11. Fluid, or water around the foal. This come away when the water-bag breaks. |
| 3. Back bowel, or rectum. | 12. Navel. |
| 4. Neck of womb. | 13. Womb. |
| 5. Vagina, or passage out from womb. | 14. Foal, or foetus. |
| 6. Vulva. | 15. Cleaning, placenta or after-birth. |
| 7. Tail. | 16. Womb. |
| 8. Bladder. | |
| 9. Mare's milk bag, or mammary glands. | |

No. 2.

This plate illustrates what is termed a breech presentation, in other words the foal is coming backward. In such a case the hind legs should be straightened out and the foal will usually come away without difficulty. Do not try to turn it, but allow delivery as illustrated.

CHAPTER IX.

FOALING (PARTURITION) AND THE DISEASES FOLLOWING IT.

THE mare usually carries her foal eleven months. The time, however, varies considerably in many cases. Some go a few days less than this time and others have been known to carry the foal as long as twelve months.

The covering or sack that envelops the foal is known variously as the placenta, the cleaning, or the after birth. This sack is attached to the inner side of the womb by means of little processes called villi.

The navel string or umbelical cord attaches the foal to the placenta. Through this cord nourishment to the foetus is supplied during the time it is in the mother's womb.

Between the foal and the after-birth is a fluid (the use of which is to protect the foal from being injured while its mother is moving about). This is called the amoniotic fluid.

I.—FOALING (PARTURITION).

Parturition is the act of bringing forth or being delivered of the fully developed foal, and as before stated usually takes place at the end of the eleventh month after being served by the male.

1. How to Tell When a Mare Is With Foal.

The mare becomes much quieter in disposition and thrives better. The belly gradually becomes distended. At or about the end of the sixth or seventh month the movement of the foal may be felt. This is more likely to be the case after the mother has taken a drink of cold water, and because of the foal lying a little to the left side it is more likely to be felt on this than on the right side.

The neck of the womb of a pregnant mare is sealed tight. This may be ascertained by passing the hand well oiled into the passage. While making an examination in this way it is often possible to feel the movement of the foal. This, of course, is the surest method.

The mare during her period of pregnancy does not come in season every three weeks, although we have met cases where a mare with foal has accepted service of the horse.

2. How to Care for a Mare With Foal.

Endeavor to keep her in her natural condition as nearly as possible. Feed fairly well but do not allow her to become too fat. Give plenty of easy exercise by allowing her to go about outside in fine weather. Light, steady work free from undue exertion is not an injury, but on the contrary is beneficial, although heavy pulls, rough usage, or anything causing sudden strain—backing up suddenly, etc.—must be avoided, as this is very dangerous and liable to produce premature delivery—miscarriage or abortion.

3. Signs of Immediate Foaling.

There is a noticeable falling away at each side of the tail and, as a general thing, wax or milk will run from the teats for a day or so before foaling. A few hours previous to delivery the mare seems to be very uneasy. Labor pains come on, and with the pains she is noticed to strain. Very

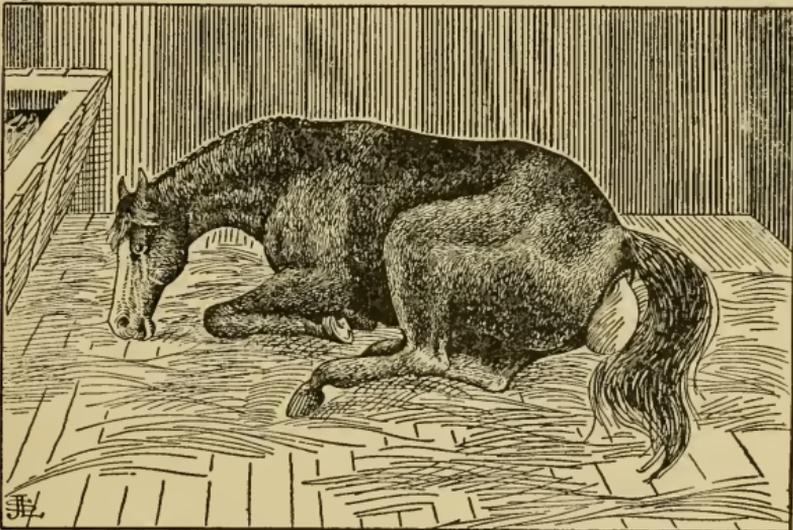


Fig. 22.—Immediate Signs of Foaling—The Water Bag.

soon the water bag appears, and as it comes the pains become more severe. She strains and lies down. If the foal is coming as it should, the head and front feet will make their appearance first. Delivery should take place now in a very few

minutes. Should there be difficulty it is well to pull upon the legs while she is straining. Generally the cleaning comes away with the foal. Should the cleaning come away without being broken there is danger of the colt being smothered, so it is better for someone to be around during delivery to break the cleaning, or after-birth, and save the foal from smothering, should this be necessary.

4. Navel String (Umbilical Cord).

Should this cord not break immediately after delivery, with a piece of shoe string tie it very tightly one inch from the belly, then cut the navel cord an inch below where it is tied on that side next to the mother. Leave the string on till it drops off. This prevents bleeding.

5. The Natural way for the Foal to Come.

The foal should come with front quarters first, the front feet and head coming together.

II.—DIFFICULTIES MET WITH IN FOALING.

Should delivery not take place in half an hour after the water bag comes, it is safe to conclude that everything is not as it should be. When conditions are natural a mare is usually delivered in a few minutes. It is better to make an examination and rectify whatever is found wrong at once, as it is much easier done at this time than in a couple of hours, and at the same time prompt action may save the life of the mare as well as that of the colt.

6. Neck of the Womb Closed.

In some cases the labor pains come on but delivery is prevented because of the neck of the womb being closed. In many cases it is possible to open the entrance to the womb by oiling the hand, inserting it into the passage and working about the opening with the fingers. Should this be impossible saturate a sponge with extract of belladonna and bathe the neck of the womb. A few minutes after this operation the opening may be effected easily.

7. Dropsy of the Belly of the Foal.

Should there be difficulty after the appearance of the legs and head it is reasonable to conclude that there is something not right. Use gentle force by pulling. Should this not be successful oil the hand and arm or lubricate well with

warm water and soap. Press the foal back into the womb and make a thorough examination. Should the difficulty be dropsy (the belly distended with water) make a small opening in the belly of the foal with a sharp knife to allow the water to come off. Great care must be exercised to guard the knife well with the hand to prevent injury to the mother. After this operation, with a little assistance, delivery usually takes place without further difficulty.

8. Enlarged Head.

Sometimes the foal's head is enlarged with water on the brain. In this case the foal comes so far that only the legs and the point of the nose may be seen. After using a little force without success examine the head. If it is enlarged, with a sharp knife cut a hole in the softest part of the enlargement and allow the water to escape from the brain. Now, by giving the mare a little assistance, delivery will take place without further difficulty.

9. Legs and Head Not Together.

The foal may come in various positions. Should the head and one front leg come, force the foal back and bring the other leg forward. This is usually all that is necessary. Should the front legs come without the head, press the foal back, make a noose on a small piece of rope four or five feet long, slip this over the head. Allow an assistant to pull gently upon the rope; at the same time help to straighten the head and neck. When this is done pull gradually upon the legs and the foal will come without any trouble. Should the head and neck come without the legs, the foal must be pressed backward and the legs brought forward before assistance is given.

Cases are met with where the four legs come together while the head remains turned back. In such a case it is always best to force the front legs back as far as possible with the hand and arm and then bring the foal forward, rear end first. Do not under any consideration attempt to force delivery head first in a case of this kind.

10. Rear End First.

The foal sometimes comes backward, and if the hind legs come first there is usually no difficulty. If the legs do not come as they should and the tail, rump and hips only can be

felt, the legs being turned under, it is rather a difficult case. Delivery can be accomplished, however, by pressing the hind quarters of the foal upward and toward the front of the womb. Slip the hand down and take hold of a foot of one hind leg. Pull upward and backward until the leg is brought out into the passage. Bring the other leg out in the same manner. After this is done the difficulty is practically over.

11. Deformities.

Deformities or freaks of nature are sometimes met with, but as these are so varied and unlike each other it is impossible to lay down any special method of procedure. The operator must, after making a thorough examination, act upon his own judgment and apply as nearly as is deemed advisable the plans laid down in the previous sections.

12. Twins.

If twins are suspected make a thorough examination. Bring the foal nearest the rear, first. Care must be taken not to pull upon a leg of each foal. The second usually comes easily. In any case where it is necessary to force the foal back into the womb, it is much easier accomplished when the mare's hindquarters are raised. This may be done by allowing the hind feet to rest upon boards or some manure.

Avoid so far as possible the using of hooks, knives, etc., as there is always danger of injury to the womb. Use the hands and pieces of fine rope as much as possible. It is wise, however, to always have good instruments on hand should their use be absolutely necessary.

III.—DIFFICULTIES, DISEASES, ETC., THAT FOLLOW FOALING.

It is too often the case that many consider the danger over as soon as the mare is delivered. The mother as well as the colt, however, are both in a weakened condition, and each at this time should receive the best of care until the system has so regained strength as to be able to perform its functions naturally.

13. Cleaning, Placenta or After-Birth.

Sometimes the placenta does not come away properly. Part remains attached to the inside of the womb and part hangs out behind.

Treatment.—Give:

Raw Linseed Oil	1 pint.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls
Fluid Extract of Belladonna.....	.25 to 30 drops.

Shake well together and give as a drench. Place a half-pail of hot salt, in a grain bag, over the kidneys, and throw a blanket over this to keep in the heat. Keep the mare quiet for a few hours and she will generally clean herself and save the bother of removing it with the hand. If this treatment does not cause it to come away in twenty-four hours after foaling, it is necessary to take it away. Have the mare held by the head, one of the front legs held up so that she cannot kick, and have another assistant hold the tail out of the way. Roll up your sleeves and oil your right arm and hand. Take hold of the cleaning with your left hand while you pass the right into where the cleaning is attached to the womb. Commence at the top, gradually forcing the cleaning off the inside of the womb. When started, work it all off by pulling gently, and the mare, as a general rule, will be all right.

14. After Pains.

These are the labor pains continued after the foal is out of the womb.

Symptoms.—The mare is in pain, lies down, gets up. These symptoms are generally accompanied by straining, more or less.

Treatment.—Keep her quiet, and watch her to prevent the forcing of the foal bed out. Give the following to relieve the pain:

Laudanum.....	1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench every hour and a half or two hours until relieved. Cover the body well, place a half-pail of hot salt in a bag over the kidneys and give a hot bran mash.

15. Foal Bed Turned Out.

This condition is fully dealt with in Part III., Diseases and Treatment of Cattle. It is much more frequently met with in cows, being rarely the case with mares.

16. Rupture of the Womb.

This is usually a serious matter.

Causes.—Rupture of the womb usually occurs during labor because of violent straining or throwing herself heavily to the ground or floor.

Symptoms.—Sometimes before delivery the bowels hang from behind and even drag upon the ground. They soon become inflamed and symptoms very similar to those of inflammation of the bowels manifest themselves. In other cases the rupture is discovered when making an examination of the foal in the womb. If rupture be suspected after delivery, such may be ascertained by an examination with the hand. The extent of rupture may be slight or serious, and in cases where the bowels protrude from behind it is better to destroy her, as nothing can be done to save her life.

Should it be found, by examination after delivery, that the womb is ruptured, the case is serious, yet there is a possibility of recovery if the rupture be on the upper side.

Treatment.—Do all possible to keep down inflammation by the application of heat. Apply hot blankets and hot bags of salt to the back and in some cases it is well to apply mustard to the belly. Give

Laudanum.....1 ounce or 4 dessertspoonfuls.
 Sweet Spirits of Nitre....1 ounce or 4 dessertspoonfuls.
 Fleming's Tincture of Aconite.....10 drops.

Mix in a pint of luke warm water and give as a drench every six hours until the mare is relieved. It is well to change the salt every hour to keep up the heat. Should the appetite be good feed soft feed containing flax seed to keep the bowels loose. It is better to allow the wound to heal naturally because by opening it and applying medicine more harm than good is usually done. Should she be costive give raw linseed oil in drenches of a pint and injections of warm water containing a little castile soap, twice a day until the bowels move freely.

17. Rupture of the Passage.

This, too, usually occurs at the time of delivery and may be the result of being punctured by the legs of the foal because of their not coming straight. It may be the result of delivery of an extremely large colt.

Symptoms.—In some cases, when the mare tries to foal herself, you find the legs out—one out the natural passage, while the other is out through the anus. In other cases, after the mare has foaled and is apparently all right, you first notice the manure coming out through the vulva instead of through its natural passage. Oil the hand and arm, pass them into the vulva and examine the passage thoroughly; if ruptured there will be a tear somewhere in the walls of the passage, generally on the upper side between it and the rectum.

Treatment.—Should the puncture of the walls be caused by a leg of the foal, oil the hand and arm, force the legs back into the womb and then bring them forward properly. Keep her quiet, give soft feed containing flaxseed and if in the spring of the year allow her to feed upon grass. Should she be costive, give small doses of raw linseed oil, half a pint at a time just sufficient to keep the bowels loose. Should there be indications of fever or swelling behind and about the parts put an ounce or four dessertspoonfuls of laudanum in each dose of the oil. Do not attempt to stitch up the wound, simply inject, into the passage, four quarts of warm water and soap containing twenty drops of carbolic acid. This flows down through the rupture and has a cleansing and healing effect. Repeat the injections twice a day. It may be added that it is much better to allow nature to do the work than to depend upon medicine in cases of this nature.

18. Inflammation of the Womb (Metritis).

Metritis is an inflammation of the substance of the womb.

Causes.—It is the result of difficult cases of foaling, when a great deal of force is used, exposure lying on the damp ground, or getting a chill while warm, after delivery.

Symptoms.—It usually occurs three or four days after delivery. There is uneasiness, pain, and sometimes straining, and in straining sometimes a dark red fluid will pass from her. She lies down, moans and looks around at her flanks. The pulse is quick and wiry; the ears and legs are first hot and then cold. Cold sweat appears around her sides and flanks. The vulva is swollen, and she passes urine or water in small quantities.

Treatment.—Give

Fleming's Tincture of Aconite.....10 to 12 drops.
 Laudanum1 ounce or 4 dessertspoonfuls.

Mix in a pint of luke warm water and give as a drench. Apply blankets wrung out of hot water over the kidneys, and after the blankets are taken off apply a mustard plaster. If costive give injections of warm water and soap and a pint of raw linseed oil every day until the bowels move freely. Wash the womb out every day with warm water containing a few drops of carbolic acid—about ten drops to the pint. Should relief not come after the first drench, give

Sweet Spirits of Nitre....1 ounce or 4 dessertspoonfuls.
 Laudanum1 ounce or 4 dessertspoonfuls.
 Fleming's Tincture of Aconite.....10 drops.

Mix in a pint of lukewarm water and give as a drench every three hours until relieved. Give plenty of warm water to drink, feed on soft food, keep her warm, and see that the foal keeps her well sucked out. This disease sometimes terminates in leucorrhœa, or whites.

19. Inflammation of the Vagina and Vulva, or Passage from the Womb.

Causes.—This, too, is the result of difficult cases of delivery.

Symptoms.—The vulva is generally very much swollen, and the inside of the lining is of a red color.

Treatment.—Give a pint of raw linseed oil and keep the bowels loose by feeding soft feed containing boiled flaxseed. If in the spring, turn out to grass. Bathe the outside of the vulva with warm water and tap the swollen parts of the lips with a lance to allow the water to escape and thus bring down the swelling. Bathe three times a day, wipe dry and apply the white lotion.

20. Injuries to the Hips During Foaling.

Symptoms.—There is a stiffness and a falling away of the muscles on the affected side.

Treatment.—Bathe the affected parts with warm water and salt every second day. Rub dry with a cloth and apply the acid liniment. Continue this treatment every second day until the stiffness disappears, and the muscles regain their natural size. During the treatment turn out to pasture, as she needs gentle exercise. It generally takes some time for complete recovery.

21. Inflammation of the Milk Bag (Garget).

This is inflammation of the glands which secrete the milk; it is not so common in mares as it is in cows.

Causes.—It is caused by getting cold, by lying on the cold, damp ground in the fall or spring, by improper sucking or by an injury of some kind.

Symptoms.—The bag is hard, hot and tender and is slightly swollen. The appetite is poor and there is some indication of fever. It is difficult to milk her because of the soreness of the bag, and the milk is thin and watery, containing curdy-like milk which comes out in jerks.

Treatment.—Give

Laudanum1 ounce or 4 dessertspoonfuls.
Nitrate of Potash, or Saltpetre.....1 teaspoonful.
Fleming's Tincture of Aconite.....5 drops.

Mix in a pint of lukewarm water and give as a drench, but if she should be costive mix in a pint of linseed oil instead of water. Bathe the bag well with warm water and vinegar three times a day, wipe dry and apply the white liniment weakened one-half by the addition of water. After applying the liniment oil the bag well with goose oil. The bag should be well milked out, either by the hand or by allowing the colt to suck.

If this treatment is not effective because of not being taken in time, the bag festers, continues to swell and becomes very sensitive and sore. In a short time the milk ceases to flow and matter forms. Treat by bathing with warm water and vinegar, after which apply liniment and goose oil. Continue this treatment until a soft spot can be detected in the swelling. Lance at this point to allow the matter to escape. After lancing continue bathing with warm water and vinegar four or five times a day, but instead of the liniment use the white lotion.

Should the case be a severe one it is better to prevent the colt sucking for a time, as the impurity of the milk may make him sick.

22. Swelling Along the Belly Before Foaling (Dropsy).

Symptoms.—This swelling commences at the bag three or four weeks before foaling and continues gradually forward until it extends out between the front legs. The general appearance otherwise seems to be quite natural and the appetite is apparently as good as usual.

Treatment.—If she has been remaining in the stable, turn her out so that there may be plenty of gentle exercise every day. Give powders of

Nitrate of Potash or Saltpetre.....	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root.	¼ pound.

Mix thoroughly together and give a teaspoonful twice a day in the feed until she foals.

This is not a serious disease, but it is well not to neglect treatment, although it usually disappears after delivery.

23. Premature Delivery (Abortion).

If a mare be liable to lose her foal or be delivered before her natural time, it usually occurs before the sixth month. It may occur, however, after that time.

Causes.—It usually comes as a result of a severe strain of some kind, such as that necessary in pulling or backing a heavy load, slipping or falling, etc. The smell or sight of blood may cause it.

Symptoms.—There is uneasiness. She lies down and stands up alternately. The labor pains soon come on and the water bag makes its appearance. Should conditions be favorable, delivery takes place in the usual manner.

Treatment.—Should there be difficulty, proceed as directed in Sub-division II. of this chapter. Give

Raw Linseed Oil.....	1 pint.
Spirits of Turpentine.....	1 ounce or 4 dessertspoonfuls.

Mix and give as a drench. Should inflammation of the womb follow abortion, refer to the treatment outlined in Section 18 of this chapter.

24. "Drying" a Mare.

Give eight drams of bitter aloes and a teaspoonful each of ginger and bicarbonate of soda. Dissolve in a pint of lukewarm water and give as a drench. After giving this drench allow her to remain quietly in the stable for a day or two. Bathe the bag once a day with forge water. This can be obtained at any blacksmith shop. It is the water in which the blacksmith cools the hot iron. Continue bathing for a week. After bathing, each time, milk out a little of the milk once a day, and gradually discontinue this by doing so every other day, then every third day, then once a week, then discontinue milking altogether. Milk the bag dry the last time. During treatment feed dry, hard food.

CHAPTER X.

DIFFICULTIES WITH AND DISEASES OF YOUNG FOALS.

IT is an undeniable fact in nature that "like begets like"; in other words, applying this principle to the horse, a sound and healthy dam and a sound and healthy sire will produce, under natural conditions, sound and healthy offspring. But, although it may be ever so important to choose breeding stock from the best that can be had, or at least from the best that one can afford, in order to produce the best offspring possible under existing circumstances, it must be remembered that the breeder's responsibility does not end in merely producing. When the foal is young, however promising may be the possibilities, the wise breeder will be careful to note these possibilities and so care for and nurture the foal that it may develop into the best possible at maturity. With this end in view it is important to become familiar with difficulties and diseases treated of in the following sections of this chapter.

1. Constipation.

It is often a very troublesome matter to get the bowels of a young foal to move naturally.

Causes.—There are many conditions that may cause constipation in young foals. The commonest being the previous diet of the mother or the fact of not allowing the foal to receive the mother's first milk. Should a mare be fed on dry feed and foal early in the spring the foal is liable to be troubled with constipation.

Symptoms.—There is a noticeable fullness and less desire to suck. He apparently has a desire to pass manure, as indicated by straining, but without success. He lies down in some cases and looks round at his side as if in pain.

Treatment.—Give, with a syringe, injections of one pint of lukewarm water containing a little raw linseed oil, three or four times a day. It may be necessary in some cases, if the manure balls be hard and large, to oil the finger, pass it into the rectum and remove them; care must be exercised, however, in doing this to prevent undue irritation of the bowels. Mix a teaspoonful of whisky and a dessertspoonful of

raw linseed oil well together. Give this three times a day on the tongue until the bowels move and there is improvement in the condition of the colt. Keep him warm and comfortable and prevent him getting too much milk, by milking the mare out as often as necessary.

The amount of whisky and oil here mentioned is sufficient for an ordinary colt a day or two old. Judgment must be exercised in regulating the dose in other cases.

2. Diarrhoea.

Causes.—This may be caused by exposure too soon after birth—being out in bad weather or lying on the damp or cold ground. Excitement as a result of turning the mare out with other horses, running about a great deal or sucking the mother while she is heated from work may cause it. In addition to this it may be added that the condition of the mother's milk—too rich or too weak—is a frequent cause of diarrhoea.

Symptoms.—There is a thin, watery discharge from the anus. This may be seen sticking about the tail and legs. He has little desire to suck and soon becomes gaunt and dull. In addition to these symptoms he may sometimes have gripping pains.

Treatment.—Remove the cause, if it can be ascertained. Keep the mare and foal very quiet. Should poor milk be suspected as the cause, feed the mother stronger or more nutritious food, and on the other hand if the milk be too rich feed lighter. Give the foal:

Whisky	1 teaspoonful.
Laudanum	20 drops.
Flour	1 teaspoonful.

Mix with a little of the mother's milk and give every four or five hours until the foal is relieved. In all cases of this kind keep the body warm, as it has a tendency to relieve the congested state of the bowels. This is a dose for a small foal two or three days old. Use judgment in regulating the dose in other cases.

3. Leaking at the Navel and Rheumatism.

Causes.—It is supposed by some to be due to a germ which finds its way in at the navel, while others attribute it to a cold, a chill or an injury.

Symptoms.—The first noticeable symptom is a lameness of one of the legs. Some of the joints are swollen and sore.

The urine instead of coming naturally comes through the navel. In possibly twenty-four hours, or thereabout, the swelling is removed to one of the other legs. After removing from one part to the other in this manner for a few days the rheumatism settles in one of the joints, where it festers and breaks. The discharge smells very bad and apparently comes from the bone. In time the discharge ceases, heals up, only to break out in like manner at some other point, and so continues until the colt dies from weakness. In other cases the swelling does not break and discharge, but there is a continual running from the navel which, because of its weakening effect, finally causes death.

Treatment.—When the discharge from the navel is first noticed, if treated properly, it can be cured. Apply Monsell's solution of iron to the navel with a feather, four or five times a day. This will stop the discharge. Rub the swollen joints four or five times a day with white liniment, and give the foal half a teaspoonful of salicylic acid, on the tongue, three times a day. If taken in time, before the joints begin to run, this treatment will invariably effect a cure. After the joints break, bathe with warm water three or four times a day, and apply white lotion. Sometimes a pure case of leaking at the navel without rheumatism is met with. Treat this by applying Monsell's solution of iron to the navel, with a feather, four or five times a day, until it stops leaking. Keep the colt very quiet and warm.

4. Weakness of the Legs and Joints.

Bandage the legs to support and strengthen them. Massage or hand rub them well. Should the colt be unable to stand, raise him up four or five times a day to enable him to suck and give him every chance possible to strengthen his legs.

5. Crooked Legs.

In some cases the foal may be "over on the knees," and in others the defect may be in the hind legs.

Treatment.—Leave the foal alone; do not try to do anything to the legs. Feed him well, and as he gets strong his legs will straighten.

6. Distemper.

This is frequently met with in foals, and is fully dealt with in Chapter XV, Section 5.

CHAPTER XI.

CASTRATION AND THE DIFFICULTIES AND DISEASES THAT FOLLOW.

UNDER favorable conditions of health, castration should be performed at the age of one year. The safest months are April and May, and the safest time eight or ten days after being turned out to pasture when he is shedding his coat.

I.—PRECAUTIONS BEFORE OPERATING.

Never operate on a colt unless he is in good condition and healthy. See that he has no distemper or any such disease. Choose good weather—not too hot or too cold—and avoid east winds and damp weather. It is necessary that hands and instruments be thoroughly cleansed by washing them in warm water, a little soap and a few drops of carbolic acid. If the age be above a year it is best to feed very light the day before the operation, as there is less danger from being thrown and tied and also from the operation itself, when the bowels are empty. It is important to ascertain whether or not the colt has ever suffered from rupture, as he must be acted upon differently. Examine the testicles to see that they are down. An aged horse's sheath is sometimes dirty, and when such is the case it should be washed out, cleansed and oiled well with lard a few days previous to operation, to prevent after-swelling. Generally speaking, after these precautions, so far as the animal is concerned, he is ready for the tackling.

II.—CASTING OR THROWING.

There are several methods of doing this. It is only necessary here to mention two of the most important.

1. The Belt Tackling.

The Belt Tackling is the simpler of these, the easier to handle and that more generally used in this country. We have used it successfully in our own practice and confidently

recommend it as the best. Fig. 23 illustrates this method so clearly that it is unnecessary to enter into any detailed description. Full instructions are supplied with each outfit, which may be obtained from the Detroit Instrument Co., Detroit, Mich.

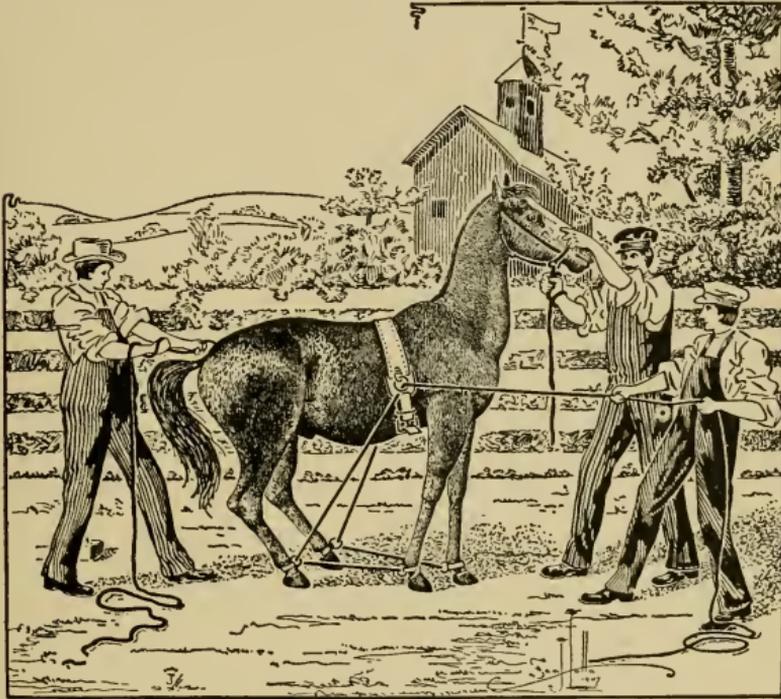


Fig. 23.—Castration—The Most Approved Method of Casting or Throwing a Horse.

2. The Farmer Miles' Tackling.

The Farmer Miles' Tackling is more adapted for use in castrating ridglings or rig colts, and is the best for this purpose, as the testicles remain up in the belly and do not come down into the bag. It is also supplied by the same company, together with full instructions for use and method of operation.

III.—METHODS OF OPERATING.

The methods of operating upon the testicles is as varied as those of casting the animal. Each no doubt has advantages, but at the same time each method must be carefully studied and carefully carried out in order that the best results may follow.

3. Castrating with Clamps.

Clamps are generally made out of cedar, from four to five inches long, hollowed out in the centre and loaded with green salve, the receipt of which may be found in Part V. Tie one end of the clamp with strong carriage trimmers' twine and leave the other end loose. Take hold of the testicle with the left hand and cut lengthwise into the scrotum, or bag, with a sharp knife, close to the median raphe. Always have the knife sharp, and make a sufficiently large cut to allow the testicle to slip out; then take hold of the testicle with the left hand and the clamp with the right and slip it over the cord, draw the cord just moderately tight and spread it out in the clamp. Tighten the clamp at the end that is not tied, with castrating pincers, and tie this end securely tight with the twine mentioned. Take off the pincers and operate on the other testicle in a similar manner. When this is done, cut off the testicles and part of the cord, leaving about half an inch of it below the clamps. In this way the clamps are prevented from slipping off.

To load the clamps some use red precipitate—two grains to an ounce of lard or vaseline. We ourselves use and recommend the green salve, the recipe for which is given in Part V.

4. Castrating with the Ecraseur.

This is a new method of operation, and gives results that are satisfactory in the majority of cases. In our opinion it is the best and most humane. No clamps are used. Open the scrotum and allow the testicles to protrude in the same manner as if clamps were to be used, being careful to make the opening sufficiently large. When the testicle protrudes sufficiently far from the opening in the scrotum, pour some carbolyzed sweet oil (five drops of carbolic acid to an ounce of sweet oil) around the cords and into the scrotum. Oil it thoroughly in order to prevent healing by the first intention—not a good thing in castration. Slip the testicle through the chain at the end of the ecraseur. Shove it up as far as possible on the cord without pulling or using force. Should the colt pull upon the cord it is better to suspend operation for a time until he ceases, as the length of the cord cannot be ascertained unless it is slack when the ecraseur is placed at the proper point. Tighten up the instrument by means of the screw until the testicle is squeezed off. This makes a peculiarly dull cut different from that of a sharp knife and

thus has the effect of closing the end of the artery and preventing the flow of blood. Some operators take off both testicles at the same time. There is, however, more danger from bleeding in this way, and we recommend that each be taken off separately. The colt may be allowed to regain his feet as soon as the testicles are severed. We desire to add again that it is absolutely necessary to see that the hands and instruments are thoroughly cleansed both before and after the operation.

5. Castration by Searing.

This method is followed in some places, and is performed by letting the testicles out and attaching an iron clamp in the same manner as a wooden one. Cut the cord off close to the clamp. With a hot iron dipped in oil, burn the end of the cord and artery; this sears it and prevents bleeding. Remove the iron clamp and operate on the other testicle in the same way. The oiling of the hot iron prevents it from sticking to the cord and pulling off the scab.

6. Castration with Ligatures.

This method is not generally followed in the castration of horses, although it is a very good method for that of bulls and boars. Operate on the scrotum in the same manner as before. Tie a strong piece of twine around the cords to prevent bleeding when the cord is cut. Cut just below the twine.

We have operated by all these methods and our experience has proven to our satisfaction that the ecraseur method is the safest and best. Should the colt be ruptured, the case requires special care, fully dealt with under the heading "Scrotal Hernia."

IV.—TREATMENT AFTER CASTRATION.

The colt should not be allowed to remain out at night in chilly, damp weather or east winds. Keep him in a box stall, clean and well bedded. He may be allowed to run in the open air in the daytime when the weather is favorable. His diet should be entirely of grass. The clamps when used should be removed on the second day after the operation. This should be done by cutting the string on the front end, spreading the clamp well apart in the front and allowing it to fall off. Be careful not to pull the cord down out of place.

Should there be considerable swelling, bathe the cuts with warm water until softened. Insert with the finger a little butter until the cuts are opened up and the discharge allowed to run out. A little swelling on the point of the sheath is not to be alarmed at so long as it does not become too large and so long as the discharge from the cuts is of a whitish color and the appetite of the colt is good. These are natural results of castration.

V—DISEASES AND DIFFICULTIES FOLLOWING CASTRATION.

Great care and cleanliness must be observed in castrating in order to reduce the danger of after effects to a minimum. However careful, in some cases difficulties will follow. Symptoms must be noted and action prompt to prevent further trouble. The principal difficulties are dealt with in the following sections.

7. Bleeding (Hemorrhage).

Causes.—It may result from some disarrangement of the clamps by jumping a fence or some other accident, or it may be the result of the ecraseur failing to close the artery of the cord.

Symptoms.—The blood may come from one or other of the following sources, viz.: the veins of the scrotum or the arteries of the cord. The blood is slightly dark and dribbles from a vein, but is brighter and comes in spurts from an artery. An artery usually bleeds, if at all, immediately after the ecraseur is removed.

Treatment.—If from veins, cast the animal and plug the cuts with cotton batting, saturated with Monsell's solution of iron. These may be removed in twenty-four hours by placing a twitch on the animal's nose and removing them without throwing him.

Should the bleeding be from arteries, cast the animal, pull the cord forward and take off another piece of the end with the ecraseur or place a clamp on the cord, securely tightened, and remove in time, same as before.

The question has often been asked: Will a year-old colt bleed to death from an artery of the cord? The answer is: Yes. We have known of cases where this has been the case. As a general thing there is a certain amount of bleeding after castration, but this is not alarming so long as the bleeding

does not become too profuse. Keep the animal quiet and the bleeding usually ceases of its own accord.

8. Rupture (Hernia).

Sometimes a small rupture is present that is not detected before the operation, or the rupture may take place during the operation.

Symptoms.—The bowels hang from the cut. This may be only slight—two or three inches or a foot, but cases are on record where the rupture has been such as to be trampled under foot. Should the bowel protrude very far and become strangulated and inflamed, there is great pain and symptoms of inflammation of the bowels. The protruding portion of the bowel is of a bluish-red color and, if allowed to remain out, soon mortifies.

There may be no sign of rupture at the time of the operation. The colt may be left apparently all right. In a few hours the owner may, upon examination, find him in the above-mentioned condition.

Treatment.—If the bowels are out, inflamed, bruised with the hind feet, and causing great pain, there can be nothing done but destroy the animal. In cases where there is only a small amount of the bowels out, throw the animal and secure him, oil the hand with sweet oil and force the bowels back through the hole into their natural cavity. Sew up the cut in the scrotum to keep the bowels from coming down. Keep the animal very quiet and feed on soft food to keep the bowels loose. Swelling will take place, and the swelling and the stitches will keep the bowels in their place until the opening heals and thus prevent further trouble with the rupture. When rupture is suspected when operating with clamps, leave them on longer than under ordinary conditions.

9. Protrusion of the Fatty Lining of the Bowels.

There is sometimes a slight rupture not noticed at the time of castration. In a few hours after the operation the fatty lining of the bowels is found to protrude from six inches to two feet.

Symptoms.—The protruding portion is of a red color. To the touch it appears to be a fatty-like substance. Little or no pain accompanies this condition and the health and appetite appear to be perfectly natural.

Treatment.—Cut it off with a pair of scissors. There is no danger from bleeding. Watch the case to detect a recurrence.

10. Abscess of the Scrotum.

This generally occurs after the cuts have healed and the case appears to be progressing favorably.

Causes.—It is the result of irritation because of some foreign body being allowed to remain in the scrotum—a sliver, a piece of dried animal matter or a dead piece of the cord. The irritation results in fester and forms an abscess.

Symptoms.—There is heat, pain and swelling around the scrotum or bag, and the animal will walk very stiff with his hind legs.

Treatment.—Poultice and bathe well. Rub with weak white liniment to bring the abscess to a head; then lance it and allow the matter to run out. In some cases the poultice will bring it to a head and it will break of its own accord.

11. Swelling After Castration.

Causes.—The swelling is a natural outcome of the inflammation caused by exposure—lying on damp, cold ground, standing in cold east winds or in a cold rain. Allowing the cut to heal too quickly and thus prevent the natural discharge, contamination from foreign matter—dirt—on the hands of the operator or the instruments, or standing in a dirty stable may cause it, or it may be because of a poor condition of the blood.

Symptoms.—As we mentioned before, a small amount of swelling is not a bad sign, but if this swelling increases until it is profuse about the cuts and around the scrotum as well as in the sheath and up the belly as far as the front legs, the symptoms are alarming. There is severe stiffness and a desire to remain quiet because of the pain produced in moving the limbs. The appetite is poor and if the discharge be of a red water-like color the symptoms become still more alarming, so much so that the case is serious and demands immediate attention.

Treatment.—Keep the bowels loose by giving small doses of raw linseed oil. Bathe the cuts well with warm water and tap the point of the sheath, and belly if necessary, in a few places with a sharp penknife or lance, allowing the watery

fluid to drip out. This helps to relieve the swelling. After a good bathing and the swelling is reduced, put salty butter on the finger and open the cuts well. This allows any discharge that is formed above to run out. After the bathing and the opening of the cuts, apply a poultice of hot linseed and bran; hold this poultice to the cuts by means of strings over the back. It is not necessary to tap the sheath and open the cut every time the swelling is dressed—once a day is all that is necessary. Bathe and apply hot poultices three or four times a day to allay the inflammation, and if there is poison in the cut, the poultice and hot water will draw it out. Feed on soft food and give gentle exercise, which also has a tendency to take down the swelling. As soon as the colt begins to eat, and there is a good healthy white discharge from the cuts, the danger may be considered over.

12. Scirrhus Cord.

This is a growth on the end of the cord.

Causes.—It may be caused by pulling the cord down when removing the clamp. The colt may pull the cord down by biting at himself to relieve the itching. If allowed to remain in this position the cut heals around it, leaving the end exposed to the air. Exposure causes irritation and in time it becomes diseased and a growth forms on the end.

Treatment.—This is easily checked if taken in time. Soften the cut by bathing in warm water. Smear the fingers with butter and break the cord loose from the skin. Force it back into the bag and the danger of further difficulty is past.

Should it be neglected and get very large, an operation is necessary. After casting and tying securely, break the cord from the skin, using the finger and thumb smeared with butter. Should it be impossible to entirely free the cord with the hand, use a sharp knife. When the cord is entirely loosened attach a clamp, in the usual manner, in such a position that the diseased portions may be cut away. In two or three days remove the clamp as in ordinary cases of castration. The diseased portions may be cut away with the ecraseur, and in the majority of cases this instrument works to better satisfaction.

Should there be much swelling follow this operation here outlined, bathe with lukewarm water three or four times a day, and after each bathing apply the white lotion. If the

point of the sheath is much swollen it is well to tap it in a few places with a sharp penknife or lance to allow the watery fluid to escape. Feed plenty of soft food containing boiled flaxseed, and give gentle exercise every day. If the case has been allowed to remain till the cord becomes diseased up through the ring in the rim of the belly it becomes hopeless.

13. Peritonitis Following Castration.

This is inflammation of the lining of the scrotum and the lining of the abdominal or belly cavity. Peritonitis is more fully dealt with in Chapter IV.

Causes.—This may be the result of exposure—standing in cold east winds, in cold rains or lying on the cold, damp ground—of the use of severe medicine in the clamps or of a bungling operation. The inflammation commences in the lining of the scrotum and extends upward through the ring in the rim of the belly and spreads over the serous membrane lining of the belly cavity. It usually makes its appearance the third or fourth day after the operation.

Symptoms.—The appetite is gone and the appearance very dull. The colt appears to be cold. The cuts are swollen and a bloody watery fluid dribbles from them. As these symptoms become more intense there is indication of pain. He lies down frequently and breathes heavily as if the lungs were affected. In warm weather there is inclination to sweat freely. The pulse is weak and fast, ranging from 60 to 70 per minute. Should he have the use of his bowels the manure is covered with slime and the urine presents a reddish appearance. It is a very weakening disease and if not checked soon ends in death.

Treatment.—For a yearling colt give the following:

Laudanum	½ ounce, or 2 dessertspoonfuls.
Fleming's Tincture of Aconite	5 drops.
Raw Linseed Oil	1 pint.

Mix thoroughly and give as a drench. If not relieved in three hours give:

Laudanum	½ ounce, or 2 dessertspoonfuls.
Fleming's Tincture of Aconite	5 drops.

Mix in half pint of lukewarm water and give as a drench every three hours until better. Keep him warm by blanketing and apply a mustard plaster over the bowels until relieved. Poultice the cuts with a hot poultice of linseed

meal and bran, which starts a healthy discharge from the cuts. Warm the drinking water and feed soft food. Should weakness follow recovery from this disease give a wineglassful of whisky in a pint of oatmeal gruel three times a day for a few days until strength is regained. It must be remembered that in cases of this kind prompt action is necessary, as when this disease gains a firm foothold the result is liable to prove fatal.

14. Lockjaw (Tetanus).

This disease usually develops from the ninth to the twenty-first day after castration, and generally follows a case that is thought to be doing extra well.

Causes.—The real cause is due to a microbe. It may follow any kind of operation, or even a very slight injury. Colts that are exposed to the cold, that have been allowed to walk or stand in a river for any length of time after being castrated, or allowed to run in a wet, marshy pasture, are in danger of being attacked by it.

For treatment and further particulars of this disease, refer to "Lockjaw or Tetanus," which is dealt with more fully in Chapter XVII.

15. Blindness (Amaurosis).

Blindness sometimes attacks a colt after castration, especially if he should bleed profusely at the time. For full particulars as to symptoms and treatment refer to Chapter XIV.

16. Enlarged Scrotum, or Water Seeds.

This is quite a common consequence of castration, more especially if the operation has been performed with the ecraseur. It may follow an operation performed with clamps. Many owners of castrated colts look upon it as being a case of rupture and veterinary surgeons sometimes make the same mistake. When properly understood it is easily cured.

Cause.—One of the most prevalent causes is the healing of the openings in the scrotum by first intention not having the proper amount of separation to destroy the inside lining of the scrotum. Small glands are situated in this lining, the function of which is to secrete a fluid for the purpose of lubricating the inside of the scrotum and the testicles to prevent injury by friction when in the natural state. Should

these glands not be destroyed by separation before the cuts heal there is a continual secretion of oil which in a short time gives the bag an enlarged, soft appearance not unlike that of a colt which had not been operated upon. Leaving the spermatic cord longer than it should be will produce the same effect.

Symptoms.—These are easily detected, especially in warm weather when the elastic fibres of the scrotum are relaxed. In cold weather the enlargement is not so easily detected, because of the elastic fibres of the scrotum being contracted. Purchasers of geldings during the winter months will require to look into this matter very carefully.

Treatment.—It is necessary to impress upon the operator the importance of satisfying himself that there is no rupture before attempting to operate. Examine the scrotum and the inguinal rings above it to see that it is not a case of rupture. Prepare the colt by giving light diet for a day or two. Cast and secure as in ordinary cases of castration. Cleanse hands and instruments thoroughly. Wash the scrotum thoroughly with warm water and castile soap. Make a longitudinal incision in the scrotum parallel to the median raphe about three-quarters of an inch from it. A pouchful of fluid will be found inside the scrotum. Dissect this out. This can generally be broken down with the fingers and should be done in this way when possible, as the less the knife is used the better. When this pouch has been loosened by dissecting around it place the chain of the ecraseur over it, taking in all the spare cord possible, tighten the chain and cut it off in the same manner as in an ordinary case of castration. Oil the parts, before freeing the colt, with carbolized oil (five drops of carbolic acid to an ounce of sweet oil.) Operate on the other side similarly if necessary. For after treatment follow the same course as outlined for castration.

VI.—CASTRATING ORIGINALS OR RIGS.

An original, ridgling or rig is a male the testicles of which do not descend into the scrotum, but remain in the abdominal or belly cavity. The reason for this remains in doubt. It is advisable to leave cases of this kind to the expert, who pays especial attention to it, as the operation is extremely difficult to perform. If the testicles of a yearling have not yet descended into the scrotum it is advisable to

allow matters to remain as they are for a year or so, as they frequently descend of their own accord. Sometimes only one testicle descends and the other remains up.

Note.—Should there not be an expert in your locality capable of performing this operation properly, we shall be pleased to make arrangements to have the work done; or if you are desirous of gaining the necessary information to enable you to perform it successfully so that a business may be made of it, we shall be pleased to arrange for a course of lectures, giving full, concise and practical information on the subject. Write the Veterinary Science Association, London, Canada, for particulars.

CHAPTER XII.

RUPTURE (HERNIA) AND METHODS OF TREATMENT.

RUPTURE or hernia is the protrusion of any of the viscera—entrails or inner parts of the animal body as a result of the breaking of the outer covering or protecting membrane.

1. Navel or Umbilical Rupture.

This is a protrusion of the bowels through the opening at the navel.

Causes.—It is the result of the opening not becoming closed and properly knit together at the time of birth, thus allowing the bowels to protrude at this point to form a sort of sack or pouch inside the skin. The size of this pouch varies from that of a small hen's egg to that of a goose egg, and even larger. This is a miserable, unsightly blemish and is best treated in the spring of the year when the colt is a year or two old.

Treatment.—Nothing should be given to eat for at least twenty-four hours before operating. After casting and securing him force the bowel well back and draw the skin well up. Keep it in this position by attaching a heavy, stiff clamp secured at both ends by a stout cord. Insert a few darning needles through the skin below the clamp to keep it from slipping off. Break off the points of the needles to prevent them catching in anything. The clamp should be left in this position till it drops off of its own accord, at which time the hole will be healed and the rupture cured. This usually requires from nine to twelve days. When the clamp falls off there is a raw spot left at this point which requires attention, especially in warm weather, to prevent it from being infested with maggots. Should this occur wash well with warm water and soap a few times and apply the creolin lotion.

Warning.—Be careful not to catch hold of the bowel when attaching the clamp.

Note.—A steel clamp made especially for the purpose of treating cases of this kind may be obtained from the Detroit

Instrument Co., Detroit, Michigan. It is an excellent article, not requiring anything to hold it in position. The method of adjusting is all that is necessary. With it the operation may be made much neater as well as simpler to perform.

2. Rupture (Ventral Hernia).

This is a rupture anywhere in the rim of the belly, and may vary from the size of a hen's egg to that of a man's head, or larger.

Causes.—It is the result of a bursting of the membrane that forms a protection to the bowels and holds them in place. It may be caused, as is generally the case, by an injury of some kind such as a kick. Severe straining such as caused by heavy pulling may cause it.

Symptoms.—Hernia may be detected in the following manner: Push the protruding portion back through the opening in the rim of the belly. This opening may be felt easily. If hernia, the bowel protrudes as before as soon as the hand is removed.

Treatment.—Various treatment has been tried—clamps, cutting in and sewing up, etc.—but with little or no success. Get as much work out of the animal as possible and allow the rupture to remain as it is.

3. Rupture in the Bag (Scrotal Hernia).

A portion of the bowel and its fatty covering is forced down into the scrotum along with the testicle.

Causes.—Some colts are ruptured at birth and are never cured. Running, jumping or any violent exercise may cause it. It may also be the result of violent struggling at the time of castration.

Symptoms.—The scrotum has a swollen and enlarged appearance. The protruding portion of the bowel can be forced back into the opening, but when the hand is removed falls back again into the same position.

Treatment.—If in a colt that is not castrated, it may be got rid of very easily while castrating him. To castrate and fix the rupture at the same time, have the animal well prepared by starving him a day or so before the operation; then throw and secure him, shove the bowel and fatty lining back into the belly. Take the testicle in the left hand and at

the same time allow the hand to rest upon the opening to keep the bowel in proper position. Make a small incision in the scrotum just large enough to admit the passage of the testicle through it. Slip the clamp on over the cord and at the same time draw up the white covering or tunics cut through in letting the testicle out. Fasten this securely in the clamp together with the cord. This prevents the bowel from again coming down. It swells in a couple of days sufficient to fill the opening through which it protruded, and the rupture entirely disappears. Remove the clamp in four or five days and there is no danger of its re-occurrence. Rupture of this kind in a stallion cannot be successfully treated other than in this manner.

CHAPTER XIII.

DISEASES OF THE EAR.

1. Deafness.

Deafness is difficult to detect in many cases, and if long standing impossible to cure.

Causes.—Horses subjected to a great deal of noise—artillery horses, etc.—are more liable to develop deafness. It may be the result of a diseased condition of the nerve of hearing or the drum of the ear.

Symptoms.—A deaf horse frequently appears to be stubborn. Not being able to hear, he appears not to be capable of obeying the word of command.

Treatment.—Little can be done. Place a twitch on the nose and pour a little sweet oil in the ear every day. This is sometimes a help.

2. Injuries or Cuts Around the Ear.

If the skin or cartilage is torn, put a twitch on the horse's nose and with a needle such as is used for sewing skin cuts draw the wound together with stitches of carriage trimmer's twine; bathe well with warm water twice a day and apply the white lotion until healed.

3. Diseases of the Cartilage.

Causes.—This disease is generally caused by an injury of some kind.

Symptoms.—It festers and breaks every month or so where diseased.

Treatment.—Place a twitch on the nose, or if inclined to be ugly, cast him in the ordinary way. This gives a better chance to operate with less risk to the horse. With a sharp knife split the skin and tissues to expose the diseased cartilage. Scrape this out and burn the wound thus made with caustic potash. This generally sets up a healthy action and it soon heals.

4. Frost Bites.

Causes.—This is frequently the result of neglect by allowing the animal to remain in a cold place. It is much more common among young cattle than among horses.

Treatment.—Bathe with cold water, and apply the white lotion after bathing, three or four times a day. If taken in time this will save the ear from dropping off. Should it become “dead” and drop off, treat in the same manner until it heals. If noticed at the time it is frozen, apply snow to it. This counteracts the effect of the frost.

CHAPTER XIV.
DISEASES OF THE EYE.

BEFORE studying the diseases of the eye it is advisable to study the anatomy of the eye, found in Part I.

1. Simple Ophthalmia.*

This is an inflammation of the outside covering of the eyes and the lining of the lids.

Causes.—It is often the result of an injury of some kind, such as being struck with a whip. Chaff or other foreign matter may set up inflammation. Extreme heat, being kept in a dark stable or foul air about the stable may account for it.

Symptoms.—The eye is very dull and partly closed, and sometimes the eyelids are swollen. Water runs from the corners. It is sore to handle and very sensitive to light, and on account of this when brought to the light he keeps it closed. In a day or so a scum gradually forms over the eye and it presents a very irritated appearance.

Treatment.—Endeavor so far as possible to ascertain the cause of the trouble and remove it. If the fault of the stable, have it remedied. If caused by some foreign substance—chaff or such—take it out as carefully as possible without injuring the sensitive portions of the eye. Bathe well with new milk, fresh from the cow, twice a day. Apply the eye wash given in Part V. in and around the eye each time after bathing until relieved. In cases where the eyelids are much swollen it is well to bleed. This is done with a sharp penknife. Raise the vein below the eye by pressing the fingers on it; then cut and allow it to bleed until it stops of its own accord, which takes about half an hour.

2. Moon Blindness (Periodic Ophthalmia).

This is an inflammation of the inner structures of the eye.

Causes.—Extreme heat or cold, poorly ventilated or dark stables, all have a tendency toward this disease. Family history may account for it, as it is hereditary, that is, the

offspring of sire or dam which have been subject to moon blindness will have a predisposition or tendency to develop it.

Symptoms.—These are generally well marked and considered in conjunction with the family history, usually give sufficient reason for coming to a conclusion that moon blindness is the trouble.

A horse may be put in the stable after work at night, apparently in his usual health. By morning the eyes are running water, are apparently very weak and partially closed. One or both eyes may be affected and these symptoms may change from one eye to the other. The disease develops rapidly, so that in two or three days the affected eye becomes still weaker and assumes a yellowish or reddish appearance. At this stage there is great difficulty to see, yet in two or three days more the eye will have returned to its natural condition, the only outward symptom being a slight dullness. In the course of from three to six months these symptoms return and this time may effect either or both eyes. The attacks are periodic in this manner, each attack leaving the eye in a more weakened state and more blurred, until in from one to three years—cases vary—total blindness is the result.

First attacks may easily be mistaken for simple inflammation, but the persistent repetition of these is evidence of periodic ophthalmia.

Treatment.—Treatment in the majority of cases terminates unsatisfactorily as there is grave danger of blindness in the end. Unless you make up your mind to drive a blind horse it is better to part with him as soon as the symptoms are such as to leave no doubt that he is affected by it.

The progress of the disease may be arrested by bathing well with new milk and applications of the eye wash in and around the eye twice a day. This checks the inflammation and will enable him to retain the sight for a longer period. It finally, however, terminates in cataract, which, of course, renders him unable to see.

Should there be a great deal of irritation it may be well to bleed from the vein below the eye. This is, generally, not so effective as in simple ophthalmia.

3. Cataract.

The pupil or black spot in the centre of the eye is a sort of window for the purpose of admitting light, so that the

image of objects in front of the eye may be reflected upon the sensitive portions on the inside and thus carried by the optic nerve to the brain. In this manner animals are possessed of the sense of sight. Should the admission of the rays of light be obstructed from any cause, total or partial blindness is the result, according to the degree of obstruction.

A cataract is an opaque, pearly white deposit across the pupil. It may be what is termed partial or complete for the reasons above stated, and may affect one or both eyes.

Causes.—Cataract is sometimes present at the time of birth. Repeated attacks of inflammation such as in a case of ophthalmia will cause it.

Symptoms.—The white portion is quite clearly seen. There is whole or partial blindness.

Treatment.—Very little, if anything, can be done, unless by an operation, and such an operation is not attended with but slight success in the horse, because of the impossibility to regulate the sight with glasses as is done with people. As for medicine, when the cataract is well formed there can be nothing given which is effective.

It is an important matter to examine the eyes of a horse carefully before purchasing him, to see that no indications of cataract are present.

4. Star Gazer (Amaurosis).

This is paralysis of the optic nerve, the function of which is to carry to the brain impressions reflected upon the retina.

Causes.—A sudden jar or injury to the head, standing in a dark stable or sudden exposure to extremely bright light may paralyze this nerve. The loss of a great deal of blood sometimes causes a temporary paralysis, but the sight returns with the re-established circulation.

Symptoms.—The eye has a large, glassy appearance, and the pupil of the eye is very much enlarged. If taken from a dark stable into the light the pupil of the eye does not close up to regulate the admission of light as if it were in good condition, but remains large. He generally carries his head high and steps high.

Treatment.—If the case is of long standing nothing can be done for it; if the result of injury by striking the head against something, or of bleeding, it can be treated successfully. Give a teaspoonful of nux vomica in the feed three

times a day. This acts as a stimulant to the nerve. Wash the eye with eye wash twice a day for a few days. In buying horses be particular to examine the eyes closely for unsoundness, for some of the shrewdest buyers have been nipped in cases of this kind.

5. Cancerous Growth in the Eye.

Causes.—The causes of this are similar to those of all other cancerous growths—cancer germs getting into the blood and settling in the eye.

Symptoms.—The first indication is inflammation which finally terminates in a growth apparently originating in the ball of the eye. This gradually develops until it hangs out upon the cheek. It has an angry, red appearance and bleeds freely upon very slight injury, giving the animal an unsightly appearance. In some cases the bones in the vicinity of the eye are diseased, causing a very disagreeable odor. Cows are more subject to cancerous growths in the eye than horses.

Treatment.—A cure may be effected in the first stages of the disease by removing the eye, growth and all. Cast the animal and secure him. While the head is held perfectly still cut around the eye, between it and the eyelid. Lift the eye up by sticking a hook into it and cut the structures off at the back. Sear it with a hot iron to stop the bleeding. Dress as an ordinary wound by bathing with warm water and apply white lotion three times a day. After applying the lotion, if the cut has an "angry" appearance apply compound tincture of benzoin (Frier's balsam) with a feather to keep the growth from returning.

6. *Filaria Oculi*.

This is a small white worm about the size of an ordinary pin found moving about in the humors of the eye. They may infest any part of the body, being found sometimes about the testicles and bowels.

Causes.—The worm develops from a microbe taken into the system with the food or water. It finds its way into the blood and is by it deposited in the eye or other parts of the body. Horses pasturing on low wet land are more exposed to it.

Symptoms.—It grows from one-half inch to two inches long, and gives rise to considerable irritation, rendering the

eye hazy and weak. By watching closely the worm may be seen, sometimes in front and sometimes farther back. Irritation of course continues so long as it remains.

Treatment.—An operation is the only successful method of saving the sight. Cast the animal. While the head is held securely, with a small lance or sharp penknife make a small incision or cut across the sight, which allows the humors of the eye to run out. The worm is generally carried out with the discharge. Keep the animal quiet after the operation and put him in a clean, dark box stall for a few days. Bathe the eye with new milk twice a day and apply the eye wash after bathing until the eye is healed. It generally takes a week or so to heal and for the fluid to re-form in the eye. A slight scar remains which in time gradually disappears.

7. Glaucoma.

Glaucoma is a hardening of the back humor of the eye.

Causes.—It is caused by an injury of some kind—being pierced by a sliver, etc.—especially if the back portion be affected. Natural decay of old horses may sometimes result in glaucoma.

Symptoms.—Blindness develops gradually, accompanied by the peculiar high action in front exhibited by all blind animals. A close examination through the pupil discloses the fact that the eye is becoming hardened and of a grayish color. It is more frequently met with in gray horses.

Treatment.—If the result of injury bathe with new milk three or four times a day. After wiping the parts dry apply the eye wash. If from old age and decay nothing will effect a cure.

8. Inflammation of the Haw (Membrana Nictitans).

This is the diseased or enlarged state of the cartilage in the corner of the eye.

Causes.—Irritation or inflammation from the presence of foreign bodies—chaff, etc.—in the eye causes the haw to enlarge, so much so at times as to protrude from the corners, thus giving the animal an unsightly appearance, as well as being the source of a great deal of pain.

Treatment.—When first noticed remove the cause of the irritation, if it can be detected, and bathe with new milk or lukewarm water two or three times a day. Wipe dry each

time after bathing and apply the eye wash. The cartilage generally returns to its natural size in a few days.

Should this treatment fail to remove it and the enlargement continues to develop a slight operation may be necessary. Place a twitch on the nose and with a small pair of pincers draw the irritated portion of the cartilage sufficiently far enough forward out of the eye and cut it off with a pair of scissors. This is a simple, almost painless operation and attended with very little or no bleeding. Continue the same treatment as before and in a few days no indication of trouble will remain.

9. Injuries to the Eyelids.

Injuries to the eyelids may be met with in the form of bruises, scratches, cuts, etc., as a result of accident.

Treatment.—If the injury is severe and torn considerably draw the edges together with a few stitches. Use a needle regularly used in such cases and white wrapping twine, as it is soft and not liable to tear out. It may not be necessary to cast the animal for this operation, a twitch being sufficient. Bathe the wound with new milk or warm water three or four times a day. After bathing wipe dry and apply the eye wash. In a few days the stitches will come out and the wound may open up slightly and look worse, but continue treatment and it will heal up in a short time. In some cases if the eye is injured it falls out on the cheek. Wash the eye carefully, set it back in proper position, and sew up and dress the wound as mentioned above.

10. Injuries to the Tear Ducts.

When these tubes are injured the tears flow out over the cheek. It is recommended to inject with a syringe, warm water into this tube or passage. The best way to do this is from below, by putting the point of the syringe in the small hole found in the bottom part of the nose and forcing the water up through until it runs out at the corner of the eye. This will clear the passage and sometimes effect a complete cure. If, however, the case is of long standing it is best to leave it alone, as the horse may be able to work for years.

11. Near Sightedness (Myopia).

Horses with very full eyes are more subject to this disease.

Causes.—Myopia has no apparent cause, but is due to the formation of the eye.

Symptoms.—The eye is full and the pupil enlarged. He shies a good deal because of not being able to see objects at a distance.

Treatment.—It is impossible to do anything to remedy this defect. Be careful in purchasing an animal afflicted in this manner, as a shy horse is a constant source of annoyance.

CHAPTER XV.
CONTAGIOUS DISEASES AND FEVERS.

I.—CONTAGIOUS DISEASES.

1. Smallpox (*Variola Equina*).

This disease is not very often met with in America, but is quite common in Europe.

Causes.—Smallpox in horses has the same source as smallpox in people. It is contagious, being carried from one animal to the other. Small scales containing the germ that gives rise to the disease, peel off the skin and in various ways are brought into contact with the healthy animal. It may be carried in the clothes of a person who has been attending the afflicted animal. Changing the harness, saddle or blankets may account for it. It is well to bear in mind that smallpox may be communicated from horse to man or to cows or other animals, consequently the greatest care is necessary to prevent contagion. It must run its course, which usually requires from nine days to two weeks before recovery commences.

Symptoms.—There is more or less fever and considerable thirst. The pulse is quick but weak and the appetite poor. Red patches soon appear on the skin and from a small hole in the center of each a watery serum oozes. These blotches vary in size and may appear on any part of the body. As a result the skin becomes sore and tender. The mouth is sore and saliva continually runs from it. The throat is sore and there is difficulty in swallowing. In from nine to fifteen days the blotches disappear, the scales fall off, and recovery is gradual.

Treatment.—The treatment is simple. Isolate the case to prevent the spread of the disease. Feed soft feed containing plenty of flaxseed. If in the spring of the year grass is better still. Give

Sulphur ¼ pound.
Nitrate of Potash or Saltpetre ¼ pound.

Mix thoroughly together and give a teaspoonful three

times a day on the tongue, which is all the medicine needed internally. Attend to the animal's general comfort, keep warm and do not expose him to cold, as such exposure may "drive the rash in" and result fatally. Wash the irritated portions of the skin once a day with the following mixture:

Creolin1 ounce or 4 dessertspoonfuls.
Rain Water1 quart.

Shake well together and apply with a sponge or cloth. This will kill the germs of the disease as they come out on the scabs. The great danger in treating this disease is the liability to catch cold and "drive the rash in," and in this manner poisoning the blood.

After recovery great care must be exercised to prevent contagion. All straw, manure, etc., should be burned, blankets, etc., thoroughly disinfected. The stable should also be thoroughly disinfected by placing a quantity of sulphur in a dish and allowing it to burn inside while the doors and windows are closed. After disinfecting in this manner white-wash the walls, manger, ceiling, floors, etc.

2. Glanders.

This is a very contagious or catching disease and one of the most loathsome and serious that the horse is subject to. It has existed for thousands of years, during which time it has been the subject of special study and treated by every kind of medicine known, yet nothing has ever yet effected a cure. It may be chronic or acute.

(a)—*Chronic Glanders.*

This form of the disease was common in this country in the early days when it was being cleared, and it is now sometimes met with in the back townships.

Causes.—It is due to the organism or germ known as bacillus mallei and may result from a poisoning of the blood as mentioned in the previous section. It is thought by some that catarrh and nasal gleet may terminate in glanders. It has been known to break out in a severe form on shipboard during a storm when the hatches have been closed down. There must have been, however, an affected animal on board, although the disease did not manifest itself until such time as conditions were favorable. It is a very troublesome disease, especially when it breaks out among a large number of horses, as in a city stable, a ranch, etc.

Symptoms.—Old and debilitated animals are more subject to its ravages than those younger and healthier. In the chronic form it may exist for a long time before severe

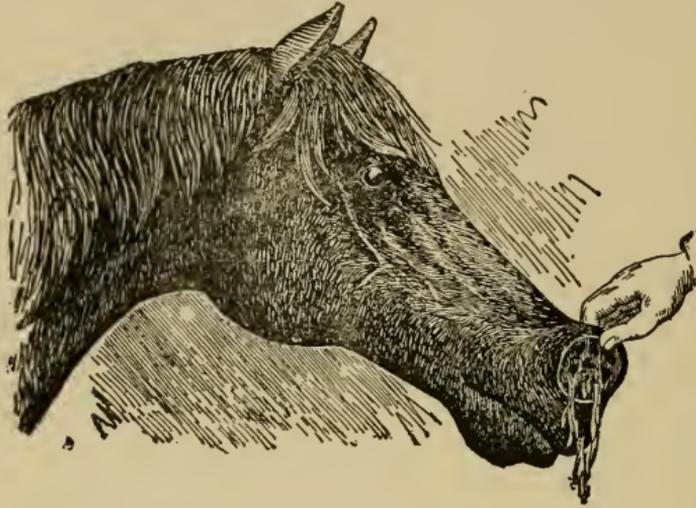


Fig. 24.—Glanders: The Discharge and Method of Examination.

symptoms are noticeable. It may be mistaken for nasal gleet, from which it differs in some important features. In an attack of glanders the temperature rises to from 103 to 105; in nasal gleet the temperature is normal—98 or 99. There is a discharge from the nose, at first rather watery, afterward greenish-yellow in color and very sticky. This discharge is odorless, here again differing from that of nasal gleet. The discharge of glanders differs in another respect from that of other diseases in that it sinks in water, while the discharge of other diseases floats. There is a discharge also from the eyes and as the disease progresses patches of ulcers form on the inside of the nose. These ulcers have little tendency to heal. The lymphatic glands about the head and neck are swollen and hard. The animal fails rapidly, soon becomes emaciated and thin and finally dies a lingering death. Should glanders be suspected apply the Mallein Test, appended to this section.

Although other animals are not subject to this disease, man and dogs will become infected from horses. When it attacks man it is a terrible affliction, consequently it is absolutely important when it is known to exist that the very greatest care in handling it should be exercised.

Treatment.—Isolate the animal just as soon as the disease is suspected. Use special articles—feed box, pail, etc.—for feeding, watering, etc., and do not allow these to come in contact with any other animal. Handle him with the greatest of care yourself. Do not allow your clothes to touch him and be careful that there are no cuts or scratches on your hands. All these precautions are necessary, because of the extremely contagious nature of the disease.

When satisfied beyond a doubt that an animal has developed glanders, destroy it at once and burn the carcass together with everything—bedding, halter, etc.—that has been in contact with it and thoroughly disinfect the stable.

(b)—*Acute Glanders.*

Glanders in the acute form is not often met with in this country. It occurs much more frequently in Europe.

Causes.—It arises from the same causes as the chronic form, the difference being that it runs its course much more rapidly.

Symptoms.—The symptoms, too, are very similar. In addition to that outlined in the previous section, notice that there is a tendency to tremble, the temperature runs up as high as 105 or even more. The discharge from the nose is profuse and similar to that of the chronic form, with sometimes the additional feature of being streaked with blood. The lungs become inflamed, which frequently causes death.

Treatment.—Follow the same treatment and exercise the same precautions as outlined in the previous section.

(c)—*How to Apply the Mallein Test.*

Mallein is to glanders what tuberculin is to tuberculosis. The method of preparation is the same. It is a limpid, serous liquid, of a dark-brown tint and characteristic odor, to which is added sufficient carbolic acid to preserve it indefinitely.

First ascertain that the temperature of the horse is normal. If an abnormal temperature variation is found, this must first be eliminated by proper treatment. Inject, subcutaneously, into the suspected horse, 1 c.c. of mallein, and in six hours take the temperature, and repeat, taking the temperature every hour until it begins to fall. After six or eight hours the temperature of a glandered horse gradually rises 2.5 degrees to 4.5 degrees Fahr., and even more above

the normal. The maximum temperature is reached in from fifteen to eighteen hours. It does not become normal until after twenty-four to forty-eight hours. During this time the animal is very decidedly ill. The tumor at the point of injection increases in size for two or three days, and only disappears after several days. In a healthy horse, on the contrary, mallein in even much larger doses has no appreciable constitutional effects. A small edematous swelling is formed at the site of injection, which is hot and slightly sensitive early, but soon diminishes in size and in about twenty-four hours entirely disappears.

It is essential that the mallein be used as soon as the package is opened.

The site of the injection (preferably the side of the neck) should be carefully shaved and disinfected, a 5-per-cent solution of carbolic acid, or a 1 to 1000 solution of bichloride of mercury being used for this purpose. Careful sterilization of the syringe should be made before and after the injection, as directed. Mallein, as well as the syringe, can be secured from the Detroit Instrument Co., Detroit, Mich.

II.—FEVERS.

These are four in number, as follows: Influenza, Purpura Hemorrhagica (commonly known as Button Farcy), Strangles or Distemper, Epizootic Cellulitis (Pink Eye).

1. Influenza.

This disease received its name when, at one time, it was thought to be influenced by the stars. It is very common among horses of America, and is a disease that is liable to affect any organ of the body.

Causes.—The germs of influenza float about in the air and in this manner is quickly communicated from one horse to another. It is more common in the spring and fall, when the horses are shedding their coats, than at any other time of the year. In 1874 and 1878 it broke out in the form of a regular epizootic, and spread all over the country, causing a great deal of trouble. Horses that are kept in badly-ventilated stables, especially those that are underground, are more subject to it.

Symptoms.—Among the first symptoms are a dull, languid appearance, a tendency to sweat upon the slightest

exertion, a starry, dirty appearance of the coat, a hot, dry mouth and a slight cough. Well marked symptoms follow. The throat is tender and sore and pressure of the hand causes a cough. The pulse is quick but weak, often running

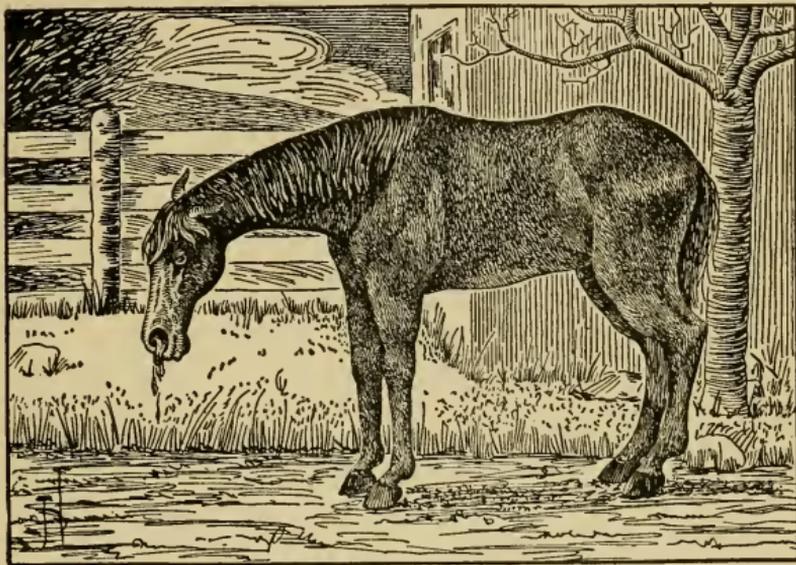


Fig. 25.—Symptoms of Influenza.

as high as 80. The head hangs low and there is indication of severe headache and nervous depression. The weakness at this stage is so pronounced that one would imagine it an easy matter to push him over. There is then a very heavy breathing and by placing the ear to the throat a peculiar rattling noise is quite decernable. The eyes are heavy and red, the bowels costive and the temperature sometimes as high as 105. A discharge at this time appears from the nose, and if yellowish-white in color it is a favorable sign. In some cases the legs and sheath are swollen, which is also a good sign so long as the swelling is not too pronounced.

When the discharge makes its appearance the most careful nursing to prevent taking cold is necessary, as there is danger of other organs of the body becoming affected. It may affect the bowels, causing inflammation and death. Should the liver be affected the symptoms vary, sometimes exhibiting themselves in diarrhoea and sometimes in costiveness. Should the lungs become affected, it is in the form of inflammation.

During the progress of the disease, in the majority of cases there is a persistent determination to remain standing.

Treatment.—Clothe and attend to the general comfort of the animal according to the season of the year. If the legs are cold, hand-rub and bandage them. Allow plenty of fresh air in the stable but avoid drafts. Support the system and assist nature to throw off the disease, because influenza will run its course in spite of medicine. Keep the bowels loose by feeding on soft food with plenty of boiled flax seed in it, but never, under any circumstances, give the animal a physic drench. Give

Chlorate of Potash	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Powdered Digitalis	$\frac{1}{4}$ pound.

Mix thoroughly together and give a teaspoonful every six hours on the tongue with a spoon. Feed often but give small quantities, so that he will eat it all without leaving any in his manger. Allow cold water to drink in small quantities but often. Rub the throat well with the white liniment four or five times a day, and if the lungs become affected, apply a light mustard plaster over the sides of the chest every day. Continue this treatment until there is relief. Where there is extreme weakness give a wineglassful of whisky in a pint of oatmeal gruel three or four times a day as a drench, being careful not to choke the animal; this is an excellent stimulant. When improvement begins the eye gets clear; he takes notice of things about him; the pulse is more nearly natural—slower and stronger—and the appetite is better. After the disease has subsided, should he be very weak and thin, give

Sulphate of Iron	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix thoroughly and give a large teaspoonful three times a day in the feed. Feed well and give gentle exercise every day. This disease, if treated in this manner, and allowed to run its course, provided of course that the animal does not catch cold, will terminate favorably. Above all never bleed, or give aconite or physic during treatment of influenza, as it only tends to make the animal weaker and the disease more violent.

4. Button Farcy (Purpura Hemorrhagica).

This disease is not contagious. It is defined to be some putrid condition or charbonous affection of the blood. It

mostly affects the capillary blood vessels of the skin, but in some cases affects the lining of the lungs and air passages.

Causes.—It is generally an after effect of some other disease, such as influenza, distemper or some other weakening ailment. Horses that are overworked, thin and run down in condition are more liable to be attacked by it, especially if neglected, turned out at night or allowed to remain exposed to unfavorable weather conditions. A chill as a result of such exposure is a good foundation for button farcy. It makes its appearance more frequently in the spring and fall.

Symptoms.—The blood is very thin, almost like water. Direct symptoms often appear very suddenly. A horse may be apparently in his usual health when left for the night, but

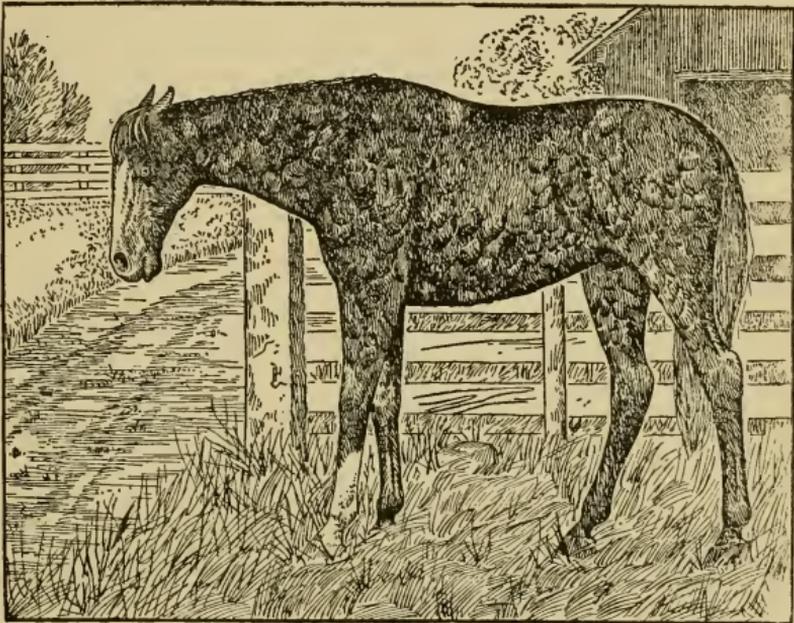


Fig. 26.—Button Farcy (*Purpura Hemorrhagica*).

found in the morning literally covered with patches of swelling. Some parts of the skin may be affected more than others. We have attended cases where the eyelids were so swollen that to see was impossible, where the lips were swollen to such an extent that it was impossible to eat, and where the swelling extended to the sheath and legs. Small spots appear all over the skin, especially upon the sides of

the neck, thighs and over the back. See Fig. 26. The swelling has been known to get so bad in some cases that patches of the skin dropped off, leaving raw sores, and where the nostrils became swollen to such an extent as to cause suffocation. There are peculiarities well worthy of attention regarding these swellings, namely, that they make their appearance very suddenly and move from one position upon the body to another. Exercise often reduces them, only to appear again worse than before. Should the lining of the nose be affected there is danger of the lungs becoming also affected.

The general symptoms noticeable are dullness, slightly heavier breathing than natural, weak but otherwise natural pulse and slightly impaired appetite.

Treatment.—It runs its course in from three to thirty days. Place the animal in a comfortable box stall, attend to his general comforts and keep him warm. Give

Raw Linseed Oil $\frac{1}{2}$ pint.
Spirits of Turpentine1 ounce or 4 dessertspoonfuls.

Mix together and give as a drench, repeating every three days until relieved. Give a teaspoonful of chlorate of potash three times a day on the tongue with a spoon until better. Feed on nutritious, light, soft food with plenty of boiled flaxseed in it to keep the bowels loose. Do not apply anything externally unless the swelling breaks, after which bathe three times a day. After bathing apply the white lotion. Never, in any case, attempt to open any of these lumps, as it only does harm. Bleeding is good in the early stages of the disease if the animal is strong enough to stand it. Be very careful in nursing to avoid a relapse, which is liable to cause death. The after treatment should be directed to building up the system by regular exercise and wholesome, nutritious food. Give the following tonic mixture:

Sulphate of Iron $\frac{1}{4}$ pound.
Ground Gentian Root $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day in the feed.

5. Distemper (Strangles).

This is very common among Canadian and American horses. It receives the name "strangles" from the peculiar suffocating noise made in breathing. Young animals from

the time they are foals until they are five or six years old are more generally attacked by it, but it may occur in older horses.

Causes.—It is due to a germ in the blood, all colts being liable to be affected by it. The germ floats about in the air and is taken into the system when breathing. It appears more frequently in the spring and fall.

Symptoms.—There is a dull, languid appearance and fatigue following slight exertion. These earlier symptoms are probably accompanied by a cough and sore throat. Saliva runs from the mouth. The manure is dry looking or indi-

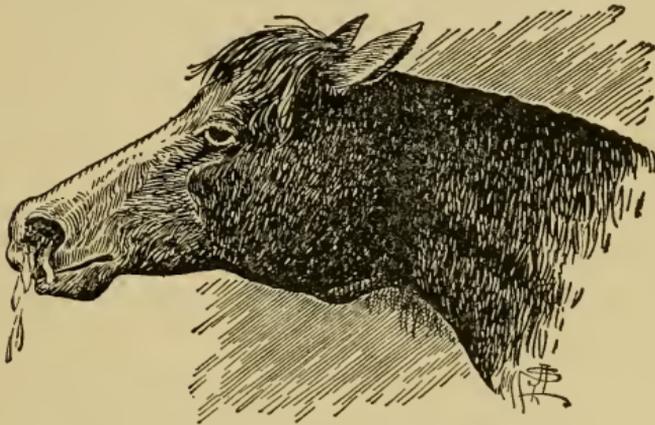


Fig. 27.—Strangles—The Position of Swelling.

cating costiveness. A lump soon appears, sometimes under, sometimes at the sides of the throat. This lump continues to gradually develop until there is difficulty in breathing. The dullness increases, the head hangs lower and there is noticeable gauntness.

Distemper usually runs its course in from six to twelve days, during which time the lump or abscess is likely to break, accompanied by a discharge from the nose—a good sign. Sometimes more than one abscess forms and it is a good plan to strive to promote their development until such time as they come to a head and discharge, thus providing a means for the poison to escape from the system.

Treatment.—Treatment is very satisfactory in most cases. Always allow the disease to run its course, give plenty of pure air, clothe the body according to the season of the

year, feed nutritious food—boiled oats or chop stuff with plenty of boiled flaxseed in it to keep the bowels loose, little medicine being necessary. Give the following powder:

Nitrate of Potash or Saltpetre $\frac{1}{4}$ pound.
Sulphur $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day on the tongue with a spoon. Rub the throat and lumps well with white liniment three times a day. Apply a hot poultice of half linseed meal and half bran to the throat every night. This will draw the abscess or swelling to a head and cause it to break, which is better than lancing. In cold weather it is best to apply a mustard plaster to the swelling instead of a poultice, because after the poultice is taken off the animal is liable to catch cold. Never, in any case, burn sulphur under the nose, because such treatment may result in inflammation of the lungs. If the lump in the throat becomes so large that life is threatened by choking, it is then necessary to perform the operation of tracheotomy.

6. The Operation of Tracheotomy.

Tracheotomy is a term derived from trachea (the windpipe) and is applied to the operation of making an opening in the windpipe in such a position as to overcome some obstruction of the air passage.

Place a twitch on the horse's nose. While an assistant holds the head high up, make an incision in the following manner. About nine inches down the neck from the larynx (Adam's apple) on the underside is a point at which the windpipe is all but bare, being covered only by the skin. Make an opening in the skin, lengthwise, about three inches long; then cut across three rings of the windpipe and insert a regular tracheotomy tube to keep the incision open. This enables the horse to breathe freely through this opening instead of through the nostrils or the mouth until such time as the abscess breaks or the swelling subsides sufficiently to allow breathing in the natural way. When this occurs and it is possible to again break naturally, remove the tube, draw the skin back again to its proper position with a few stitches, and treat as an ordinary cut by bathing two or three times a day and applying after each bath the white lotion. The cut usually heals favorably in a short time and it may be added that it is well during the presence of the tube to remove it once a day to clean it.

7. Bastard Strangles.

This generally follows simple strangles or distemper.

Causes.—To use a common expression it is the result of the disease being "driven in." The matter from the abscess instead of being discharged is absorbed by the blood and thus permeates and affects the whole system.

Symptoms.—Abscesses similar to that which appears in the throat during the development of distemper are liable to make their appearance upon any part of the body—about the shoulder, neck, flank or hips. Otherwise the symptoms are very similar to those outlined in the previous section.

Treatment.—The treatment should be directed towards ridding the blood of the poison. The abscesses will continue to form until this is accomplished. Give the same medicine, bathe, poultice, rub and apply the white liniment to these lumps to bring them to a head and thus commence the discharge. It is sometimes necessary to lance them with this object in view. We have met cases in which during the progress of the disease discharge took place at forty or fifty different points, dependent of course upon the amount of poison in the blood.

In addition to the treatment as here outlined we advise the giving of a dessertspoonful of hyposulphite of soda in the feed three times a day. The dose should be regulated to the conditions of the animal treated, as this is for a fully developed horse under ordinary conditions.

8. Pink Eye (Epizootic Cellulitis).

Pink eye affects the cellular tissue under the skin, and like other fevers of the horse, runs a course which takes from six to nine days, and, as a general thing, if treated properly, terminates favorably.

Causes.—It is due to germs which float about in the air, and when once it gains a foothold it spreads all over the country from one horse to another. There was a serious outbreak between 1875 and 1880, which affected horses in every part of the country.

Symptoms.—The animal becomes dull and feverish, and the eyes are red and swollen, afterward turning to a pinkish color, from which the disease receives its name—pink eye. The appetite is poor and the temperature runs from 103 to 105 degrees. The mouth is hot and dry, and there is a falling

off in condition accompanied with the passage of hard, dry manure. There is a discharge from the eyes and swelling of the limbs and belly. In addition to these symptoms there is sometimes a cough.

Treatment.—This disease is very easily treated in most cases, when not too much medicine is used. Allow it to run its course. Keep the body warm, the stable clean, and allow plenty of fresh air. Feed soft food with plenty of boiled flax seed to keep the bowels loose, and give the following simple medicine to act on the blood:

Chlorate of Potash $\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre..... $\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day on the tongue with a spoon. Never mix chlorate of potash and sulphur together, as it will explode, being very dangerous. Give the animal plenty of cold water in small quantities. If very weak give as a stimulant a wineglassful of whisky in a pint of gruel three times a day, and never, under any circumstances, give a physic. It is well to wash out the nostrils and eyes twice a day with lukewarm water. In a few days favorable symptoms are noticed and convalescence is gradual until the usual condition is regained.

CHAPTER XVI.
DISEASES OF THE SKIN.

1. Cracked Heels (Scratches).

This disease is common among horses, and affects the heels, those of the hind legs being oftener affected than those of the front.

Causes.—Anything that irritates the skin tends to produce this disease. Wet and muddy roads in the fall and spring, washing and not properly drying the legs, standing in badly kept stables, or wearing boots on the legs will cause it. Heavy, hairy-legged horses are more subject to it than light horses.

Symptoms.—The affected legs have a tendency to swell and are stiff and sore about the heels. The skin becomes cracked and scaly-looking at the back of the heels, and in some cases, when being driven the heels bleed.

Treatment.—Commences by feeding soft food and giving physic consisting of:

Bitter Aloes	8 drams.
Ginger	1 tablespoonful.
Bicarbonate of Soda	1 tablespoonful.

Dissolve in a pint of lukewarm water and give as a drench, allowing the animal to remain in the stable the next day. After this give the following powder:

Nitrate of Potash or Saltpetre.....	¼ pound
Sulphur	¼ pound

Mix thoroughly and give a teaspoonful twice a day in the feed. This will cool the blood and improve the general

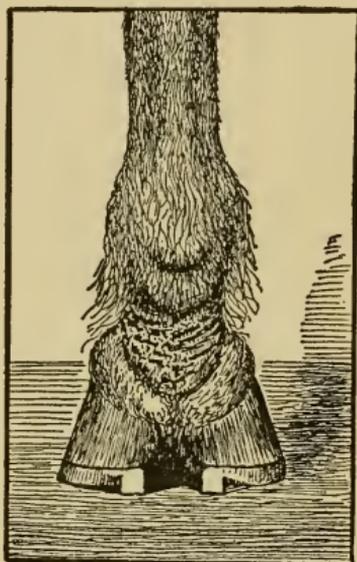


Fig 23.—Scratches, Cracked Heel.

condition. Bathe the heels with lukewarm water and a little castile soap, night and morning, wipe dry with a soft cloth and apply the white lotion. Before taking him out to work rub the heels with vaseline or lard to keep them soft and protect them from the dirt and water. If the heels are very sore and swollen apply a hot poultice of half linseed and half bran every night for a while until the natural condition is restored.

2. Mud Fever.

This is an inflammation of the skin of the legs and the under part of the belly.

Causes.—Mud fever is the result of conditions such as those that give rise to scratches, being met with mostly in the spring and fall, during wet, slushy weather. The muddy water splashes over the legs and belly and, not being washed off, soon causes an inflammation of the skin of these parts. Sometimes the neglect to properly rub dry after washing with cold water will cause it.

Symptoms.—The legs are swollen and stiff, the skin is hot and tender, and the hair falls off in patches.

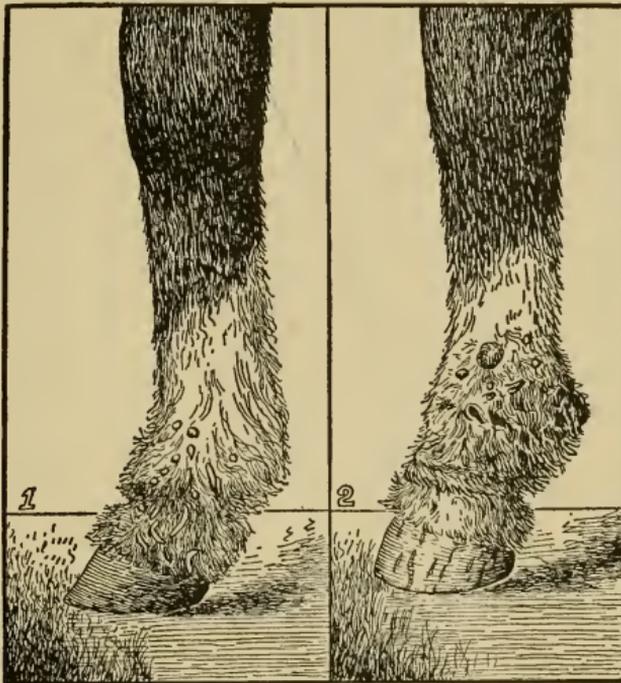
Treatment.—Give the same medicine internally as that recommended for scratches to cool and cleanse the blood. If the legs are dirty bathe them with lukewarm water and a little castile soap and dry them with a soft cloth. One bathing is all that is necessary; simply brush off with a soft brush and apply the white lotion twice a day, which is soothing and healing to the skin. Keep the animal out of the wet and mud as much as possible. If working him is necessary, each time before taking him out, rub the parts affected with vaseline or lard, which softens and protects the affected skin.

3. Grease.

Causes.—This disease generally follows a neglected case of scratches. It affects the glands of the legs, as well as the skin, and is more common in heavy, hairy-legged horses that have round, fleshy legs. It may be caused from bad blood and swollen legs, and is more frequently met with in the hind legs. It is also brought on by clipping horses' legs in cold, wet weather.

Symptoms.—There is a thickening and swelling of the legs which become hot and tender and upon which the hair stands out instead of lying down flat as under ordinary con-

ditions. There is an oily and sometimes offensive smelling discharge from around the heels, thus giving rise to the name, grease. During exercise or work the swelling disappears, only to reappear as soon as allowed to stand idle.



Figs. 29 and 30.—Grease.

Treatment.—Treatment of grease should have the same object in view as that of scratches or mud fever, namely, the purifying and clearing up of the blood. Although it is difficult to make a complete cure the condition may be greatly improved by physic drench and powders as mentioned in the previous sections. Give attention to the diet, which should be soft and nutritious. Bathe the legs twice a day with warm water and castile soap, rub dry and apply the white lotion, to which a few drops of carbolic acid may be added to counteract the offensive odor. Poultice the legs every night with hot bran and linseed meal to soothe them and promote the discharge. This treatment will fix the legs up in good shape for some time. Should the treatment of grease be neglected and allowed to develop sufficiently to reach the “grapous” stage as illustrated in fig. 30, small red growths appear about

the heel. These have an appearance not unlike a bunch of grapes. Burn them off with caustic potash before commencing treatment.

4. Sallenders and Mallenders.

Sallenders is an inflammation of the skin in the vicinity of the hock, while mallenders is a similar condition of the knee.

Causes.—It is more frequently met with in heavy horses, especially those highly fed—stallions, etc.—or those allowed to run down in condition during the winter and be heavily fed again in the spring. Fly bites or blistering may cause it.

Symptoms.—There is a soreness or tenderness of the parts, which of course may not be noticed except by accident. A watery discharge soon follows and the hair about the hock or knee may fall out. The skin becomes thickened and itchy and in some cases there may be patches of proud flesh.

Treatment.—Although it cannot be regarded as a serious disease, successful treatment is somewhat difficult. Strive to purify and build up a healthy condition of the blood by internal medicine—physic drenches, etc., as mentioned in the previous sections of this chapter. Should the cause be suspected as being inactivity and overfeeding, reduce the diet and increase the exercise. Wash the legs thoroughly with warm water and castile soap and then apply poultices of half linseed meal and half bran. If very sore and irritated, continue the poulticing for two or three days until this condition is removed. During treatment change the poultice at least three times a day. Burn the proud flesh, if such appears, every two or three days with nitrate of silver. After poulticing discontinue the bathing and make applications of the following lotion each morning and night:

Corrosive Sublimate	2 drams.
Alcohol	4 ounces or 16 dessertspoonfuls.
Rain Water	1 pint.

Shake well before each application.

5. Simple Eczema.

Causes.—Eczema is sometimes mistaken for mange, but unlike mange it is not the result of germs or parasites working in the skin. It is more frequently met with in hot weather when the animal is fed upon such heat producing foods as barley, etc.

Symptoms.—The first appearance of eczema is accompanied by a dryness of the skin in the vicinity of the head, neck and tail, followed by the formation of small pimples from which is discharged a water-like fluid. This is accompanied by a desire to rub the affected parts against the stall, manger or some other object for the purpose of trying to allay the irritation which is sometimes so great that the skin is rubbed and scratched until almost raw.

Treatment.—Proper treatment will relieve the disease, but when a horse is once affected there is an extreme liability of its reappearance with the next hot weather.

Purify and clear the blood by physic, drench and powders as previously mentioned. Rub twice a day with either of the following washes:

No. 1.

Corrosive Sublimate1 dram.
Rain Water1 pint.

No. 2.

Creolin $\frac{1}{2}$ ounce or 2 dessertspoonfuls.
Rain Water1 pint.

No. 3.

Tincture of Iodine2 drams
Rain Water1 pint.

In each case mix and shake well before each application. Probably the favorite of these—the cheapest at any rate and the one that we use—is No. 2. It is inexpensive, costing but two or three cents, and serves the purpose as well as any. Before applying, brush the skin free of all dust, using a fine brush, after which apply to the affected parts with a sponge. Continue this treatment until the indication of irritation ceases.

6. Nettle Rash (Surfeit).

Causes.—Feeding hot or over ripe food, giving a drink of cold water when the animal is heated, or simply overheating during violent exercise of any kind will cause it.

Symptoms.—Small pimples appear on the skin around the head, neck and shoulders, but the skin in other parts of the body may be affected. This disease is met with at all times of the year.

Treatment.—Give physic consisting of:

Bitter Aloes	8 to 10 drams.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Allow the animal to remain in the stable during the next day. Feed on soft food, and continue treatment with a powder of

Ground Gentian Root	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful twice a day on the tongue with a spoon until the pimples disappear.

7. Warts.

Warts are thickened projections of or growths on the skin.

Causes.—It is difficult to say what is the cause. Some animals seem to be more inclined to warts than others. They may be found on any part of the body.

Treatment.—If the wart has a neck it is easily removed by cording. Tie a piece of strong cord round the neck of the wart as close to the skin as possible. This stops the circulation through the wart, causing it to die, after which it soon falls off. Should this plan be impracticable because of the shape of the wart, cut it off with a sharp knife or pair of scissors and burn the spot with caustic potash, which kills the roots and prevents them from re-forming. They may be nicely removed with an ecraseur if one is obtainable.

8. Melanotic Tumors.

These tumors affect gray horses only, being found generally in the vicinity of the tail, sheath, lips or ears. They may be found also in other parts of the body.

Causes.—What causes them is not definitely known.

Symptoms.—They vary in size from that of a bean to that of a pigeon's egg and appear in bunches. They are not sensitive or sore and do not fester, but gradually grow until they become a nuisance when working around a horse.

Treatment.—Do not attempt treatment of these tumors until such time as they interfere with the usefulness of the horse. Should treatment be advisable they may be cut off with a sharp knife, after which apply Monsell's solution of iron to the spot with a feather to stop bleeding. They may be treated with a cord as outlined in section 7, or with a ecraseur and afterward dealt with as an ordinary wound by bathing twice a day with lukewarm water and applying, after each bath, the white lotion.

9. Mange.

Mange is an insect parasite that burrows into the outer and nervous coating of the skin, Fig. 31. It multiplies in enormous numbers and causes almost unbearable irritation.

Causes.—Mange generally originates with horses that have long, dirty hair and that are in poor condition. Other horses exposed to it may become affected also, as the germ is easily communicated by a change of harness, coming in contact with fences or trees against which affected animals have been rubbing, the groom's clothes, standing in the same stable with others affected, and so on. When mange is suspected it is therefore necessary to exercise the greatest precaution to prevent its spreading.

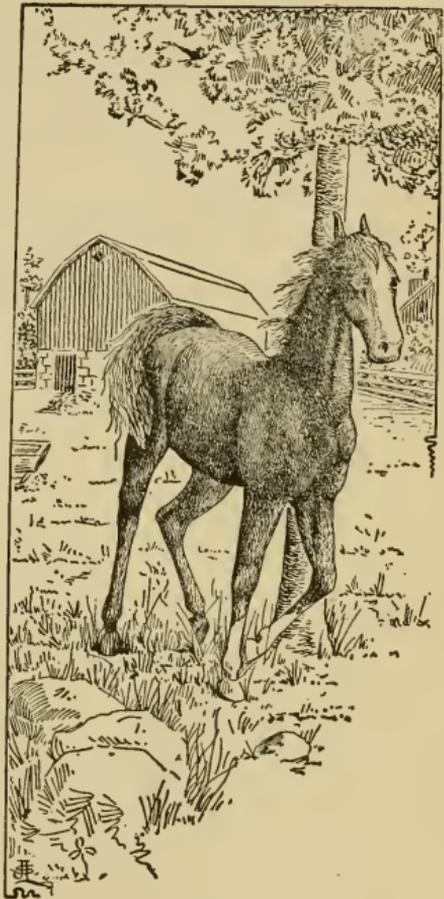


Fig. 31.—Indications of Mange.

Symptoms.—There is an extreme irritation followed by a watery discharge from the affected parts. The hair falls off in patches. It usually makes its first appearance in the vicinity of the mane and tail, but gradually spreads all over the body. All doubt as to the actual presence of mange may be dispelled by the examination under the microscope of the scales from the affected parts. If mange be the cause of the irritation the mange insect may be seen.

Treatment.—The treatment must be directed toward the killing of the insect. If the hair is long, clip it off. Wash the body all over with lukewarm water and a little soap, after which apply either of the following washes:

- Carbolic Acid $\frac{1}{4}$ ounce or 1 dessertspoonful.
- Sweet Oil1 pint.

Mix and shake well together. Rub it around the head, neck and shoulders the first day. The second day rub it around the chest, belly and over the back. The third day put it over his hind quarters and legs. It is best not to go over the whole body at once, as too much of the carbolic acid will be absorbed into the system and may cause poisoning. Another very good wash, and one we think better than the above, is:

- Creolin2 ounces or 8 dessertspoonfuls.
- Rain Water1 quart.

Shake well and rub in thoroughly all over the skin, twice a week, until the parasites are killed. This is by far the cheapest and best remedy known—a case may be cured for ten cents. To prevent the disease from spreading to others, wash with carbolic water everything that has come in con-

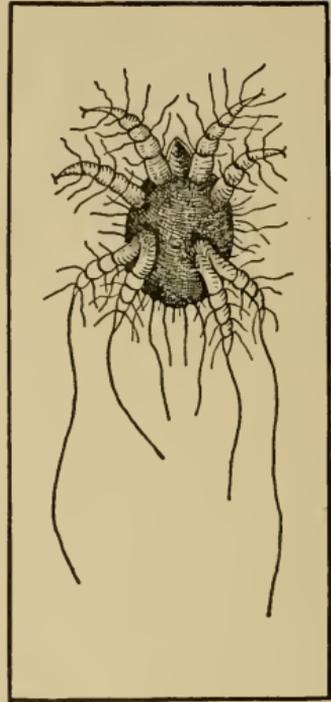


Fig. 32.
The Mange Insect, Magnified.

tact with the affected animal (a few drops of carbolic acid in warm water). This will kill the insect and prevent the disease from spreading. Feed soft food and give a teaspoonful of sulphur in the food twice a day.

10. Ringworm.

Causes.—Ringworm is also the result of the burrowing into the skin of a parasite. It is much more frequently met with in cattle than in horses.

Symptoms.—It often attacks around the eyes and nose. The germs or parasites work in circles, which causes the hair to fall off and leave round, bald spots. If not checked, it soon spreads over the body. Men are liable to contract this disease from horses and cattle, and horses and cattle are liable to contract it from men.

Treatment.—The best and cheapest remedy, and one never known to fail in our experience, is crude petroleum oil as it comes out of the ground. This can be bought at almost any store in the country or city. Paint it over the spot where the ringworm is working, allowing it to extend a half-inch over the edge of the ringworm on to the healthy skin so as to check the spreading. Apply this once a day until the ringworm is gone. If it blisters the skin, stop using it for a day or so and then continue the applications. Another very good remedy is tincture of iodine. Paint as before, every two or three days until the ringworm is gone.

11. Lice.

Horses may be infected with common horse lice or hen lice. Hen lice are very small, reddish looking, and travel very fast. Being too near a lousy hen house, or the roosting of hens in the stable, may account for them. Horse lice are larger than hen lice. They have a long, brownish body, travel very slowly, are generally found on horses that are turned out and have long, dirty hair.

Symptoms.—The coat looks rough. He does not thrive well, keeps rubbing his sides, neck and tail until he has the hair worn off, and seems to be in perfect misery. The lice may be seen upon close examination.

Treatment.—Kill them by washing the body well with lukewarm water and soap, dry by rubbing him with cloths, and apply the following wash:

Creoline2 ounces or 8 dessertspoonfuls.
Rain Water1 quart.

Shake well and apply all over the body every third day by rubbing it well into the skin. Continue this treatment until all the lice are killed. Another very good remedy is a plug of "black-strap" chewing tobacco cut up and steeped in a gallon of rain water. Rub this solution well all over the body every third day until the lice are killed.

CHAPTER XVII.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM IN GENERAL.

1. Inflammation of the Brain and Its Coverings (Phrenitis).

This is not at all common, but it is sometimes met with. Its primary condition is congestion, which is followed by inflammation.

Causes.—Tumors growing in the vicinity of the brain, severe injury to the skull with or without fracture, continued exposure to the hot sun are among the causes more frequently met with. An abscess formed in the brain during an

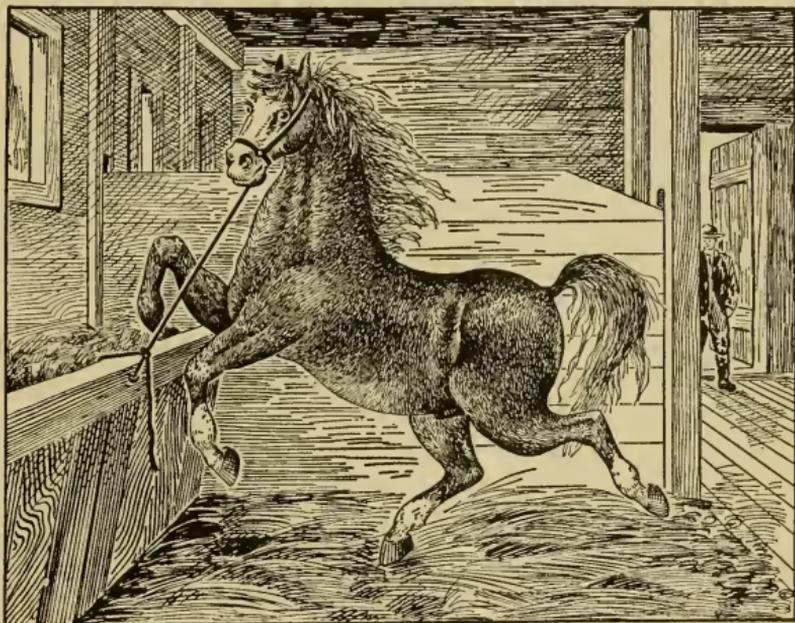


Fig. 33.—Symptoms of Inflammation of the Brain.

attack of distemper or strangles may cause it. It may be added that phrenitis may develop without any cause that can be accounted for.

Symptoms.—A very noticeable dullness is the first symptom. If standing in a stall the horse rests his head upon the

manger. The pupil of the eye is very large and the pulse quite strong but irregular—sometimes as slow as twenty per minute. There is a peculiar snoring noise made in breathing. When the dull period is past a condition exactly the reverse is apparent. There is great excitement, the actions resembling those of a horse that is mad. The pulse increases rapidly and the breathing is louder. He reels about, holds his head high and sometimes rears and throws his front feet in the manger, acting like a piece of machinery. He may hold his head to one side because of the seat of the trouble being located on one side. Should you attempt to lead him, he may fall. Periods of quietness are thus followed by periods of excitement, more pronounced upon each reappearance. We have attended cases in which the head was twisted down between the front legs and held in that position.

Treatment.—The treatment of an animal in this condition is somewhat dangerous because of the great excitement being at any time liable to develop, and great care must be exercised. Give a thorough physic of

Bitter Aloes	10 to 12 drams.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. One hour after give the following:

Bromide of Potassium	2 drams or 1 teaspoonful.
Fleming's Tincture of Aconite.....	10 drops.

Mix in a pint of cold water and give as a drench. Repeat every two hours, and apply cold water cloths and ice to the head until there is relief. Cover the body up nice and warm with blankets. If in good condition, and the disease noticed in the earlier stages, bleed him. Take a half or three-quarters of a pail of blood from him. If you bleed him, follow up with the above treatment, but give about eight to ten drams of bitter aloes only and not so much aconite.

2. Sunstroke.

This disease is common to all animals, and more especially to man, generally attacking hard-working horses in the hot months of summer. It is a congested state of the blood vessels of the brain, with loss of power and feeling.

Causes.—It is caused by exposure to the hot sun, as a general thing, and especially so if the horse has been highly fed and kept in a poorly ventilated stable. It is often caused

by taking a horse out of a pasture field and giving him a hard day's work in the sun when not used to it.

Symptoms.—Dullness and dryness of the skin are among the earlier symptoms. Sweating when at work is not so profuse as ordinarily. The appetite is poor and there is a staggering sort of gait. Symptoms such as these may be noticed two or three days before the climax is reached. He finally staggers and falls, struggles for a time and then remains quiet, having lost power to move and sense of feeling. Pricking with a pin or knife apparently makes no impression. The pupil of the eye is very much enlarged, the pulse quick but weak and the breathing heavy. He is at this stage unable to help himself.

Treatment.—Apply cold, wet cloths and ice bags to the head around the brain, and keep these on until he gets relief, and give

Sweet Spirits of Nitre1 ounce or 4 dessertspoonfuls.
Whisky1 wineglassful.

Mix in a half pint of cold water and give as a drench. Repeat this every hour and a half or two hours until there is a change for the better. Be careful in drenching while in this state for fear of choking him. Continue treatment with a dose of physic consisting of

Bitter Aloes 8 to 10 drams.
Bicarbonate of Soda 1 teaspoonful.
Ginger 1 teaspoonful.

Mix in a pint of lukewarm water and give as a drench. Should he notice things about him and have a desire to eat give soft food containing flaxseed. Give cold water in small quantities but often. Should he remain lying for any length of time in the same position, turn him over at least two or three times a day to prevent the lungs from becoming affected and cause him to be more comfortable. Apply plenty of blankets to the body to keep it warm in order to lessen the circulation of blood in the head. In this as in all other cases when lying, keep plenty of dry bedding under him. As soon as there is a desire to stand assist him to regain his feet.

3. Concussion of the Brain.

Causes.—Concussion of the brain is usually the result of a severe injury to the head such as that which may occur during a runaway, rearing and falling back or striking the

pole of the head violently against some hard substance. In some cases recovery is rapid, but in others death comes very suddenly.

Symptoms.—In a pure case of concussion all power of motion and feeling is lost. There is complete paralysis and but little sign of life. The pupils of the eyes are very much enlarged and the pulse very weak. Should the bones of the skull be free from fracture there are chances of recovery. Signs of consciousness are first indicated by a desire to rise, but he gets up on his hind legs first and it may be some time before it is possible for him to get upon his front legs. Recovery is variable according to the extent of injury.

Treatment.—Follow the same course of treatment as outlined in section II. of this chapter for sunstroke.

4. Stomach Stagers (Megrims).

Causes.—It may be caused in various ways. Anything that will interfere with the flow of blood to the brain, such as heart disease, indigestion, working in a tight collar, or a small tumor growing and pressing on the brain. Very nervous animals are more subject to this than others of the opposite temperament.

Symptoms.—The attack is sudden. He staggers, becomes unmanageable and falls to the ground. These symptoms may pass off in a few minutes, and he may seem as well as ever. A horse once affected is unfit to use for single driving, as he may take one of these fits at any time and fall without showing the slightest sign of doing so.

Treatment.—Dash cold water on the head until he comes to, and afterwards give a physic consisting of

Bitter Aloes	8 to 10 drams.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. If there is anything wrong with the stomach this will generally relieve him, and it might be that he will never have another attack. If it is from a tight collar, put a large one on him. In some cases it is recommended to give, after the physic, a teaspoonful of bromide of potassium in the feed twice a day, for a while, to act on the nerves.

5. Inflammation of the Spinal Cord and Coverings (Spinitis).

Causes.—This, too, is the result of injury in the majority of cases, such as may take place in a runaway. We have met a case where spinitis developed in a colt after a fall in the pasture field. Casting an animal may so injure him as to cause it, as also may nervous excitement from violent exertion.

Symptoms.—The earlier symptoms may not be well marked but as the disease progresses the symptoms become more apparent. There is considerable fever, weakness and a staggering gait. He sometimes strikes his hind fetlocks in walking and falls down when an attempt is made to turn him around. If neglected and allowed to develop, the result is usually paralysis and death.

Treatment.—Give a physic of

Bitter Aloes	8 drams.
Bicarbonate of Soda	1 teaspoonful.
Ginger	1 teaspoonful.

Mix in a pint of lukewarm water and give as a drench. In addition to this give the following powder:

Powdered Nux Vomica	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful in the feed or on the tongue with a spoon every night and morning. Keep him very quiet and in a comfortable place. Blister along the back with a mustard plaster—quarter of a pound of mustard and enough vinegar to make it into a paste. Put this plaster on every day for a few days. When getting better oil his back, if sore from the mustard plaster, with sweet oil, lard or goose oil. Feed on soft food with plenty of boiled flaxseed in it to keep the bowels loose. Assist him in getting up, should he lie down, for when once he gets off of his feet entirely there is very little hope of recovery.

6. Paralysis.

Paralysis may be complete or partial. When complete, of course there is absolute loss of muscular power and sense of feeling, which soon results in death. Partial paralysis affects but one part of the body—the hind quarters or one side, etc. See Fig. 34. Should the spine be affected all portions of the body behind it are also paralyzed.

Causes.—It may be the result of injury to the brain or spinal cord, tumors in the vicinity of these organs or great excitement. Injury to the back may occur at the time of falling or when being cast for an operation. Horses used in the hunt sometimes develop it because of slipping or severely straining the muscles under the spine. A rib fracture sometimes renders a horse unable to rise to his feet. It may develop in a stallion because of serving a great many mares. Cows are more subject to paralysis than horses.

Symptoms.—Partial paralysis renders that part of the body affected powerless and senseless. Should one side, for example, be paralyzed, it is so indicated by walking in a circle; again if the seat of the trouble be in the hind quarters,

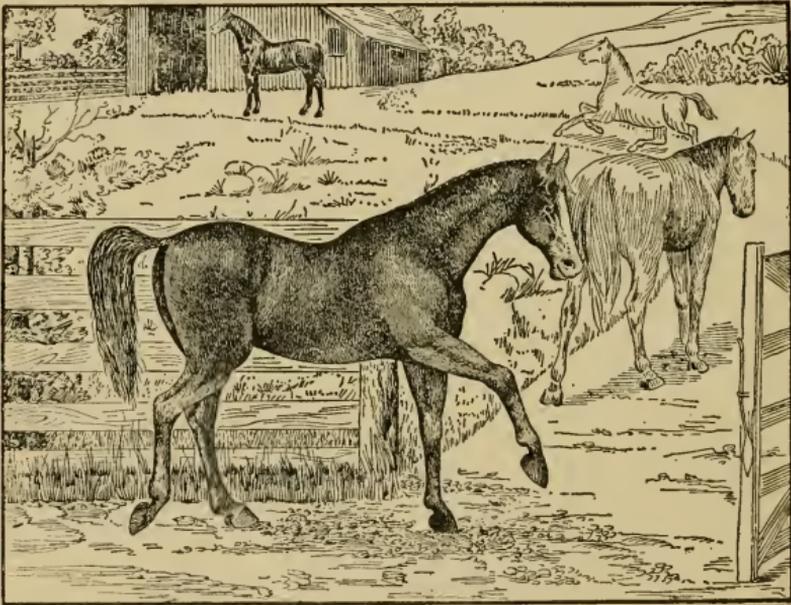


Fig. 34.—Paralysis of the Hind Legs.

such will be apparent because of the loss of power in these parts. There is sufficient power to raise the body upon the front feet but that is all. The loss of the sense of feeling may be proven by pricking the affected part with a pin when apparently no notice will be taken of it. Even when unable to stand because of paralysis the appetite may be fairly good.

Treatment.—Should he be able to bear his own weight, raise him with pulleys or slings. In warm weather apply a

mustard plaster over the back, but if in very cold weather put a half-pail of hot salt in a bag over the kidneys and apply plenty of blankets, because what is necessary in cases of this kind is plenty of heat to the back. Should he be able to stand fairly well, keep him on his feet as much as possible. A horse can stand for a couple of weeks without injury; in fact if he be allowed to lie down, his anxiety to get up may cause him to flounder about to such an extent as to be in danger of hurting himself in some way. Give

Bitter Aloes	8 drams.
Sweet Spirits of Nitre	1 ounce or 4 dessertspoonfuls.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. This will start the bowels and kidneys to act. In addition to this give the following powders to strengthen the nerves:

Powdered Nux Vomica	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day on the tongue with a spoon, or in soft food containing plenty of boiled flaxseed, and if he is able to walk give gentle exercise every day.

7. Inflammation of the Brain and Spinal Cord and Their Coverings (Cerebro-Spinal Meningitis).

Cerebro-spinal meningitis is primarily a congestion of the brain, spinal cord and the coverings of these organs, which finally develops into inflammation. It is comparatively new, not being met with anywhere except on this continent.

Causes.—It may be caused by being kept in a crowded stable that is poorly ventilated and badly drained, or by eating certain kinds of grasses that contain too much narcotic properties, such as are grown in swamps.

Symptoms.—These vary according to the organs most affected. There is a noticeable trembling of different parts of the body accompanied by dullness and loss of appetite. A peculiar jerking in the limbs is noticeable as the disease progresses, followed by staggering and falling and loss of power to regain the feet. The pulse is quick but weak, the bowels are costive and the urine is of a dark brown color. After falling he lies quietly for a time in an apparently dull, stupid condition. This, however, passes off after a time and

he becomes delirious. Give him water, and although he attempts to drink he is unable to do so because of paralysis of the gullet. These symptoms are soon followed by death.

Care should be taken to ascertain the cause in order to remove it if possible, because other horses similarly exposed may also develop the disease.

Treatment.—If noticed before it has gone too far there is hope of recovery; but if the animal is down and unable to swallow the chances are against him. As soon as the disease is noticed, take one-half pail of blood from him and give

Bitter Aloes	8 drams.
Sweet Spirits of Nitre	1 ounce or 4 dessertspoonfuls.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench then follow with a powder of:

Powdered Nux Vomica	$\frac{1}{4}$ pound.
Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Hyposulphite of Soda	$\frac{1}{4}$ pound.

Mix well together and give a teaspoonful on the tongue every three hours until there is relief. Apply a mustard plaster and hot cloths to the back and cover the body warm. Should he get down turn him over from side to side three times a day, and be very careful while drenching for fear of choking him. Feed soft food, with plenty of boiled flaxseed in it, and give plenty of cold water to drink.

8. Chorea.

This is an affection of the nervous system, in which the horse loses the power to back up.

Causes.—It is due to an injury of the spinal cord. Cases have been met with in which chorea attacked a colt after castration, but we are of the opinion that even then the chances were that it was due to an injury as a result of casting rather than to the effect of the operation.

Symptoms.—The most noticeable symptom of course is the inability to back up. In all probability he is useful in other ways, will be able to pull and do anything ordinarily in the shape of work so long as it requires only going ahead, but try to force him to go backward and his tail rises, the muscles of the hind quarters shiver, but backing up is out of the question.

Chorea is more liable to develop in horses of a highly nervous temperament.

Treatment.—If noticed in the first stages, give:

Powdered Nux Vomica ½ pound.
Nitrate of Potash or Saltpetre ½ pound.

Mix thoroughly and give a teaspoonful three times a day in soft food. Rub him over the back and hips with the white liniment twice a day. If in good condition, give him a physic drench of

Bitter Aloes 8 drams.
Ginger 1 dessertspoonful.
Bicarbonate of Soda 1 dessertspoonful.

9. Stringhalt.

Stringhalt derives its name from the peculiar manner in which the horse acts.

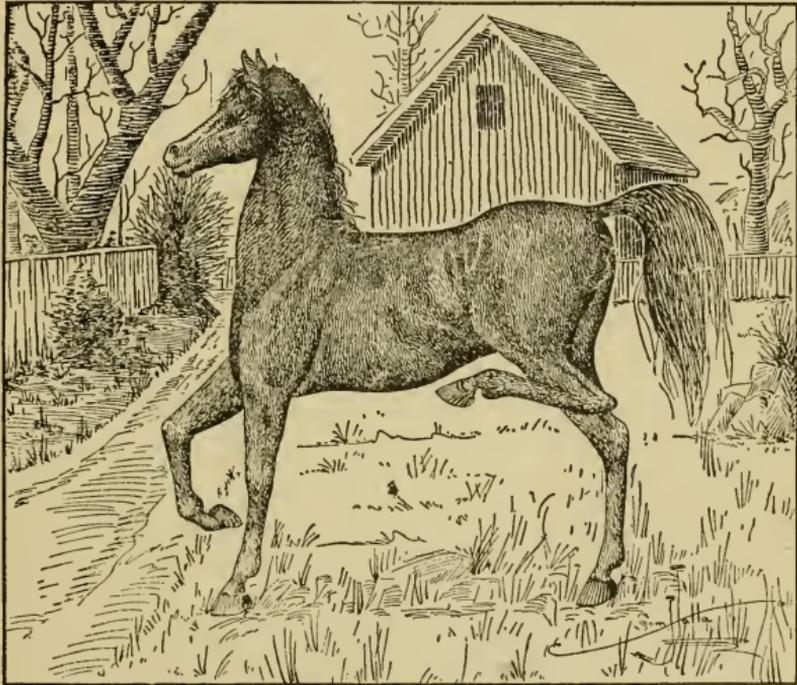


Fig. 35.—Attitude Assumed When Affected with Stringhalt.

Causes.—It is the result of some affection of the nerves which supply the part affected, but really what part of the nerves has never been positively ascertained. Horses of highly nervous temperament are more frequently attacked. The application to the legs of severe blisters which irritate

the nerves or clipping the legs when left exposed to cold may cause it. Sometimes the burning of the fetlock by the rope or the irritation of the cutting during castration may give rise to it. It affects the hind more frequently than the front legs.

Symptoms.—There is a jerky, peculiar, high action of the affected leg, more noticeable during excitement. See Fig. 35.

Treatment.—If well established it is incurable, but if noticed in the first stages, give a physic of

Bitter Aloes	8 to 10 drams.
Bicarbonate of Soda	1 dessertspoonful.
ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Leave the animal in the stable the next day, and follow with a powder of bromide of potassium, two drams, or a teaspoonful, twice a day in the food, or on the tongue with a spoon. This acts favorably on the nerves.

10. Hydrophobia (Rabies).

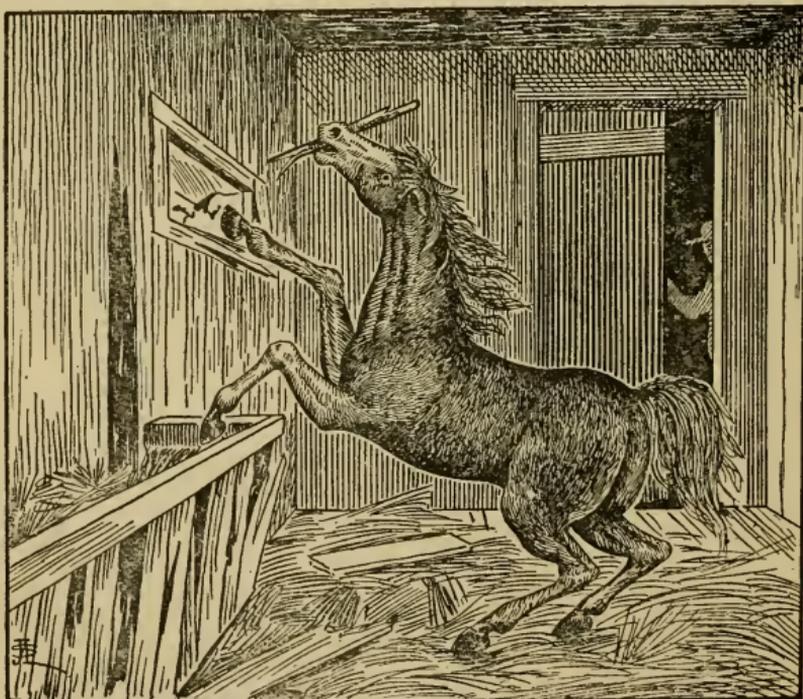


Fig. 36.—Hydrophobia.

Causes.—It is the result of being bitten by a dog or cat. It never originates in the horse.

Symptoms.—There is extreme restlessness. He bites or rubs the part that has been bitten. Brain disturbance soon follows these earlier symptoms, similar in some respects to that during an attack of inflammation of the brain. The symptoms of hydrophobia have the additional feature of viciousness, as shown by the destructive impulse and also by attempts to bite his attendant. The excitement increases. He turns round and round, finally falls and dies.

Treatment.—When the symptoms as here outlined are apparent, destroy the horse at once.

A bite from a dog may be treated—before symptoms of hydrophobia appear—as follows: With a sharp knife cut away the flesh in the vicinity of the wound and then burn with caustic potash or nitrate of silver. Should these not be at hand use a red-hot iron or anything to destroy the poison.

11. Lockjaw (Tetanus).

This is purely a disease of the nerves and receives its name because of the peculiar effect upon the muscles of the jaw, causing them at times to become so set that it is an utter impossibility to pry them apart. It appears in two forms, viz: the traumatic following a visible injury or operation and the idiopathic, which develops when no injury or operation is apparent.

Cause.—It is due to a germ—tetanus bacillus—entering the system through an abrasion of the skin or mucous membrane. The symptoms begin to appear from eight to twenty-one days after the occurrence of the injury. The abrasion may be slight or severe, as it has been known to follow the prick of a nail in the foot as well as a stake or cut. It may follow any operation—docking, nicking a horse's tail, or castration. Injury to the skin while blistering severely may account for it.

It is more likely to follow castration if the castrated animal be allowed to remain in cold winds and rain or walk through or stand in cold water. A case is on record in which twenty-four castrated horses were allowed to bathe in cold water. Sixteen of the twenty-four died of lockjaw. The necessity of operating in fine weather and of keeping the

castrated animal away from damp places and cold winds is therefore apparent.

Tetanus usually appears about the time a wound has healed, and is more likely to follow a wound that has been allowed to heal prematurely—faster than it should.

Symptoms.—These are easily detected. In the earlier stages there is a peculiar stiffness of the body. He walks with the neck high and the head pointed forward as if suffering from sore throat. He has a peculiar, high action and is unable to lower the head to pasture except in very mild cases. The appetite seems to be fair, as he makes attempts to eat. Sudden excitement causes him to almost groan, as if in pain. He throws the tail up, raises the head quickly and turns up

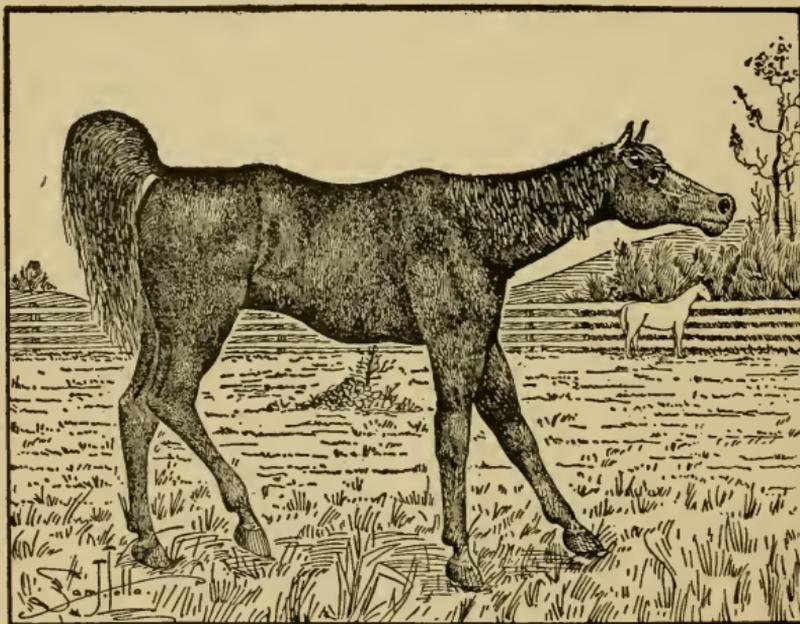


Fig. 37.—The Rigid Position Assumed in an Attack of Lockjaw.

the white of the eyes. The muscles seem to be hard, drawn and set all over the body and he almost falls. An examination of the mouth discloses the fact that it can be opened only slightly. These symptoms gradually become more violent until he is unable to stand. Severe fits of struggling, during which he appears to be in terrible agony, follow, until death ends his suffering.

Treatment.—In a very light case of the disease, if in the spring and the animal is able to lower his head and eat grass, it is best to leave him out in a level pasture field where there is nothing to disturb him. Do not go near him to give medicine, but watch him to see that nothing unexpected turns up. Catching a wild colt in the pasture to give medicine only excites him so much that it does more harm than good. All kinds of treatments have been tried, but the best is to give, as soon as the disease is detected, a dose of physic consisting of

Bitter Aloes	8 drams.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.
Sweet Spirits of Nitre	1 ounce or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench, being careful not to unduly excite him while giving it. Should it be caused by a nail in the foot, pare the hole out well and poultice with hot linseed poultices, changing them often to keep them hot. Keep the foot poulticed until there is relief. If from a wound bathe well with lukewarm water three or four times a day, and paint with fluid extract of belladonna after each bathing. Keep him in a comfortable stable, free from noise or anything that will excite him, as perfect quietness is necessary in treating this disease. Give one dram, or one teaspoonful, of fluid extract of belladonna on the tongue with a spoon three times a day, and feed soft, easily masticated food, such as gruels of chop stuff containing boiled flaxseed. Make the gruel thin so that he can drink it. If in the spring give him grass, at other seasons scald the hay and make it as soft and easy to eat as possible. It generally takes from three weeks to thirty days for the disease to run its course. It is best not to rely too much on medicine, for it takes time. Good nursing is better than medicine, and as a general rule before the end of the third week there are signs of improvement.

CHAPTER XVIII.

DISEASES OF THE LYMPHATIC SYSTEM.

1. Weed in the Leg (Lymphangitis).

This disease is known by various other names, such as water farcy, big leg or Monday morning fever. It is very common now in this country, and is liable to be more so, on account of horses being better fed and cared for than formerly. It generally affects the hind legs, but sometimes affects the front legs.

Causes.—Lymphangitis is common among hard-worked and highly-fed horses, and one of the commonest causes is continuing to feed heavily during a period of idleness after being worked hard. The direct cause is the result of an over-supply of nutriment in the blood which unduly stimulates and gives rise to inflammation of the lymphatic glands of the legs. This inflammation prevents their proper absorption of the lymph and to their failure to carry it off is largely due the swelling that naturally follows. A similar condition may

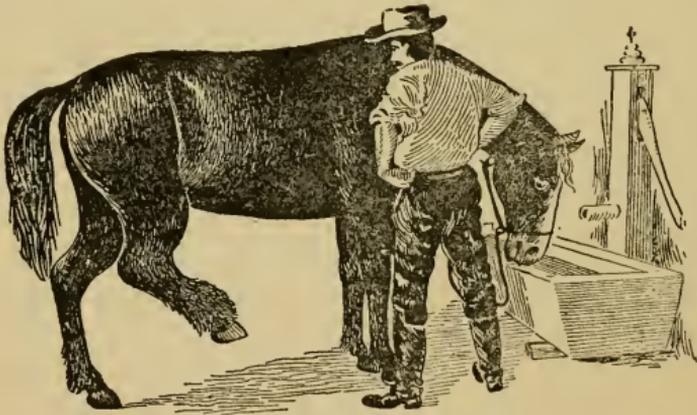


Fig. 38.—Weed in the Leg (Lymphangitis).

have its source in the prick of a nail or other injury in the foot or because of an over-supply of fibrine in the blood.

Heavy horses having a sluggish circulation are more likely to be affected than light horses.

Symptoms.—There is loss of appetite, slight trembling and fever followed by lameness and swelling along the inside of the leg—usually the hind leg—just inside of the thigh. In the earlier stages this swelling makes its appearance along the line of the lymphatic vessels in the form of a hard cord. Press the fingers upon this cord and immediately the leg is thrown out and up and is apparently very stiff and sore.

This condition is followed by much greater swelling extending all the way down and around, in some cases becoming as large as a stovepipe. The leg is sore and sensitive and frequently held from the floor, causing considerable pain, as indicated by turning the head to look at it frequently.

Should a front leg be affected the symptoms are similar, the swelling commencing at the chest and extending down on the inside. The pulse is quickened and the breathing heavier than is natural. A second attack is much more liable than a first, a third than a second and so on, until frequent attacks terminate in elephantiasis, or big leg.

Treatment.—Clear the blood of the extreme richness as soon as possible, by bleeding—take four quarts of blood from him if he is strong and fat, and give a physic of

Bitter Aloes	8 to 10 drams.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. If you bleed, give only 8 drams of aloes, and use the following powders:

Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful three times a day on the tongue with a spoon or in the food. Feed soft food, with plenty of boiled flaxseed in it, to keep the bowels loose. Bathe the leg with lukewarm water—as warm as you can bear your hand in it—containing some saltpetre and vinegar, for nearly an hour at a time, three times a day. After wiping dry, rub well with white liniment weakened nearly one-half by adding water. If in very cold weather, bandage the leg to keep from getting cold in it after the bathing. Allow him to stand quietly for three or four days until the inflammation is checked in the gland; then commence to exercise a little

every day, and gradually bring him back to his natural habits. The more he is bathed with warm water the sooner he gets relief.

2. Big Leg (Elephantiasis).

Causes.—This is a thickened state of the leg from repeated attacks of lymphangitis or weed in the leg. The swelling becomes organized and it is impossible to effect a complete cure in any case.

Treatment.—Give regular exercise and a physic drench once in a while to keep the bowels right.

Bitter Aloes	8 to 10 drams.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Follow with a powder to act on the kidneys and blood:

Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix thoroughly and give a teaspoonful in the food twice a day. This will help more than anything you can do for him. Whenever the swelling re-appears, repeat the above treatment, and by keeping his blood in good condition he may make a good work horse for a long time.

3. Swelling of the Limbs (Anasarca).

Causes.—This is the result of the lymphatic glands of the legs working sluggishly and not carrying off the lymph. It generally occurs in the hind legs, and is commonly called stocking of the legs. Hard work in the spring after remaining comparatively idle during the winter and before being accustomed to it is one of the commonest causes. The swelling is noticed often in the morning after standing idle during the night. An unhealthy condition of the blood or any hard work to which the horse is not accustomed may also cause it.

Symptoms.—There is swelling of the legs during the night, accompanied by stiffness when taken out to work. This swelling goes down after moving about for some time, but will return again during the next night, perhaps worse than before. If not attended to this condition may terminate in a case of scratches or grease.

Treatment.—Keep the animal from work for a few days and give a physic of

Bitter Aloes	8 drams.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.
Sweet Spirits of Nitre	½ ounce or 2 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench. Feed soft, light food, and allow the animal to stand in a stable a few days after giving the drench. If very weak, and not safe to give the aloes, give

Raw Linseed Oil	1 pint.
Sweet Spirits of Nitre.....	½ ounce or 2 dessertspoonfuls.

Mix and give as a drench and follow the same treatment as after giving aloes; then follow with a powder to act on the kidneys and blood and build up the system:

Nitrate of Potash or Saltpetre	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root	¼ pound.

Mix thoroughly and give a teaspoonful every night and morning in the feed. After being idle a couple of days allow him to do only gentle, easy work, and hand-rub his legs at night and bandage them, which will keep the swelling down and strengthen the leg. Never leave the bandage on longer than three hours, as it then does more harm than good.

CHAPTER XIX.

DISEASES OF THE HEART, ARTERIES, VEINS AND BLOOD.

I.—HEART DISEASES.

AFFECTIONS of the heart are uncommon to the horse, but palpitation and rupture of the valves are met with sometimes.

1. Rupture of the Valves.

Causes.—It is hard to tell just what is the cause, but it is safe to conclude that valves were diseased in some form before the rupture takes place.

Symptoms.—When rupture takes place the horse dies almost instantly, as it immediately stops the circulation. In some cases the horse may be subjected to weak spells before rupture takes place, while in others this symptom may not be noticed.

Treatment.—Nothing tending to bring about a cure can be done. An examination of the heart after death is the only means of determining definitely whether death was due to rupture, when clotted blood and the ruptured valve may be seen.

2. Palpitation.

This is due to weakness of the heart.

Causes.—It generally follows such weakening diseases as fevers, lung troubles, or dropsy of the heart.

Symptoms.—There is extreme weakness accompanied by violent thumping of the heart, plainly heard when placing the ear against the side in its vicinity. This is increased during periods of excitement. The pulse is weak but quick, and there is little ability to do ordinary work.

Treatment.—Keep him as quiet as possible, and do all possible to build up the general strength by easily digested, nutritious diet. Give a tonic of

Pulverized Digitalis	¼ pound.
Ground Gentian Root	½ pound.
Powdered Nux Vomica	¼ pound.
Ground Sulphate of Iron	¼ pound.

Mix thoroughly and give a teaspoonful three times a day in the feed or on the tongue with a spoon.

II.—DISEASES OF THE ARTERIES.

3. Tumor (Aneurism).

This is a diseased state of the walls of an artery.

Causes.—The causes are unknown.

Symptoms.—Tumor may be present for some time before being detected, in fact until the artery gives way at the point of attack. Should this occur internally and the artery be large, death soon follows from loss of blood. Should it occur in a small artery among the muscles death will not follow from loss of blood, because of the stoppage of bleeding by clotting, and pressure of the skin and muscle. This condition may be detected by a swelling suddenly appearing in the vicinity of the diseased artery. There may be weakness of course accompany the rupture according to its extent. Pressure upon the swelling will indicate the presence of the fluid within.

Treatment.—Allow the fluid to remain in the swelling two or three days until positive that the artery has stopped bleeding; then, with a sharp knife, open into the lower part of the swelling—make a large cut—and remove all the clotted blood; then, with a large syringe, wash out all the blood with lukewarm water containing a few drops of carbolic acid. After this, bathe the parts well with lukewarm water twice a day, and inject the white lotion each time, after bathing. Keep the animal quiet and it heals in the course of two or three weeks. Should bleeding of the artery occur the second time, it may be necessary to tie it above the point of rupture with a piece of strong cord.

4. Rupture of an Artery.

Causes.—It is sometimes caused by straining while foaling, drawing heavily, severe exertion of any kind, or a severe bruise.

Symptoms.—These are the same as those of tumor or aneurism of an artery, only the artery is not diseased.

Treatment.—Treat in the same manner as a tumor or aneurism of an artery.

III.—DISEASES OF THE VEINS.

5. Inflammation of a Vein (Phlebitis).

The jugular veins are more frequently affected by inflammation than others.

Causes.—Neglect to give proper attention to cleanliness when bleeding—using a rusty fleam, a rusty pin or dirty hands—is often the cause. Rubbing the neck against something after bleeding, turning a horse out to grass so that he may hold his head down after bleeding, or any condition tending to interfere with the circulation may cause clotting, swelling and then inflammation.

Symptoms.—There is swelling along that side of the neck at which the incision was made when bleeding. If the head has been allowed down it, too, may be swollen on that side. The swelling is hard and painful, and in a few days the formation of clotted blood causes festering, finally breaking out in small boils or abscesses.

Treatment.—Keep the head well tied up and bathe the sides of the neck with warm water and vinegar four times a day for half an hour at a time, and each time, after bathing apply white liniment. If the neck beals or festers, open the places with a knife and allow the matter to escape. When this is done change the treatment to white lotion instead of liniment. Do this until all the swelling and inflammation disappears and the bealing places are healed; then blister, using the following:

Vaseline, or Lard1 ounce.
Pulverized Cantharides, or Spanish Fly.....1½ drams.

Mix well together and rub along the swollen part of the neck. Tie his head short so that he can not rub it. Rub in well and grease the blistered parts in three days after. Allow it to remain for two or three weeks, or until it heals, and if the swelling is not down, blister again and follow the same directions as before. In after treatment do not turn him out to pasture for a year or so, for the head will swell on account of not having the use of this vein. Keep him in the stable and feed from a high manger, and he will be just as useful as ever. After a time the other jugular vein enlarges so that it does the work of both veins. When buying a horse look at both sides of his neck to see that the veins are all right.

IV.—DISEASES OF THE BLOOD.

6. Bad Blood, Hide Bound.

An impure condition of the blood is frequently termed "bad blood," the most noticeable result of which is failure to thrive and continue in good condition.

Causes.—Neglect includes almost every cause—hard work accompanied by abuse, turning out to a straw stack and treatment such as will allow the system to "run down"—although it may result from indigestion or poor teeth, which prevent the proper mastication of the food.

Symptoms.—There is weakness, a generally "run down" condition and that usually termed "hide bound." The hair is rough, dry and scruffy. The blood is hot and small pulses

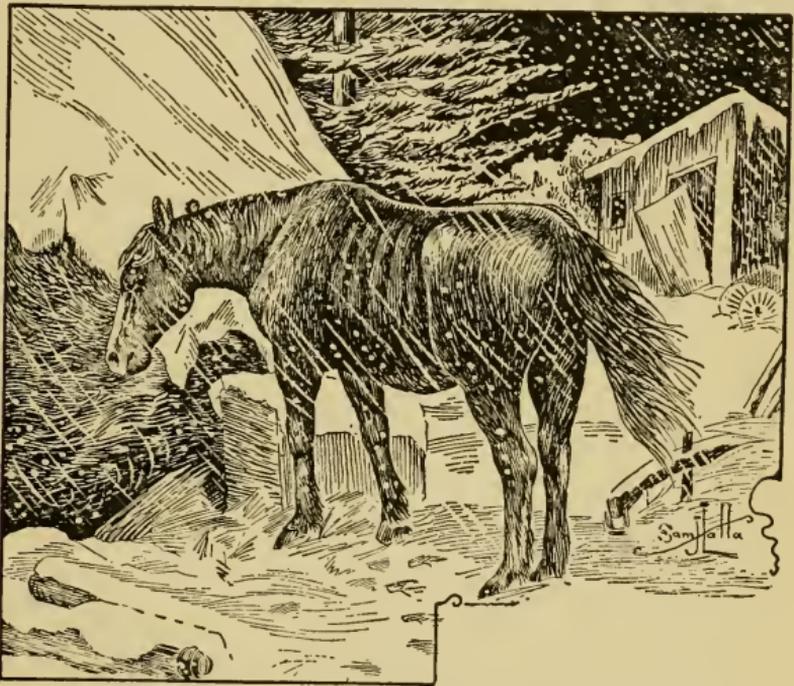


Fig. 39.—Such Treatment as this Paves the Way for Diseases of the Blood.

appear over the body. Standing in the stable over night causes the legs to swell. Scratches appear when out in wet weather. There is a general dullness and unfitness for work, which does not seem to improve even when plenty of food is given.

Treatment.—Strive to improve the condition of the blood. Give a physic of

Bitter Aloes	8 drams.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. Allow him to stand in the stable a couple of days, and feed soft food with plenty of flaxseed in it to keep the bowels loose, then give the following powder:

Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.

Mix and give a large teaspoonful twice a day in the feed. After this follow with a tonic powder of

Ground Gentian Root	$\frac{1}{4}$ pound.
Sulphate of Iron	$\frac{1}{4}$ pound.

Mix well and give a teaspoonful twice a day in the feed. If in the spring of the year and possible to turn him out to grass, bleed him, taking half a pail of blood, then turn him out, and this will cure him as quick as anything. When following treatment for "bad blood" when a horse must be kept in the stable, give a little exercise each day. In every case examine the teeth carefully and remedy any defects that may be noticed, as the proper mastication of the food is essential to success.

7. Azotura.

Azotura was at one time only occasionally met with, but it is becoming more prevalent.

Causes.—High feeding while being allowed to remain idle in the stable, thus causing the blood to be stored with an unusual amount of albumen, followed by violent exercise—hard work or driving—may account for it. Violent exercise such as we have mentioned causes a more than usual amount of oxygen to be taken into the lungs with the extra amount of breathing occasioned by the exercise. The oxygen comes in contact with the blood, unites with the albumen, forming hippuric and urea acids. These affect the action of the kidneys, which in turn interferes with the muscular system, causing the muscles of the back and hips to become swollen and paralyzed. It is the only disease that is noticed to make its appearance soon after the commencement of such exercise as that of a drive, and is more common during the winter

months because of the probability of being allowed to stand for longer periods in the stable. It is met with, however, at any time of the year.

Symptoms.—When taking a horse out of the stable, he may go off full of life for a quarter of a mile to a mile, or even a longer distance in some cases. He then breaks out in a sweat, becomes stiff in the hind quarters and unable to trot. He breathes heavily, his pulse is quick and weak, and he trembles about the flanks. The muscles of the back and hips are swollen and as hard as a board. Attempt to drive him still further and he becomes so stiff that he is not able to go, falls down and is unable to rise. At this stage all the symptoms mentioned above are increased greatly. His urine is of a dark red color and scanty, due to the kidneys not acting properly. Obtain a portion of the urine and allow it to stand; the acids come to the top. In severe cases the legs and ears are very cold.

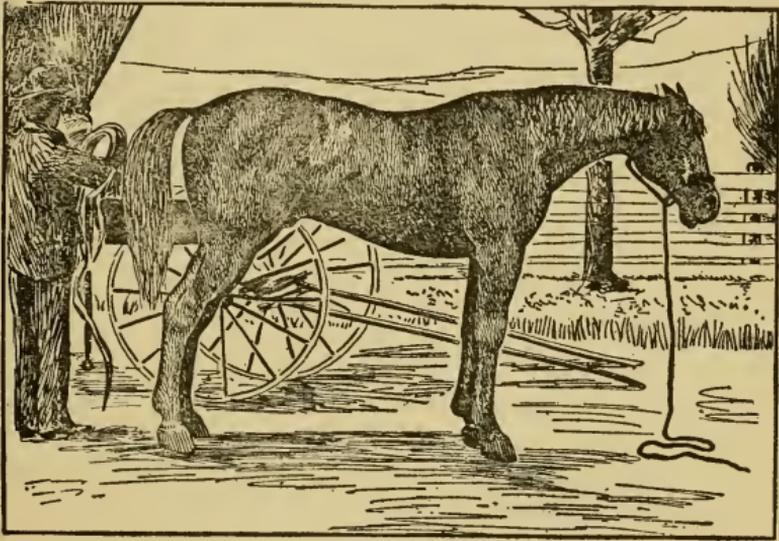


Fig. 40.—Azotura.

Treatment.—As soon as the symptoms are noticed, stop driving him and take him to the nearest stable, for if the driving is continued he only falls down and is a great deal more trouble. When in the stable, cover him well with blankets and allow him to sweat profusely. This relieves the kidneys. Give him a good rubbing all over the back and hips

with white liniment or apply a coat of mustard and vinegar over the back. Even a half-pail of hot salt in a bag is good. Heat must be applied to the kidneys to start their action. Give

Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Bitter Aloes	8 drams.
Bicarbonate of Soda	1 teaspoonful.
Ginger	1 teaspoonful.
Fleming's Tincture of Aconite	10 drops.

Mix in a pint of lukewarm water and give as a drench; this promotes action of the bowels and kidneys. As a general thing, if this treatment be immediately given, he will be able to work in three or four hours. If a severe case, and the horse does not get relief in three or four hours, follow with

Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Bicarbonate of Soda	1 dessertspoonful.
Fleming's Tincture of Aconite	10 drops.

Mix in a pint of lukewarm water and give every three hours until there is relief. Keep the heat applied to the back. If he is so bad as to get down, turn him over from side to side, twice a day, and as soon as he is able to get up, help him to his feet. It is well to use slings for a short time every day after he begins to get strong. We saw one case where a horse had lain nine days, then got up and was all right again by following the above treatment without the slings. Feed soft food and give all the lukewarm water he can drink. Attend to his general comfort by providing a comfortable stall with good bedding. Should he not make water, take it away with a catheter. When getting better give the following powders to act upon the kidneys:

Nitrate of Potash or Saltpetre	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.

Mix and give a teaspoonful twice a day in the feed. After an animal has suffered from this disease once he is more liable to be affected again. Strive to keep the kidneys in good condition and exercise a little each day. When taking out to work or drive, avoid violent exercise for a time, and this generally prevents its recurrence,

CHAPTER XX.

DISEASES OF THE BONES.

1. Big Head (Osteo-Porosis).

This disease is more common in some localities than in others. It is not prevalent in Canada or Great Britain, but is quite so in the United States and Mexico. It is a disease which attacks horses from one to four years old, rarely old horses. It develops gradually as the animal grows, without any signs of soreness, the bones of the head and legs becoming larger, lighter and very brittle, or easy to break—thus the term “big.” It affects the bones of the head more frequently than those of any other part of the body.

Causes.—It is difficult to say what is the real cause of this disease, but it is supposed to be caused by feeding on pasture land deficient in the salts of lime. Some believe it to be wholly caused by grazing on low-lying, swampy land, where the grass grows long and does not contain the full amount of nourishing substances.

Symptoms.—In the earlier stages the symptoms are not well marked. There is dullness, loss of flesh and softening of the muscles. In from four to six months the true nature of the disease becomes evident. There is a stiffness when traveling and very gaunt appearance accompanied by an enlarging of the head, soon followed by enlargement of the bones of the legs. As the disease progresses these symptoms increase. The animal loses flesh until after a gradual decline he dies. In some cases the bones of the legs become so brittle that they break while traveling.

Treatment.—The treatment of osteo porosis up to the present has not been attended with but little success, more especially if allowed to go for any length of time before taking the matter in hand. In the earlier stages if he is on low pasture move him to high ground, and give a teaspoonful of sulphate of iron in some oats twice a day to build up the system and counteract the effect of the disease.

2. Splints.

A splint is a bony enlargement on the front leg between the knee and the fetlock or below the hock on the hind leg. It may affect the inside or outside of the leg, but is less frequently found on the outside of the front leg. Any enlargement of bone in the places mentioned comes within the meaning of the term splint. Should both sides of the leg be affected the term, double splint, is applied.

Causes.—Driving, riding or working colts upon hard, solid footing—pavements of cities, shoes that are too heavy, striking the foot against the opposite leg in traveling, or anything that may cause inflammation between the bone and its covering may cause a splint. The inflammation causes a deposit of bony matter, resulting in enlargement of the part and soreness. Colts that are very fat and heavy on their legs or horses with small, weak legs below the knee are more liable to be affected.

Symptoms.—A splint is hard to detect until it has developed to some extent, after which there is little difficulty. There is a peculiarity about lameness caused by splint which it is well to note carefully. When walking or standing the lameness is not evident, making its appearance only when trotting, at which time it is very noticeable. Notice, too, that a lame horse drops his head when he strikes his weight on the sound leg in order, so far as he can, to favor the lame leg. In any case where lameness is noticed examine the feet carefully to be sure that nothing—a nail, sliver, etc.—is penetrating the sensitive portions.

Treatment.—Proper treatment, generally speaking, is successful. Keep the horse from work as much as possible. If in summer, bathe the leg in cold water containing a little salt, a couple of times a day, and after rubbing dry, apply the white liniment. Continue this treat-

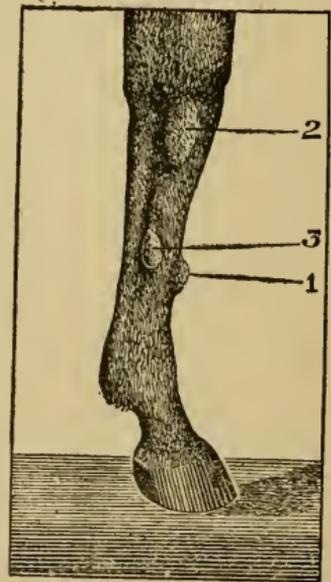


Fig. 41.—Splints. 1. A Bone-like Growth on the Front of the Leg, Frequently Spoken of as a Splint. 2. A High Splint near the Knee. 3. A Low Splint.

ment until the inflammation and soreness disappears from the splint, then blister to remove the enlargement. Use

Vaseline or Lard	1 ounce.
Binioidide of Mercury	1 dram.
Powdered Cantharides or Spanish Fly.....	1 dram.

Mix thoroughly and there is enough to blister an ordinary splint three times. If there is much hair on the splint clip it off and apply one-third of the blister. The more you rub it in the better it acts. Tie his head a little short for a few hours so that he cannot bite the blistered part. In three days grease with vaseline or lard. Three weeks after blister again, and follow the same directions as before. If not all gone, blister the third time, after a lapse of two or three weeks more.

3. Sore Shins.

This is an inflammation of the covering of the shin or metacarpal bones and nearly always affects the front legs, but sometimes affects the shin or metatarsus bones in the hind legs. It is more common in some parts of the country, and generally occurs in young race or trotting horses that are put to severe exertion.

Causes.—Sore shins may be caused by any condition that may set up inflammation in the covering of the shin bones, such as hard and continuous driving of young race horses in training, continuous, steady strain upon the legs, striking the shins against anything or working a colt hard after being in pasture and not used to hard work.

Symptoms.—These are easily noted. There is a marked lameness at first. The parts affected are very sensitive and hot, as indicated by his flinching and action when the parts are pressed with the hand. When trotting his head drops, as outlined in the previous section. Should this condition be neglected it is soon followed by a thickening of the inflamed portions.

Treatment.—Give the animal as much rest as possible. If in the summer, bathe with cold water and salt. If in the winter, bathe with warm water and salt. After bathing twice a day, rub dry and apply white liniment. When the soreness and inflammation disappear, blister to take down the enlargement. Use the same blister and follow the same directions as is given in the treatment of splints.

4. Side Bone.

Side bone is ossification, or turning into bone, of the lateral cartilages of the foot; these are two, one situated on each side. By pressing on them at each side just above the hoof, they may be moved in and out, that is when they are in a healthy state. When they become diseased or changed into bone, they become enlarged and cannot be moved. It is more frequently met with in heavy breeds, but is sometimes met with in light horses, when it is harder to treat and more of a detriment to them on account of being used for fast work.

Causes.—Hard work, as a general thing, causes side bone.

Symptoms.—Heavy horses are not lame in some cases, there being simply the enlargement at each side of the foot, just above the hoof. In severe cases there may be lameness. In light horses, used for drawing, the first symptom noticed is lameness, followed by the enlargement at the sides of the foot, just above the hoof.

Treatment.—Rest the animal as much as possible. If in the summer, bathe the foot well with cold water and salt twice a day, each time, wipe dry and apply the white liniment. If in the winter, bathe with warm water and salt, and also poultice with half linseed meal and half bran. Apply the poultice as warm as possible without burning the animal, and each time after bathing and poulticing, rub with white liniment as mentioned above. When the soreness and lameness has disappeared blister with

Binioidide of Mercury	2 drams.
Vaseline or Lard	1 ounce.

Mix well together and there is enough to blister a small side bone four times. Apply quarter of the blister and rub in thoroughly, leave for three days and then grease with lard. In two or three weeks wash the parts clean with lukewarm water and soap, and blister again as before. Repeat the blisters until the lameness is entirely gone and the side bone stops growing. In buying a horse always examine him closely for side bones, especially if a heavy horse. In cases where it is necessary to work the animal shoe him with a bar shoe.

5. Ringbone.

There are two kinds—the high-up and the low-down ringbone. The high-up ringbone affects the pastern joint, the low-down the coffin joint. It is a bony growth around the

pastern or coffin joints. It may affect the front legs, but is more frequently found on the hind ones. There are cases where the four legs are affected at the same time.

Causes.—Like most other bone diseases, it runs in some breeds of horses to be affected with ringbones, that is to say it is hereditary, hence the necessity of breeding sound animals. There are other well-marked causes, such as hard or fast work, an injury or severe sprain of the joint, allowing colts' feet to grow too long, or allowing foals to follow their mother when working. Running a nail in the foot, and wounding the coffin joint causes the joint to become diseased and throw out a ringbone. Standing on one leg while very lame in the other may cause it.

Symptoms.—Lameness followed by an enlargement round the affected joint are well marked symptoms. When the pastern joint is affected the enlargement is about half way between the fetlock joint and the hoof—a high-up ringbone. An enlargement affecting the coffin joint bulges out around the top of the hoof (see Fig. 42)—a low-down ringbone. There is noticeable heat in the parts in the vicinity of the ringbone and the lameness is peculiar, the step of the affected leg being longer and the putting of the heel down first. The lameness, too, is much more noticeable at the commencement of work, becoming less after being warmed up by the exercise.

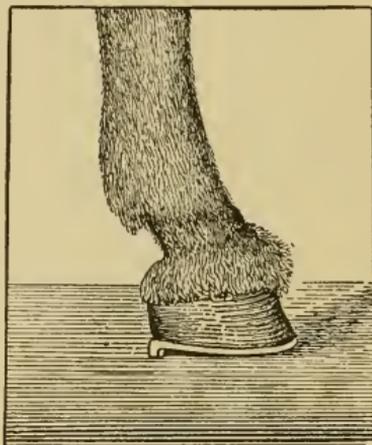


Fig. 42.—A Lowdown Ringbone.

Treatment.—The treatment, in some cases, is not attended with very great success, although, in others, it is very successful, depending, of course, on the extent of disease in the joint. The treatment is similar to that of spavin—the main object being to set up what is known as ankylosis of the diseased joint, that is, to cause the bones forming the joint to become united solid to each other. As soon as this takes place, the lameness and soreness leaves. This is what is called a cure. Of course, after cured, the motion of that

joint is gone, and there is not quite as free action as before the leg was affected, but the horse will be very useful for years after. In order to obtain a really clear idea of this, examine a cured ringbone, after the horse dies. An idea of how the bones unite may be clearly obtained in this manner. In all cases first pare the foot down to its natural shape, and cut the toe off very short and keep it cut short afterward. This throws the strain off the joint. Cut the hair, if long, off the enlargement and blister with

Biniodide of Mercury2 drams.
Vaseline or Lard1 ounce.

Mix well together. This is sufficient to blister an ordinary ringbone two or three times. Apply one-third of the blister and rub in thoroughly—the more you rub the better it will work—and grease the third day after blistering. Continue blistering every four weeks until cured, following the same directions as before. Each time before blistering, wash the parts with warm water and soap. If, in the course of a few months, this does not help him, “fire” him. Use the same kind of firing iron as that used in firing a spavin. Place a twitch on his nose. While one of the front legs is held up, burn all around the ringbone in streaks—running up and down—three-quarters of an inch apart. (See Fig. 43.) Don’t burn too severely, only enough to leave a white seam after the iron. In doing this take time and do not bear heavily on the iron. After firing allow it to remain for six days and blister the same as above mentioned, following the same directions. It may be necessary to cast him during this operation. Do not become discouraged if not better immediately, as it generally takes from six months to a year, and even longer in bad cases to effect a cure. Treat a colt exactly the same only not quite so severely, varying treatment according to the size.

6. Bone Spavin.

A spavin is a disease affecting the bones of the hock joint, which generally results in a bony

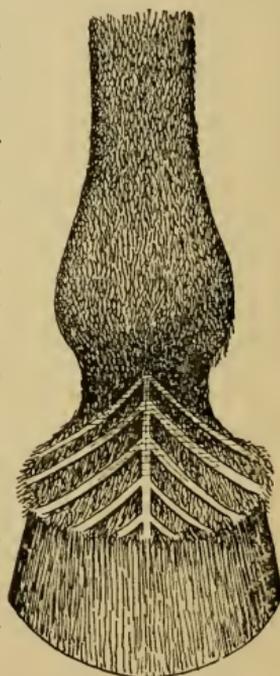


Fig. 43.—Method of “Firing” a Ringbone.

enlargement on the inside. When inside and not showing on the outside in the form of an enlargement it is called an occult spavin. There are high-up and low-down, or what are commonly called jack spavins.

Causes.—Bone spavin is the result of the same conditions as those of ringbone. It runs in some breeds to be spavined—it is hereditary and makes its appearance for generations, hence the necessity for breeding from good, sound stock. Although it runs in some breeds, there are other well marked, accidental causes, and in these cases breeding from such may be done with safety. We refer to such accidents, including hard work, as a kick or other injury—severe sprain, etc.—which affects the joint.

Symptoms.—These are clear and easily noticed as a general rule. Inquire into the history of the case, how long the animal has been lame and how he acts when traveling. If the horse steps shorter than natural and strikes the toe first in putting down the foot, if he is very lame in starting off after standing for a while, or being kept in the stable over night, if he improves after going a mile or so, and if the farther he goes the less he shows the lameness, look for a spavin. If there is an enlargement it can easily be seen, but if an occult spavin there will be no enlargement, merely heat and soreness of the parts. When these symptoms are present it is certain to be a spavin. After a time the muscles of the hip on the lame side waste away, because of not being properly used. Do not let this symptom mislead as to where the lameness is. As the enlargement grows the lameness will increase.

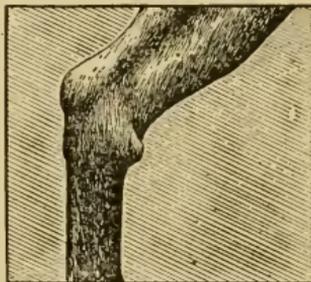


Fig. 44.—A Bone Spavin.

Treatment.—Treat as a ringbone. Try to cause the diseased joint to become united and form what is called ankylosis of the joint. The soreness and lameness will then disappear, but on account of there being no movement in the joint, the animal will not have as free use of the leg as he had before. He may be very serviceable, however, for a number of years after being cured. A high-up spavin is very much harder to cure than a low-down or jack spavin, as it

affects the largest articulation in the hock joint. It is always best to try a blister before firing, for in some cases a blister will cure them all right. Blister with

Binioidide of Mercury.....2 drams.
Vaseline or Lard1 ounce.

Mix thoroughly together. There is enough to blister an ordinary sized spavin twice. Apply half of it over the inside of the hock where the enlargement is situated, rub in thoroughly and grease the parts three days afterward. If an occult spavin, or if the enlargement goes right through the joint, use all the blister at once, that is, half on the inside and half on the outside. In three weeks wash the parts with warm water and soap, and blister again as before. Repeat the blister a few times, and, if not somewhat better, fire it with the feather iron. (See Fig. 45.) Use three of these irons,

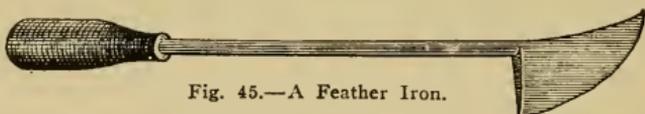


Fig. 45.—A Feather Iron.

get them red hot, place a twitch on the horse's nose, have one of his front legs held up, and proceed to fire. Draw the lines as shown in Fig. 46, always a good half-inch apart each way. Run the iron lightly, as shown, until a white line appears, indicating that it is quite deep enough. The best place to heat the irons is at a blacksmith shop, and if the horse is very ugly it may be necessary to throw him in the same way as for castration. Continue the firing and blistering until it effects a cure, which may take from six months to a year or two. Do not blister for six or seven days after firing. Work the animal a little between times, as it is beneficial. Shoe him with a high heeled shoe, which helps to throw the strain off the hock joint.

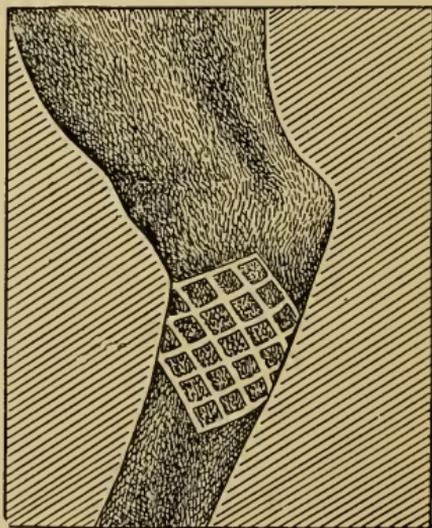


Fig. 46.—Method of "Firing" a Spavin.

After firing and blistering, always keep the animal out of the water, as becoming wet scalds the hair and skin, causing it to become very sore.

CHAPTER XXI.

WOUNDS AND THEIR TREATMENT.

I.—CLASSES OF WOUNDS.

1. Incised.

An incised wound is the result of a clean-cutting instrument. Its length is greater than its depth.

2. Punctured.

A punctured wound is caused by some instrument—sharp or blunt—penetrating endwise. Its depth exceeds its length.

3. Lacerated.

A lacerated wound is made by both tearing and cutting the flesh, such as that received by being kicked by another horse.

4. Contused.

A contused wound is such that the skin in the vicinity of the wound is not broken, the tissue under the skin being injured. An ordinary black eye is the best example of its kind.

II.—GENERAL TREATMENT.

5. To Stop Bleeding.

Profuse bleeding may be stopped by any of the following methods:

First.—Apply cotton batting over the point from which the blood is flowing, and over the batting a tight bandage. Leave the bandage adjusted for at least twenty-four hours.

Second.—Apply an astringent. The best we know of is Monsell's solution of iron, applied with a feather.

Third.—Tie the end of the artery with a strong piece of cord when such is possible. A common sewing needle such as used for sewing wounds is a handy article to have on hand. Run the needle under the bleeding artery or vein, drawing the cord with it, tie the string tightly round the artery and vein, taking some of the muscle in also. Leave the string till it falls off of its own accord.

Fourth.—Should the wound be deep and it be impossible to get at the artery, plug the hole with cotton batting. Leave it plugged for twenty-four hours. Remove the plug and also examine carefully and remove any foreign matter, wash it out with a little lukewarm water until it is thoroughly cleansed, when it is ready for sewing if necessary.

6. Sewing.

When satisfied that all foreign matter is removed and the wound has been thoroughly cleansed, it may be sewed if necessary.

Place a twitch on the horse's nose and cause one of his front legs to be held up, or if necessary because of the temperament of the horse or the extent of the injury, cast and secure him in the usual way.

Use a needle made for the purpose. *This may be obtained at almost any drug store. Carriage trimmers' small twine is the best for the purpose, obtainable at any hardware store. Examine the wound carefully to ascertain the best place to insert the first stitch in order to bring it together evenly, then place the stitches a half-inch apart, tying each stitch separately until the whole is done. Draw the stitches moderately tight, as they remain longer than if made too tight.

When this is done bathe well with lukewarm water twice a day until the stitches come out. Each time after bathing apply the white lotion to allay the inflammation and keep down the swelling. In time the stitches drop out of their own accord and the wound opens again. Continue bathing and applying the white lotion, but each time follow by painting with compound tincture of benzoin or Friar's balsam. This prevents the formation of proud flesh. As soon as nearly healed and hard, change the treatment and use only the green salve twice a day—night and morning. The best method to use the salve is to place a little in a spoon, heat it over the blaze of the lantern and apply it with a feather. The salve not only promotes healing, but softens the flesh around the wound, thus allowing the edges to come well together, making a much neater appearance when healed.

7. Treatment Without Sewing.

If the wound be deep and the opening small sewing may not be necessary. Treat in precisely the same manner as we

have outlined for treatment after the stitches come out, the only additional precaution being to work the medicines well up into the wound. To accomplish this use a feather or a syringe. The object in view must be to cause healing to take place on the inside first.

In treating a contused wound—the outside skin not being broken, or at least slightly torn—bathe well with lukewarm water two or three times a day. Wipe dry each time and apply the white lotion to reduce the swelling.

Should the wound be of long standing and healing not take place, burn slightly with caustic potash and treat in the ordinary manner.

Should matter form in a sort of pocket or sack, as sometimes happens, cut a hole near the bottom of the sack and allow it to discharge, and treat in the ordinary way.

These methods apply to all wounds except those about the eyes or feet, special treatment for which is given under these headings. Consult the index.

III.—METHODS OF HEALING.

There are two ways of healing: First, "Healing by the first intention;" second, "Healing by the second intention."

8. By "First Intention."

This method is followed generally by physicians. By it the wound is nicely brought together and kept in an anti-septic state, a condition in which the flesh is not allowed to putrefy or decay, and heals from the beginning without suppurating or running matter.

9. By "Second Intention."

Healing by "second intention" is more generally followed in veterinary practice, because of the impossibility of keeping the horse quiet. The wound soon becomes irritated and begins to discharge matter, but so long as this is of a nice white color it is a good sign, and after it takes place healing generally commences. Keep him as quiet as possible. Feed soft, light food containing plenty of boiled flaxseed to regulate the bowels.

10. After Treatment.

Should there be a thickening left after the wound heals, blister a little with

- Pulverized Cantharides or Spanish Fly.....1½ drams.
- Lard or Vaseline1 ounce.

Mix thoroughly and apply a little of it, according to the size of the enlargement, rub it in well. After three days grease the blistered part. In the course of two or three weeks, if not completely removed, wash the parts with lukewarm water and soap, then dry and apply the blister again, treating the same as above mentioned. Continue blistering till the thickening is entirely gone.

IV.—COMPLICATIONS ARISING FROM WOUNDS.

11. Inflammation.

This generally follows deeply-punctured wounds, but may follow other kinds of wounds.

Symptoms.—The wound is very much swollen and tender, the animal seems feverish and in pain, and the cut discharges watery-looking blood.

Treatment.—Keep him quiet and warm, and give a teaspoonful of nitrate of potash or saltpetre in the feed twice a day. Feed soft food to keep the bowels loose. Bathe the wound three times a day with hot vinegar and water—half and half—bathe for half an hour or more, rub dry and apply the white lotion. Swab out the wound with a sponge or syringe, using carbolic acid, 25 drops to 1 pint of water. Swab out each time after bathing.

12. Blood Poisoning.

Causes.—Handling with dirty hands, using dirty or rusty instruments, anything that may introduce foreign matter of a poisoning nature may cause it.

Symptoms.—The wound becomes extremely sensitive and sore, festers and swells. Discharges of matter may take place in different parts of the body.

Treatment.—Give

Hyposulphite of Soda1 teaspoonful.

Give three times a day on the tongue with a spoon or in the feed. This kills the poison in the blood. Bathe the wound with hot water three or four times a day and poultice between times with hot linseed meal. Swab the wound out with a sponge or syringe, using carbolic acid and water—25 drops to 1 pint of lukewarm water—to cleanse it. Should he break out in any other places on the body, treat these in a similar manner.

CHAPTER XXII.

INJURIES AND DISEASES OF THE HEAD, NECK, SHOULDERS, BODY AND HIPS.

I.—THE HEAD AND NECK.

1. Poll Evil.

The name "poll evil" is derived from the location of the disease, being in the poll of the head.

Causes.—The primary cause of poll evil is an injury of some sort such as may be the result of striking the head against the top of a low doorway when passing in and out of the stable, jerking back when tied with a halter, or wearing a heavy poke to prevent jumping.

Symptoms.—There is swelling and soreness of the parts. The head is carried in a stiff manner and there is difficulty to

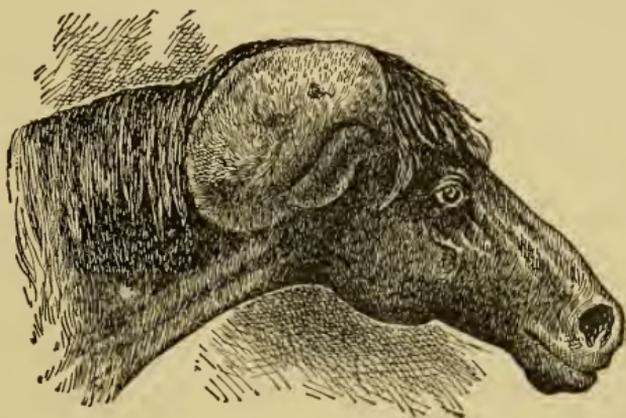


Fig. 47.—Poll Evil.

move the neck and head because of the pain thus caused. As the disease progresses there is formation of matter, followed by disease of the bone itself.

Treatment.—If treatment be prompt the result is usually satisfactory. Remove the cause, bathe the parts well with warm water and a little vinegar twice a day. After bathing rub dry, and each time apply the white liniment. Keep the

animal very quiet and feed from a high manger. This keeps the sore parts as quiet as possible until the soreness and swelling is all gone. When matter forms, open with a knife at the lowest part so as to allow the matter to discharge. After opening bathe well twice a day. Melt green salve and pour it into the cut each time after bathing. If the bones become diseased, it is necessary to throw the animal and cut into and scrape out the dead bone before it will heal, then treat the same as above mentioned. A severe case generally leaves the horse's neck stiff, and he will not be able to eat off of the ground. If he is difficult to handle, always put a twitch on the nose while dressing the wound. Should there be a thickening after healing, sweat it down by rubbing the parts with acid liniment. Apply every third day after bathing with warm water containing a little salt until the thickening disappears.

2. Injuries to the Muscles of the Neck.

Causes.—Pulling back upon the halter, becoming cast in the stall, and in some cases a bite from another horse may cause injury to the muscles of the neck.

Symptoms.—These are stiffness of the neck, swelling and soreness of the affected parts, and sometimes a carrying of the head to one side.

Treatment.—Bathe well with warm water and salt two or three times a day. After bathing wipe dry and apply the white liniment until the soreness and swelling are gone. When matter forms open at the bottom of the lump and allow it to discharge, then treat as an ordinary wound by applying the white lotion.

3. Fracture of the Bones of the Neck.

Causes.—This is usually the result of falling upon the head and neck, such as may happen when stumbling, running away, jumping over a high fence or other object, or when being cast for an operation.

Symptoms.—Should the fracture cause the bones to press upon the spinal cord the action of the heart is stopped, and death comes immediately. Should this not be the case because of the slight extent of the fracture, there is soreness in the vicinity of the fracture. The head may be carried to one side—that upon which the broken bone is situated. Attempt to straighten the head and the horse almost falls.

Treatment.—Keep the animal as quiet as possible and feed from a high manger. Bathe the parts well with warm water twice a day and apply the white liniment each time after bathing. The bones, after a time, will unite. If it does not heal the part broken will fester and matter forms. Open with a sharp knife and remove the piece of broken bone, then treat as a common wound and it soon heals.

4. Sore on the Top of the Neck from the Collar.

Causes.—These sores are the result of a badly-fitting collar or of working a horse hard before the neck becomes hardened and used to a new collar.

Symptoms.—The injured parts of the neck are sore and raw looking, and the horse winces when an attempt is made to examine it.

Treatment.—Use a nicely-fitting collar on him and a regular pad for the top of the neck. Dry and clean it each time after using. Clip the mane around the sore and wash it every night with cold water and salt, then dry well and apply the white lotion. Apply the lotion every morning, without washing, before taking him out to work. Sometimes it is necessary to allow him to remain idle for a few days to give it time to heal.

II.—INJURIES AND DISEASES IN THE VICINITY OF THE SHOULDERS AND WITHERS.

5. Fistulous Withers.

This disease resembles poll evil and also gets its name from the parts affected.

Causes.—It is the result of injury such as may be caused by a badly-fitting saddle or by becoming cast on the back while rolling.

Symptoms.—The symptoms are well marked, there being swelling and soreness of the withers, which, when not attended to develops until matter is formed, which finally extends to the bones. There is also a formation of small pipes running down to the bones and exuding an offensive smelling matter.

Treatment.—If noticed when matter begins to form, bathe well two or three times a day, and each time after bathing rub the parts with white liniment. When matter forms, open the swelling at the very lowest part so as to

allow the matter to run out, then bathe, as above mentioned and pour hot green salve directly into the hole. When the discharge of matter smells very bad, and the bone is likely

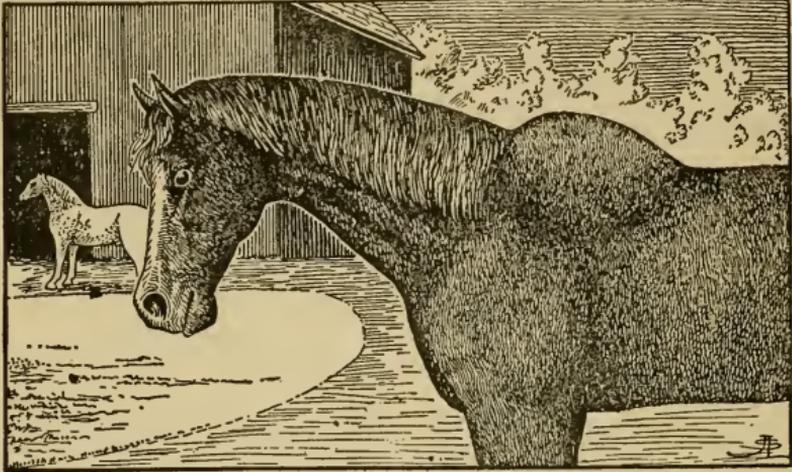


Fig. 48.—Fistulous Withers.

to be diseased, throw the animal, cut down to the diseased bone, scrape it and then treat with green salve by pouring it into the cut twice a day after bathing. Both this disease and poll evil, in bad cases, are tedious to treat. When dressing the wound put a twitch on the horse's nose if he is very ugly. If there is a thickening after the parts heal, rub with acid liniment, applying it every third day after bathing with lukewarm water and salt until the thickening is gone.

6. Sweeny (Shoulder Slip).

This is more commonly met with in young than in old horses.

Causes.—It is the result of bruising the muscles of the shoulder in some manner. This may be done when a plow strikes a stone, causing a sudden jerk, or when the wagon strikes a stone, causing the tongue to swing violently to one side, resulting in injury from it or the neckyoke.

Symptoms.—These are well marked. As soon as the horse receives the injury there is a slight swelling and soreness of the part, followed by a wasting away of the muscles that are injured. It is generally the muscles lying over the shoulder blade that become affected with this disease, and in some cases the muscles fall away until there is a large hollow

at this point. In some cases the horse is not very lame, being merely a little stiff.

Treatment.—If the animal has been working hard, change to lighter work, or better still, allow him to remain idle. Bathe the parts well with cold water and salt every night if in the summer. After bathing, wipe dry, hand rub and pull the skin out on the hollow to loosen it from the muscle. Every third day after bathing apply the acid liniment in and around the hollow part of the shoulder; this is the best remedy known. Continue this treatment until the muscle becomes its natural size and the shoulder is filled out. It sometimes takes the muscles a long time to regain their natural size, but, as a general thing, this takes place in the course of time. If you can, turn him out to pasture, then blister in and around the hollow place with the following:

Pulverized Cantharides or Spanish Fly1½ drams.
Vaseline or Lard1 ounce.

Mix well together and rub it all into the parts. Grease three days after with lard, and repeat the blister every three weeks until cured.

7. Scalded or Galled Shoulders.

Causes.—This is usually the result of wearing a badly fitting collar or allowing the collar to get hard because of the sweat becoming dry upon it. A collar that is too large or too small or causing a horse to work hard when not used to it, or in fact hard work at any time, may cause the shoulders to become scalded and sore.

Treatment.—Use a well-fitted collar, and keep it clean by brushing or scraping the dirt off before using. While working horses, if allowing them to stand a few minutes, raise the collars so as to allow the air to get to the shoulders. Keep the mane from under the collar. Every night, after working, bathe with cold water and salt, and after wiping dry, if they are sore, apply the white lotion; this heals and hardens the skin.

8. Bruises of the Shoulder.

Causes.—These may be the result of an accident of some kind.

Symptoms.—A swelling soon follows the injury. This swelling upon examination will be found to contain water or serum.

Treatment.—Cut into the swelling at the bottom part and allow the water to discharge. Make a hole large enough in which to insert the finger. After opening, bathe well with lukewarm water twice a day; wipe dry, and apply the white liniment around the swelling. In addition to this, dress the inside of the swelling, to cause it to heal from the inside, with compound tincture of benzoin or Friar's balsam. Green salve may be used instead of the benzoin to put into the wound. Insert it into the hole with a feather.

9. Tumors or Lumps on the Shoulder.

Causes.—The improper treatment of a bruise upon the shoulder renders it liable to form a hard callous lump.

Treatment.—The best treatment is to dissect the lump out with a sharp knife, sew up the wound with a needle and twine, and treat as an ordinary lacerated wound. There is little danger in cutting around the shoulder, for there are no large vessels where these lumps are generally found.

10. Shoulder Joint Lameness.

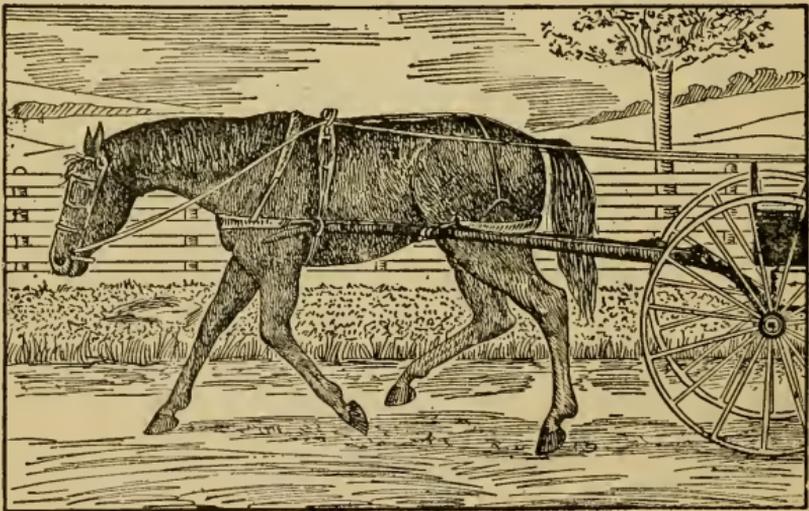


Fig. 49.—An Indication of Shoulder Joint Lameness.

This is a very bad lameness, and the seat of the trouble is generally situated where the large muscle of the shoulder passes down through the pulley-shaped part of the bones on the front of the shoulder joint.

Causes.—A strain of the joint because of being cast in the stall, plunging through deep snow, falling on the shoulder.

or being kicked by another horse may be sufficient to cause it. Sometimes it is the result of a sort of rheumatic inflammation of the joint.

Symptoms.—He steps short on the affected leg and often strikes the toe and stumbles because of the inability to properly lift the leg. The foot is brought well under him while standing. He rests on the toe and allows the knee to bend forward to allow rest to the shoulder. Rough handling, pinching, etc., of the shoulder causes him to flinch because of the soreness.

Treatment.—If the case is neglected for a long time, and the bone becomes diseased, it is incurable. If taken in time a cure may be effected by bathing the shoulder with lukewarm water and salt twice a day. After bathing, wipe dry and rub well with white liniment. Keep the animal in the stable and keep the shoulder as quiet as possible. After the soreness is pretty well gone blister with the following:

Powdered Cantharides or Spanish Fly	1½ drams.
Vaseline or Lard	1 ounce.

Mix and apply half of this mixture around the front and side of the shoulder joint. Rub in well and allow it to stand for three days, then grease with lard. After two or three weeks, if the animal does not seem better, wash the shoulder, wipe dry and blister again, following the same instructions as given before.

11. Sore Back.

Causes.—It is usually the result of irritation and rubbing because of badly-fitted harness.

Treatment.—In all cases remove the cause, and, if in the summer time, bathe with cold water and soap; if in the winter, use warm water and soap; do this twice a day. After bathing each time, wipe dry and apply the white lotion.

12. Chronic Sores on Back or Shoulders (Sit-Fast).

Causes.—Working while neglecting a sore shoulder or back causes chronic sores.

Symptoms.—The sore spot has no tendency to heal and remains raw while working.

Treatment.—Burn the sore with caustic potash and afterward treat by allowing him to remain idle, bathing with luke-

warm water, and, after bathing, applying the white lotion twice a day until healed.

13. Broken Back.

Causes.—A fall of some kind may be sufficient.

Symptoms.—If the break is near the front of the bones of the back it will cause instant death, but if it occurs farther back it will cause paralysis of the hind quarters.

Treatment.—There is none but to destroy the animal.

14. Injuries to the Muscles of the Belly.

Causes.—Such accidents as stepping on a sharp piece of stick, causing it to turn up and catch the muscles of the belly, a hook from a cow or a kick from another horse may cause injury to these muscles.

Treatment.—If there is a lacerated wound stitch it together; if punctured, examine carefully for any foreign matter, then treat these similar to that recommended in Chapter XXI. Should the injury be sufficient to allow a portion of the bowels to protrude the case is much more serious. Should the bowels protrude to such an extent as to admit of being trampled upon by the horse it is best to destroy him at once. Should, however, the protruding portions be free from injury, cast and secure him well, cleanse the bowel thoroughly with lukewarm water, force them back into place and sew up the opening securely. Bathe twice a day with lukewarm water and each time after bathing apply the white lotion. Should the opening be very large, it is well to wrap a bandage of factory cotton round the body to afford support and assist the stitches to keep the bowel in position. Keep him as quiet as possible and feed soft feed until the wound heals.

15. Staked.

This is a very common occurrence among horses.

Causes.—It is the result of stepping on a piece of stick, jumping a fence, running against a stake sticking in the ground, a plow handle or other such object.

Treatment.—Remove the stake if not already done and examine for pieces of wood or other foreign matter in the wound. The bleeding in accidents of this kind is usually only slight, but should blood flow profusely from the wound, plug

it with cotton batting, removing the plug in twenty-four hours. Treat then in the manner outlined in Chap. XXI. Keep the patient quiet and feed soft feed containing plenty of flaxseed to keep the bowels loose.

16. Hipped.

This term is applied to a condition in which the hip bone is knocked down.

Causes.—It is caused, too, by an accident such as striking the side of a narrow doorway, falling upon the hard ground, in fact any accident causing anything to strike the point of the hip sufficiently hard enough to break a piece off the bone.

Symptoms.—At the time there is swelling and soreness around the point of the hip. After it gets well the injured hip is not as large as the other, making a disagreeable blemish.

Treatment.—The only thing to be done after it is knocked down is to bathe and apply the white liniment after bathing until the swelling and soreness disappears; then leave it alone. If the hip swells and begins to fester around the broken piece of bone, cut into it and take the piece out, then treat as a lacerated wound.

17. Fracture of the Hip Bones.

Causes.—It may be the result of any such accident as slipping or falling upon the ice, etc.

Symptoms.—There is severe lameness. Examine carefully by twisting upon the bones. The broken ends may be heard grinding against each other. Severe swelling in a short time takes place in the vicinity of the fracture.

Treatment.—If the fracture is very bad it is best to destroy the animal, but if there is a wish to try to save it, all that can be done is to keep him very quiet and bathe the parts well with lukewarm water and vinegar. After rubbing dry, rub well with white liniment twice a day. In some cases this affects a cure in the course of a few weeks.

18. Falling Away of the Muscles of the Hip.

Causes.—This is the result of some other previous injury or disease such as an injury to the muscles while foaling, by falling or being thrown against some hard object. Continued lameness in any of the joints below the hips, such as that caused by spavin, may cause it.

Symptoms.—Stiffness and soreness are noticeable for a few days, provided that the trouble arises from an injury. In such a case the falling away is noticed within a few days. Should lameness of the other joints cause it, the falling away is gradual and slow.

Treatment.—The best and only treatment for this is to let the animal run out and apply a fly-blister to the wasted muscles. Use the following blister:

Pulverized Cantharides or Spanish Fly $.1\frac{1}{2}$ drams.
Vaseline or Lard 1 ounce.

Mix well and apply all over the wasted muscles, rub in well and tie the horse so that he cannot bite or rub the blistered parts for a few hours, then turn him out and grease in three days afterward. In a month if not better blister again, continuing to blister each month until cured. Should lameness of the other joints be the cause treat for this, and as soon as the cause of the falling away is remedied the shoulder will fill out of itself.

19. Sore Tail From the Crupper.

Causes.—Anything that causes irritation—reining him too high, thus pulling the crupper too tight, or allowing the sweat to become dry and hard on the crupper may be the cause.

Symptoms.—The parts become inflamed and finally raw and sore.

Treatment.—Discontinue the use of the crupper for a few days. Wash the parts with lukewarm water and soap until thoroughly cleansed, then apply the white lotion twice a day until healed. Before commencing to again use the crupper see that it is properly cleaned.

20. Fractures of the Bones of the Tail.

Causes.—This may be the result of such an accident as rearing and falling back upon the haunches.

Treatment.—Keep the animal quiet, and if it is a season for flies, cover him so that it is not necessary to use the tail in trying to keep them off. If the tail is much swollen, rub with white liniment twice a day until the swelling is gone down, then allow him to remain quiet until the bones unite. If there is not much swelling, bandage moderately tight and leave the bandage on a few days at a time, while the bones are uniting.

21. Hip Joint Lameness.

This is a sprain of the round ligament in the hip joint.

Causes.—Hip joint lameness is also the result of an accident such as stepping on a small round stone which suddenly turns and throws the leg forward, falling or slipping on the ice, or in fact any sort of accident that may cause a severe strain upon the ligaments in the joint.

Symptoms.—The horse steps short on the affected side, and in trotting he goes kind of three-cornered. Every time he raises his leg the hip raises with it, showing that he is trying to keep the hip quiet. He also flinches when pressure is applied to the hip joint. If the disease is allowed to run on for some time there is a wasting of the muscles around the part.

Treatment.—If a long standing case, and the joint is diseased, it is incurable, but if taken in time it may be cured by keeping him quiet and bathing the parts well with lukewarm water and salt twice a day. After bathing, each time, wipe dry and apply the white liniment. Continue this treatment until the soreness and swelling disappears, then blister with the following:

Pulverized Cantharides or Spanish Fly.....1½ drams.
Vaseline or Lard1 ounce.

Mix well and there is enough to blister the hip three times. Each time rub the blister in well, allow it to remain for three days, then grease with lard. In three or four weeks, blister again and repeat the blister in this way until the lameness disappears.

22. Sprain of the Muscles of the Hip.

Causes.—This is more commonly met with than hip joint lameness. A sudden slip while pulling heavily or pulling a driver suddenly may be sufficient to account for a sprain of the muscles of the hip.

Symptoms.—There is swelling and soreness of the muscles. This condition may be more easily detected when standing behind the animal. There is also a great difficulty in bringing the leg forward.

Treatment.—Keep the animal quiet; bathe well with lukewarm water and salt two or three times a day; after bathing, wipe dry and rub the parts well with white liniment. Continue this treatment until the animal is better.

CHAPTER XXIII.

DISEASES OF THE FRONT AND HIND LEGS.

1. Capped Elbow or Shoe Boil.

This is a thickening at the back of the elbow joint.

Causes.—Shoeing and leaving a long heel on the shoe which catches the animal in that part while he is lying down, or from wearing a heavy belly band on the harness, which rubs against and irritates the elbow may be the cause.

Treatment.—If caused by the shoe, have him shod with a short-heeled shoe, and, for a time, tie an old bag around the foot, so that when he is lying down the foot does not irritate the elbow. Treat as follows as soon as noticed: Bathe well with lukewarm water and vinegar twice a day. If not raw but merely swollen, use the white liniment after bathing. If raw, use the white lotion. This generally effects a cure. In some cases it festers and matter forms. It is then necessary to open it with a knife at the lowest part of the swelling and

treat as above mentioned, only melt a little green salve and put it in the hole each time after dressing until it heals. If it is of long standing, and there is a large, hard lump formed on the cap of the elbow, the only treatment is to throw the animal, secure him, and skin the lump out carefully. This can be done without causing but little bleeding. After the lump is cut out, draw the skin together with a few stitches

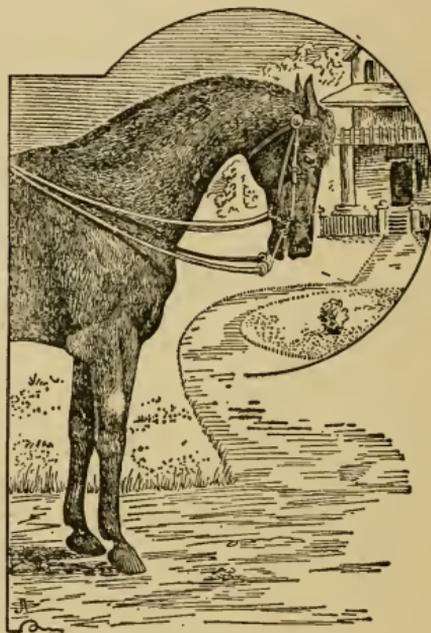


Fig. 50.—Capped Elbow.

and treat as a lacerated wound, by bathing with lukewarm water and applying the white lotion twice a day until it heals.

2. Fracture of the Bones of the Shoulder.

Causes.—It is usually the result of falling or running against some hard, solid object.

Symptoms.—There is swelling and soreness, accompanied by severe lameness. The bones may be heard grating against each other upon movement of the shoulder.

Treatment.—In the majority of cases it is best to destroy him at once. Should there be, however, a desire to try treatment, keep him quiet and bathe with lukewarm water twice a day. After bathing apply the white liniment to arrest the swelling and inflammation. Treatment in the majority of cases is unsatisfactory and should the parts become much swollen accompanied by much pain it is best to have him destroyed.

3. Injuries and Sprains of the Knee.

Causes.—It is usually the result of a fall.

Symptoms.—The knee is very sore and cannot be bent when walking.

Treatment.—Keep the animal quiet, and bathe twice a day with lukewarm water and salt, and after bathing apply the white liniment. If the knee is cut, use the white lotion after bathing. If the cut is large, put a few stitches in it, and treat as above mentioned.

4. Striking the Knee (Speedy Cut).

This is caused by striking the knee with the opposite foot.

Causes.—It is generally the result of bad shoeing, or using too heavy a shoe on colts. Some horses with high action have a tendency to strike the knees.

Symptoms.—There is swelling on the inside of the knee. It is very painful, and as soon as you handle it the animal jerks his knee away. In some cases it becomes very much swollen and matter forms in it. When walking, in bringing his leg forward he swings it out and can hardly get along

because of it being so sore. In other cases, when not striking so severely the inside of the knee becomes thickened and hard.

Treatment.—Allow him to remain idle. Bathe the parts well with lukewarm water and salt two or three times a day—the more bathing the better. Each time after bathing, rub dry and apply the white liniment. If matter forms, open with a sharp knife to allow the matter to discharge, then treat as above mentioned. After it is healed if there is a thickening, blister with the following:

Pulverized Cantharides or Spanish Fly2 drams.
 'Vaseline or Lard1 ounce.

Mix well and rub what you can nicely get on over the swelling. Rub in well and grease on the third day. In a couple of weeks, blister again, and repeat the blistering until the thickening disappears. After this, be careful how you have the animal shod, and if he is inclined to strike, wear a knee boot on him.

5. Fracture of the Bones of the Knee.

Causes.—Falling upon the knees is often sufficient.

Symptoms.—The animal is very lame, the knees become swollen, hot and tender.

Treatment.—Keep him quiet and bathe well with lukewarm water—the more the better. After bathing, each time apply white liniment. It generally takes a case of this kind four or five weeks to get better. After the soreness and swelling has gone it is well to blister a few times with the fly blister to get the soreness and thickening out of the knee.

6. Puffy Enlargements Around the Knees and Fetlocks (Bursal Enlargements).

Causes.—These enlargements are the result of an injury of some sort such as that which may result from striking the knee against the manger while pawing, or from lying on the hard floor.

Symptoms.—There is a puffy enlargement, not sore to handle, that feels as if full of oil.

Treatment.—Bathe well once a day with cold water and salt, rub dry and bandage for three hours. After removing the bandage—every third day—apply acid liniment. This will as a general thing bring about a complete cure. Never attempt to open a bursal, as it allows the oil that is in it to run out. In all cases, if the cause can be ascertained, remove it.

7. Splint Affecting the Knee.

This is where the splint is very high up on the bones and affects the knee.

Treatment.—Follow the same treatment as is given for splint, but in some cases it is very hard to effect a cure.

8. Knee Sprung.

This is when the knee is bent forward.

Causes.—Hard and fast work, standing in a stall that has a great slant, high in front and low behind, feeding from a very high rack, a sprain and contraction of the back tendons, or being shod with high heels will cause it. Horses with weak, small knees are more subject to this than horses with good, strong straight knees. An animal may be very badly knee sprung and still be a good work horse.

Treatment.—Should it be necessary to work the animal during treatment, first fix the floor. See that it is level and feed him off the floor. Bathe the legs with cold water and salt twice a day, after bathing rub dry and apply the white liniment every night. When the liniment is dried in, bandage for a few hours. Shoe with a flat shoe, if the roads are not slippery. If possible turn him out to pasture and blister the back cords once a month with the following:

Pulverized Cantharides or Spanish Fly.....2 drams.
Vaseline or Lard1 ounce.



Fig. 51.—Knee Sprung.

Mix and there is enough in this to blister both legs once. Rub in well and tie his head short so that he can not bite it for a few hours. In three days, grease it and let him run for a month. Repeat the blister until he is better.

9. Calf-Kneed.

This is not a disease but a fault in the formation of the knee. The animal stands with his knees bent back.

Treatment.—There is none. When buying horses watch that they are not calf-kneed, for they are as a rule bad stumblers.

10. Sprain of the Back Tendons.

There is more or less swelling around the sprained tendons and lameness in traveling. Pressure on the cords causes him to flinch.

Treatment.—Bathe with cold water and salt if in summer, but if in winter bathe with lukewarm water and salt twice a day. Rub dry and apply the white liniment. In an hour or so after applying the liniment, bandage, leaving the bandage on for three hours. After he is pretty well over the lameness, and if there is a thickening left, blister with the following:

Pulverized Cantharides or Spanish Fly.....	2 drams.
Vaseline or Lard	1 ounce.

Mix and rub enough in to blister well, and grease the third day. Keep him quiet during treatment.

11. Sprain of the Fetlock Joint.

Causes.—Stepping crooked or turning over on the ankle will cause it.

Symptoms.—The animal is very lame and the joint swollen and sore.

Treatment.—Use the same treatment as given for sprain of the back tendons.

12. Knuckling.

Causes.—It is the result of hard and fast work. Horses that stand straight on the fetlock are more liable to knuckle.

Symptoms.—There is a jerking forward of the fetlock every time he steps. He stands with his fetlock joint bent forward instead of back.

Treatment.—If a case of long standing there can be nothing done, but if only coming on blister around the fetlock and turn him out. Blister with:

Pulverized Cantharides or	
Spanish Fly	2 drams.
Vaseline or Lard.....	1 ounce.

Mix and apply around the fetlock, rub in well and allow it to remain for three days, then grease, allow it to remain for a few weeks and blister again. Repeat the blistering until the joint gets strong. There will be enough in this prescription to blister two fetlocks.

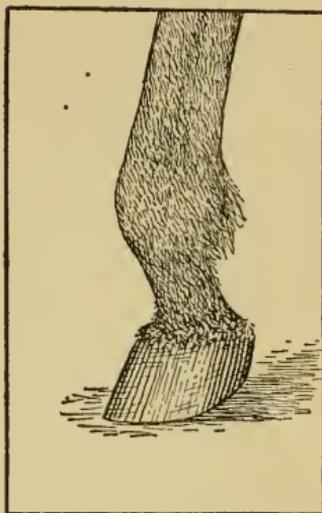


Fig. 52.—Knuckling.

13. Knuckling in Colts.

Causes.—A colt that has been kept in the stable with but little or no exercise during the winter is liable to come out in the spring knuckled in the fetlocks.

Treatment.—Before turning him out to the field, blister about the fetlocks as described in Section 12. In three days grease the parts and turn out to pasture. This usually brings about a cure in a short time.

14. Interfering, or Striking the Fetlocks.

This trouble is mostly met with in colts when they are first shod.

Causes.—It is sometimes caused by shoeing with too heavy a shoe and taking the horse on a long trip before he is used to it. Some horses naturally travel so close behind that they brush the legs together.

Symptoms.—There is soreness on the inside of the fetlocks and sometimes the hair and skin are knocked off. In

severe cases there may be considerable swelling. An interfering horse usually hops on three legs for a short distance immediately after he "strikes" and then goes along as usual until he strikes again.

Treatment.—Bathe the leg well with lukewarm water and a little castile soap twice a day. If swollen, after bathing rub dry and apply the white lotion. Have the shoes changed and made light. If in poor condition, feed well and do not work him too hard until he gets strong and in good shape for work. While driving him it is well to use an interfering boot on the leg. Careful shoeing and getting him strong and able for his work generally brings about a cure.

15. Wind Galls.

These are little puffy swellings at the back part of the fetlock joint. Some horses are more subject to this condition than others.

Causes.—It is usually the result of hard driving.

Symptoms.—It does not, generally speaking, cause lameness, but it is a disagreeable looking blemish. These little puffy swellings are full of oil, which comes from the bursal that secretes the oil which lubricates the back tendons where they work over the back of the fetlock.

Treatment.—If in the summer, bathe the legs well every night with cold water and salt, then rub dry and put on a bandage. Leave this on for a couple of hours every night after bathing. Every third night give the leg a good rubbing with acid liniment after taking the bandage off. If this does not cure him in a few weeks, blister with the fly blister used for knuckling, and treat the same after blistering.

16. Thickening Around the Fetlock.

Causes.—This is generally from hard work or from sprains of the joint, and is often met with in livery horses.

Treatment.—Blister in the same manner and use the same treatment afterward as is given for knuckling, only blister heavier.

17. Fractures of the Bones Below the Knee.

Causes.—Driving a horse fast along a very hard road when he is feeling good, will sometimes fracture these bones. Jumping a fence, running away, getting the leg caught, or

anything that causes a blow hard enough fractures these bones.

Symptoms.—The horse is very lame and holds the leg up because of the pain. Take hold of the leg and twist it a little and the ends of the fractured bones may be heard to grate together.

Treatment.—If an old animal destroy him at once, but if a colt or young horse, keep him quiet in slings. After the leg is straightened apply a starch bandage, which is a bandage wrung out of starch. Put a good lot of the bandage on and hold the leg straight until the bandage hardens. It will then hold the broken leg straight. Leave it on for four or five weeks, until sure that the bones are well knit together.

18. Break Down.

This is when the tendons and ligaments at the back of the fetlock give way and allow the fetlock to drop down almost upon the ground. This is mostly met with in running or racing horses, such as are put to very severe exertion.

Treatment.—The fetlock cannot be restored to its natural state. Blister once a month with the following:

Pulverized Cantharides or Spanish Fly.	2 drams.
Vaseline or Lard	1 ounce.

Mix and rub about half of this in along the back of the fetlock. Allow it to remain for three days and let the animal run out to pasture. Repeat the blister until the lameness has pretty well disappeared. If very lame, keep him in the stable for a while, and bathe with warm water and salt twice a day. After bathing, apply the white liniment until the lameness has nearly gone, then blister and turn him out.

19. Sprain of the Stifle Joint.

Symptoms.—The animal cannot bring the leg forward, and it is very sore, as indicated by pressure around the joint.

Treatment.—Bathe twice a day with hot water and vinegar containing a little salt. After bathing wipe dry and apply the white liniment. Keep the animal quiet to give the sprained parts rest.

20. Dislocation of the Patella or Stifle Out.

This is when the patella or stifle bone slips out of the pulley-like process of bone in front of the stifle joint. As

soon as this slips out the joint is locked and the animal cannot move it.

Causes.—It generally occurs in young colts or young horses that are worked hard and become thin. It usually

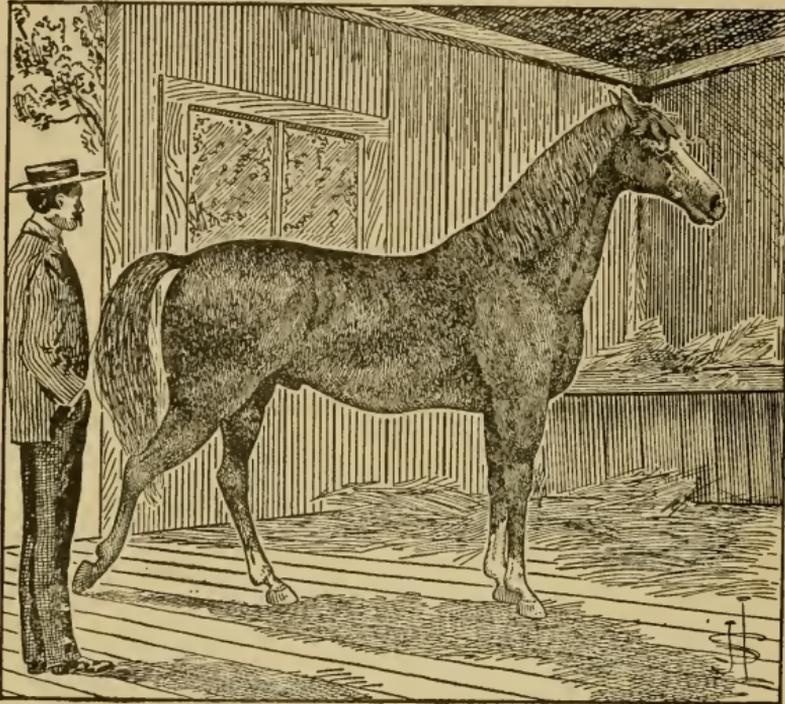


Fig. 53.—Position of the Leg During Dislocation of the Patella or Stifle.

follows slipping off the end of a plank, or slipping while in the act of getting up.

Symptoms.—The horse acts as if its foot were nailed to the floor. It cannot move it forward or back. Feel around the joint; it is drawn and hard, and you see that the joint bone is out too far. When left out for a long time the joint becomes swollen.

Treatment.—It is quite simply treated in the majority of cases. Have an assistant hold the animal's head and another pull the affected leg well forward (see Fig. 54). Then place the hands against the outside of the joint, pushing inward and forward as strongly as possible to force the bone into its natural position. This is not an easy matter sometimes, as

we have seen cases in which the strength of a strong man was taxed to the utmost to accomplish it. When this is done and power of movement of the leg is regained, walk him on a level piece of ground until the affected parts regain their strength. If it slips out the second time it is easier put in, by pressing in the same way. Bathe the parts with warm water

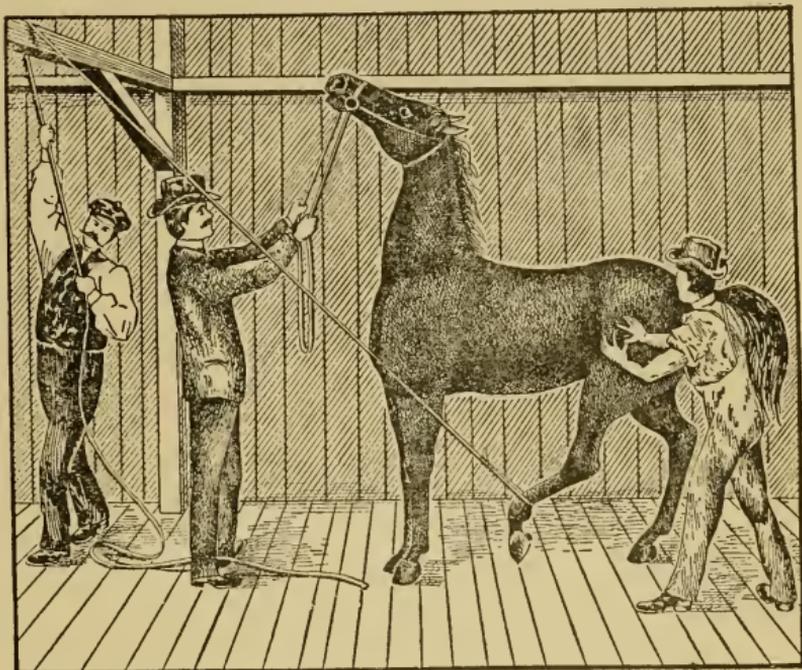


Fig. 54.—Showing the Method of Returning the Patella to Its Original Position.

and salt; after bathing rub dry and apply the white liniment twice a day until the joint gets strong and the soreness is gone. If the animal is in poor condition feed well and try to get his strength up.

21. Partial Dislocation of the Stifle.

This generally occurs in young foals when they are running over a rough pasture field, or in colts in the spring of the year when they are very weak. At first, when noticed, the stifle will slip out and the leg will be locked for a hop or two, then it will slip in and he will go on all right again. At this stage it is frequently spoken of merely as cramps in the leg. The stifle continues to slip in and out for some time until the bones get diseased and weakened. The bone then

gets about half way out and stays there. After this the joint will be larger than natural and the animal will never have proper action again.

Treatment.—As soon as noticed is the time to treat it. Place the animal in a level place where he cannot run around much and feed well to build up the physical condition. In the earlier stages bathe well with warm water twice a day, wipe dry each time and apply the white liniment. This treatment usually effects a cure. Should it not do so apply a light blister about the stifle joint. Use

Pulverized Cantharides or Spanish Fly.....1½ drams.
Vaseline or Lard1 ounce.

Mix and apply a light coat of the blister over the joint, rub in well and grease the third day. Let it go for a month, then blister again and repeat this every month until the stifle is good and strong.

22. Fracture of the Thigh Bone.

Causes.—This is generally from the kick of another horse, and, although the bone itself is fractured, the coverings will hold the bone to its place in some cases.

Symptoms.—For a few days after the kick the animal seems lame and a fracture of the bone may not be suspected, but all at once the covering of the bone gives way and the horse almost falls. Careful examination discloses the fact that the leg is fractured. The leg may be swung around.

Treatment.—When the bones give right away, destroy him, but if the horse gets a severe kick, is a little lame and fracture is suspected, keep him perfectly quiet. Bathe with warm water and salt and after bathing apply white liniment to arrest the soreness and inflammation. By doing this, the covering of the bone is so strong that it will hold the bone together until it knits, thus effecting a cure.

23. Sprain of the Muscles on the Front of the Hind Leg, Between the Hock and Stifle Joint.

Causes.—These are similar to those of other sprains.

Symptoms.—The muscle is swollen and sore. When he lifts the leg and tries to bring it forward, instead of coming forward it will fly backward and upward. The muscle that is affected is called the flexor metatarsi muscle.

Treatment.—Keep the animal very quiet, bathe well with lukewarm water and salt three times a day, and after bathing rub dry and apply the white liniment.

24. Sprain of the Muscle Running Up From the Hock on the Inside of the Hind Leg.

Causes.—A severe sprain of the leg such as may result from slipping in drawing may affect this muscle.

Symptoms.—There is a thickening of the muscles above the hock, and the animal is stiff for a few days. The stiffness soon disappears, but a thickening remains if not treated.

Treatment.—Allow him to remain idle. Bathe the parts twice a day with lukewarm water and salt, if in the winter, but if in summer use cold water and salt. After bathing rub dry and apply the white liniment. When the stiffness and soreness disappear blister to remove the thickening, using the following.

Pulverized Cantharides	2 drams.
Vaseline or Lard	1 ounce.

Mix and apply about half the amount. Rub it in well and after three days grease it. Repeat the blister every three weeks until the thickening disappears. Turn the animal out during treatment.

25. Bog Spavin.

This is a puffy enlargement partly on the inside and partly on the front of the hock joint. There is an over supply of joint oil secreted in the joint, and this bulges out the capsular ligament at this part of the joint.

Causes.—Horses with round, meaty joints are mostly subjected to this. Keeping young colts in the stable and feeding them high without much exercise, fast work or strain of the joint will cause it.

Symptoms.—There is a puffy enlargement on the inside and front of the hock joint sometimes larger than others. Feeling it indicates that it is full of oil. If it comes on from a sprain there is lameness for a few days, but this passes off and leaves an enlargement.

Treatment.—If the animal is lame, bathe with lukewarm water and salt twice a day; in warm weather use cold water, and in cold weather use warm water; after bathing rub dry and apply the white liniment. Continue this treatment for

a few days until the soreness and lameness disappear, then blister with the following, and turn the animal out:

Pulverized Cantharides or Spanish Fly.....2 drams.
Vaseline or Lard1 ounce.

Mix and there is enough to blister two or three times according to the size of the bog. Rub in well and in three days grease. Repeat the blister in a few weeks as soon as the skin is nicely healing up. It is necessary to blister several times before the enlargement is removed. Often where there is a bog spavin there is a thoroughpin in connection with it. For further particulars refer to last paragraph under the heading, "Capped Hock."

26. Thoroughpin.

Causes.—These are similar to those given for bog spavin. The enlargements are on each side of the hock near the back.

Treatment.—The treatment is the same as that given for bog spavin. Never, under any circumstances, open either a bog spavin or a thoroughpin, for if you do, you will have a case of open joint to deal with.

27. Capped Hock.

This is a common disease. It is a swelling or thickening on the cap of the hock.

Causes.—It results from an injury of some kind, such as may follow kicking in the stable and striking the hock against the stall. Some horses may do it in laying down.

Symptoms.—There is swelling on the cap of the hock, which is generally soft but not sore to handle. It is of a puffy nature, as it is mostly oil that causes the enlargement on account of the little bursa being injured, and thus secreting too much oil. It does not lame the horse or interfere with his usefulness, but it is a bad blemish and an eyesore.

Treatment.—If caused from kicking the stall, place the horse so that he cannot strike it. If being treated immediately, bathe with lukewarm water and salt; rub dry and apply the white liniment. Continue this treatment until the soreness and swelling is gone; then blister the thickening with:

Pulverized Cantharides or Spanish Fly.....1½ drams.
Vaseline or Lard1 ounce.

Mix thoroughly and there is enough to blister on the cap four or five times. Blister light and about every two weeks.

Grease the third day after each blister. Should it be necessary to use the animal, bathe the parts once a day with cold water and salt; rub dry and apply the acid liniment every third day after bathing. The acid liniment is also good when used in this way for bog spavins and thoroughpins when necessary to work the horse.

28. Sprain of the Hock Joint.

Symptoms.—The horse is very lame and he does not use the hock properly in bringing the leg forward. There is swelling and heat around the joint.

Treatment.—Bathe well with hot or cold water, according to the season of the year. After bathing, each time wipe dry and apply the white liniment. Bathe twice a day and keep the horse quiet.

29. Fracture of the Bones of the Hock.

Fractures of these bones do not occur very often.

Symptoms.—The animal is very lame, and holds the leg up because of the pain. The joint becomes swollen and very sore to touch. By working the joint the grating sound made by the broken bones may be heard.

Treatment.—If a very bad fracture, destroy the horse, but if not, and a young animal, keep him quiet and bathe well with lukewarm water and salt three or four times a day. After bathing, rub dry and apply the white liniment; this keeps down the inflammation and swelling. It is always best in treating any kind of fracture to keep the animal in slings, but do not sling him entirely off his feet, just enough to ease the weight off his legs. After a few weeks the bones become united, but there will be lameness and soreness in the joint. This is best relieved by blistering with

Pulverized Cantharides or Spanish Fly.....1 dram.
 Biniodide of Mercury1 dram.
 Vaseline or Lard1 ounce.

Mix thoroughly and there is enough to blister twice. Rub a little in on each side of the joint, rub it in well, grease the third day and allow it to remain for three or four weeks; then blister as before. Let the animal have a good rest by turning him out to pasture.

30. Blood Spavin.

This is an enlargement of the vein which runs down in front of the hock joint.

Causes.—A weakened state of the wall of the vein is the cause.

Symptoms.—There is an enlargement of the vein, but the animal is not lame, nor does it hurt the animal for any kind of work. It is an eyesore and disagreeable blemish.

Treatment.—There is no treatment for it.



Fig. 55.—A Blood Spavin.

31. Open Joint.

This condition may arise in any joint of the legs or other parts of the body. It is the result of injury sufficiently severe to penetrate the capsular ligament, allowing the joint oil to leak out.

Causes.—A kick from another horse, a prod with a fork or running against a sharp obstacle may account for it. It may arise from a diseased condition of the joint.

Symptoms.—There will be lameness and swelling around the injured joint and leaking from the hole of an oily looking substance which is the synovia or joint oil. If the leaking is not stopped, inflammation develops in the joint and destroys it. If he does get better, it leaves him with a stiff joint.

Treatment.—The larger the joint the more troublesome is the treatment and the more danger there is of losing the animal. Do not bathe or apply any liniment, as it only increases the flow of joint oil. If the case is taken in time by applying Monsell's solution of iron in and around the hole every couple of hours with a feather, in most cases it completely checks the running of the oil, and the animal recovers all right. This is the best treatment known for open joint. Keep him quiet and feed on soft food with plenty of boiled flaxseed in it to keep the bowels open. Sometimes after the joint is apparently healed for a couple of weeks it breaks out again. Treat this the same as at first until it closes the hole. After the joint is healed and it is still swollen, bathe with cold water and salt once a day. Bandage for a couple of hours after bathing, and every third day, after taking off the

bandage, rub the joint well with acid liniment. If the hole is very large and the bone is injured, it is best to destroy the animal at once.

32. Tumors and Cancers.

These are rarely met with in horses, but are quite commonly so in cattle. For this reason the subject is fully dealt with in Part III.

33. Curb.

This is a rupture and enlargement of the ligament that runs down the back part of the hock joint—this ligament receives the name of calcaneocuboid ligament.

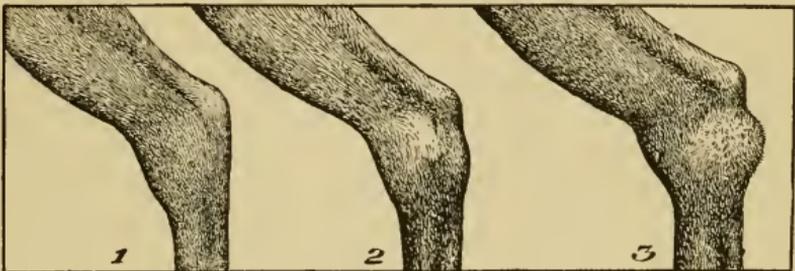


Fig. 56.—Curb. 1. Sound Hock. 2 and 3. Curbs.

Causes.—Horses that have crooked or curby legs are more liable to this than horses with straight legs. It generally results from a severe sprain by slipping while drawing or driving, or from rearing up or backing forcibly with a heavy load or in deep snow.

Symptoms.—It is easily detected by looking at the hind leg at the side. The enlargement at the back of the hock may be detected by running the hand down over the back of the hock joint. When the curb is first sprung on, the animal is lame, and, in traveling, he steps long, somewhat similar to ringbone lameness. After resting for a day or two, and then being driven, at first, he is not very lame, but after driving a while he becomes very lame. When allowed to stand he rests the leg by standing on his toe and throwing the fetlock forward. After a time the lameness disappears if not treated, but the enlargement remains.

Treatment.—Get the soreness and lameness out of the ligament by bathing with lukewarm water and salt twice a

day, if in winter, but if in summer cold water and salt; after bathing rub dry and apply the white liniment. When the soreness and swelling are gone from the ligament, blister with the following to reduce the thickening:

Pulverized Cantharides or Spanish Fly2 drams.
Vaseline or Lard1 ounce.

Mix, and there is enough in this to blister three times. Cut the hair from around the curb and rub one-third of the mixture in well. In three days grease and let it remain for a couple of weeks; then wash the leg with lukewarm water and soap and blister again. Grease as before and repeat this blistering every three weeks until the enlargement is all gone. During treatment do not work the animal, but if you must work him keep him well shod to prevent slipping.

34. Rheumatism.

This is a kind of chronic inflammation in the tendons and ligaments around the joints, and may affect any joint of the body.

Causes.—It often follows weakening diseases when the animal is allowed to run out and lie on the cold, damp ground. Bad blood containing too much acid may cause it.

Symptoms.—There is a slight soreness, swelling and lameness in the joints, changing from one joint to the other, being worse in damp weather.

Treatment.—Rub the affected joints well two or three times a day with white liniment and give the following:

Salicylic Acid¼ pound.
Nitrate of Potash or Saltpetre¼ pound.
Bicarbonate of Soda¼ pound.

Mix thoroughly and give a large teaspoonful three times a day. This medicine acts like a charm in rheumatism.

CHAPTER XXIV.

DISEASES OF THE FEET.

1. Acute Founder (Laminitis).

This is an inflammation of the sensitive part of the foot, or what is commonly called the quick.

Causes.—This disease is very easily brought on by driving or working a horse hard and then giving him a drink of cold water, or allowing him to stand in a draft while he is warm. This checks the perspiration suddenly and drives the blood to the feet, which sets up inflammation in them. Sometimes giving an animal a small feed of wheat will first cause acute indigestion, turning to a bad case of founder. It may affect mares a few days after foaling, especially if they do not have their natural flow of milk, or by catching cold after foaling and settling in their feet. Hard driving and bad shoeing will also cause it. Lung troubles sometimes terminate in founder.

Symptoms.—Founder generally affects the front, but may affect the hind feet. The symptoms are plain. The pulse beats strong and runs up to from 50 to 75 per minute. The animal sweats freely and breathes heavy and quick; he generally stands on his feet for a few days at first, standing in a peculiar way, his front feet stretched out as far as he can put them, standing on the heels trying to relieve the feet, while the hind feet are drawn forward and well under him to throw as much weight as he can on his hind legs, thus relieving the front feet. His feet are very hot and feverish, and he can hardly move forward or backward. On account of the inflammation being inside the hard resisting hoof where there is no room for swelling, it is one of the most painful diseases that the horse is liable to, and if he does not get relief in a few days the quick of the foot becomes destroyed, and the bone gets loose from the inside of the wall and drops down on the sole. When this happens it causes the sole to become bulged out in an unnatural way. It is then known as a club (pumiced) foot.

Treatment.—Give a dose of physic consisting of

Bitter Aloes .....	. . . . .	.8 to 10 drams.
Bicarbonate of Soda ...	. . . . .	.1 teaspoonful.
Ginger .....	. . . . .	.1 teaspoonful.
Fleming's Tincture of Aconite .....	. . . . .	.10 drops.

Mix in a pint of lukewarm water and give as a drench. If he is in high condition take four quarts of blood away from him, then take off his shoes and place his front feet in a tub and bathe them for two or three hours at a time with lukewarm water—hot as you can bear your hand in it—two or three times a day; after each bath rub dry and apply white liniment around the feet and legs; poultice the feet with hot linseed meal and bran and leave the poultice on till you are ready to bathe again. Repeat this treatment until the inflammation is checked. Give plenty of cold water to drink—a little at a time—and if he wants to eat give soft feed and the following drench:

Nitrate of Potash or Saltpetre .....	.1 teaspoonful.
Fleming's Tincture of Aconite ...	.10 drops.
Water .....	.1 pint.

Mix and give as a drench three times a day, continuing the drenches until he gets relief. Clothe the body well and have the stall well bedded to induce him to lie down, as this helps to relieve his feet. For after treatment blister with the following and turn him out to pasture:

Pulverized Cantharides or Spanish Fly. ....	.1½ drams.
Lard or Vaseline .....	.1 ounce

Mix well and apply all of it around the tops of both the feet; rub in well and grease three days after.

2 Sore Feet (Chronic Founder).

This is a soreness or a chronic inflammation of the feet.

Causes.—It comes from hard work; especially driving on hard roads. Horses with small or flat feet are more subject to this than other horses, but any are liable to it. Bad shoeing, letting the shoe rest too much on the sole or standing on a dry floor, the feet becoming dry, hard and contracted causes chronic founder.

Symptoms.—It generally affects the front feet. They become hot, dry and very hard, and, in some cases, contracted at the heels, caused from the fever and soreness in the foot. He has a peculiar stumbling action, and tries to step on the

heels first. Press around the feet with a pincers or your hands and the animal will flinch. After a time, from trying to favor his feet, the muscles of the chest will gradually waste away and leave it hollow. This must not mislead you and make you think there is anything wrong with the chest. When the chest falls away some call it chest founder, but this is a mistaken idea. There is no such thing as chest founder, the whole trouble arising in the feet.

Treatment.—Treatment is not very satisfactory in some cases. If a valuable animal, soak the feet well in warm water and salt. Use a tub containing six or eight inches of water; leave the feet in the water two or three hours at a time, twice a day; every night put on a hot poultice of half linseed and bran and leave it on all night. After the soreness is pretty well out, blister around the top of the hoof with the following:

Pulverized Cantharides or Spanish Fly.....2 drams.
Vaseline or Lard 1 ounce.

Mix and apply all of it around the tops of both front feet and turn the horse out to pasture for a long time. Grease and blister the third day. After the horse is all right and he is brought in to work again let him stand on a ground floor, for an animal once affected with this disease is more liable to be affected again. Be careful in shoeing; we recommend the bar shoe. If necessary to keep him shod, and he is not of much value, keep him on a ground floor and pack the feet every night with cow manure, blue clay, or anything that will keep the moisture in the foot. Even in very bad cases, blistering and turning out to pasture for a while will help it.

3. Club (Pumiced) Foot.

Causes.—This is the result of the foot bone becoming separated from the inside of the walls and dropping down upon the sole and frog. It is generally the result of a neglected case of acute founder. A horse thus affected is rendered practically useless for road work, but may be fixed up sufficiently well to do slow work on the farm.

Treatment.—Blister around the tops of the hoofs, as in a case of chronic founder, turn him out to pasture and shoe with a heavy shoe well corked up and well bevelled out so that the weight does not fall upon the sole. Try to have the weight thrown entirely upon the wall and have the shoes set regularly once a month.

4. Corns.

Corns may affect any foot or either heel. They are, however, more generally found on the front feet and more frequently affect the inside heel.

Symptoms.—The horse is more or less lame in most cases, and is more so just after he bruises it. When standing, if it is in one foot, he points that foot out; if in both feet, he first points one out and then the other, changing from one to the other frequently. He goes pretty well on soft ground, but gets lame as soon as he strikes a hard piece of road. On raising the foot and tapping or pressing on the affected quarter, he flinches. In taking the shoe off and paring down the quarter, a red spot in the corner of the sole is exposed. In case the corn becomes bruised and festers, the symptoms will be more severe. He holds up the foot and in walking he steps long, and on the toe, then hops on the other foot. The affected quarter is hot and tender when pressed upon, and if he does not soon get relief it festers and breaks out at the top of the hoof.

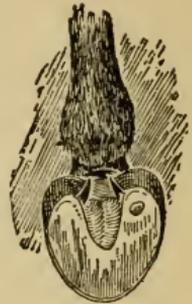


Fig. 57.—Position of a Corn.

Treatment.—In many cases it is not necessary to lay him off, but shoe him so that the shoe will not press on the heels and apply a poultice of hot linseed and bran to the foot for a few nights. A bar shoe is a very good one to put on, as it throws the weight on the frog and relieves the heels and quarter. If a festering corn, remove the shoe and pare down into the corn until you strike the matter. Allow it to escape; this will give him relief. Then poultice as above mentioned and allow the animal to rest a few days, and when you are going to use him again shoe him with a bar shoe. See that the shoes do not press on the heels and quarters, and if the soreness continues, blister around the affected quarter with the same blister that is used for chronic founder. For after treatment keep the animal shod regularly and see that the shoes do not press too much on the heels.

5. Thrush.

This is a disease that affects the frog. It is mostly met with in the hind, but often affects the front feet.

Causes.—Standing in wet and filth, or anything that will rot the frog causes it. Heavy horses are more subject to this disease than light horses.

Symptoms.—These are very plain. He may be only slightly lame, but if he steps on anything very hard he flinches. By examining the foot you find that the centre of the frog is eaten out by the disease, and there is a discharge which has a very bad smell.

Treatment.—Keep him out of the wet and dirt, and the stable very clean. Cut off the dead horn from around the frog and wash out the diseased part with warm water and a little soap. After it is cleaned well, poultice with a hot poultice of half linseed meal and half bran for a few days until the foot is nice and soft; after this clean the poultice out of the frog and dust in some dry calomel about twice a week until it is better. Another cheap treatment is to pack the foot full of common salt a couple of times a week. Another is to pour a few drops of butter of antimony into the diseased foot once a week. Do this until all the discharge and smell is gone from the frog. Then leave the frog alone until it goes down itself.

6. Injuries from Nails (Punctures).

Causes.—Such injuries are frequently met with, especially in large cities. As soon as a horse shows signs of lameness the bottom of the foot should be examined at once to see whether or not some sharp object such as a nail has punctured or penetrated the bottom of the foot.

Symptoms.—If in the hind foot he knuckles over and becomes lame very suddenly. If in the front foot he points it out while standing, and when he steps puts as little weight on it as possible, hopping on the sound leg. Examine the foot and you may find the nail itself; if not, by tapping around the foot with a small hammer you find where the tender spot is; then pare around it and you will find a small, black spot where the nail entered.

Treatment.—If you find the nail pull it out and pare out the hole almost down to the quick, then drop in a few drops of butter of antimony, which will counteract any poison or rust that may be left in. After this keep him quiet and apply a hot poultice of half linseed and half bran for a few days until he is entirely over the lameness before you work him.

The danger of these punctures are that they may start to fester. This is very painful, and also very dangerous. If it starts to fester, the animal holds the foot up with pain. It is swollen around the top and very hot. Cut down well into the hole and allow the matter to escape. Bathe with hot water and poultice to relieve the pain and draw all the matter out. When a large hole is necessary and the quick bulges out, burn it with butter of antimony once a day. After the animal is able to walk nicely, blister the foot around the top of the hoof with the same blister used in chronic founder and turn him out to pasture till the soreness is all out.

7. Pricks in the Quick.

Causes.—These injuries are done in shoeing by driving nails too close to the quick.

Symptoms.—At the time of driving the nail the horse gives a sudden jerk, showing that the nail strikes the quick.

Treatment.—Remove the shoe and keep the horse quiet for a day or two. If he is lame poultice the foot with hot linseed. If he continues to be lame, pare around the nail hole and give it the same treatment that is given for punctures of other nails. In any of these cases, if necessary to work him when he is getting better, plug the hole with tar and cotton batting and put a leather under the shoe to keep the dirt out.

8. Quarter Crack.

Quarter crack receives its name on account of the part of the foot it affects. It generally affects the front feet, and is more often found to affect the inside quarter of the foot.

Causes.—Certain breeds of animals are more subject to this than others, especially if the feet are of a brittle nature. It is often met with in road horses, more especially if they have high knee action and strike the ground heavily.

Symptoms.—At first a small crack appears in the quarter of the foot just below the hair. If the animal is kept at work he gets lame; the crack gets larger and longer, and sometimes bleeds. If still kept working, it sometimes festers on account of the irritation being kept up.

Treatment.—Remove the shoe, pare out the bottom of the affected quarter so that the shoe will not rest upon it, then shoe with a bar shoe. As well as this, pare out the crack all the way down on each side—almost to the quick—

from the top to the bottom of it, to prevent it from pressing on itself. If a little lame, poultice the foot for a few days until the soreness is all out. After this apply a little of the same blister used for chronic founder, just above the crack in the hair. This stimulates the growth of the horn and makes the hoof grow. It also draws out all of the soreness.

9. Caulks.

This is common in the fall and spring when horses are sharp shod.

Causes.—It is caused by the horse or his mate stepping on his foot and cutting around the top of the hoof.

Treatment.—If it bleeds freely, apply Monsell's solution of iron. If this is not at hand, apply a pad of cotton batting and bandage tightly over it; leave it on for twenty-four hours. The danger in caulks is that sometimes hair and dirt gets worked down into the caulk and it begins to fester, working down into the foot. In all cases where he shows any signs of lameness, pare out the hoof around the caulk to the bottom of it, then poultice for a few days. Change the poultice twice a day to keep it hot and each time it is changed pour a little hot green salve into it.

10. Overreach.

This generally occurs in fast horses where they are speeded without having on quarter boots. They step too far with their hind foot and catch the heel of the front foot.

• **Treatment.**—Treat the same as a lacerated wound, and in all cases when speeding fast horses, use boots on them to prevent them from catching their quarters.

11. Bruises of the Sole.

Causes.—Stepping on a stone or any hard substance or pressure of the shoe on the sole may cause it.

Symptoms.—He steps very long on the affected foot. Tap the sole of the foot with a hammer. He flinches when the bruised spot is struck. If the bruise is allowed to remain without being treated it commences to fester and the symptoms are more severe. The horse will hardly be able to put his foot to the ground, and it is hot and swollen around the top.

Treatment.—Remove the shoe and find the affected spot by tapping on the sole with a hammer. If you do not think it is festering poultice with a hot poultice of half linseed meal and half bran. Change the poultice twice a day to keep it hot until the soreness is all out. If you think it is festering pare a small hole in through the sole to the festering part, to allow the matter to escape, then poultice as above mentioned until it is better. Each time, when changing the poultice, melt a little green salve and drop it into the hole.

12. Cuts of Any Kind.

Refer to the treatment of wounds, Chapter XXI.

13. False Quarter.

Causes.—This is the result of a cut around the top of the hoof which sometimes causes a false growth of horn (in the form of a ridge) to grow down the hoof as it grows out.

Treatment.—File the ridge down level with the wall of the foot with a rasp occasionally.

14. Quittor.

This disease is sometimes called gravel. Properly speaking it is a formation of matter between the sensitive and insensitive portions, gradually working its way up until it breaks out at the cornet, forming what might be termed a fistula.

Causes.—Pricks or punctures in the bottom of the foot, separating corns or gravel working up into the foot may be the cause. A neglected caulk or ordinary bruise may also cause it.

Symptoms.—Lameness, usually well marked, is the first symptom. In the earlier stages a swelling forms at the top of the hoof. This swelling breaks in the course of a few days and, in the later stages of the disease, becomes a running sore. A careful examination with a probe discloses the fact that the fistula extends downward toward the bottom of the foot. More than one fistula may be found in bad cases.

Treatment.—A case of long standing, more especially if the bone be affected, is very difficult to treat successfully. In such cases very severe treatment is essential. Endeavor to remove the cause, so far as it can be ascertained. Remove the shoe and cut the wall and sole down immediately below

the abscess close to the quick, so as to allow the pus to discharge. Use a solution of

White Lotion8 ounces.
Corrosive Sublimate½ dram.

Shake well together, inject it in at the top and allow it to discharge through the opening at the bottom. This destroys the pipe of the fistula. Poultice almost continually for a week or two, changing the poultice twice a day. Discontinue the poultice gradually when improvement in the condition of the foot is noticed. Should the bone be diseased it may be necessary to cut away more of the sole and wall and scrape away the diseased portion of bone. Do not attempt this, however, unless it is felt to be absolutely necessary.

15. Seedy Toe.

This term is applied to a peculiar condition of the horn of the toe in which it becomes soft and crumbly, in severe cases causing the foot to grow out of shape. A small or large portion may be affected. When a large portion is affected, the foot becomes deformed, this condition being also accompanied by lameness.

Causes.—Probably the cause most frequently met with is the use of shoes with large toe clips. These interfere with the proper nutrition of the foot. In fact any condition that interferes with the nutrition and impairs the secretion may have the same effect.

Treatment.—Remove the shoe, cut down the toe and scrape off the diseased portion of the horn. Poultice the parts thoroughly to relieve the inflammation and soreness. Cover any sensitive structures left exposed with lard and pine tar. Stimulate the growth of the horn by applications of fly blister to the top of the hoof. During treatment it is well to poultice occasionally to soften the hoof and promote healthy growth.

16. Canker.

Canker is a fungus growth affecting the sole and frog.

Causes.—It is usually the result of some irritating condition such as that of puncture, standing in filthy places or walking through wet barnyards.

Symptoms.—The fungus growth usually makes its first appearance on the sole or frog. If not treated this extends until the whole bottom of the foot becomes involved. It

bleeds from slight injury and is often quite difficult to treat successfully.

Treatment.—Pare away the dead portion of the horn, cutting the growth off with it. Bleeding during this operation may be quite profuse. To check this burn with nitric acid. Apply it with a feather, after which cover the whole of the bottom of the foot with tow and pine tar. In order to hold the tow and tar in place and have a moderate amount of pressure place a piece of sole leather between the shoe and foot. Tack the shoe on with a couple of nails, so that it can be removed easily in a couple of days to apply a fresh supply of tow and tar. Repeat this treatment every few days until the growth is killed and the foot regains its natural condition.

17. Coffin Joint Lameness (Navicular Disease).

This is becoming a very common disease, and is met with mostly in driving horses.

Causes.—Hard and fast work is the usual cause. Animals with short, upright pastern joints, short, stubby action, or horses with high pounding action are more often affected with this disease. Allowing the toes to grow too long and cutting down the heels when shoeing them will cause it.

Symptoms.—There is usually more or less lameness. In some cases it comes on suddenly and is severe, while in others it gradually comes on for weeks, and sometimes for months, before it is much noticed. While standing he points the feet out, and in some cases this is the first symptom noticed. If both feet are affected the horse suffers pain and while standing first throws the weight on one foot and then on the other. In traveling he has what is known as a groggy action. Another well marked symptom is a wasting of the muscles of the chest. On examining the feet the heels will be found to be contracted and hard. By raising the foot up and pressing with the thumb on the back part of the heel the horse is made to flinch. Notice the shoe he has been wearing. It is found to be worn mostly at the toe.

Treatment.—If a bad case of long standing it is incurable, but if taken in time it may be cured. Rest the horse and bathe the feet twice a day for an hour or two at a time (if in the winter bathe with warm water, if in summer use cold water). After bathing apply white liniment around the top of the hoof and every night poultice the foot with hot

linseed meal and bran, half and half. Continue this treatment until he is pretty well over the lameness; then blister the foot the same as in chronic founder and let him out to pasture. If of long standing and necessary to use the horse, stand him on a ground floor and pack his feet every night with cow manure, blue clay or anything that has a tendency to soften the foot. Shoe him with high heeled shoes, low in front. In some cases neurotomy may be performed, an operation of nerving the foot. This is done with the view of taking the feeling away from the foot. This is done as follows: Throw the animal and secure him; then make a cut along the inside and outside of the leg between the knee and fetlock (about half way). Make the cut about two inches long lengthwise in the groove between the shin bone and the back tendons. In this groove is found the nerve, artery and vein which runs down the leg. Cut about an inch out of the nerve so that it will not unite together again. Do this on both sides of the affected leg or legs; then stitch the cut up, bandage the leg and treat as a common wound. Bathe and apply the white lotion twice a day. After this operation the horse gets up and goes off as though there was nothing wrong, but it is necessary to be careful in shoeing him. Examine the foot every night, for if anything went wrong with it, it might even rot off before the animal would show any lameness. This operation at one time was performed to a great extent, but is now losing in favor. In examining a horse if you think that he has been nerved in this way, prick him with a pin around the feet. If he has been operated on he will not feel anything, but if he has not he will show signs of feeling in the ordinary way.

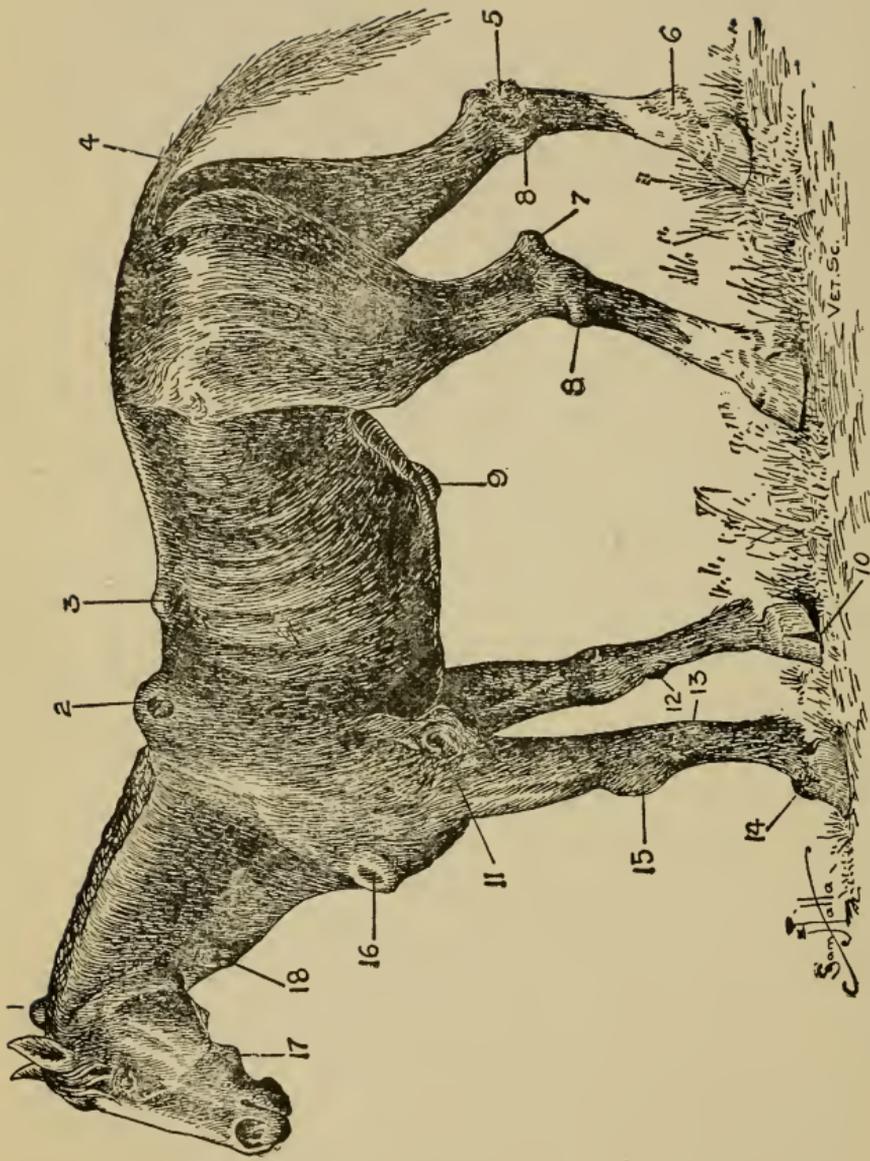


PLATE XI.—EXTERNAL MANIFESTATIONS OF SOME OF THE MORE COMMON DISEASES TO WHICH THE HORSE IS SUBJECT.

EXPLANATION TO PLATE XI.

- | | |
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| 1. Poll Evil. | 11. Capped Elbow. |
| 2. Fistulous Withers. | 12. Splint. |
| 3. Small Tumor from Badly Fitting Harness. | 13. Sprain of the Back Tendons. |
| 4. Scutt Tail. | 14. Ringbone. |
| 5. Curb. | 15. Big Knee. |
| 6. Wind Gall. | 16. Sit-fast or Tumor on the Shoulder. |
| 7. Capped Hock. | 17. Injured Jaw from Bridle or Halter. |
| 8. Spavin. | 18. Sore Spot on Neck from Bleeding. |
| 9. Umbilical or Navel Rupture. | |
| 10. Quarter Crack. | |

Plate XI. is presented for the purpose of showing clearly the position of common blemishes, so that in an examination for soundness they may be looked for and detected with the least difficulty. A careful study of this Plate is very necessary.

CHAPTER XXV.

MISCELLANEOUS INFORMATION.

1. A Nice Horse.

A horse wide between the eyes, with a nice tapering muzzle and a pleasant, bright eye exhibits indications of a good disposition and a kind and even temperament. Large ears, carried well forward when traveling, is also a good indication. The neck should be rather long, bowed upward and well cut out under the jaws. The shoulders should be long and well slanted forward, the withers quite high running, nicely curved, into a short, strong back terminating in long, round, well developed hips and rump. The chest should be deep and well rounded out. The belly should be fairly well developed but tidy, well "ribbed up," that is, not having too much space between the last rib and the hip bones. The bones of the legs should be flat and clean, terminating in well-shaped feet.

2. How to Examine for Soundness.

Give the horse a quick trot or gallop to see that he is not lame. As soon as he stops put your ear to his nose to ascertain that his wind is not affected. Then examine his nostrils and mouth, and at the same time examine the teeth to determine his age. Look closely into the eyes to see that there is nothing wrong with them. Pass the hand up around his ears and the pole of the head to see that they are all right. Examine one side of him first by starting at the neck, running the hand over it to the withers, then over the shoulder, down the outside and inside of the front leg, watching carefully for splints, sidebones, ringbones and such like. Raise the foot and see if it is well formed, with good, strong heels. Look back along the belly for warts and running sores caused from castration and pass the hand down the back of the hips to see that the hip bones are both of the same size. Follow the hind leg over the hock and hind fetlock and look for spavins, windgalls, curbs, splints, sidebones and ringbones. Examine the stiffls to see that they are all right. Examine the hind foot as you did the front. Go to the other side and examine him in the same way. Now stand back and take a good look

at him to see how he stands on his legs, and, also, how he holds his head and neck; notice if he stands with his front feet well under him, for this is a good sign; at the same time see if he is inclined to be weak in the knees and fetlocks. Beware of calf-kneed horses, for they are always stumblers; see that he stands neither too straight nor too crooked on his hind legs. After this take a walk around to the front and see that he has a well formed breast, and that he does not toe in nor toe out too much. Then make an effort as if you intended to strike him with a stick or whip over the side. If he grunts, examine close to see that he is not a roarer. Now give him another good, sharp trot or gallop to see that he carries his front and hind legs nice and straight and that he has good action. Notice, too, whether he carries his tail straight or not. Step up again quickly and place your ear to his nostril to see if he makes any noise, and be sure that he is all right in his wind. As a final test put him in a stable for an hour or two, giving him a pail of water and some feed, for cases of lameness are not shown until he has stood for a while. In an hour or two go into the stall and take him out yourself, watching at the same time how he steps over and how he backs out of the stall for fear of springhalt or corea. Give him a brisk trot again and again test him for lameness and soundness in his wind.

3. How to Tell the Age by the Teeth.

During the first year of the foal's life the following changes take place in the teeth: Four centre nippers or front teeth, two above and two below, make their appearance about the ninth day. At nine weeks four more front teeth, called laterals, appear, one on each side of the first two pairs. At nine months of age he gets four more front teeth, called the corner teeth, one on each side of the two pair below, and one on each side of the two pair above. So, at nine months of age the colt has a full mouth of milk, or temporary front teeth.

At the age of two years no change takes place in the front teeth, so that the general appearance is the only guide.

At three years of age he sheds the four centre nippers or front teeth, two above and two below, and gets permanent ones.

At four he sheds the four lateral teeth, two above and two below, and gets permanent teeth in their places.

At five he sheds the four corner, or outside teeth, and gets permanent ones. So, at this age, the horse has a full mouth of permanent front teeth.

At five years of age each of the front teeth contains a black ring.

At six the rings on the two centre teeth of the bottom row disappear, a black spot only being left in its place.

At seven the rings on the laterals (teeth next to the centre pair in the lower row) disappear and a black spot only is left on each.

At eight the rings on the corner teeth of the lower row disappear and a black spot only is left on each.

At nine the rings on the two centre front teeth of the upper row disappear, a black spot remaining on each.

At ten the rings on the laterals (those next to the centre pair in the upper row) disappear, a black spot only remaining.

At eleven the rings on the corner teeth of the upper jaw disappear, a black spot remaining in place of each ring.

At twelve the change again takes place in the lower jaw. The two centre teeth become much narrower and longer than the others.

At thirteen the laterals (those next to the centre pair—one on each side) become much longer and narrower.

At fourteen the same change takes place in the lower corner teeth.

At fifteen this change appears in the two centre teeth of the uppers—they, too, becoming much longer and narrower.

At sixteen the upper laterals are similarly affected.

At seventeen the long, narrow effect is produced in the corner teeth of the upper row.

At eighteen the change again shifts to the lower row, the two centre teeth becoming much shorter.

At nineteen this short effect is produced in the laterals of the same row.

At twenty the lower corner teeth are much shorter.

At twenty-one the change is again produced in the uppers. The two centre teeth become much shorter.

At twenty-two the upper laterals become shorter.

At twenty-three the upper corner teeth become shorter.

After the horse has attained the age of twenty-four or over his age cannot be determined with any degree of accuracy by the appearance of his teeth.

In order to place the matter of age as indicated by the appearance of the teeth more clearly before the student, the following schedule is submitted. In it the indication of age is presented at a glance. For example: a horse is supposed to be, say nine years old. Run down the age column to the figure 9 and by reading to the right it will be found that all the lower incisors as well as the two upper centre teeth contain black spots, and the remaining four uppers, rings. Similarly: Suppose that in examining a horse's mouth, the two center teeth and the two laterals of the lower jaw are found to present black spots and the remaining incisors, rings. Run down the columns for centre and laterals to the darkface S's in each, and to the left the age is found to be 7.

4. Drenching.

A twitch is a small round handle about three feet long provided with a hole near one end, through which passes a small rope to form a sort of loop. This loop is sufficiently large enough to slip over the horse's nose, being tightened by twisting the rope by means of the handle.

The bottle containing the drench should have a fairly long neck and be of thick, strong glass.

Place a halter on the horse and lead him to a place that will admit of raising his head well up. Place a twitch on his nose and while an assistant holds the nose well up with the twitch, slip the bottle containing the drench into the mouth from the side between the front and back teeth. Pour into the back of the mouth only a small portion of the medicine at a time to prevent choking. Should he commence to cough, allow him to lower his head immediately and do not raise it again until the coughing has ceased. Don't be in a hurry to empty the bottle, as it takes some horses much longer than others to take a drench.

5. Bleeding.

Place a small rope, or plow cord, in the form of a slip-knot, over the horse's neck and draw it tight enough to swell the jugular vein on the left side of the neck, moisten the hair over the swelling and hold the fleames—which must be clean—lengthwise with the vein; have an assistant to hold the rope, and also cover the horse's left eye so he cannot see you. When you are satisfied that the fleames set over the vein strike them a quick, sharp blow with a stick of some kind. As soon as the vein is cut, a stream of blood spurts from the

AGE SCHEDULE.

AGE	LOWER Front Teeth—Incisors			UPPER Front Teeth—Incisors			MOLARS
	Center	Lateral	Corner	Center	Lateral	Corner	
9 Days	2	.....	.....	2	.....	.....	12
9 Weeks	2	2	.....	2	2	.....	12
9 Months	2	2	2	2	2	2	12
1 Year	2	2	2	2	2	2	12+4=16
2 “	2	2	2	2	2	2	12+8=20
3 “	2	2	2	2	2	2	4+16=20
4 “	2	2	2	2	2	2	24
5 “	2 R	2 R	2 R	2 R	2 R	2 R	24+2 Canines
6 “	SS	RR	RR	RR	RR	RR	Full Set
7 “	SS	SS	RR	RR	RR	RR	“
8 “	SS	SS	SS	RR	RR	RR	“
9 “	SS	SS	SS	SS	RR	RR	“
10 “	SS	SS	SS	SS	SS	RR	“
11 “	SS	SS	SS	SS	SS	SS	“
12 “	N & L	.....	.....	.....	.....	.....	“
13 “	N & L	N & L	.....	.....	.....	.....	“
14 “	N & L	N & L	N & L	.....	.....	.....	“
15 “	N & L	N & L	N & L	N & L	.....	.....	“
16 “	N & L	N & L	N & L	N & L	N & L	.....	“
17 “	N & L	N & L	N & L	N & L	N & L	N & L	“
18 “	Shorter	.....	.....	.....	.....	.....	“
19 “	Shorter	Shorter	.....	.....	.....	.....	“
20 “	Shorter	Shorter	Shorter	.....	.....	.....	“
21 “	Shorter	Shorter	Shorter	Shorter	.....	.....	“
22 “	Shorter	Shorter	Shorter	Shorter	Shorter	.....	“
23 “	Shorter	Shorter	Shorter	Shorter	Shorter	Shorter	“

Explanation of figures and letters used in above Schedule—Light face figures (2) indicate Temporary or Milk Teeth. Dark face figures (2) indicate Permanent Teeth. Medium dark face letters (R) indicate Rings, dark face letters (S), spots. N & L means narrower and longer.

hole. Continue holding the rope tight until sufficient blood has escaped. Always catch the blood in a pail so that you know how much is taken away. When it has bled enough slacken the rope. This stops the bleeding. Then take a bright new pin and run it through the two edges of the skin, bringing them together; wind a string around the pin so that it cannot get off. Leave the pin in this position for twenty-four hours after bleeding. Tie the horse's head up and do not let him out to grass or eat anything that will cause him to keep his head down to the ground until the vein is healed. Be sure your hands, the fleames and the pin are clean, for dirt or rust will set up inflammation of the vein.

6. Chills.

Causes.—It often occurs after a horse has been working hard if allowed to take a cold drink of water, or stand in the cold. Any such treatment will bring on a chill

Symptoms.—The horse shivers, looks very dull, his back is humped up a little. He breathes heavily and refuses to eat. This is not looked upon as a disease in itself, but as a symptom of some other disease, and if allowed to continue without being checked is liable to cause inflammation of any of the organs of the body; therefore the necessity of checking a chill at once.

Treatment.—Put the animal in a warm stall and cover him with an extra blanket or two to get him heated up. If his legs are cold, rub them to stimulate the circulation. Give

- Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
- Fleming's Tincture of Aconite.....5 to 10 drops.
- Ginger2 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench. Repeat the dose every hour until he is better. If you have no sweet spirits of nitre give a wineglassful of whisky. As soon as the horse will eat give him a hot drink or a bran mash.

7. Care and Feeding.

Always water the horse before feeding, if he be not too warm. Feed regularly, that is, set a certain time for feeding and feed as near that time as possible. Give a certain amount of exercise every day upon which the weather is suitable. When not working allow him to run out around the yard, and always remember that good cleaning and a clean stable is as good as half the feed. A good way to cleanse the stable is to

throw a little lime around in the stalls every week or so, and in summer when the horses are all out, close up the doors and burn some sulphur in the stable. The fumes will kill the germs of distemper and other diseases, the germs of which may be lurking in the stable. Always have a little box of salt in front of him, so when he wants it he can have it. In this way he never takes more than is good for him; rock salt is the best if you can get it. Whitewashing the stable about once a year is a good plan to keep it clean.

8. Poisoning from Paris Green.

Paris green is a very poisonous preparation, made from arsenic and copperas. Poisoning from this drug is quite frequently met with, because of its being so extensively used to kill vermin and noxious insects on the farm.

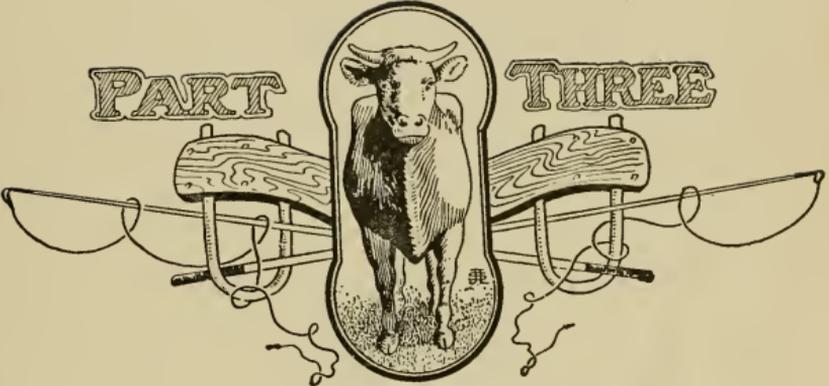
Symptoms.—The animal appears to be extremely sick and in great pain. The eyes are blood shot. Paris green poisoning is often accompanied by violent vomiting, if the animal affected be a dog or such as can vomit. In most cases careful inquiry will secure information as to where the poison was secured, thus aiding in the formation of a definite conclusion.

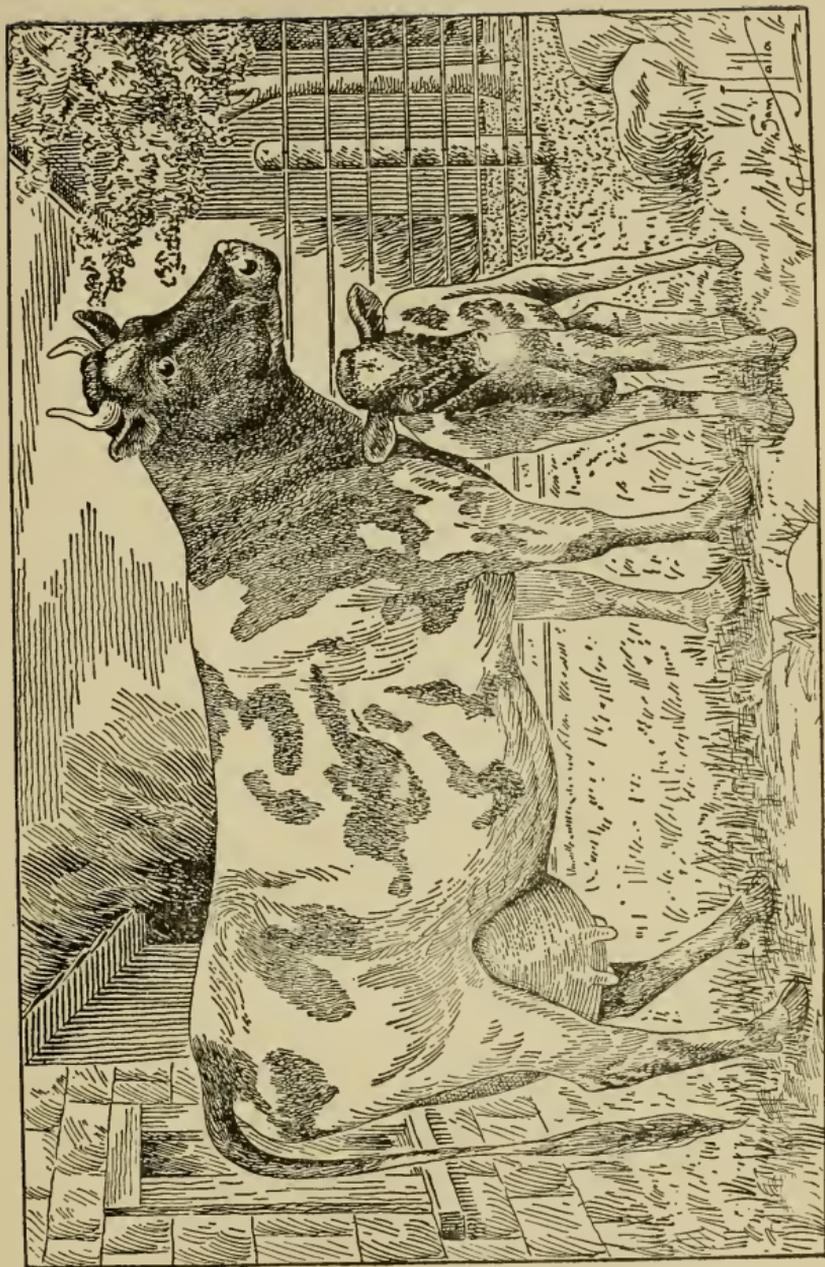
Treatment.—Try to produce vomiting by giving such doses as mustard and warm water, if the animal be such as can vomit. Should this be accomplished in the early stages the result is usually satisfactory.

Should the animal be a horse or cow—such as cannot vomit—use the stomach pump to wash out the stomach thoroughly. In addition to this give mucilaginous drinks composed of water, milk and eggs. If taken in time the life of the animal may be saved.

9. What Constitutes a Dose.

Each dose of medicine mentioned in Part II.—Diseases and Treatment of the Horse—except when otherwise specially stated, is intended for the average-sized horse; consequently when giving medicine to a colt or a very small horse, judgment must be exercised to regulate the size of the dose accordingly. A yearling colt should be given one-third of a dose mentioned for an average horse; two-year-old colts a half, and three-year-old colts almost a full dose. Horses four years old or more should be given the dose as mentioned for the average horse.





AN AYRSHIRE COW AND CALF.

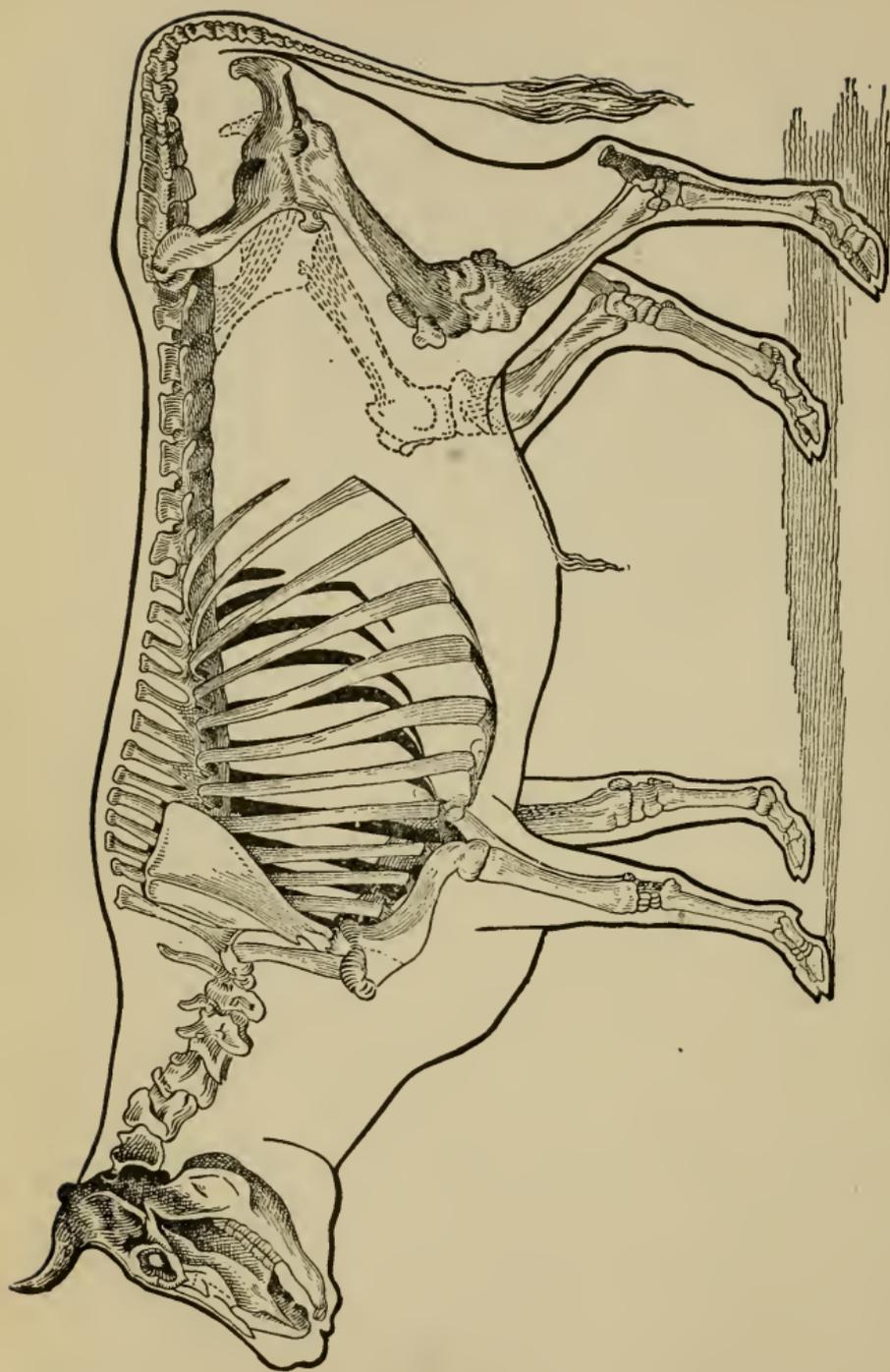


PLATE XII.—SKELETON OF AN OX.

EXPLANATION OF PLATE XII.

SKELETON OF THE OX.

This plate shows all the bones and joints in the skeleton of the ox, but these are so nearly the same as those of the horse that a designation of each is not necessary. Full descriptions are given in the pages that follow.

PART III.

ANATOMY, DISEASES AND TREATMENT OF CATTLE.

CHAPTER I.

ANATOMY OF THE OX.

I.—THE SKELETON.

EACH bone and joint in the skeleton of the ox receives the same name as the corresponding bone and joint in that of the horse. There are, however, a few important points of difference that it may be well to note.

(a) The ox has **thirteen**, but the horse **eighteen** pairs of ribs.

(b) The **breast bone** or sternum of the ox is much **larger** and **flatter** than that of the horse. This is important as it accounts for the fact that a cow suffering with lung disease usually lies down, while under similar conditions the horse remains standing. The peculiar formation of the breast bones and ribs eases the ox in a lying position but on the other hand contracts the chest of a horse, giving rise to more severe pain than when standing.

(c) The **bones of the head** of the ox are heavier, wider and possessed of a projection—the **core** of the horn—on the upper part of the skull. Note this when **dehorning**. The core is hollow, being a continuation of the sinuses or cavities in the bones of the head. The horn is attached to and covers the core.

(d) Two small bones—the **cardiac** or **heart bones**—are situated in the heart of the ox. No such bones are found in the heart of the horse.

(e) The **bones of the leg** of the ox are divided from fetlock down, into two parts, while in the horse they are not divided.

II.—DIGESTIVE ORGANS.

1. The Lips.

The lips of the ox are thick and hard. The upper has no hair on it and varies in color with the color of the animal. When cattle are in good health this space is always moist.

2. The Cheeks.

The Cheeks on the inside are covered by many small, rough processes which give them a very rough appearance.

3. The Tongue.

The Tongue of the ox is stronger than that of the horse and is more movable. It is very thick and heavy at the back, pointed at the front end and the upper part of it is very rough. It is by means of the tongue that the ox takes most of the food into the mouth.

4. The Glands.

The salivary glands (those that secrete the saliva) are similar to those of the horse.

5. The Teeth.

The Teeth differ very much from those of the horse.

(a) The ox has no front teeth in the upper part of his mouth, their place being taken by a pad of cartilage or gristle. This pad takes the place of the upper row of front teeth. The lower row of teeth press against it when the animal is cropping grass. This accounts for the fact that cattle do not do as well on short grass as horses.

(b) The front teeth in the lower row also differ from those of the horse. They are eight in number, chisel-shaped, and are loosely set in the gum.

(c) The molars, or back teeth, are similar to those of the horse, only they are smaller and not so smooth on their upper surface. The ox has twenty-four molars or back teeth, and eight incisors or front teeth, making thirty-two in all.

6. The Pharynx.

The pharynx or gullet of the ox is much larger than that of the horse.

7. The Oesophagus.

The œsophagus or tube, which carries the food down from the mouth to the stomach is well developed, the fibres

in it being very strong and possessing a double action. When the animal is eating they carry the food from the mouth to the stomach, and when chewing the cud they act the very opposite, carrying the food from the stomach back into the mouth.

8. The Stomach.

The student will do well to give some time to the study of this important organ of the ox, as it is very frequently the seat of disease.

The Stomach has a capacity of sixty gallons and is divided into four separate and distinct compartments (see plate xiii.): (a) the rumen or paunch, (b) the reticulum or honey comb, (c) the omasum or many-plies, and (d) the abomasum or true stomach. In the first three of these the food undergoes a sort of preparatory process, while in the fourth the process of digestion is complete.

(a) The rumen or paunch is very large, and in an aged animal fills three-quarters of the belly cavity. It lies up against the left side of the belly, where it is attached and held to its place by ligaments. Its situation is an important matter as many diseases of the rumen, or paunch, are first noticed on the left side. Tapping for bloating is always done on the left side because of this fact. The walls of the paunch of an ox resemble those of the stomach of the horse, but are not nearly so sensitive, and stand a great deal of abuse before inflammation sets in. The paunch has two openings, both of which are at the front; through one the food enters, while through the other it passes out into the next division.

(b) The reticulum, or honey comb, is the smallest division and resembles a honey comb in appearance. This part has little to do in preparing the food. It is provided with two openings, one in front, where the food enters, the other at the back, where it passes through into the third division. In the reticulum, or honey comb, the food is softened further by the water that the animal drinks which passes directly into the second division. The food is here pressed into balls and prepared to be forced back into the mouth to be further masticated.

(c) The omasum or many-plies is the second largest division of the stomach. When full it is ovoid in shape. It is placed just behind the second division and at the right side

of the paunch. The inside is full of folds, or layers of membrane, into which all the coarse parts of the food pass and are rolled about until they are fine and well prepared to pass into the last division. When this part of the stomach becomes deranged and the food becomes dry and hard between the folds, the disease called impaction of the many-plics, or dry murrain is the result.

(d) The **Abomasum** or fourth stomach is the true digestive part. In it the food is completely digested. The walls are redder in color than those of the three first divisions and contain the glands which secrete the acids and gastric juices. This stomach has two openings, one through which the food enters and the other through which it passes into the small bowels.

9. The Bowels or Intestines.

The intestines of the ox are divided into large and small bowels. This, together with their structure and action, resembles that of the horse. The small bowels are only half the size of those of the horse, being about one-half inch in diameter, and about 150 feet in length. The large bowels are not nearly so large as those of the horse, and are 36 feet in length.

10. The Liver.

The **Liver** of the ox resembles that of the horse except that it is provided with a gall bladder which resembles a pear in shape. This acts as a sac in which to store the gall during the time it is not required in digestion. When digestion is going on the walls of the gall sac contract and force the gall down to the food. The other two glands, the pancreas and spleen, resemble those of the horse. The juices from these glands have the same action in cattle as they have in the horse.

11. Rumination or Chewing the Cud.

Food when first taken into the mouth of a ruminant is but lightly masticated and mixed with the saliva from the salivary glands, after which it is swallowed, passing through the œsophagus into the paunch. This division acts as a sort of storehouse for food thus eaten quickly. When the animal has time, so to speak, he lies or stands quietly and completes the mastication of his food by chewing the cud. This peculiar

act is performed as follows: After being softened and moistened by warmth the food passes from the paunch into the second division—the honey comb. In this small globe-like compartment the food is moistened and compressed into small balls—the cud. By a peculiar reverse action of the gullet these balls are taken back to the mouth to be chewed over again. When the re-mastication is complete it is again swallowed, but this time passes directly into the third division—the many-plies, and thence to the fourth or true stomach.

12. The Process of Digestion.

Following rumination which, strictly speaking, is the first step in the digesting process, the food passes into the many-plies or third division. The fine parts pass right along to the abomasum or fourth stomach, while the coarser parts are drawn between the folds of membrane in this division and worked about until it is fine and ready to pass into the fourth stomach, where it becomes fully digested by the action of acids and gastric juices which are secreted into this part. It then passes into the small bowels, and is acted upon by the bile from the liver and the pancreatic juice from the pancreas. These juices are emptied into the first part of the small bowels through little tubes or ducts, which lead from the glands down to the bowels, just on the same principle as that of the horse. After this, throughout the rest of the bowels, the nourishment of the food is taken into the system by means of little glands or villi which are situated in the coating of the bowels. The nourishment when once in the blood goes to supply the different parts of the body, while the part containing no nourishment or undigested passes off through the back bowels in the form of manure.

III.—THE RESPIRATORY OR BREATHING ORGANS.

These organs work on the same principle and resemble in structure those of the horse, only that they are not, as a general thing, so liable to diseases.

IV.—THE URINARY ORGANS.

The chief point of difference in these organs occurs in the kidneys, which in the ox are larger, and instead of being smooth, like those of the horse, are rough, resembling a

bunch of grapes. The bladder and the other urinary organs resemble those of the horse.

V.—THE GENITAL ORGANS OF THE COW.

13. The Ovaries.

The Ovaries of a cow are smaller than those of the mare, but resemble them in structure.

14. The Womb.

The Womb of the cow somewhat resembles that of the mare, but the inside lining is different, being covered with button-like processes about the size of a pigeon's egg, only more flattened out. These processes receive the name of cotyledons; to these the cleaning or afterbirth is attached—a very important point with which every person interested should become familiar. These may be seen by examining the womb after calving or by opening a cow that dies soon after calving. The passage from the womb of the cow is shorter than that of the mare, but is formed on the same principle.

15. The Mammary Glands or Bag.

The Bag, mammary glands, or udder, is a very important organ of the cow. It is first divided into two halves by a partition or wall. Each half is again divided into two parts, each forming a quarter of the bag and each having a mammary or milk gland and a sinus or pouch in which to hold the milk secreted until the cow is milked. This sinus or pouch is situated just above the passage of the teat.

VI.—THE GENITAL ORGANS OF THE BULL.

(a) *The Testicles* are ovoid in shape and well developed.

(b) *The spermatic cord* and artery are small compared with those of the horse.

(c) *The penis* is long and pointed, and has an S shaped curve in it just below the pubis, or hip bones; this curve can be felt by feeling carefully just behind the bag.

(d) *The sheath* is long and runs further forward on the belly. It has a tuft of hair on the point of it. During the time the bull is serving a cow the S shaped part of the penis straightens out.

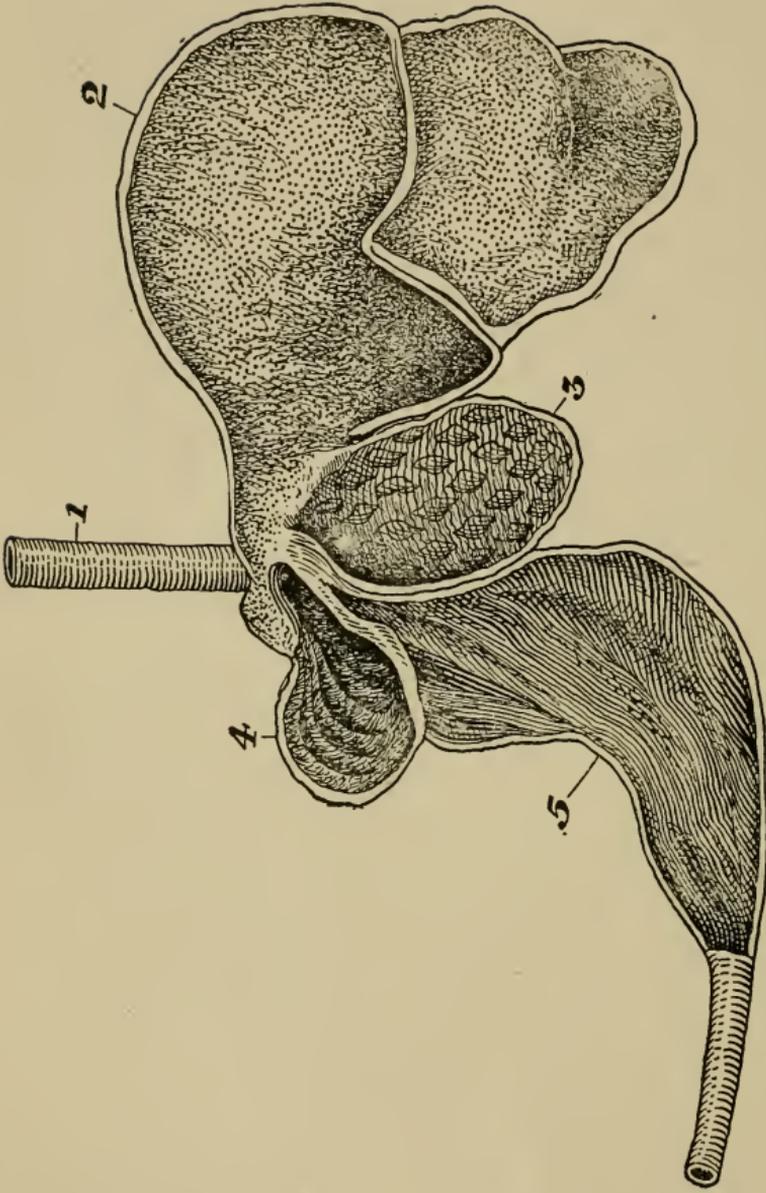


PLATE XIII.—STOMACH OF A RUMINANT

EXPLANATION OF PLATE XIII.

STOMACH OF A RUMINANT.

Plate XIII. illustrates the divisions and openings in the stomach of a Ruminant—animals which possess the singular power of remasticating their food. The same part is known by two or more different names:

1. The Gullet or Œsophagus.
2. The Rumen, Paunch or First Stomach.
3. The Reticulum, Honey Comb, King's-hood or Second Stomach.
4. The Omasum, Many-plies, or Third Stomach.
5. The Abomasum, Rennet, True or Fourth Stomach.

CHAPTER II.

DISEASES OF THE HEAD, THROAT AND LUNGS.

1. Catarrh or Cold in the Head.

Cattle do not suffer so much from this disease as horses. It is an inflammation of the lining membrane or the sinuses of the head.

Causes.—It is generally caused by exposure or sudden change in the weather.

Symptoms.—The nose is rough and dry, there being also a mattery discharge from it. The animal has a slight cough and there is a sort of rattling in the head when breathing.

Treatment.—Give a mild dose of physic consisting of

Epsom Salts½ pound.
Sweet Spirits of Nitre.....1 ounce, or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench. Keep the animal dry and warm and feed mashes and good hay until there is improvement. After the first drench follow with

Nitrate of Potash or Saltpetre.....½ pound.
Ground Gentian Root½ pound.

Mix together and give a teaspoonful three times a day until cured. Should the discharge from the nose continue and become chronic, the disease is known as nasal gleet, the same as in horses. In such cases give a teaspoonful of ground sulphate of iron three times a day in the feed or on the tongue with a spoon. This soon stops the discharge.

2. Sore Throat.

This is a kind of inflammation affecting the larynx, or Adam's apple. It may also affect the pharynx, or gullet.

Causes.—Exposure to cold, sudden changes of the weather, choking when something lodges in and irritates the throat, roughly passing a probang down the throat and bruising it, or giving medicines that are not properly diluted with water may cause a sore throat.

Symptoms.—There is difficulty in breathing. The throat is swollen and pressure upon it hurts the animal. The nose

is dry, accompanied by continual swallowing. It refuses its feed and does not chew its cud. The head is held poked out as if trying to ease the throat.

Treatment.—Give

Epsom Salts $\frac{3}{4}$ pound
Sweet Spirits of Nitre.....1 ounce, or 4 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench taking care not to choke the animal. Follow up with

Nitrate of Potash or Saltpetre $\frac{1}{4}$ pound.
Sulphur $\frac{3}{4}$ pound.
Pulverized Alum $\frac{1}{8}$ pound.

Mix and give a large teaspoonful three times a day on the tongue. This acts as a gargle and should be continued until the animal is better. Rub the throat three times a day with white liniment and in bad cases apply a mustard plaster to it, or use a hot poultice every night on the throat.

3. Filaria Bronchitis.

This disease affects young cattle and sheep and is caused by small germs or parasites which get down into the lining of the bronchial tubes. These germs receive the name of *strongylus micrurus*. They get into the system by being taken into the stomach with the water or food. They then pass from the stomach into the bowels and thence into the blood, passing with it to the bronchial tubes, where they lodge and set up this disease. It is most common among animals that are grazing on low pasture fields.

Symptoms.—There is a wheezy noise while breathing and a dry husky cough with a slight discharge from the nose. By examining the discharge with a microscope these little germs or parasites may be seen in it. The animal gradually runs down in condition and if not soon separated from the others, they too will become affected.

Treatment.—Kill the germs by giving

Raw Linseed Oil $\frac{1}{2}$ pint.
Spirits of Turpentine..... $\frac{1}{2}$ ounce or 2 dessertspoonfuls.

Mix and give as a drench once a week. The turpentine has a special action in cases of this kind, as it passes into the blood and therefore comes in contact with and kills the germs. If this should fail, drive the affected cattle into a stable, take a pan of sulphur, throw some live coals in it and allow them to breathe the fumes. Stand in the stable with

the cattle and allow them as much of the fumes as you can stand yourself, then turn them out. This is the best way to tell how much to give them. Do this every day for a week or so until they are better. The fumes of the burning sulphur come in contact with the germs in the bronchial tubes and destroys them and thus arrests the disease. Care must be taken when burning sulphur not to strangle the cattle by letting them inhale too much of the fumes. Feed them well to build up the constitution and thus enable them to better withstand the ravages of the disease.

4. Inflammation of the Lungs (Pneumonia).

Causes.—The cause is very similar to that of horses, usually due to exposure to cold rains, cold drafts or exposure after calving.

Symptoms.—The animal refuses to eat, has a slight cough and the nose is sometimes dry, then wet, changing frequently. The breathing is heavy and quick, accompanied by a groaning noise similar to that made during impaction of the stomach. Care must be taken to prevent mistaking one for the other. By placing the ear over the side of the chest a sound is heard similar to that made by rubbing the hair just over your ear between the thumb and finger. An affected milch cow drops off some in her milk. Pressure on the ribs over the lungs with the hand indicates soreness. The animal is feverish and very thirsty because of the fever in the lungs. The bowels are often a little costive. The pulse is quick and strong at first, but in a couple of days, if not better, gets quicker and weaker, sometimes running as high as one hundred per minute. During the progress of this disease cattle lie almost all the time. They lie well upon the breast bone, as this position seems to give relief.

Treatment.—If the bowels are not moving very freely and the animal is in fair condition, give

Epsom Salts	½ pound.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite	15 drops.

Mix in a pint of lukewarm water and give as a drench three times a day, omitting the salts after the first drench. Rub the sides with white liniment three times a day, and keep a half pail of hot salt over the lungs, changing it about every hour during the day. At night apply a mustard plaster—half a pound of mustard with enough vinegar to make a

paste. Rub well in over the sides and cover the animal up warm. Continue this treatment until relieved. When there are signs of improvement discontinue these drenches and give the following:

Nitrate of Potash or Saltpetre.....	¼ pound.
Ground Gentian Root	¼ pound.
Ground Aniseed	¼ pound.

Mix together and give a teaspoonful three times a day on the tongue. Keep the bowels regulated by giving one-half pound drenches of epsom salts once or twice a week and feed on soft food with plenty of boiled flaxseed in it.

5. Bronchitis.

Causes.—This disease, when it is the result of a cold, arises from causes similar to those of inflammation of the lungs.

Symptoms.—The symptoms are the same as those of inflammation of the lungs, except that there is more of a wheezing noise heard in the windpipe.

Treatment.—Follow the same course of treatment as is given for inflammation of the lungs.

6. Pleurisy.

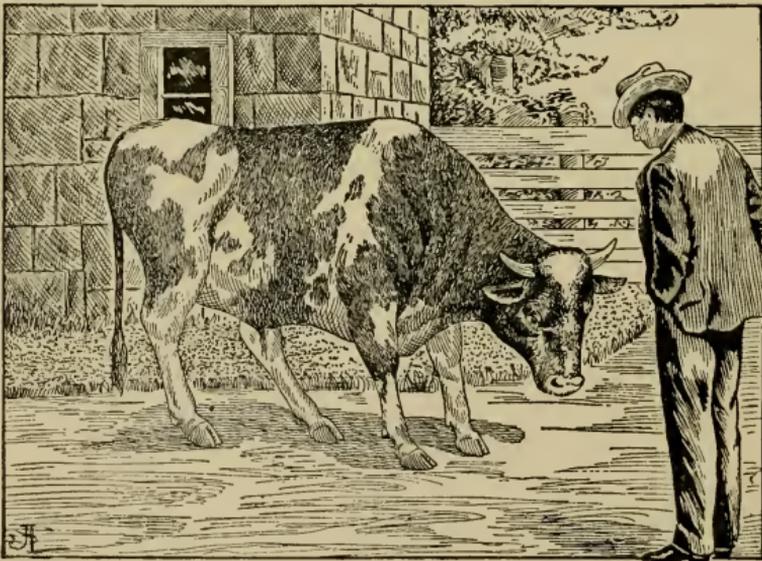


Fig. 58.—A Steer Suffering from Pleurisy.

This is an inflammation of the coverings of the lungs.

Causes.—These are similar to those of inflammation of the lungs, and this disease is very often present with it.

Symptoms.—These are similar to those of inflammation of the lungs, except that in pleurisy there is more of a grating sound heard when the ear is placed to the side. The animal's sides seem to be sore and he flinches more under pressure than with inflammation of the lungs.

Treatment.—The treatment is the same as for inflammation of the lungs. Here as well as in all other lung troubles be very careful in drenching to avoid choking. Allow plenty of fresh air without a draft and keep the patient as comfortable as possible.

CHAPTER III.

DISEASES OF THE DIGESTIVE ORGANS.

1. Slavering.

This is a dribbling of saliva from the mouth.

Causes.—A wound, something being caught between the teeth, or eating wild mustard or poisonous grasses will cause it.

Treatment.—Give

Epsom Salts1 pound.
Bicarbonate of Soda1 dessertspoonful.
Ginger1 dessertspoonful.

Dissolve in a quart of lukewarm water and give as a drench. Sponge the mouth out with the following lotion once a day:

Powdered Alum1 dessertspoonful.
Water1 pint.

After the medicine has operated and you have washed the mouth out two or three times the slavering generally disappears. In all cases examine the mouth thoroughly by looking into it, and if you find anything caught between the teeth remove it at once.

2. Sharp Molars or Back Teeth.

The edges of the teeth become worn sharp and consequently cut the tongue and cheek.

Symptoms.—During mastication of the food the animal stops frequently and spits the food out of the mouth. As a result of its inability to properly chew the food the condition soon runs down.

Treatment.—The best plan is to run a tooth rasp or float over the outside edges of the upper and along the inside edges of the lower teeth.

3. Decayed Teeth (Caries).

Symptoms.—The animal does not thrive well, stops eating and spits the food out of the mouth. The breath smells very bad. Put a clevis in its mouth, run your hand back and locate the decayed tooth.

Treatment.—Tie him up short and have the tongue held out of the mouth by an assistant. If he seems ugly place a small sized clevis crossways in the mouth, then pass your hand in along the teeth until you locate the affected tooth. Then remove it with a large molar forceps. If necessary, throw him down and secure him by the same process as given for castrating a bull.

4. Caps on the Teeth.

This occurs in cattle from two to four years old when they are shedding their milk grinders. Instead of the milk teeth dropping out, as they should, caps hang on the new teeth which fester at the roots, causing a lump on the jaw bone.

Symptoms.—The animal holds its head to one side, has difficulty in eating and sometimes spits the food out, falls off greatly in condition, and if neglected for some time a lump forms on the jaw opposite the festered tooth.

Treatment.—Examine the mouth carefully and locate the cap. This can be easily done because of its being stuck up higher than the other teeth. Remove the cap with a pincers or anything that will knock the cap off the tooth—a cold chisel or hammer will do, tapping it gently to knock the cap off. If this is done in time it will prevent a lump from forming on the jaw.

5. Lumps on the Jaw Bones From the Teeth or From Injury.

These lumps are hard and immovable.

Treatment.—If by a cap on the tooth, causing the roots to fester, remove the cap but do not pull the tooth at first. Try blistering the lump with

Biniode of Mercury	1½ drams.
Powdered Cantharides or Spanish Fly.....	1 dram.
Vaseline or Lard	1 ounce.

Mix and apply one-third to one-half of this amount, according to the size of lump, rub in well and grease in three days. Between two and three weeks after, wash the lump with soap and water and blister again, greasing in three days after. If this treatment does not stop it from growing throw the animal and secure it. Pull the tooth with a large forceps used for the purpose. If from an injury blister in the same manner. For other information of lumpy jaw see actinomy-cosis.

6. Inflammation of the Parotid Glands.

This is an inflammation of the glands situated at the side of the throat.

Causes.—An injury of some kind such as being hooked, or striking an animal with a stick or stone while driving it may cause it.

Symptoms.—The affected side of the throat is swollen and very sore. The animal walks about with its head stuck out, and falls off in condition, as on account of the throat being so sore it is unable to bend its neck down to eat, and is also unable to swallow easily.

Treatment.—Apply hot poultices to the throat of half linseed meal and half bran. Change these every three or four hours to keep it hot, and each time—when changing—rub the gland well with white liniment. This either checks the inflammation and brings down the swelling, or if it festers, brings it to a head. Then if it does not break of its own accord lance in the softest part. After lancing and letting the matter out, poultice every night and apply white lotion, before putting the poultice on and after taking it off.

While treating keep him in the stable and feed from a high manger so that it is not necessary to lower the head to eat. Give plenty of slops and boiled feed, or anything that is easily chewed and swallowed, so as to keep the strength up.

7. Choking.

This is a very common thing among cattle.

Causes.—Attempting to swallow something that is too large for the throat, such as an apple, potato, slice of turnip, mangel, or carrot, and sometimes a bone when the animal has a fashion of licking or chewing them, is usually the cause of choking.

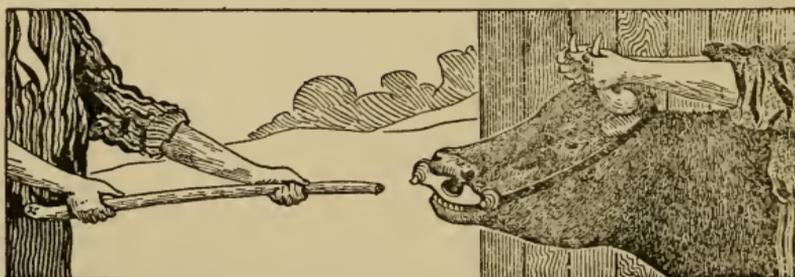


Fig. 59.—Showing the Method of Using the Gag and Propeg for Choking.

Symptoms.—The animal stops eating, slavers at the mouth, coughs, breathes heavily, and after a time becomes bloated in the paunch, which is noticed at the left side. If not relieved it becomes so bloated that it drops down from suffocation and soon dies. Bloating is generally worse when from an apple or potato, as it acts just like a cork in a tube.

Treatment.—Examine the mouth and throat, or gullet, and endeavor to ascertain the cause; also examine along the left side of the neck to try to find where the obstruction is lodged in the tube. If you can feel or see what is choking the animal, and you think you can reach it, put a clevis crossways in the mouth and run your hand down the throat and bring it up. If you cannot reach it pour half a pint of linseed oil down as a drench, then move the obstruction by working it with your hand from the outside until the oil gets worked around it, as it may slip down when you get it started. If you have no raw linseed oil any other kind of oil will do. If this fails, pass down a probang, which is an instrument for that purpose.

A small wooden gag goes with the probang. This is placed in the mouth crossways. Have a man stand on each side to hold a horn and one end of the gag, keeping the cow's head in line with the body. Oil the probang and pass it through the hole in the gag as indicated in Fig. 59. Press it forward through the centre of the mouth into the gullet or throat. Press gently forward until the obstruction is felt and then endeavor to press it into the stomach. Tap with a trocar and cannula on the left side to allow the gas to escape, following the directions as given in Section 8. See Fig. 60.

Do not, under any circumstances, attempt to shove down a broom-handle, or anything of that kind, to remove the obstruction, as you are apt to burst the tube which leads to the stomach. You will then lose the animal. A probang is something that every stock owner should keep on hand. See appended announcement.

8. Bloating (Tympanites).

This is a formation of gas in the paunch, or rumen, and is a common occurrence among cattle.

Causes.—Choking, sudden change in the food, wet clover, or eating frozen roots of any kind may cause it.

Symptoms.—The left side is greatly swollen with gas, and in severe cases the whole belly is distended. Tapping

with the fingers on the left side, over the paunch, makes a hollow, drum-like sound. On account of the stomach being so much swollen it presses on the lungs, causing the animal

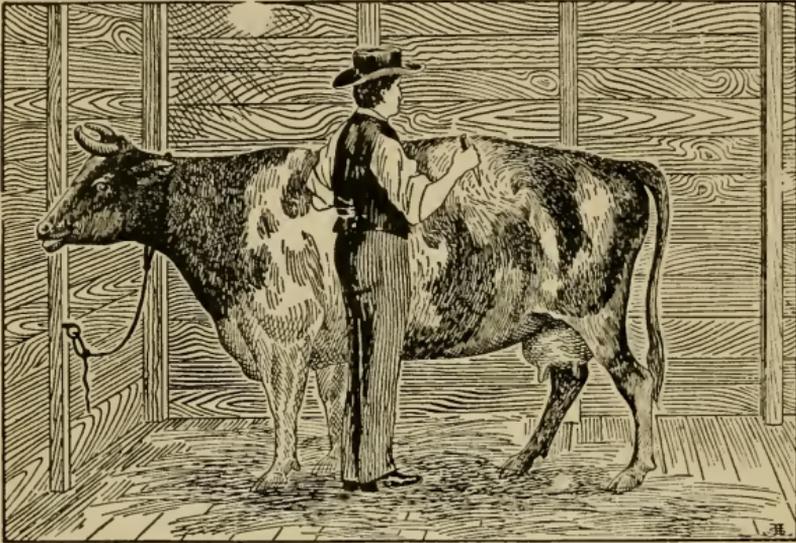


Fig. 60.—Tapping the Rumen for Bloating.

to breathe very heavily. In severe cases the eyes are blood-shot, and if not soon relieved will stagger, fall and die, actually smothering to death.

Treatment.—The treatment must be prompt in severe cases. Give

Spirits of Turpentine2 ounces or 8 dessertspoonfuls.
Raw Linseed Oil1 pint.
Bicarbonate of Soda1 dessertspoonful.

Mix and give as a drench, and if the animal does not get relief in one hour and a half give

Epsom Salts1 pound.
Sweet Spirits of Nitre.....2 ounces or 8 dessertspoonfuls.
Bicarbonate of Soda2 dessertspoonfuls.

Dissolve in a quart of lukewarm water and give as a drench. Follow with a drench (every hour until the animal gets relief) of

Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Bicarbonate of Soda2 dessertspoonfuls.

Apply plenty of heat to the body by means of blankets, and hot salt over the kidneys.

For after-treatment feed light food, give lukewarm water to drink and principally mashes to eat for a few days, so as to allow the stomach to have a rest. When very much bloated and in danger of its life, perform the operation of tapping.

Tapping.—Cut a small hole in the skin on the left side midway between the point of the hip bone and the last rib, and about four inches down from the back bone. After the hole is cut in the skin take a trocar and cannula and run them downward and inward, pull out the trocar and leave the cannula in. This allows the gas to come spouting out of the cannula. Leave the cannula in for an hour or so until the bloating has disappeared, then pull it out and allow the hole to heal of its own accord.

A trocar and cannula is a very useful outfit to have on hand and may be the means of saving many times its price in cases of emergency. See appended announcement.

Should the instrument not be on hand use a penknife, inserting it at the same point as that indicated for using the cannula.

9. Impaction of the Rumen, or Paunch, With Food.

Impaction is a condition in which the rumen, or paunch, becomes so full of food that it is unable to force it along its natural course.

Causes.—Feeding poor food, straw and such like. (The animal takes a large feed, and the walls of the stomach being weak are unable to force the food forward in its natural course.) A large feed of over-ripe grass, getting loose and getting a large feed of any kind of food that the animal is not used to, and feeding fattening cattle too heavily are among the causes most frequently met with.

Symptoms.—In some cases the animal is slightly bloated, while in other cases there is no bloating at all. He seems uneasy, and makes a peculiar grunt or groan nearly every time he breathes. If a cow, and milking, the flow of milk falls away in one night. The nose is dry. The breathing and pulse are quicker than natural, and the animal gets up and down once in a while, and does not take much food or water. Press on the left side, over the paunch, or rumen. It is hard and full of food. The dent made with the finger remains for some time. Tap with the finger over the stomach.

There is a dull, heavy sound. The bowels are costive, and the passage is dry, slimy looking, and has a bad smell.

Treatment.—Give a dose of physic consisting of

Epsom Salts	1½ pounds.
Bitter Aloes	1 ounce.
Bicarbonate of Soda	2 dessertspoonfuls.
Ginger	1 dessertspoonful.

Dissolve in a quart of lukewarm water and give as a drench. Follow with a stimulant to help the physic to work through the bowels.

Whisky	2 wineglassfuls.
Ginger	2 dessertspoonfuls.
Bicarbonate of Soda	2 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench three times a day until the animal is better. If the physic has not operated in twenty-four hours walk the animal a quarter of a mile. The exercise often starts the physic to work; but if it does not operate wait twenty-four hours more before giving any more physic. At the end of this time, if the physic has not yet operated, give a stronger dose consisting of

Bitter Aloes	2 ounces.
Gamboge	2 drams.

Mix in a pint of lukewarm water and give as a drench. At the end of another twenty-four hours if necessary give the animal a short walk, and this will generally work the physic. If walking does not prove effective give

Raw Linseed Oil	1 pint.
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Give this drench every day until the physic does operate. Keep the animal well blanketed and warm, and place a half pail of hot salt over the back, as heat helps the stomach to act. Give all the lukewarm water it will drink, with sloppy feed, but no hay. In the course of a week or so, if the physic has operated without carrying off the load of food from the rumen or paunch, then, as the last resort, perform the operation of rumenotomy.

10. Rumenotomy.

This is an operation of opening the rumen and removing the food from it.

There is usually little difficulty in holding the animal when sick. Place it close against the side of a stall or partition. Secure it in this position by a rope. There is no par-

ticular method recommended for doing this. The left side should be from the partition.

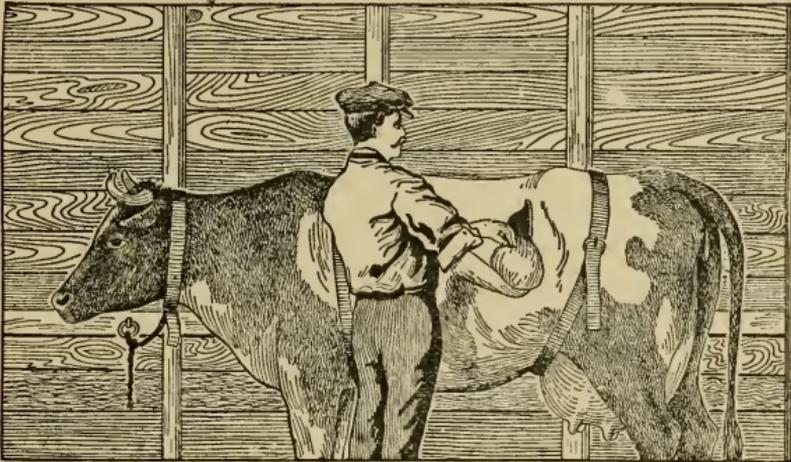


Fig. 61.—Performing the Operation of Rumenotomy.

Select a point two inches below the back bone and about half way between the last rib and the front of the hip bone. Commencing at this point, make an incision four or five inches long through the skin and muscles to expose the stomach. Pass the hand through the incision and draw the stomach well out—sufficiently far enough to prevent the contents from dropping between the walls of the stomach and belly. Now make an incision in the wall of the stomach large enough to admit the passage of the hand in and out freely. Remove the contents of the stomach with the hand. Sew up the incision in the usual manner—use carriage trimmer's twine and place the stitches half an inch apart—and then wash it with a quart of lukewarm water containing ten drops of carbolic acid. After this is done place the stomach back in proper position and proceed to sew the outer incision, putting the stitches half an inch apart.

Bathe the cut with lukewarm water and apply the white lotion twice a day until healed. Give a few stimulating drenches such as are recommended for impaction of the rumen. The diet for a few days should be confined to soft food in the form of gruels. Avoid allowing any more exercise than is absolutely necessary until the cut is healed.

11. Vomiting.

This is sometimes met with in cattle, but never in horses.

Causes.—It is generally caused by some irritation of the fourth, or true digestive part of the stomach, or it may be caused by eating some bones, old clothes, or a boot, or something of that kind. Sometimes it is caused by nails which are taken into the rumen with food. Often after an animal is slaughtered there are nails and rubbish found in the stomach.

Treatment.—Give a physic consisting of

- Epsom Salts 1 pound.
- Brown Sugar ½ pound.
- Salt 2 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. This generally gives relief, but if not, give:

- Raw Linseed Oil 1 pint.
- Sweet Spirits of Nitre... 1 ounce or 4 dessertspoonfuls.
- Bicarbonate of Soda 2 dessertspoonfuls.

Mix and give as a drench every second day until the animal gets relief. Feed soft food and give lukewarm water to drink for a while. In cases where this treatment does not give relief and it is certain that there is something in the stomach, perform the operation of rumenotomy and take it out.

12. Hair Balls in the Rumen or Paunch.

Causes.—They are caused by animals licking each other in the spring when the hair is loose. The hair collects in a ball in the stomach.

Symptoms.—The animal soon stops chewing its cud, and has slight spells of bloating. It does not feed well and soon falls off in condition.

Treatment.—Give a physic of

- Epsom Salts 1 pound.
- Bicarbonate of Soda 2 dessertspoonfuls.
- Ginger 2 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. Give this drench once a week, and if it does not relieve and it is thought that there is a hair ball in the stomach, then, as a last resort, perform the operation of rumenotomy.

There have been cases known in which snakes, from three to four feet long, have been found in the stomach of

the ox, and where nails have worked their way through the stomach into the heart, resulting in death.

13. Binder Twine in the Rumen.

Causes.—It is the result of eating straw that has been bound with binder twine. The twine collects and rolls up in the form of a ball in the rumen or paunch.

Symptoms.—These are the same as outlined in Sect. 12.

Treatment.—Refer also to Sect. 12.

14. Impaction of the Many-plies or Third Stomach.

This also receives the name of fardelbound, or dry murrain. It is a condition in which the food in the third part of the stomach becomes hard and dry between the folds and cannot work out. In some cases it becomes packed in between the folds as hard as a board.

Causes.—It is usually caused by eating dry and over-ripe food that does not contain much nourishment. A common cause is the turning of cattle out too early in the spring, before the new grass has grown much. In trying to get at the new grass they fill themselves with old, dry grass, which lodges in the third part of the stomach and sets up impaction.

Symptoms.—First there is diarrhoea, followed by costiveness and stoppage in the bowels. Anything that does come away is hard and slimy looking. The animal falls off in condition, and if a milch cow she nearly goes dry. The nose is dry and hot, the pulse quickened and the breathing increased. Sometimes there is slight moaning and grating of the teeth. The belly has a tucked up appearance, and on account of not eating much the animal does not chew its cud. If the disease is allowed to run on without being checked it affects the brain and the animal becomes delirious, which is followed by convulsions and death.

Treatment.—Give

Epsom Salts	1 pound.
Ginger	2 dessertspoonfuls.
Bicarbonate of Soda	2 dessertspoonfuls.
Salt	2 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. After this give the following stimulant:

Whisky	2 wineglassfuls.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.
Powdered Nux Vomica	1 teaspoonful.
Salt	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench; repeat three times a day until the animal is better. Keep the bowels open by giving pint doses of raw linseed oil every three days. Keeping the bowels open and giving these stimulants will generally work the food out of the stomach in a few days. Give plenty of lukewarm water to drink, and feed soft food. Salt is given to induce drinking, which helps to work the food out.

15. Inflammation of the Rennet or Fourth Division of the Stomach.

This is an inflamed condition of the fourth, or the true digestive part of the stomach, and is more often met with in calves than in older cattle.

Causes.—In cattle it is caused by eating frozen roots, grass, or over-ripe food. In calves it is caused from changing too suddenly from sweet to sour milk, especially when the calf is young. This irritates the stomach and sets up the disease.

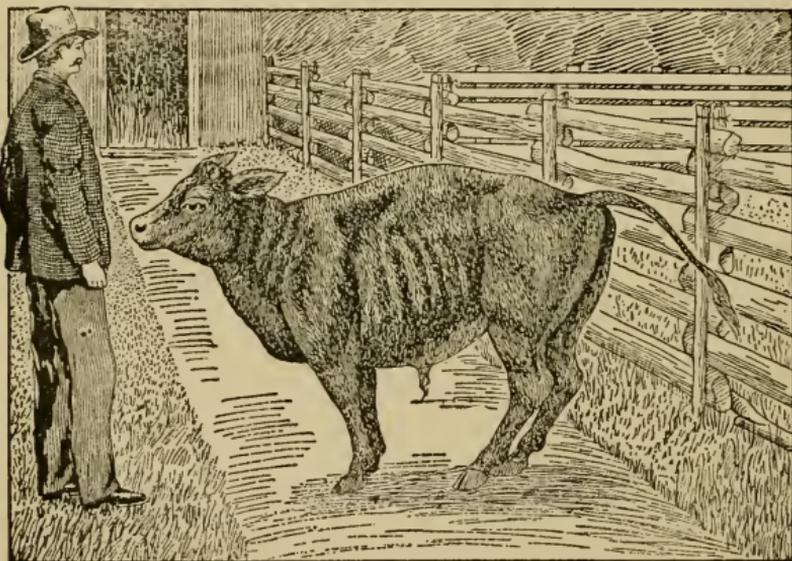


Fig. 62.—Suffering from Inflammation of the Stomach.

Symptoms.—First there is diarrhœa, then constipation, continually changing from one to the other every day or so. The animal breathes quickly and groans with pain. The nose

is hot and dry, and the belly has a tucked up appearance and pressure upon it indicates soreness. The legs and ears are cold.

Treatment for Calves.—Give

Raw Linseed Oil $\frac{1}{4}$ pint.
Laudanum1 dram or 1 teaspoonful.

Mix and give as a drench. Give the belly a good rubbing with mustard and vinegar, blanket to keep warm, and place some hot salt in a bag over the back. Give a teaspoonful of laudanum in half a cup of milk three times a day until relieved. If it will drink give small quantities of new milk, in which put one teaspoonful of common soda every time you feed it.

Treatment for Larger Cattle.—Give

Raw Linseed Oil1 pint.
Laudanum1 ounce or 4 dessertspoonfuls.

Mix and give as a drench. Follow with

Laudanum1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite15 drops.

Mix in a pint of water and give as a drench three times a day until relieved. Clothe the body well and keep hot salt in a bag to the back. Give lukewarm water to drink, and feed soft food.

16. Diarrhoea.

Causes.—Drinking impure, or stagnant water, eating frozen roots, a sudden change of food, or excitement by being chased will cause diarrhoea.

Symptoms.—There are large passages from the bowels of a fluid nature. The animal soon becomes gaunt and falls off in condition, and in bad cases refuses to eat, but seems very thirsty.

Treatment.—Give

Raw Linseed Oil $\frac{1}{2}$ pint.
Tincture of Catechu.....1 ounce or 4 dessertspoonfuls.

Mix and give as a drench. Clothe the body well and place hot salt to the back. Keep the animal very quiet; give very little water to drink, and take the chill off. Feed on soft, hot mash and very little other food. In severe cases apply a mustard plaster over the belly to heat the bowels.

If not relieved in five hours after the first drench give the following:

Tincture of Catechu.....	1 ounce or 4 dessertspoonfuls.
Ginger	2 dessertspoonfuls.
Bicarbonate of Soda	2 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench every five hours until the animal gets relief. This disease, if not checked for some time, is liable to terminate in bloody flux (dysentery).

17. Bloody Flux (Dysentery).

This follows diarrhœa, and is indicated by the manure being streaked with blood.

Treatment.—The treatment is the same as that given for diarrhœa, Sec. 16, but to each of the drenches add a teaspoonful of ground chalk.

18. Colic.

Causes.—This is generally caused by taking a cold drink of water or by a change of food, especially if green or frozen.

Symptoms.—It is very painful while it lasts. The animal is very uneasy, lies down, gets up, stretches out, strikes the feet against the belly, moans, and looks around at the side because of the pain. In some cases there is slight bloating on the left side.

Treatment.—Give

Epsom Salts	1 pound.
Laudanum	1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	10 drops.

Mix in a quart of lukewarm water and give as a drench. Keep the animal warm by blanketing and repeat this drench every hour until relieved. After the first dose, however, leave out the epsom salts.

Another good medicine is composed of

Raw Linseed Oil.....	1 pint.
Spirits of Turpentine....	1½ ounces or 6 dessertspoonfuls.

Mix and give as a drench every hour.

Another good one is composed of

Whisky	½ pint.
Black Pepper	1 dessertspoonful.

Mix in a pint of lukewarm water and give as a drench. The danger is that this disease may terminate in inflammation of the bowels.

19. Inflammation of the Bowels (Enteritis).

This is not so common in cattle as it is in horses. It generally affects the small bowels and in severe cases death results in four or five hours.

Causes.—It sometimes follows cases of colic. The bowels getting twisted and stopping the passage, being out in cold rains, a sudden change in the temperature resulting in a chill which settles in the bowels, eating musty or frozen food, drinking ice cold water when being hot or anything that chills the body may cause it.

Symptoms.—There is dryness of the muzzle, loss of appetite, and on account of not eating no chewing of the cud. The patient is very restless and is in severe pain, pawing and getting up and down, not seeming to have a minute's ease. The urine is of a red color and the manure is covered with slime. The legs and ears are cold. There is gritting of the teeth, and no movement to be heard in the bowels. The pulse is very quick but after a short time becomes very weak, so weak as scarcely to be felt.

Treatment.—Bleed the animal as soon as noticed. Take away six quarts of blood, if in fair condition and a medium sized animal. Then give

Laudanum1 ounce or 4 dessertspoonfuls.
 Linseed Tea1 pint.

Mix and give as a drench every four hours. Clothe the body well. Place hot salt over the back and a mustard plaster to the belly.

20. Constipation of the Bowels.

Causes.—This is not so common in cattle as it is in horses and is more likely to occur in cattle that are feeding high on strong feed such as corn, shorts and mill sweepings. Any other rich food is liable to cause it, especially if the animal is not getting a few roots along with it to keep the bowels loose.

Symptoms.—The animal seems dull and does not care to eat or drink. The muzzle is dry and there is no passage from the bowels.

Treatment.—Give

Epsom Salts1 pound.
 Bitter Aloes1 ounce.
 Ginger2 dessertspoonfuls.
 Bicarbonate of Soda2 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. If this has not operated in twenty-four hours walk the animal for a quarter of a mile, and if it has not operated in twenty-four hours after the walk give

Gamboge2 drams or 1 teaspoonful.
Bitter Aloes2 ounces.

Mix in a quart of lukewarm water and give as a drench. Continue exercising every day, and if the last drench has not operated in twenty-four hours give

Raw Linseed Oil 1 pint.
Whisky½ pint.
Powdered Nux Vomica1 teaspoonful.

Mix and give as a drench every day until there is a passage. Keep the body warm with blankets and place hot salt in a bag over the back.

21. Inflammation of the Lining of the Belly Cavity (Peritonitis).

The causes, symptoms and treatment are similar to those of this disease in the horse. It is rarely met with in cattle.

22. Dropsy of the Belly.

This follows peritonitis, and the symptoms and treatment are similar to that of the horse. It is rarely met with in cattle.

23. Tapeworms.

This is about the only kind of worm the bowels of the ox are subject to. This complaint is rarely met with in cattle, but in cases where it is there may be from twenty-five to one hundred feet of the worm found in the bowels.

Symptoms.—The animal runs down in condition, but still continues feeding and seems always hungry. The only way to be sure of a tape worm is to watch the manure. Joints of the worm may be found coming away with the manure.

Treatment.—Get rid of the worm by starving the animal for four days, that is, just give it enough to keep it from starving to death. Give

Oil of Male Shield Fern...½ ounce or 2 dessertspoonfuls.
New Milk1 pint.

Mix and give as a drench three times a day during the four days the animal is being starved. At the end of this

time give one pint of castor oil, which will bring the worm away all right. Young calves are more likely to be affected than cattle. Treat these the same, only give one-quarter of the dose. As soon as the worm passes away bring the animal back to its regular feed and habits gradually.

24. Jaundice or Yellows.

Causes.—This may be caused by congestion or inflammation of the liver, or by bile stones forming in the duct of the liver, damming back the bile. Stall-fed cattle are more liable to be affected by it.

Symptoms.—Pressing on the right side of the belly causes the animal pain. The appetite is poor and there is little desire to drink much. The white of the eyes and the lining of the mouth and nose is of a yellow color. If a milk cow the milk falls off in quantity, and has a bitter taste like bile. The animal sometimes has a very painful cough, and soon runs down in condition and has a very dull appearance.

Treatment.—Give

Epsom Salts	1 pound.
Salt	2 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench, but before doing so put one dram of dry calomel (which acts on the liver) on the tongue with a spoon. Wash it down with the drench. Repeat once or twice a week until the animal is better. Feed soft food, giving plenty of water to drink and gentle exercise every day.

25. Fluke Disease.

This occurs in cattle and sheep pasturing on low-lying lands, and is more frequently met with in rainy seasons.

Causes.—Animals drink the eggs of the flukeworm from pools of water, or take them in along with the grass. After they get into the stomach in this way they pass into the blood along with the nourishment, and then through the blood until they come to the liver, where they lodge and form into flukeworms. Here they deposit their eggs, which pass down out of the liver along with the bile, then out of the system along with the manure. They become dry and are blown into pools of water and over the grass, where animals again take them up. In this manner the worm generates.

Symptoms.—At first, when the eggs are taken into the liver, they seem to stimulate its action, and the animal seems to thrive better than ever for a time, but after the worms are full grown the liver becomes diseased. This stops the secretion of the bile, and the animal soon falls off in condition, becomes very dull and weak, and has dropsical swellings under the jaws, throat, chest and belly. These symptoms are soon followed by death.

Treatment.—There is no effective treatment known. Destroy the diseased animal to prevent the disease from spreading, and move the unaffected cattle to a higher and dryer pasture. As horses are not affected they may be placed on the pasture after the cattle are taken off. On examining the liver after death it is found to be diseased, and to contain worms which are from one-half to one inch long, with round bodies. In some cases they exist in great numbers.

26. White Scowers.

This is a form of diarrhoea in calves.

Causes.—The result of an inflammation of the lining of the fourth part, or true digestive stomach, and is generally caused by changing the calf's milk to that of another cow or by giving cold or skimmed milk when not used to it.

Symptoms.—The manure is very thin, and is of a yellowish white color. The calf is in pain, breathes heavily, and groans at times, grits its teeth and looks round at its sides.

Treatment.—Try to ascertain the cause of the trouble, and if from a change in the milk, or from giving it too cold, give good, warm milk to drink, and follow with

Raw Linseed Oil.....	.2 ounces or 8 dessertspoonfuls.
Lime Water .....	.2 ounces or 8 dessertspoonfuls.
Laudanum	1 dram or 1 teaspoonful.

Mix and give as a drench, and if this does not give relief follow with

Laudanum	1 dram or 1 teaspoonful.
Lime Water .....	.2 ounces or 8 dessertspoonfuls.

Mix and give this three times a day in a little milk as a drench. Keep this treatment up, and see that the animal is kept dry and warm until it is better.

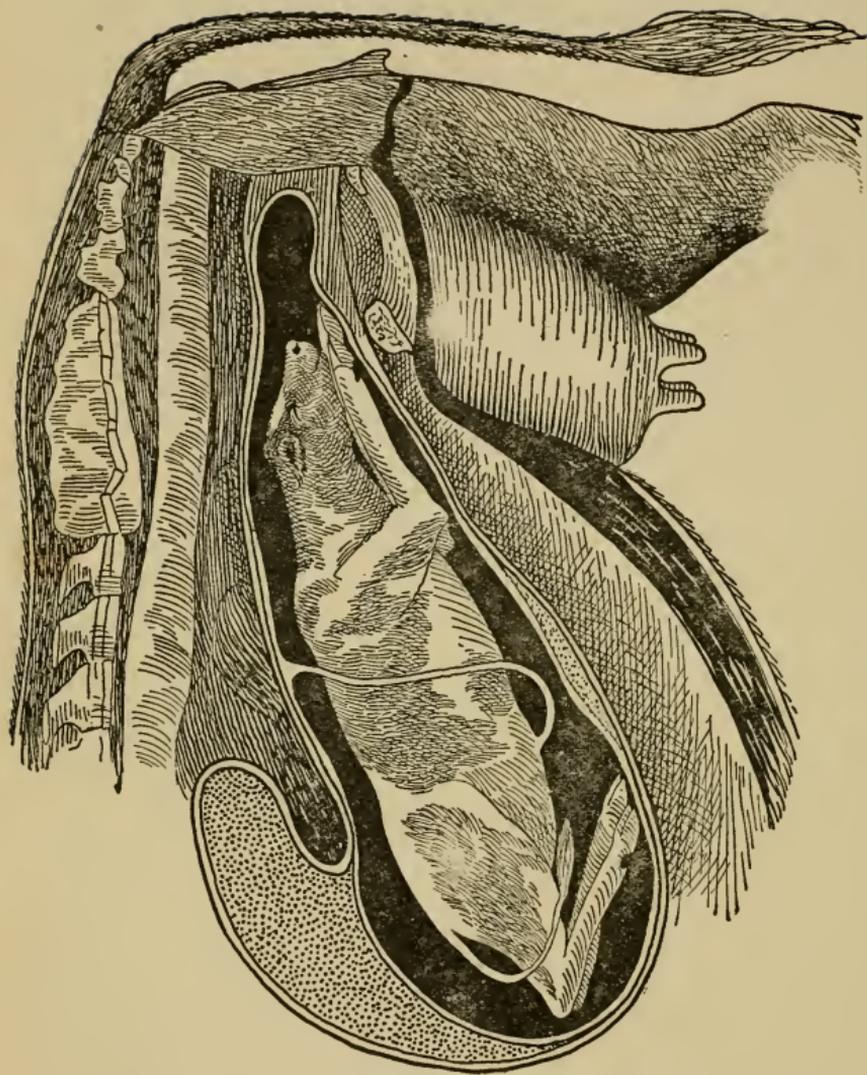


PLATE XIV.—CORRECT POSITION OF CALF IN THE WOMB.

EXPLANATION TO PLATE XIV.

This cut shows the natural position of the calf in the womb, showing the natural way it should come out, front legs and head first; when the cow is calving.

CHAPTER IV.

CALVING, DIFFICULTIES AND DISEASES ATTENDING IT.

I.—INDICATIONS OF PREGNANCY AND HOW TO TELL WHEN A COW IS IN CALF.

DURING the hot months of the spring and summer a cow comes bulling every third week, and occasionally a well-fed cow kept in a warm stable comes bulling during the winter.

The first indication of being with calf is the failure to come bulling in the usual manner after being served by the bull. Her appetite is better; she thrives better and is of a much quieter disposition.

In a few weeks a fullness may be noticed about the flanks, especially on the right side as the foetus lies more to this side. In a few months the calf can be felt in the form of a hard lump by pressing the hand quickly against the right flank.

About the fifth or sixth month the quickening period is reached and the calf may be noticed moving. This is more likely to be the case after the cow has taken a drink of cold water.

Springing commences in young cows about four months previous to calving, and the bag gradually keeps getting larger until calving time, while older cows generally commence to make a bag from four to six weeks before calving.

The vulva gradually increases in size during the period of making bag.

About the end of the ninth month, when calving time approaches, the ligaments at the sides of the tail and hips relax and leave a hollow at each side of the tail. This hollow is well marked a day or so before calving. These symptoms are accompanied by a wild expression of the eyes and a desire to be away from other cattle to which she acts crossly.

Signs of immediate calving are the indications of labor pains as shown by straining. Shortly after these symptoms the neck of the womb opens, the water bag appears, breaks, and if delivery is natural the head and legs soon appear.

The cow usually lies down and a few minutes of severe straining is in natural delivery sufficient to force the calf from the vulva.

The cleaning (placenta or after-birth) generally comes away at the time of delivery or soon after.

II.—DISEASES DURING PREGNANCY.

1. Dropsy of the Womb.

This is due to derangement of the afterbirth, and an over-abundant amount of fluid secreted in the calf. In some cases several palifuls collect in the womb.

Symptoms.—The belly continues to get larger and larger until the cow seems almost as broad as she is long. On account of so much fluid forming she becomes weak and has difficulty in getting up and walking around.

Treatment.—There can be but little done in this disease only to keep the strength up. Give a teaspoonful of nitrate of potash or saltpetre in a mash every third day until she calves. This acts on the kidneys, which helps to get the water out of the womb. Feed plenty of good, strong, nourishing food to keep her strength up and she will be all right after calving.

2. Paralysis of the Hind Quarters.

This disease is generally noticed in poorly-fed, unthrifty cows, especially if they are exposed to cold or wet. It is caused by the calf in the womb pressing on the nerves that control the muscles of the hind quarters.

Symptoms.—The cow appears healthy—is eating and chewing her cud, but is not able to rise on her hind quarters.

Treatment.—Give half-pound doses of Epsom salts once or twice a week, according to the action on the bowels. Give the following powder:

Ground Gentian Root	¼ pound.
Nitrate of Potash or Saltpetre.....	¼ pound.
Powdered Nux Vomica	¼ pound.

Mix and give a tablespoonful in a slop twice a day. Give plenty of good food, keep her warm, have good bedding under her, and turn her from side to side twice a day until she calves, at which time she generally comes all right. Never attempt to put her in slings, just let her lie until she is able to get up.

3. Cows Losing Their Calves—Non-Contagious Abortion.

Causes.—This generally results from slipping on ice, being chased by a dog or from the hook of another animal.

Symptoms.—Labor pains come on. She gets up and down and the water bag appears and breaks. If the calf is coming straight, it soon appears and comes away all right.

Treatment.—If straining continues and the calf does not come, oil the hand, pass it up into the womb and straighten the calf. After the calf is taken away, cover her up warm, and if she does not seem very well give her the following:

Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Epsom Salts1 pound.

Mix in a quart of lukewarm water and give as a drench. If the cleaning does not come away follow the same treatment as given in Sect. 10 of this chapter. After this, feed soft food, keep her warm and milk her twice a day.

4. Contagious Abortion.

This is becoming quite a common disease in some localities and frequently causes considerable loss to cattlemen.

Causes.—It is due to a germ in the vagina or womb and is transmitted from one cow to another through the discharge or afterbirth of a cow that has already aborted, or through the service of a bull that has before served a cow suffering from the disease.

Treatment.—All cows suspected should be isolated from those pregnant. Great care also must be exercised to prevent the spread of the disease should a case of abortion occur. Burn or bury deeply the foetus, afterbirth and in fact everything that comes away. Thoroughly disinfect the stable by scattering lime freely about the floors and washing the woodwork with a solution of corrosive sublimate in the following proportions:

Corrosive Sublimate1 part.
Water1000 parts.

Disinfect in ten days in exactly the same manner and then whitewash the stable. This makes it thoroughly clean and prevents the possibility of live germs lurking about.

Disinfect the hind quarters of all cows that have aborted by washing with the same corrosive sublimate solution once a day until any discharge from the vulva has ceased. Sprinkle lime upon the droppings.

Treat the pregnant cows by way of prevention by giving a tablespoonful of hyposulphite of soda once a day either in a drench or bran mash.

Should a cow abort in the pasture the greatest care must be exercised. Burn everything discharged from the womb on the spot and scatter lime freely on the ground in the immediate vicinity.

III.—DIFFICULTIES DURING DELIVERY.

5. Deformities, etc.

These are very similar to those of the mare, and the principles laid down and fully explained in Part II. should be adhered to.

When the calf is coming front first always bring the head and legs together. Should the rear end come first do not attempt to turn it but bring the hind feet first.

Do not be too eager to use hooks. Small ropes are better and there is less danger of tearing the womb.

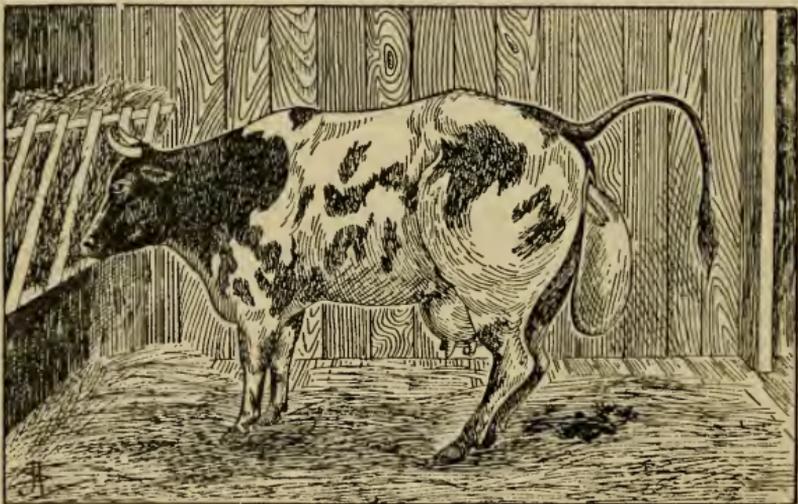


Fig. 63.—Calving—Appearance of the Water Bag.

When necessary to do any cutting it is best to get an experienced hand, as the parts of the calf have to be skinned inside, commencing at the legs and skinning to the shoulder

blade, and then taking it off with the leg, then taking out the ribs and insides, and so on, with the other parts until enough of the calf is cut away to admit of it being taken away.

6. Closure of the Neck of the Womb.

This is when labor pains begin, but the neck of the womb remains contracted or closed, and will not allow the calf to come out of the womb.

Treatment.—Give

Epsom Salts1 pound.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Fluid Extract of Belladonna.....1 dram or 1 teaspoonful.

Mix in a quart of lukewarm water and give as a drench. Keep the body warm with blankets and half a pail of hot salt, in a bag, over the back. On examining the neck of the womb with the hand it will be found that only one or two fingers can be worked into it. Take a small piece of sponge or cloth and saturate it with fluid extract of belladonna, shove it well into the neck of the womb as if it were for a plug. Change this two or three times a day to add more of the fluid extract of belladonna. Do not use any rough treatment, for the belladonna in a day or so will dilate or open the neck of the womb enough so that she will calve herself. If this treatment should fail, take a penknife and nick around the inside of the neck of the womb in several places on the upper side, then use the belladonna as described above. This will open it.

7. Rupture of the Womb or the Passage From the Womb.

This occurs at the time of calving in the same way as it does in the mare when foaling. For symptoms and treatment see the same subject in Part II.

IV.—DISEASES FOLLOWING DELIVERY.

8. Turning Out of the Vagina or Passage Leading From the Womb.

Causes.—With cows as well as with mares this is caused by standing in the stall with the hind feet too low before calving or foaling. When lying down, on account of being so full, the womb presses back against the passage and turns it out. It is liable to come out in cows from straining a few days after calving, or it may be caused from constipation, in either cows or mares where there is much straining in making manure.

Symptoms.—There is a bulging out of the passage about the size of a man's head.

Treatment.—Bathe the part well with lukewarm water until nice and clean, shove it back to its place and stitch the edges of the vulva together by putting in a couple of stitches, just leaving space enough at the bottom for the mare or cow to make water. Put the stitches deep in the vulva and allow them to come out of their own accord, which generally takes a week or so. If a cow, give a pound of Epsom salts and a tablespoonful of ginger in a quart of lukewarm water, and raise her stall two or three inches higher at the back than in the front. Feed rich food, as it will not make such a bulk in her stomach. If a mare, give her a pint of raw linseed oil, and raise her stall two or three inches higher at the back than in the front. In either case be careful until after delivery. Watch very closely and if any indications of being delivered are manifested, such as labor pains, cut the stitches out and give her assistance. After she is delivered shove the parts back and stitch up the vulva again for a few days. She will then be all right.

9. Womb or Calf Bed Turned Out.

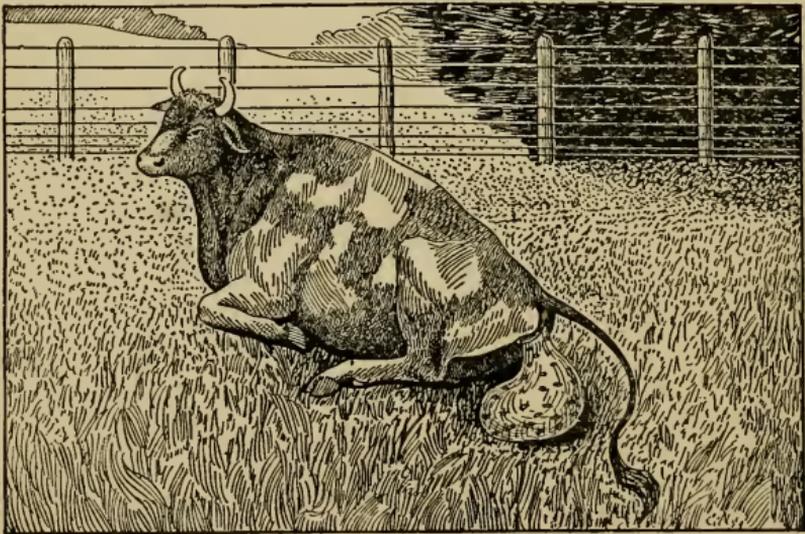


Fig. 64.—Expulsion of the Womb.

This is when the calf bed is turned inside out, and hangs down from the vulva. It is not often seen in mares, but is a common occurrence in cows.

Causes.—Lying with her hind quarters too low is generally the cause. While the womb is in its dilated or enlarged state, after calving or foaling, the body being low behind, the bowels and stomach presses the womb back up into the pelvic, or hip cavity, and as soon as it gets up in this part it causes the animal pain and straining, which soon turns the womb inside out. To prevent this from taking place, it is always well to keep the animal standing for a few minutes after having her young, so as to allow the womb to go back into its place. After this, if she lie down, see that her hind quarters are not too low.

Symptoms.—The animal seems very weak and has a large red mass hanging out behind, sometimes larger than a large wooden pail.

Treatment.—In all cases, as soon as it is noticed, return it, for the sooner it is done the easier it is put back and the less danger there is of losing the animal. The longer it is out the more it swells. If the cleaning is still attached to the womb—as it is in some cases—remove the cleaning before returning to the womb. This can be done easily by separating it from one button at a time. After this bathe well with warm water, and when nice and clean, place a clean sheet or blanket under it and have it held up by two men, one on each side. When everything is ready for returning it cause the cow, or mare, to rise to her feet, and have her stand so that her hind quarters are a few inches higher than her front. Then have the men who are holding the sheet raise the womb a little higher than the vulva; this makes it easier to press in. Turn the womb in by commencing at the edge of the vulva, returning it gradually until all is in the passage; then, with the hand closed, press against the end of the womb and shove it right back to its place. Hold it there for a few minutes with the hand and arm. During the operation be careful not to run the fingers through it. After drawing out the arm place three or four good, solid stitches across the vulva, leaving a little opening at the bottom for the water to come through. Cover her so that she will be warm and keep a half pail of hot salt in a bag to her back.

If a cow give

Epsom Salts	1 pound.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Laudanum	1 ounce or 4 dessertspoonfuls.

Mix in a quart of water and give as a drench. After this give one ounce or four tablespoonfuls of laudanum and ten drops of aconite in a pint of water every three hours until she stops straining. Keep her standing on her feet for a few hours, with her hind quarters raised three or four inches higher than her front. In two or three days after the pains have ceased take the stitches out and allow her to stand on the level floor again.

If a mare, give one pint of raw linseed oil instead of the Epsom salts, but otherwise the treatment is the same.

In either case remove the stitches in two or three days, when the animal quits straining and seems all right.

10. Retention of the Cleaning and How to Take It Away.

Causes.—This is due to a congested and swollen condition of the buttons inside the womb to which the cleaning is attached. This is usually the result of allowing a cow to cool off too quickly after calving. In order to prevent this occurring blanket her and give a warm drink as soon as possible after delivery.

Treatment.—As soon as the cow is noticed not to clean, give

Epsom Salts	1 pound.
Fluid Extract of Belladonna.....	1 dram or 1 teaspoonful.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. Blanket well and keep half a pail of hot salt in a bag to her back. Give a hot bran mash, leave her quiet, and when the medicine operates she generally cleans all right. In thirty hours after giving the medicine, if she has not cleaned, it is necessary to take it away with the hand.

Roll up the sleeves and oil the right hand and arm. Take hold of the piece of cleaning that is outside with the left hand and pass the right hand into the womb. By gently pulling the cleaning it comes away quite easily after getting the medicine, it being held in only by the contraction of the neck of the womb.

In cases where the cleaning has not loosened from the buttons, gradually pull with the left hand and loosen the cleaning from the buttons with the right until it is all worked off. A little practice in removing cleanings soon makes perfect.

When the cleaning is green and too tight on the buttons allow it to remain another day and give another drench of

the same kind as the first one mentioned. This makes it all right for taking away. Cleaning should never be taken away without first giving the medicine to loosen it from the buttons.

11. Inflammation of the Womb (Metritis).

This disease generally comes on two or three days after calving.

Causes.—Getting wet, standing in a draft or any condition that causes a sudden chill, will bring it on.

Symptoms.—There is slight shivering. The horns, ears and legs are cold, the pulse and breathing quick, and the appetite gone. She stops chewing her cud and seems restless on her hind legs, as if in pain. She seems sore on the right side, her vulva is swollen, and bloody looking stuff passes from it. Frequently, after making her water, she seems very thirsty. Her bowels are costive, and the urine is of a reddish color. The bag is hot, swollen and tender, and she does not give as much milk as she should.

Treatment.—Give

Epsom Salts	1 pound.
Laudanum	1½ ounces or 6 dessertspoonfuls.
Fleming's Tincture of Aconite	10 drops.

Mix in a quart of lukewarm water and give as a drench. Keep her body warm with blankets and half a pailful of hot salt in a bag to the back. Keep it hot by changing every hour.

After the first drench give

Laudanum	1 ounce or 4 dessertspoonfuls.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite	10 drops.

Mix in a pint of lukewarm water and give as a drench every four hours until better. Feed soft food with boiled flaxseed in it to keep the bowels loose. Give cold water to drink in small quantities, but often.

After this disease has passed off there is sometimes a nasty discharge of a whitish color from the womb, which has a bad smell. This condition is called whites (Leucorrhœa).

12. Whites (Leucorrhœa).

Causes.—This disease frequently follows inflammation of the womb, but may be caused in other ways. Handling the womb roughly in taking the calf, or cleaning away, returning

a calf bed or anything that irritates the womb will cause it. Being put to the bull too often may cause it.

Symptoms.—A nasty, whitish discharge, which has a bad smell, passes from the vulva. It is often noticed after she makes water. From the effects of this she loses flesh and gets poor, weak and hide-bound.

Treatment.—Give half-pound doses of Epsom salts dissolved in a pint of lukewarm water, twice a week to keep the bowels free. Oil the hand, pass it through the passage to the neck of the womb, and gradually open it up with the fingers until large enough to pass the hand into the womb. Then with a pail of lukewarm water, soap and a sponge wash the womb and passage out until it is nice and clean. Bathe the womb well with a teaspoonful of sulphate of zinc dissolved in a pint of water. This heals the womb and dries up the discharge.

In the course of a week, if the discharge is not stopped, dress the womb again in the same manner. Continue the salts once or twice a week, according to its action on the bowels, and, if in the spring of the year, let her out to grass.

13. Paralysis.

Causes.—Paralysis is the result of injury to the muscles or nerves of the back, and may happen during calving.

Symptoms.—Inability to raise upon the feet is the most apparent symptom. Otherwise the cow appears healthy. This disease need not alarm you for, as a general thing, she gets all right in a few days.

Treatment.—Give

Epsom Salts1 pound.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.

Mix in a quart of lukewarm water and give as a drench. Keep her body warm with blankets, and apply a quarter of a pound of mustard, mixed in vinegar, over the back every second day. Feed soft food, with boiled flaxseed in it. Milk her out twice a day, and also turn her over from side to side twice a day, but never, under any circumstances, put her in slings.

14. Milk Fever (Parturient Apoplexy).

This is one of the most fatal diseases cows are subject to, and mostly affects well-fed, fat cows that calve during the

hot months of spring and summer. It may, however, affect poor cows. It is also noticed occasionally to affect cows at almost any time of the year, even in the winter, in rare cases.

Causes.—The exact causes of this disease are not clearly understood, but it is supposed that on account of the hot weather, and the cow being fat and well supplied with blood, fever is set up which affects the nerves. When the nerves are affected, the milk glands also become affected, and do not secrete the milk, and the milk not being secreted as it should be, leaves the blood charged with material which should go to form milk. The blood becoming charged with this material affects the brain and nerves, soon causing paralysis.

It is usually noticed to come on in from one to eight days after calving. The sooner it comes on after calving, the more fatal it is. Cows taking it in one or two days after calving seldom get better, but if after that time there is more chance of recovery.

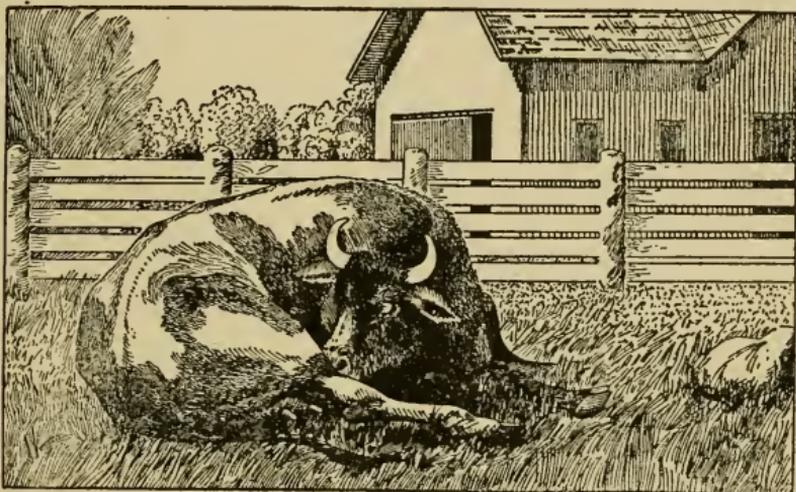


Fig. 65.—Indications of Milk Fever.

Symptoms.—At first there is a wild, glary appearance of the eyes and very little milk in the bag, which, in most cases, seems soft and flabby. In trying to walk she has a staggering gait. These symptoms gradually get worse. Saliva runs from the mouth, and she seems greatly excited, staggers, and acts like a drunken man. Finally she gets down, and is unable to rise. Her head is turned round to her side. Her ears are lopped over and her eyes now have a peculiar, dull,

glassy appearance. The pupils of the eyes are enlarged. She breathes a little heavy. Her nose is dry, and she does not take any notice of things around her. Try to milk her and only a little comes out at a time. There is very little or no passage from the bowels, and if you prick her with a pin she cannot feel it. A few hours after this, if she does not get relief, she becomes delirious, moans heavily, lies stretched out, and constantly tosses her head about. The bag continues to get softer, and after a while, when you try to milk her, no milk will come. She gradually gets worse and soon dies.

In a certain instance we were called to treat a case of milk fever, but owing to the distance—it being four hours before we could reach her—the cow breathed her last just as we arrived. We mention this to impress the necessity of prompt action and also the great importance of thoroughly understanding the nature of the disease. The treatments following are, so far as we are able to ascertain, the only successful methods of coping with it.

Treatment.—Treatment must be prompt in order to be effective. If the cow is on her feet and able to swallow without difficulty, give

Epsom Salts	1 pound.
Bitter Aloes	1 ounce.
Nitrate of Potash, or Saltpetre.....	1 large teaspoonful.
Bicarbonate of Soda and Ginger...	1 dessertspoonful each.

Mix in a quart of lukewarm water and give as a drench. Put her in a cool, airy stable and tie a bag containing broken ice to the head between the horns, keeping the ice to the head until she is relieved. Milk her dry, and sponge the bag thoroughly with warm water so as to soften and clean it. Take a pint of clean boiling water, allow it to cool down to lukewarm; to this add fifty grains of iodide of potassium and stir thoroughly until dissolved. By the aid of a teat syphon and small rubber syringe inject one quarter of this mixture through the passage of each teat up into the bag. After injecting, give the bag a thorough hand rubbing in order to work the medicine well up around the milk glands. In case she should get off her feet watch her carefully so that she cannot injure the bag by lying on it. Turn her from side to side every four hours, keeping her lying up well on her breast bone. If her bowels are not free give her injections of half a pail of lukewarm water every four hours. If she does not

make her water within twelve hours after injecting the bag, take it away by means of a catheter—an instrument for this purpose.

This is done by passing the point of the catheter, guided by the finger, along the bottom part of the vulva about four inches in, where there is a small opening. Into this pass the catheter gently downward and forward until the water comes through it. Guarding the opening mentioned is a little valve, and sometimes by slipping the finger in and raising the valve the water will come without using the catheter. Do this twice a day if necessary.

Four hours after injecting the bag if she is not showing signs of recovery, milk her out and repeat the same injection into the bag. Repeat this every four hours until the milk returns and she shows signs of recovery in other ways.

During treatment offer her frequently small drinks of cold water and gruels. Milk often until she is well.

When recovering give a small quantity of such foods as she seems to relish best and leave the calf with her for a week or so. If the cow is not going to recover the paralysis becomes more marked. She becomes dull and quiet, which is followed by a delirious state before death.

Another treatment which we recommend highly is as follows: Inject air into the bag instead of using iodide of potassium and water. A special instrument is made for this purpose. All that is necessary is to insert it into the teat and pump air into the udder (bag). The air becomes sterilized while passing through the instrument. Pump the bag as full as possible without causing it injury. It may be necessary to tie the end of the teat with a soft cord to prevent the air from escaping when the instrument is removed. In four hours milk the air out and repeat the operation. Do this every four hours until better.

After using sterilized air follow the same course of after treatment as when using iodide of potassium.

For milk fever instruments refer to the appended advertisement. They should be kept on hand by every stockman, especially such as keep a number of milking cows. The small cost of these as well as many others that may be used successfully with but little experience is a mere trifle compared to that of a valuable animal the life of which may be saved by their timely use.

Milk fever may be prevented by giving proper attention to the cow both before and after calving. Should she be in good condition and milk fever suspected, treat her as follows: Turn her each day into a shady place, feed light nutritious food and allow her to run out at night. Give:

Epsom Salts1 pound.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.

If she has a very large bag before she calves, milk her every day. After she calves, keep her in during the day and let her out at night for a week, and keep her well milked out. Repeat the above dose and there is little danger of milk fever.

15. Inflammation of the Milk Bag (Garget).

Causes.—Getting cold in the bag, an injury, too great a flow of milk at calving time, a lump in the teat, or anything that will stop the milk from being milked out of the bag may cause garget.

Symptoms.—The cow seems feverish. The bag is swollen, hot and tender. She is very thirsty, but does not care to eat. The bowels are a little costive. Milking her causes pain and there is very little milk in the bag. In severe cases, nothing but a little water comes out.

This disease may affect one quarter, half the bag, or all of it. It is most frequently seen in cows, just after calving, that are kept in high condition. If allowed to run on for some time the bag may fester and break, while in other cases, where there is a great deal of inflammation in the bag, mortification may set in, and the part mortified drops off. The mortification may extend up into the body and cause her death.

Treatment.—Give

Epsom Salts $\frac{3}{4}$ pound.
Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
Nitrate of Potash or Saltpetre.....1 teaspoonful.

Mix in a quart of water, give as a drench, and repeat every second or third day until she is better. This carries the fever out of her system. Bathe her bag well with warm water and vinegar three times a day; after bathing, apply white liniment, and as soon as the liniment is on, oil the bag with lard or goose oil to keep the liniment from blistering and to soften the bag. Milk her three or four times a day and feed light until all the soreness is out of the bag.

In cases where the milk stops coming entirely, and the bag festers, watch for a soft place in the swelling, and, as soon as it forms, lance it and let the matter out. After you lance the bag, if it smells bad, put a few drops of carbolic acid in the water that you bathe it with; this stops the bad odor and cleans the wound. Continue treatment as given above.

In case the bag mortifies give plenty of bathing with the hot carbolic water, as above mentioned, three times a day, then apply the white lotion, and give the drench mentioned above once a week instead of every second day. The mortified portion gradually rots away and heals.

CHAPTER V.

DISEASES PECULIAR TO THE MILKING SEASON.

1. Small Round Lumps in the Passage of the Teat.

Causes.—A bruise or injury to the passage of the teat causes in some way, when healing, the thickening or lump to form.

Symptoms.—There is a small lump in the teat which can be felt between the finger and thumb when handling the teat. These lumps may be anywhere along the milk passage. The first summer that the cow is affected with these lumps in the teat they interfere greatly with milking, but if bred again, when she calves these lumps will entirely block the teat and cause a great deal of trouble in getting the milk down. The bag becomes swollen and inflamed, and in a great many cases she loses the affected quarter.

Treatment.—Generally speaking the milk can be drawn from the bag in the usual way during the first season the cow is affected. It is advisable, however, not to breed an affected cow again. The best plan is to fatten her, as in all probability she will be worse the next season.

When it is impossible to draw the milk from the bag with the hand, pass a teat siphon* or milk tube into the passage of the teat, through the lump and sufficiently far enough to reach the milk. About one-quarter of the milk in the bag will run out in this manner. Use the tube each time the other teats are being milked.

When using the teat siphon proceed as follows: First tie a colored string in the small ring at the side so as not to lose it if it drops out in the straw, then oil it. Take hold of the teat with the left hand and with the right pass the teat siphon up through the passage to the lump, and when it is felt gradually force it through. This is easily done. Continue passing it gently up until the milk runs out, and leave it in until all the milk is out.

*Teat siphons are very useful in all cases when it is impossible to get the milk from the bag in the usual way. They may be had from the company whose announcement appears on the latter pages of this book.

Bathe the bag twice a day with warm water and vinegar, after bathing apply white liniment and then oil the bag with lard to keep it soft. It is advisable in very bad cases to let that quarter of the bag go dry as soon as possible.

2. Bloody Milk.

Causes.—Any injury to the bag, getting cold in it, or eating irritating weeds may cause it.

Treatment.—Give the following:

Epsom Salts1 pound.
Nitrate of Potash or Saltpetre.....1 teaspoonful.

Mix in a quart of lukewarm water and give as a drench. Give a teaspoonful of saltpetre in a mash every night. After milking bathe the bag with warm water, wipe dry and apply white liniment, then oil the bag with lard or goose grease, and the milk will soon be all right. If caused from eating irritating plants, put the cow in another pasture.

3. Blue Milk.

In many cases the milk is watery looking and very blue.

Causes.—Minute germs, called bacillus cyanogenus, cause this by getting up into the teat. The only way to be sure of these germs is to examine the milk with a microscope.

Treatment.—With a small glass syringe inserted into the passage of the teat inject some of the following each time after milking:

Hyposulphite of Soda1 dram.
Water1 pint.

Shake well before injecting, and after a few injections the milk will be all right.

4. Stringy Milk.

Causes.—Swallowing small germs while drinking out of stagnant pools of water will cause stringy milk.

Symptoms.—A few days after the germs are swallowed the cow's milk is curdy and stringy looking, mixed with water, and comes out in jerks when milking. It is like this for a few days, then gets all right for a week or so when it comes on again. Generally two or three cows out of a large herd are affected in the same way.

Treatment.—If caused by drinking out of low springs or pools keep the cows away from the water by fencing it off.

Give two drams, or one teaspoonful of bisulphite of soda in a mash every night, which soon brings the milk all right, making a permanent cure.

5. Chapped or Sore Teats.

Causes.—This is caused by milking with rough hands. Running through long grass and wetting and irritating the teats or irritation from flies may cause it.

Treatment.—Each time before milking wash the teats off with lukewarm water and a little castile soap, then rub the teats with the following salve:

Vaseline	2 ounces.
Oxide of Zinc	1 dram.
Carbolic Acid	10 drops.

Mix well together and put in a box large enough to hold it. This is a cheap and a grand healing salve for any kind of sores around the bag.

6. Small Warts on the Teats.

These are very troublesome when milking, but are very easily got rid of if the right plan is followed.

Treatment.—The best time for treatment is after the cow has been dried. Tie and hobble her two hind legs together above the hocks with a strap so that she cannot kick, then with a pair of large, sharp scissors clip all the warts off as close as possible to the teat. Cutting them off with scissors prevents bleeding. After they are taken off dress them once a day with the same salve used for chapped teats, and they will not come on again. If they should return the next year use the same treatment again.

7. Cuts and Fistula of the Teat.

This is caused when the teat has been cut deep enough to cut the milk passage, allowing the milk to drip out through the hole.

Treatment.—If the cut is big sew it up with a needle used for sewing wounds; bathe with warm water and apply white lotion every time after milking.

The best way to milk a cow while the teats are sore is to insert a teat siphon, or milk tube, up into the teat. This lets the milk run out without irritating the teat. Sometimes after it is healed there is a small hole in the side, which allows the milk to leak out while milking. The best time to fix this is

after she has gone dry. Burn the hole with a pointed stick of caustic potash, which destroys the fistula, then while it is healing the hole disappears and it will be all right the next time she calves.

8. Cow Pox.

This is often met with and affects herds in all parts of the world. It is somewhat similar to smallpox in people only it is not nearly so fatal. It is an infectious disease, that is, it can be carried from one cow to another. For instance, one man is milking eight or ten cows and only one has the disease at first; he will carry the disease to all the others.

Symptoms.—The cow seems feverish and does not give quite so much milk. In a few days, little red, pimple like spots appear around the teats. In a day or so more, these red spots rise up in the form of blisters, which contain a watery fluid. If these are not broken during milking, they dry up themselves and form scabs, which, in a few days, drop off, leaving the teat natural. It generally takes from eight to ten days to run its course; but sometimes, when the blisters on the teats are broken by the milker's hand and kept irritated by milking, or flies, they take a long time to heal.

Treatment.—Keep the cow separate from the others, and allow only one person to milk her, and no others, so as to keep the disease from spreading. If in the spring, let her have grass only. If at any other time of the year, feed soft food with boiled flax seed in it, and give the following powders for the blood and kidneys:

Nitrate of Potash or Saltpetre	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root	¼ pound.

Mix thoroughly and give a teaspoonful night and morning in a mash. Each time before milking, bathe the teats with lukewarm water and soap, then milk carefully and use the following preparation:

Sweet Oil	4 ounces.
Carbolic Acid	10 drops.

Mix and apply to the sore parts each time after milking.

9. "Drying" a Cow.

Give her a pound of epsom salts in a quart of lukewarm water as a drench. Bathe the bag once a day for a week with lukewarm forge water or warm vinegar. This may be

obtained at any blacksmith shop, being the water in which the hot irons have been cooled. After bathing each time milk out a little milk on the ground for a few days, then every second day or third day for a few days, then once a week. The idea is to stop the milking gradually. Milk the bag dry the last time. During this treatment the diet should be of dry, hard food.

CHAPTER VI.

DISEASES OF THE GENITAL ORGANS OF THE BULL.

1. Inflammation of the Testicles (Orchitis).

Causes.—It is generally the result of an injury, or serving too many cows.

Symptoms.—The bull moves stiff and has a straddling gait; the testicles are swollen and very tender.

Treatment.—Give

Epsom Salts	1½ pounds.
Nitrate of Potash or Saltpetre.....	1 teaspoonful.
Ginger	1 dessertspoonful.

Mix in a quart of lukewarm water and give as a drench. Bathe the testicles well with hot water and vinegar and apply a poultice of hot linseed meal and bran, about half and half. Have the poultice held up to the bag by means of strings tied up over the back and it will give steady heat to the bag and draw the inflammation out. It will also support the testicles and ease the pain. Keep the poultices hot by changing them twice a day and continue this treatment until the bull is better. Do not let him get cold afterward.

During treatment feed soft food and he will soon be all right. If, after he is well, you find that the inflammation has destroyed the seed part of the testicles—which can only be told by allowing service of cows without them becoming in calf—castrate him, as he will be of no further use for breeding purposes.

2. Injuries to the Sheath and Penis.

Causes.—Jumping over a fence and being caught on it, or being caught in any way by the sheath and penis will injure it.

Symptoms.—There is swelling and soreness of the sheath and penis. If a bull he will be unfit for service until better.

Treatment.—Examine to see if anything is in the end of the sheath, and remove it at once. Bathe well three times a day with lukewarm water, wipe dry and then apply the white lotion. Keep this treatment up until the swelling is all out. In very severe cases give him a pound of epsom salts.

3. Clapp (Gonorrhoea).

This is an inflammation of the lining of the passage of the penis.

Causes.—Too frequent service, or serving a cow that is affected with whites (leucorrhoea) will cause clapp.

Symptoms.—There is a whitish fluid discharge from the end of the penis and sheath, which are also very sore to handle. Making his water scalds him and causes him pain.

Treatment.—Give one pound of epsom salts in a quart of lukewarm water as a drench to cool the blood. Bathe the sheath well with lukewarm water twice a day, wipe dry, and inject into it a little of the following:

Sulphate of Zinc.....	2 drams or 1 teaspoonful.
Water	1 pint.

Mix and shake well before using. This is a cheap and effective cure for this disease. Keep the bull away from cows until he is better, as he is sure to communicate the disease to them.

4. Swelling of the Point of the Sheath.

Causes.—It is mostly met with in those that are grazing on a pasture field where there is a lot of limestone, or when there is much lime in the water that they drink. On account of the steer not putting out his penis while making water, just letting it dribble out of the sheath, the lime in his water collects and forms a small limestone which soon gets large and irritates the sheath, causing it to swell.

Treatment.—If he is a quiet steer, let him stand, and have someone hold him by the horn and nose. Oil the fingers and pass one of them up into the sheath. By working the stone around you can soon remove it, then oil the sheath inside and outside with lard and it will be all right. In case you cannot do this with the steer standing up, throw him down and secure him as for castration and remove it in the same way.

5. Bloody Urine (Red Water).

Causes.—It is caused by the animal eating some weeds that act on and irritate the kidneys, or it may be caused by stones in the bladder or kidneys, or by a severe strain of the back.

Symptoms.—The urine or water is of a smoky, red color. The animal passes water often, and strains after making it. In some cases the urine is very profuse.

Treatment.—Give

Glauber Salts1 to 1½ pounds.

Mix in a quart of lukewarm water and give as a drench.
Follow with

Ground Gentian Root½ pound.

Sulphate of Iron½ pound.

Mix well together and give a large tablespoonful in a mash twice a day, night and morning.

CHAPTER VII. DISEASES OF THE EAR AND EYE.

I.—THE EAR.

DISEASES of the ear of the ox are very rarely met with, and are similar to those of the horse. For any information concerning them refer to this subject in Part II.

II.—THE EYE.

1. Cancer.

The eye of the ox seems to be a favorite place for cancers, which are very often met with.

Causes.—The causes are the same as those of other cancers, that is, the cancer germ gets into the blood, for the disease first begins in the blood, but afterward locates and shows itself in the eye. Some say it is the result of an injury.

Symptoms.—The first symptom is dullness of the eye, with tears flowing from the corners. There is a bulging out, and if you look closely you will see in the back part of the eye a small growth. The animal may thrive fairly well for a while but falls off in condition as the growth develops, on account of the pain. Soon the growth becomes so large that it will destroy the whole eye, which hangs down on the cheek. It becomes very angry and red looking, and bleeds freely if the least thing touches it. The cancer continues growing, and in a short time the bones around the eye become diseased. As they become diseased, they also become enlarged, and have a very bad smell,

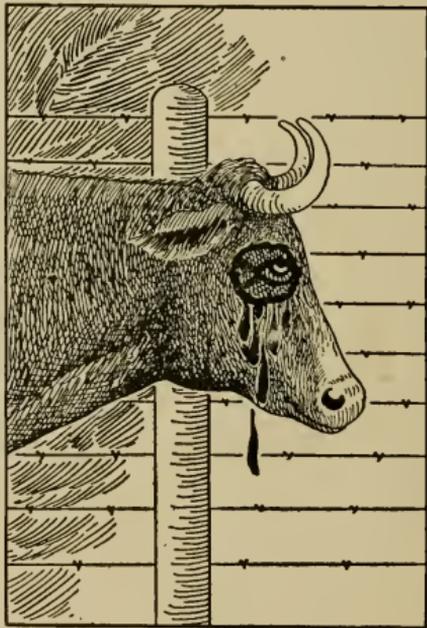


Fig. 66.—Cancer in the Eye.

Treatment.—Removing the eye in the early stages of the disease may effect a cure. This is done as follows: Throw and secure the animal; have the head held solid, and with a knife cut around the eye and loosen it from the eyelids. Stick a small hook into the eye and pull it out as far as you can. Take a piece of carriage trimmers' twine and slip it around the back part and tie it tight. This will stop the bleeding. Cut the eye off in front of where the string is tied. Saturate a piece of cotton batting with Monsell's solution of iron and insert it in the hole formerly occupied by the eye. Take the batting out the next day and bathe twice a day with lukewarm water and soap; after bathing apply white lotion. If the parts are raw and angry looking touch them with caustic potash every day. This may effect a cure, but in a case where it grows again, or where the growth is very bad before operating, or the bones diseased, have the animal destroyed immediately.

2. Foreign Substances in the Eye.

Sometimes chaff, barley-beards or small pieces of stick get into the eye and become lodged there.

Symptoms.—The animal suffers very much. Tears run down over the cheek. The eye becomes very much inflamed and dim, and if allowed to run on the sight soon becomes covered with a white scum. Examine the eye closely and find out what is in it.

Treatment.—In all cases when you find the cause of the trouble remove it; then bathe the eye every day with new milk or lukewarm water. Wipe dry and apply, in and around the eye every time after bathing, the eye wash. Keep this treatment up till better.

3. Growth on the Haw.

This is a red growth in the inner corner of the eye, caused by some irritation of the haw—a piece of cartilage or tough membrane that fits across the inner corner of the eye.

Symptoms.—At first the eye looks sore and angry in the inner corner and runs water freely, followed by a red, angry looking growth growing out of the corner. The growth may vary from the size of a marble to a small hen's egg.

Treatment.—Secure the animal by throwing it in the same manner as described for castrating bulls. Have the

head held firmly on the ground, take hold of the growth with a small hook, or anything that you can hold it with and draw it out far enough to get under it with a pair of scissors and clip it off. There is usually very little bleeding or trouble with it afterward. Bathe with new milk once a day, wipe dry and apply the eye wash.

4. Sore or Inflamed Eyes.

Causes.—Cold or injury will cause it.

Symptoms.—Tears run freely. The eyes are very weak and red looking, and if not relieved a scum soon forms over the sight.

Treatment.—Bathe well twice a day with new milk or lukewarm water, and each time after bathing wipe dry and apply the eye wash.

5. Cataract.

This is very rarely met with in cattle, and for information regarding it refer to Part II., as the causes, symptoms and treatment are the same as those of the horse.

6. Injuries to the Eyelids.

This may occur in many ways. A kick from a horse, a hook from a cow, or catching on something may cause it.

Treatment.—If torn much stitch them up with a wound sewing needle and carriage trimmers' twine, which is the best for this work. Treat afterward by bathing with new milk or lukewarm water and applying the eye wash. Do this twice a day and it will soon heal and the stitches will work out themselves.

CHAPTER VIII.

ACCIDENTS—FRACTURED BONES, WOUNDS, SPRAINS OF JOINTS AND TENDONS.

IT will be well, before pursuing a study of this chapter, to go over very carefully the chapter on Wounds in Part II.

I.—FRACTURED BONES.

Fractures occur in various ways, from the kick of a horse, getting caught on a fence while jumping, falling, being chased by dogs, or being struck with anything hard enough to fracture a bone. As a rule, when the fracture is so bad that the bone is shattered, or a piece of the bone penetrates the skin, it is best to destroy the animal. If fat enough it makes good beef, provided it is killed in time.

1. Fracture of the Lower Jaw.

This is a fracture that generally occurs from a kick or a blow of some kind. It is first noticed by the animal not being able to eat, and the mouth seeming crooked. It is recommended in cases of this kind to set the jaw in place, and have it held there with wire fastened around the teeth in the jaw. This can be done better if it is the front of the jaw that is fractured. Feed soft food, such as gruels, that the animal can drink down. If fit to kill it is best, however, to butcher it.

2. Broken Neck.

To show how simple this may occur we relate a case that came under our own personal observation. A cow that had been kept in the stable during the winter and fed well was let out one day by the owner, and she, feeling good, was playing about when the dog was put after her. While running away from the dog she kicked up her hind feet and lowered her head. In doing this she caught her nose on the ground, which threw her over onto her head and neck. We heard the bone snap, and by the time we got to her she was dead. On examining her we found that one of the bones of the neck was broken in the fall, which caused her death instantly. In

any case where the bones of the neck are fractured enough to press on the spinal cord it will cause death instantly.

3. Fracture of the Bones of the Back.

This may be caused by something falling on the animal, or by slipping and falling, or by another animal jumping on it while standing crooked.

Symptoms.—There is paralysis of the hind quarters, attended with pain. The animal moans and refuses to eat anything. In severe cases the back is swollen, and the mark of what caused the fracture may be seen.

Treatment.—It is best to kill the animal, but if there is a desire to try to treat it, keep it quiet, feed on soft food and keep the bowels regulated by giving small doses of salts. Turn it from side to side twice a day, and be careful while turning not to hurt its back.

4. Fracture of the Hip Bones.

In some cases a hip is knocked down by a blow, or by running through a narrow doorway and striking the hip. This is not dangerous, although it spoils the look of the animal. If sore after being knocked down bathe twice a day with lukewarm water and apply white liniment until the soreness is out, and if the bone heals all right do nothing more. Sometimes the broken piece of bone does not heal to the other and it soon begins to fester around the injury, the parts becoming swollen and sore. Open it with a sharp knife and remove the broken piece of bone.

Fracture of the under part of the hip bones generally results from slipping when the legs straddle out. As soon as it gets up it walks off very stiff, and the legs are straddled out behind while walking or standing. In such a case keep the animal very quiet by tying it in a stall until the bones unite. This generally takes four or five weeks.

5. Broken Ribs.

This is always the result of a kick or a blow of some kind. In a severe case the animal cannot rise to its feet. There is a dinge in the side, and on shoving it in and out you

can hear the bones grating on each other. In slight cases the animal is able to get up all right, but will be stiff and sore. In most of these cases the animal coughs a little, and breathes short and quick.

Treatment.—All that is needed is quietness, good care and nutritious food. If not able to rise turn it over from side to side twice a day. If the rib is broken so badly that it penetrates the lung and sets up inflammation there is no hope of recovery.

6. Fracture of the Shoulder Blade.

Fracture of these bones is indicated by the extreme lameness and pain it causes. On moving the leg you can hear the bones grating on each other. In a case of this kind it is best to destroy the animal, but if the fracture is not so severe, and the patient young, keep it very quiet, feed well, and it will come all right in the course of time. The less you bother with it the better.

7. Broken Bones Below the Knee or Below the Hock.

Symptoms.—There is crookedness of the leg, lameness and extreme pain. When you move the leg you can hear the bones grating on each other.

Treatment.—Place the patient in a quiet place, set the leg in shape, and have some one to hold it while you bandage it with a starched bandage—a long strip of cotton dipped in starch used for starching clothes. On drawing the bandage out of the starch draw it between your fingers to clean out as much of the starch as you can, then wrap it moderately tight around the leg. Put plenty of the bandage on, and have some one hold the leg and bandage straight for an hour or so until the starch hardens. After this the bandage will hold the leg to its place. Leave it on four or five weeks until the bones are healed. Keep the animal quiet until the bones are well knit together. If the leg should swell with this bandage take it off and put it on looser.

Fractures above the knee are sometimes treated by this method, but not nearly so successfully.

8. Stiffle Out in Cattle.

For this disease we refer you to dislocation of the patella (stiffle out) in horses, as the causes, symptoms and treatment are the same in both. This does not occur so often in cattle, as it does in horses.

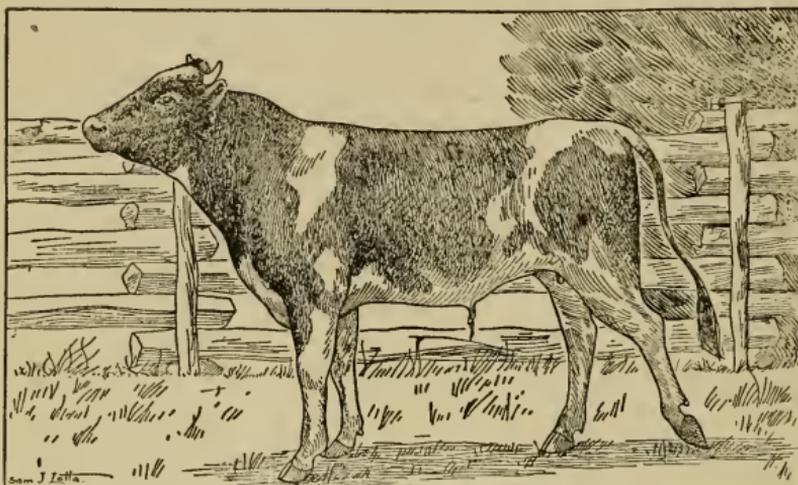


Fig. 67.—Position Assumed in Dislocation of the Stifle.

9. Fractures of the Bones Above and Below the Stiffle Joint.

The animal may not be able to stand, but if so the leg hangs loose. By moving the leg you can hear the broken bones grate on each other.

Treatment.—In very severe cases it is best to destroy the patient or use it for beef. If you attempt to treat it you will not be able to do more than keep the animal quiet, and leave it lying down or standing up, whichever it prefers.

10. Spavin.

This is generally met with in working oxen, or cows. There is lameness and an enlargement on the inner side of the lower part of the hock joint, similar to spavin in horses. Blister with the following:

Binioidide of Mercury	2 drams.
Powdered Cantharides or Spanish Fly.....	3 drams.
Vaseline or Lard	1½ ounces.

Mix thoroughly, clip off the hair on the inside of the hock over the enlargement and rub on half of this blister, rubbing it in well. Tie the animal short to prevent licking it. Grease

the blistered part the third day after blistering, let it go for a month, and then wash it off with warm water and soap. Repeat the blister until the animal is over the lameness, which generally takes three or four months.

II.—WOUNDS, SPRAINS, ETC.

11. Wounds Generally.

For wounds we refer you to Part II., as they happen in a similar manner and are treated the same. In sewing the skin of cattle you will find it tougher and a little harder to sew than that of the horse.

12. Air Under the Skin as the Result of a Wound.

Sometimes in a very small wound air gets under the skin into the tissue which connects the skin to the body. The amount of air varies greatly, sometimes only a small amount works in just around the wound, while again we have seen cases where so much air has worked in that it spreads all over the body, under the skin, making the animal look double its natural size. Rub the hand over the skin and it will make a peculiar crackling noise if air is present.

Treatment.—The main treatment is to tap the skin in several places with a penknife and let the air escape. Rub the skin to force all the air out, and after this give it a good rubbing once a day with white liniment. Treat the wound according to directions and in a few days the air will all disappear. This disease is sometimes met with in the horse and is treated in the same manner.

13. Maggots in Neglected Wounds.

Symptoms.—The wound smells bad, is dirty, and if you stir it, the maggots can be seen moving around in it.

Treatment.—Give the wound a thorough cleaning, by washing it out with lukewarm water and soap. Apply creolin lotion to destroy them. In very bad cases, if this does not effect a cure, give the wound a good dressing with spirits of turpentine, and afterward bathe twice a day and apply the creolin lotion.

14. Sprains Generally.

Causes.—Stepping crooked, fighting or being worried by dogs are the more general causes.

Symptoms.—There is heat, swelling, pain and stiffness, or lameness according to the part of the body affected.

Treatment.—Bathe the parts well with lukewarm water and vinegar three times a day; after bathing wipe dry and apply the white liniment. If the sprain is in a joint of the legs, bandaging each time after bathing helps to relieve the pain and support the joint.

15. Rheumatism.

This is a kind of inflammation that affects the joints and tendons.

Causes.—Bad blood containing too much acid, getting wet or lying on the damp ground in the spring of the year, will cause it.

Symptoms.—There is swelling and soreness in the joint affected. It may affect one joint for a while, then move to another, and so on.

Treatment.—Rub the affected joint well with acid liniment once a day and give the following:

Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.
Bicarbonate of Soda	$\frac{1}{4}$ pound.
Salicylic Acid	$\frac{1}{4}$ pound.

Mix and give a tablespoonful twice a day in the feed.

CHAPTER IX.

DISEASES OF THE SKIN.

1. Warts and Small Growths.

Some cattle are more subject to warts than others. If the warts have a neck the best way to get rid of them is by tying a small, strong string tightly around the wart, as close to the skin as possible. Leaving the string tied tight on it will stop the blood circulating in the wart and cause it to die and drop off. If the wart is flat and has no neck cut it off with a sharp knife and burn with a stick of caustic potash. Small lumps, or tumors, in the skin are very common in horses and cattle, but are easily got rid of. If a horse, put a twitch on his nose and have one of his front feet held up; if a cow, tie her up solid, cut a hole in the skin over the lump and skin around it, then lift it up and cut it off at the bottom. There is not much danger from bleeding so long as you do not cut into a large vein. For after treatment bathe with lukewarm water twice a day and apply the white lotion after bathing until it heals.

2. Lice.

They may be cattle lice or hen lice.

Symptoms.—Constant irritation and rubbing until the hair is off in places is an ever present symptom. The lice may be seen on close examination. Cattle affected with lice do not thrive well.

Treatment.—The treatment is very simple and cheap. Here is the most effective remedy known if properly used:

Creolin ½ ounce or 2 dessertspoonfuls.
Water 1 pint.

Mix, shake well and there is enough in this to go over a cow twice. Before applying give the animal a good brushing with a stiff brush, pour the wash into a flat dish where you can get at it, and with a brush or sponge, dipped in the wash, rub the animal all over. Do this twice a week until the lice are all killed. Twenty cents will buy enough creolin to kill the lice on twenty head of cattle.

3. Mange.

For this disease refer to mange in horses, as the causes, symptoms and treatment are the same.

4. Ringworm.

This is a common disease in young cattle and calves.

Causes.—It is the result of a parasite, or germ, getting into the skin and working around the bottom of the hair, causing it to fall out in round patches. This disease affects young cattle more than older ones, but may affect them at any age.

Treatment.—The cheapest and best remedy is crude petroleum oil painted over the spot a little over the edges of the ringworm, in the sound skin, to keep it from spreading. Paint with a feather every day, or every second day, until the ringworm disappears. Be careful in handling ringworms on cattle, as you are liable to become affected yourself.

5. Horn Fly.

These are also called Austrian flies. They are small, black, hard flies. They first appeared on this continent in the Eastern States in the year 1887, and since then have spread all over the country. They start to bother the cattle during the warm days of May and continue bothering them until the frost comes in the fall. These flies become very numerous. They pierce holes in the skin and suck the blood. While they are resting they light on the horns, and sometimes the base of the horn is literally covered with them.

Treatment.—Apply wagon grease, tar, or some oily substance around the base of the horn every few days to keep them from resting there. Wash the animal's body twice a week with creolin wash, which is very cheap and effectual.

Creolin 2 ounces or 8 dessertspoonfuls.
Water 1 gallon.

Mix, shake well and rub or spray them over twice a week, and it will keep the flies from bothering them.

3. Warbles.

This trouble is only found to affect cattle. It is caused by a large fly, called the gadfly, stinging the animal around the back. This fly lays an egg down in the skin each time it stings, which develops into what is known as the warble.

Symptoms.—Small lumps appear in the skin, principally over the animal's back and as spring approaches these lumps, which contain the grub, or warble, become pierced, and the grub gradually works out and falls on the ground. In a few days it matures into another gadfly which flies off to sting cattle again during the summer.

Treatment.—As soon as you notice the lump, cut the skin and squeeze the grub out. By killing the grubs in this way you will soon get rid of the pest.

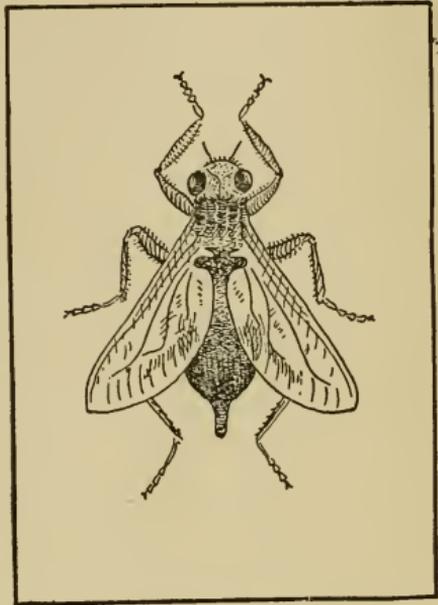


Fig. 68.—The Warble Fly.

7. Snake Bites.

The bite of some snakes is very poisonous and causes the animal to have great depression. It becomes very weak and feeble; the eyes are dull and the pupils enlarged; the ears and legs become cold, and in severe cases death soon comes if treatment is neglected. If you see the animal as soon as it is bitten cut the piece out and burn the wound with a hot iron to kill the poison. Give half-pint doses of whisky or brandy mixed in a pint of water every three or four hours to stimulate the animal and counteract the depression and weakness caused by the poison in the system.

8. Insect Bites.

After the bite, or sting, there is noticed a soft swelling, which is sore. Rub the parts with white liniment three or

four times a day; which will soon draw the poison out and take down the swelling.

9. Frost Bites.

Frost bites in cattle are treated the same as frost bites in horses.

10. Burns and Scalds.

Burns and scalds are treated by applying carbolic oil to the burnt or scalded part. Use four ounces of sweet oil with ten drops of carbolic acid in it. Put this on twice a day and it will stop the pain and heal the parts.

CHAPTER X.

DISEASES OF THE FEET.

1. Laminitis (Founder).

This is inflammation of the sensitive structures or what is commonly called the quick of the foot.

Causes.—Overfeeding, overheating, or driving a long distance on a hard, stony road may cause it.

Symptoms.—The animal persists in lying down. The feet are hot and sometimes swollen around the top of the hoof and sore to press on. There is much thirst because of being feverish, but little desire to eat much. If you force the animal to move it merely slides its feet along, seems very stiff and its belly is all drawn up from trying to favor its feet.

Treatment.—Keep the animal as quiet as possible, and poultice the feet with hot linseed meal and bran—about half-and-half. The way to do this is to take an old grain bag, cut about a foot off the bottom of it. Pack the hot poultice in this and place the foot in it. Tie it up around the fetlock and foot so that it cannot fall off. Do this to each foot and change the poultice twice a day. Keep this up until the animal gets all right. Give a pound and a half of Epsom salts in a quart of lukewarm water, and a teaspoonful of saltpetre, or nitrate of potash, in a mash night and morning. Sometimes, if the weather is warm, standing the animal in a stream of water with a mucky bottom, for a few hours every day, soon brings them all right without any other treatment.

2. Soreness From Any Cause.

Treat just the same as you would for founder, by poultices and keeping the animal quiet. If the toes are too long, cut them off with a chisel and mallet.

3. Foul in the Foot (Foot-Rot).

This is an inflammation of the skin and parts between the trotters or toes. After this ulcers or small boils form and break out all around the top of the foot and between the trotters. The foot becomes very much swollen in some cases and causes the trotters to spread wide apart. The animal

suffers great pain and can scarcely put the foot to the ground. If neglected it becomes very tedious and hard to treat. The hind feet are more often affected than the front ones.

Causes.—It is the result of something becoming wedged in between the trotters or toes, such as hard clay, manure or a piece of stick, bone or any such like substance. It is more often seen where cattle stand in a filthy place or have to walk through a dirty, soft yard.

Treatment.—As soon as noticed examine the foot and remove any substance found between the trotter or toes. Wash thoroughly with lukewarm water and soap, and apply a good warm poultice of linseed meal. Poultice every night and keep the animal in a nice dry place. After you take the poultice off in the morning and before you put it on at night give the foot a good dressing with the following:

Carbolic Acid	1 dram or 1 teaspoonful.
Water	1 pint.

Shake well together each time before using and apply as mentioned. When applying get it worked in between the trotters or toes as much as you can. Keep this treatment up until better. In very bad cases this takes a long time, but keep at it. Another very good wash to use in place of the carbolic water is

Creolin	½ ounce or 2 dessertspoonfuls.
Water	1 pint.

Mix and use the same as carbolic water. If one remedy should fail try the other. During treatment be sure and keep the animal quiet and in a dry place, and feed well to keep the strength up.

4. Fistula.

No matter what part of the foot is affected it is just the same. It is caused by a bruise or by something running into the foot and dirt getting up in the hole or by diseased bone.

Symptoms.—There is lameness and a discharge from a small hole which has no tendency to heal. If from a small piece of diseased bone the discharge smells very bad.

Treatment.—In all cases pare out the hoof or horn around the sore spot, so as to allow whatever is in it to have a chance to run out, then poultice until you draw out whatever is in

the hole causing the trouble. The best poultice for this is hot linseed meal. After you get it out, the hole will soon heal of its own accord.

5. Punctures—Nails, Etc.

This generally occurs where cattle are running around old buildings where boards with nails in them are lying about.

Symptoms.—There is severe lameness which comes on all of a sudden. The animal appears to be in great pain and can scarcely touch its foot to the ground.

Treatment.—Pull the nail out, pare out around the hole and poultice with hot linseed meal. Keep the animal quiet until the soreness is all out. Change the poultices twice a day. If it should fester pare down around the hole until the matter comes out and poultice well to draw it all out. Keep the animal quiet until the hole heals. After you stop poulticing stuff the hole with tar and cotton batting to keep the dirt from working up into it.

CHAPTER XI.

OPERATIONS—DEHORNING, ETC.

IN all operations it is imperative that hands, instruments—in fact everything used in the work should be CLEAN and well DISINFECTED.

1. Dehorning.

This is an operation which is carried on to a great extent in Canada and other countries, and is gaining the favor of stock owners rapidly. It is a very simple, although a painful operation while it lasts, and is, as a general thing, attended with very good results. While this is a painful operation so are all other operations, such as castration and docking, but as long as it is done with a view to benefitting the lives of the cattle themselves, and also their owner, it is not considered inhuman. It is best not to perform this operation on cattle under one year old, for the horns will often grow again, and before that time they never do much harm. The best time to dehorn is in the spring, during the months of March and April, so that the horns will be well healed up before flies come to bother them, or in the fall of the year, just after there has been frost enough to kill the flies. The operation is a simple one, and is performed in this way:

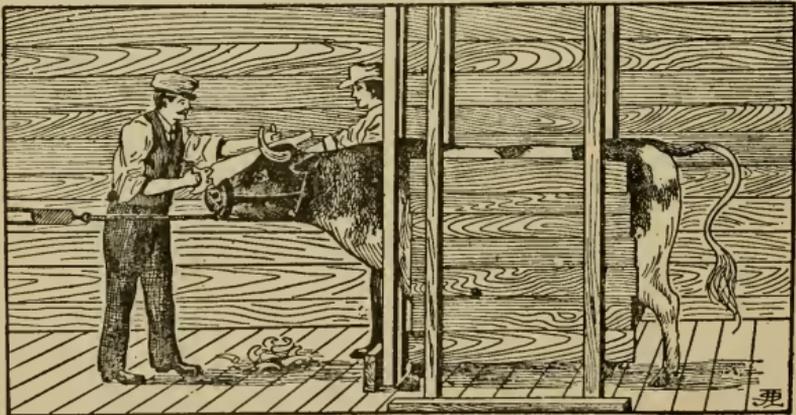


Fig. 69.—The Operation of Dehorning.

Build a stanchion, similar to the old way of tying cattle, in a solid doorway, or any other such place where you can

run the cattle into it, one at a time. Have the stanchion built very strong, also have the sticks in it quite tight together, just large enough for the animal's neck to fit in when it is closed. Have a narrow stall, built out of strong plank, at the side of the stanchion where you can run the cattle in; this will keep them from swinging the body around while you are dehorning them. When you have the animal fast in the stanchion put a rope halter over its head, and have the head and neck well pulled forward by means of a double pulley so as to get good purchase to hold the animal in its place while operating. Have the pulleys attached to something about eight or ten feet straight in front of the animal, and as near the ground as possible; this will hold the head in better position. Have a man take hold of the nose and ear at one side while you saw the horn off with a stiff-backed, fine-tooth carpenter saw, taking about one-eighth of an inch of skin off with the horn, then take off the other horn in like manner. By taking the horn off in this place it is easier sawed, bleeds less, heals nicer and there is no danger of it growing again.

This animal may now be allowed to go and preparation made for the next. When only a few are to be operated upon secure as shown in the accompanying illustration and take the horns off in the manner described.

Another method is by using large dehorning clippers*. These we recommend instead of the saw, as the operation with them is more humane and more easily and quickly performed.

When the animal reaches two or three years of age the horns become brittle, and in pinching them off with the clippers there is danger of fracturing the bones of the head.

Try to prevent as much as possible chasing or rough usage both before and after the operation, as bleeding is much more profuse when the subject operated upon is excited.

Should bleeding be profuse or more than seems to be usual, apply a little of Monsell's solution of iron with a feather, which will stop it. Keep the animal quiet and do not allow it to be out in any cold storms. Be careful when feeding not to throw dust or chaff on the head as it will get in the wounds and cause festering.

*See announcement in the latter pages of this book for prices of these instruments, method of using, etc.

The horns of calves may be killed or prevented from developing if operated upon when they are about a week old. When the little horn first appears dip a stick of caustic potash in water, rub it well into the skin about the point at which the horn is making its appearance. One burning in this manner is sufficient in most cases. If necessary, however, the burning may be repeated in a few days—a little heavier than before.

2. Bleeding.

Tie a small rope around the neck, just in front of the shoulders, so that it will raise the jugular vein, then take the largest blade of an ordinary fleame, hold it lengthwise, fair in the centre over the vein. Hit the fleame a sharp tap with a piece of hardwood, hit hard enough to cut the vein. Catch the blood in a pail. Take from four to eight quarts away. When you have enough blood drawn, let the rope slack, run a pin through the two edges of the cut and wind a string around the pin in the form of a figure eight and tie it there. Keep the animal in the stable, and feed from a high manger, for twenty-four hours, then remove the pin and allow the animal to go. In this operation, as in all others, have everything clean for fear of blood poisoning.

3. Drenching.

Always mix drenches for cattle in a large quantity of water. It has a tendency to wash out the paunch more quickly and has a better action.

While an assistant holds the horns take hold of the nose with the left hand; hold the head a little above the level and with the right hand place the neck of the bottle well back into the mouth and allow the contents to run down the throat. Do not remove the bottle until empty unless the animal coughs. Should this occur remove the bottle and allow the head to be lowered. After the fit of coughing has subsided continue as before.

Be careful, especially in lung diseases, as there is considerable danger of choking.

4. Spaying.

This operation is best performed in the spring of the year. It is carried on to a great extent through this continent, especially on ranches where cattle are raised for ship-

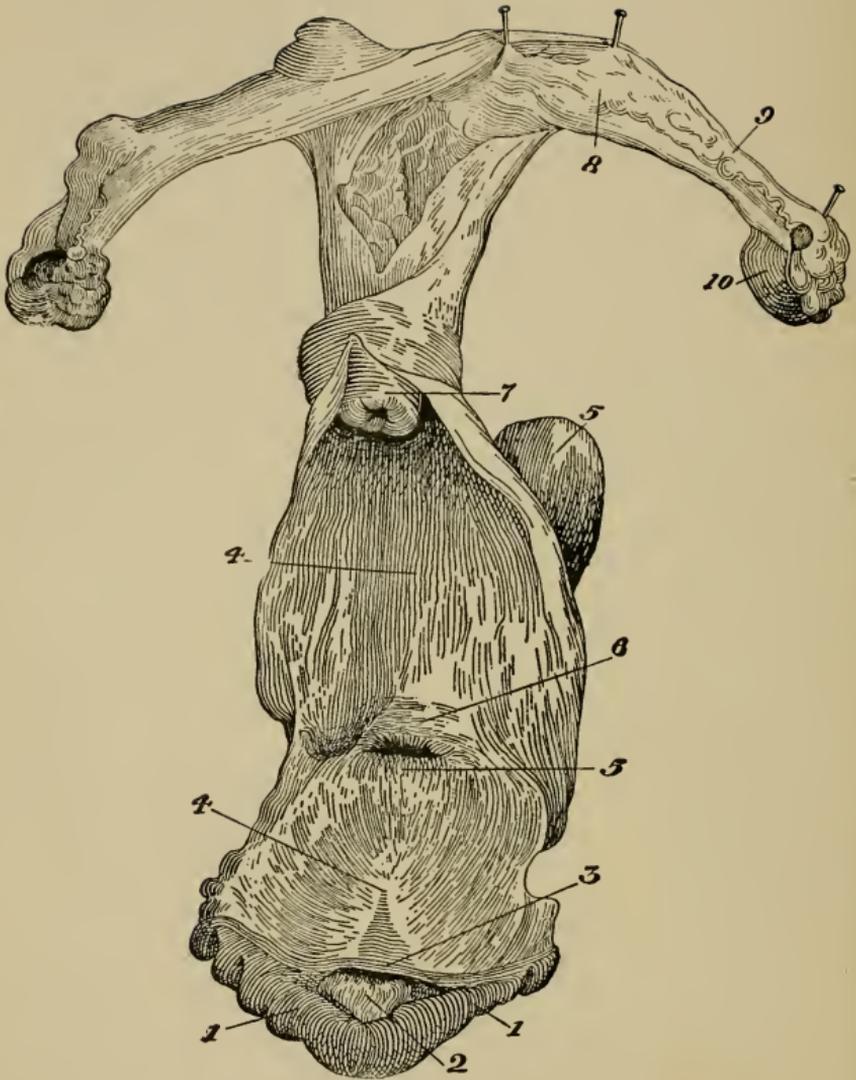


PLATE XV.—GENITAL ORGANS OF THE COW.

EXPLANATION OF PLATE XV.

GENITAL ORGANS OF THE COW.

1. 1. Lips of vulva.
2. Clitoris.
3. Prepuce or skin.
4. 4. Vagina laid open.
5. Bladder. z
5. Opening in vagina to bladder.
6. Valve of mucus membrane, protecting the opening to the bladder.
7. Neck of the uterus or womb.
8. Body of uterus open.
9. Right fallopian tube.
10. Ovary



ping purposes. Many claim that heifers do a great deal better after being spayed.

The operation may be performed upon an animal at any age, although the best time is when she is a year old. It should not be performed before this time nor during the period of or for a few months after pregnancy.

The best plan is to operate on the left side just above the stomach or paunch, as owing to the situation of the paunch there is less danger of the bowels protruding from the incision that must of necessity be made.

Prepare the heifers or cows by allowing nothing to eat for a few hours before commencing. This reduces to a minimum the danger of being hurt during the operation. When many are to be spayed build a stanchion having solid sides to prevent the subject from swinging round. Make provision also for tying securely to prevent movement during the operation.

Select a point on the left side about three or four inches downward and forward from the point of the hip. Begin at this point and make an incision downward and forward sufficiently large enough to admit the hand. Before inserting the hand take extra precaution to see that it is thoroughly clean and disinfected by being well oiled with carbolized oil. Pass the hand through the incision back until the bladder is reached. Just above the bladder is situated the broad ligament and the womb. Pass the fingers along the follopian tube until the left ovary is reached. Draw this out sufficiently far enough and remove it with a spaying emasculator. Proceed in exactly the same manner and remove the other ovary. Press the follopian tubes back to proper position. Sew up the incision with a couple of stitches and allow the animal to go.

The operation of spaying may seem to be somewhat complicated, but with a little practice becomes very simple. We advise those intending to perform it or to make a business of it to examine carefully the organs mentioned in our description. This may be done at any slaughter house while a heifer is being killed. Examine the bladder, womb, follopian tubes and ovaries and note the relative position of each.

5. Rumenotomy.

This operation is fully described in Chapter III., Section 10.

6. Castration of Bulls.

Secure him, either by standing him in a firm stall or throwing him down. This can be easily done by taking a rope about thirty feet long, make a loop in the centre large enough to slip over his head and neck and then tie a knot in it. After the rope is put over his head and fitted on the neck, pass it back between the front legs and bring the ends of it back one on each side and around the outside of the hind legs, and back around the inside just above the hock, then bring them forward on the outside of the front legs through the loops. Have a man on each side to pull on the ropes, which soon throws him down, then tie him up solid. This is the best method known for throwing cattle.

As soon as you have secured him, take a sharp knife and make a cut along the side of the bag large enough to let the testicle out. Be sure the cut extends to the bottom of the bag so that it will form a pocket. As soon as you have let the testicle out, draw it well up and you will notice a white covering attached to the back part. Cut this off close to the testicle with your knife, then you can pull up the testicle and cord free. Pull the testicle and cord well up, and if the bull is over a year old, tie the cord with a strong, fine piece of string about four inches above the testicle, leaving the ends of the string six or eight inches long so that they hang out of the bag and will not heal up in it. Leave this string on until it drops off itself. Cut the testicles off below the string, fill the holes full of salty butter and let him go.

The reason the string is tied on the cord when the animal is one year old and upwards is because there is danger of him bleeding to death. The operation of castrating a bull standing up is done by securing him in a solid, narrow stall and operating in the same manner as you would if he were lying down.

7. Castration of Calves.

Tie him or have some person hold him; make the cuts in the bag the same as for castrating bulls. When the testicle is out, separate the covering attached to the back part of the testicle with your knife, draw the cord and testicle well up.

and with your knife scrape up and down on the cord until it is scraped off. This prevents bleeding. Fill the holes full of salty butter and let him go.

The main thing after castrating bulls, bull calves, boars and dogs is to keep them away from dampness. If they swell, bathe with lukewarm water and soap and open up the cuts with salty butter on your finger. If it swells very much, bathe with lukewarm water and salt three times a day, and after bathing apply white lotion. Sometimes, a few weeks after the cuts are healed, the bag swells and becomes very sore and hot. In this case you may know there is matter forming in the bag. Bathe well three times a day with lukewarm water and after bathing apply white lotion and a hot poultice of half linseed meal and half bran. Fasten the poultice by means of strings over the back. This brings the festering to a head. Change the poultice every time you bathe the bag. As soon as you find a soft spot in the bag, lance it to let the matter out. Make a good sized hole, large enough to run your finger up to clean it out. After this, treat by bathing with lukewarm water and soap and applying the white lotion twice a day. Keep the cuts open by putting butter on your finger and running it up into the hole once a day until it commences to heal.

8. Rig or Original Bulls.

A rig or original bull is one in which one or both of the testicles never come down into the scrotum, or bag. These kind of bulls cannot be castrated like horses, and after they get a little age become a perfect nuisance.

Advice.—When you go to castrate a calf and find that only one or neither testicles are down, fatten and get rid of it, for it very rarely comes down afterwards. It will save you a lot of trouble if you get rid of it while young.

9. Ringing a Bull.

Secure the animal by throwing him, or having him in a solid, narrow stall. Take a piece of sharp-pointed, clean, hard wood, or a sharp piece of bright steel large enough to make a hole for the ring. Pierce the hole through in the soft part of the nose, just in front of the hard cartilage that separates the nostrils. After the hole is through, open and oil the ring, slip it through, close it and put in the screw. After the ring is in turn it every day until the wound is healed. These rings can be obtained at any hardware store

CHAPTER XII.

DISEASES OF THE NERVOUS SYSTEM.

1. Corn Stalk Disease.

Causes.—It is the result of eating corn stalks which have minute germs underneath the leaves. These germs are so small that you cannot see them without the aid of a microscope. Corn stalks that are affected with these germs do not grow so well, and ripen long before the other corn.

Symptoms.—There is at first symptoms of impaction of the third part of the stomach or many-plies, after which the brain becomes affected and the animal becomes delirious. This is followed by a sort of stupidity, the animal shoving its head forward against the stall and paying no attention to anything, followed in a few days by death.

Treatment.—Give the following:

Epsom Salts	1 pound.
Bitter Aloes	1 ounce.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	10 to 15 drops.

Mix in a quart of lukewarm water and give as a drench.

Follow with:

Fleming's Tincture of Aconite	10 to 15 drops.
Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a pint of water and give as a drench every four hours until better. Give lukewarm water to drink, feed soft food, keep the body warm, and if the animal's head is affected, keep ice to its head in a bag. Smut on corn is very bad feed, as it is apt to derange the stomach and cause diarrhœa, and if too much smut it sets up a disease similar to ergotism.

2. Inflammation of the Brain (Encephalitis).

This disease is not so often met with in cattle as it is in horses.

Causes.—A severe blow on the head, falling and striking the head, irritation from small tumors growing around the brain and pressing on it, certain kinds of food containing ergot or narcotic principles, or eating grains from a distillery will cause it.

Symptoms.—The first symptoms are dullness and drowsiness and the patient stands with its head pressed up against a wall or fence. Its legs continue moving as if it were going to walk directly through whatever its head is pressed against. When walking it has a staggering gait. The bowels are costive and the urine is of a dark-red color. After these symptoms pass off the animal gets delirious and acts as if it were mad, bellows, stamps its feet, grates its teeth, frothes at the mouth, runs about wildly, and, if in the stable, rears up into the manger.

Treatment.—In the first stages, when the animal is dull, bleed it, taking four quarts of blood away, and give

Epsom Salts	1 pound.
Bitter Aloes	1 ounce.
Ginger	1 dessertspoonful.
Bicarbonate of Soda	1 dessertspoonful.

Mix in a quart of lukewarm water and give as a drench. Keep the animal in a quiet, shady place. Apply a mustard plaster to the back, keep the body warm and apply ice to its head in a bag. Give

Sweet Spirits of Nitre.....	1 ounce or 4 dessertspoonfuls.
Fleming's Tincture of Aconite.....	10 to 15 drops.

Mix in a pint of cold water and give every five hours, until better. Give plenty of cold water to drink in small quantities and feed soft food. Give an injection into the anus of half a pail of lukewarm water and soap twice a day to assist the movement of the bowels.

3. Sunstroke.

This very rarely occurs in cattle. The causes, symptoms and treatment are the same as those of the horse, only in giving a physic use one pound of Epsom salts along with the bitter aloes.

4. Lockjaw (Tetanus).

This disease is rarely met with in cattle.

Causes.—It is usually met with following operations, or wounds of any kind, and sometimes it comes on from causes unknown.

Symptoms.—If from a wound just when it is healing the muscles all over the body are contracted and hard. The animal has a stiff way of walking. The tail is stiff and continues working like a snake. The jaws become partially set,

The animal cannot reach down to the ground. The eyes have a peculiar look and seem to be turned back in the head and set. In some cases the animal can eat, while in other cases it cannot, according to how much the muscles of the jaws are affected.

Treatment.—This is one of the diseases that does not require much medicine because giving the medicine excites and does more harm than good, and, anyway, medicine does not seem to do any good in this disease. Give the following:

Epsom Salts	1 pound.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.
Fluid Extract of Belladonna....	1 dram or 1 teaspoonful.

Mix in a quart of lukewarm water and give as a drench once a week. Keep the animal perfectly quiet and free from noise. Give food made into gruel, so that it can drink it down. If caused from a wound, bathe the wound twice a day and fill the opening with green salve. If possible poultice it every night with linseed meal. This disease generally takes three or four weeks to run its course, and if you can keep the animal's strength up till then it will pass away, while in severe cases they die in a week or so.

CHAPTER XIII.

CONTAGIOUS DISEASES.

CONTAGIOUS disease is one that may be transmitted from one animal to another. To use a common expression, it is "catching." Transmission from one animal to the other may be accomplished in three ways: (1) by coming on actual contact, thus allowing the disease germ to pass from the one to the other, (2) by coming in contact with some object carrying germs because of being in contact with the diseased animal, or (3) by breathing or remaining in the air containing germs of disease.

1. Contagious Pleuro-Pneumonia.

This, as the name suggests, is an inflammation of the lungs and their covering—the pleura. It was formerly more common than at present.

It was first noticed in Prussia in 1802, Russia in 1824, England in 1841, and America in 1843. It is a very contagious disease in cattle, but never affects other animals. If an animal once gets over this disease it will never get it again. When there is an outbreak it spreads very rapidly, by the germs of the disease being carried about in different ways.

Symptoms.—The first symptom is fever. The temperature goes as high as 105 degrees. The animal will remain feverish for a week or so, and also have a cough, as if from a slight cold. After this there is inflammation of the lungs and their covering. By listening at the sides you will hear the peculiar grating sound that is heard in inflammation of these parts. The animal breathes heavy and quick, falls off rapidly in condition, refuses to eat, becomes hide bound, and there is a discharge from the nostrils of a whitish color, which has a very bad smell. The pulse runs up higher and becomes weaker; the nose is dry, and the animal lies on its breast bone most of the time. Sometimes there is diarrhœa, then costiveness. The eyes become dull and the animal soon dies. When one animal in a herd becomes affected with this disease the whole herd will soon become affected and die, and if it is not checked soon spreads all over the country.

Treatment.—If there should be several animals die in the same district, and you suspect this disease, send for one of the government veterinary inspectors, who looks after all contagious diseases. The treatment he will follow, after he is sure of this disease, is:—He will have the affected herd immediately destroyed, and the people who have been attending the cattle and those who are on the farm will not be allowed to leave the farm for ninety days. All the stables where the cattle have been will be disinfected and no other cattle will be allowed on the farm for ninety days after the slaughter. Medical treatment is of no avail in this disease, and you are not allowed to treat them.

2. Foot and Mouth Disease (Epizootic Aphtha).

This disease while only recently encountered in America is quite common in European countries. The skin, mouth, feet and udder are the organs mostly affected. It cannot be

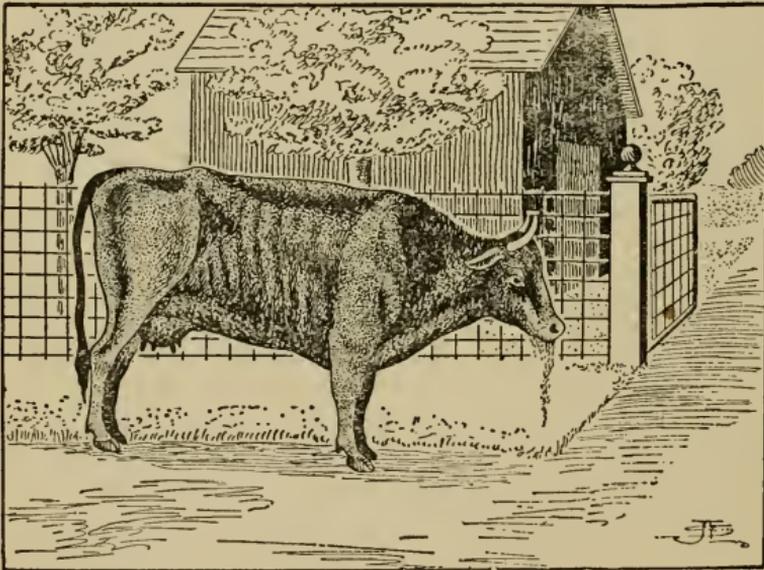


Fig. 70.—Foot and Mouth Disease.

looked upon as extremely fatal, although immense loss is occasioned by loss in flesh and the depreciation in the amount of milk fit for use.

Causes.—Contagion is accomplished principally through the discharge from the mouth, although this is apparently not the only way in which the disease is transmitted. Large

numbers of cattle of the same community are frequently affected before the disease can be got under control.

Symptoms.—A rough, staring coat is the first indication of the presence of this disease. There are spells of shivering and a hot, dry condition of the mouth and muzzle. The pulse and temperature rise while the mouth, lips, tongue, teats and udder are sore, red and swollen. About the second or third day small pustules which have formed break and discharge; saliva dribbles from the mouth as the tongue is kept moving about in the mouth. These symptoms are accompanied by uneasiness, stiffness, soreness and inclination to lie down.

Severe cases have been known when the hoofs even dropped off.

Treatment.—The disease runs its course in about fifteen days and in the generality of cases good care is sufficient to bring the patient through safely. The diet should be of soft food with plenty of pure, clean water to drink. Put a teaspoonful of saltpetre in the food or drinking water three times a day. This has a tendency to reduce the fever. Much attention must be given to the feet. If very sore poultice with hot linseed, change twice a day for a few days, after which use the following lotion:

Sugar of Lead	1 ounce.
Carbolic Acid	2 drams.
Laudanum	1 ounce.
Water	1 pint.

Mix, shake well and apply to the feet three times a day. Should there be much separation apply tar and bandage.

During this treatment no exercise should be allowed, and should there be extreme weakness give two ounces of whisky or brandy mixed in a pint of oatmeal gruel three times a day.

3. Consumption (Tuberculosis).

This disease is a contagious one, caused by germs called the bacillus tuberculosis. It has been known for centuries and there has been laws passed calling for the destruction of affected animals, and also forbidding the meat to be used as food. It is known in all the civilized world. It may affect the lungs, bowels, liver, kidneys, bladder, brain or spinal cord, or any other part of the body. The germs in the affected cattle come away from the lungs by coughing, or flows away in the saliva from the affected animal's mouth, fall on the grass, in mangers, pails and such like, and other animals fol-

lowing them up may take the germs into the lungs by eating or drinking out of the same pail or manger, or off the grass where the diseased cattle have been. In this manner the disease is communicated from one to the other. These germs may also pass out of the system into the milk, and animals or people that drink the milk are liable to take the disease. The danger of having a diseased cow around is therefore apparent.

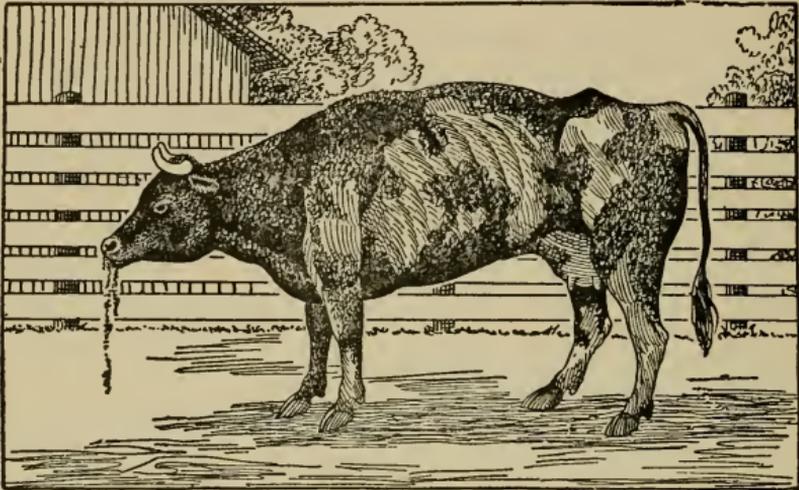


Fig. 71.—Appearance of Consumption.

Symptoms.—At first the disease comes on very slowly after the germs are taken into the system. If affecting the lungs there is a short, dull cough which may be noticed more in the morning, after exercise, or drinking. Later on the cough becomes more troublesome, the animal runs down in condition, the breath has a bad smell, there is a dribbling of saliva from the mouth, the animal becomes hide bound, the hair stands out and it is a pitiful looking sight. In a few months the patient pines away and dies. The time it takes the disease to run its course varies from three months to a year.

It is noticed more in thoroughbred than in grade cattle. If affecting the bowels the animal runs down in condition, has diarrhœa sometimes, then costiveness, changing every few days. The other symptoms are the same, only when not affecting the lungs there is not such a cough.

If affecting the brain or spinal cord it causes paralysis, and death soon follows. If any of the other parts or organs of the body are affected it causes symptoms peculiar to that organ, and the animal slowly pines away and dies.

To find out whether cattle are affected with tuberculosis use the tuberculine test.

The Tuberculine Test.—A day previous to applying the test take the temperature. If normal this should be from 99° to 101° . Keep those to be tested in a shed or stable free from drafts, feed regularly and do not allow large drinks of cold water at a time. Fifty minims of tuberculine is a dose for an ordinary sized cow; this, however, must be regulated to the size of the animal. See that the tuberculine is fresh and kept in a cool place.

Choose a point on the neck. Wash the skin at this point perfectly clean with warm water and soap. With a hypodermic syringe—thoroughly cleaned and disinfected—inject fifty minims (drops) of tuberculine under the skin. Following the injection take the temperature three times—at the end of the ninth, the twelfth, and the fifteenth hours.

Should the temperature gradually rise to 104° or higher it may be concluded that the animal is suffering from tuberculosis.

Should the temperature rise only to a point less than 103° the conclusion is that the animal is not tuberculous.

On the other hand, if the temperature rises to a point between 103° and 104° the case is considered doubtful and the test should be repeated.

As soon as it is known that the disease exists the animal should be destroyed in order to prevent others from becoming affected. Not only this, but the disease may be communicated from cattle to man through the milk or by eating the meat.

When opening cattle the organ that is affected will be found to be eaten away with the disease, and its place is taken by a lot of small lumps inclosed in a membrane. If you cut into them they are found to be full of other little cheesy lumps about the size of a pea. In very bad cases tumors will sometimes form and be full of yellow matter.

4. Hydrophobia, Madness or Rabies.

This disease originates spontaneously in dogs and cats and can be communicated to other animals or man by the

poison caused from the bites of these animals while they are mad. The saliva of the mouth contains the poison and this is how it is caused from a bite. Every animal that they bite does not go mad, but about one-fourth of the animals bitten do.

Symptoms.—A few days after being bitten the animal loses its appetite, is very restless and anxious looking; then there is increased restlessness, loud roaring at times, bunting at things and pawing with the feet. Saliva drips from the mouth and there is a peculiar wild look in the eyes. The animal continually strains to pass manure, but very little comes, and in a short time becomes paralyzed in the hind quarters, falls down and death soon relieves it. If the above symptoms are present, and a mad dog has been through that section of the country, you may as well destroy the animal, as it is dangerous to have around.

Treatment.—If the disease has set in, destroy the animal, and in going around it be very careful not to let it hook or bite you. If treating the animal just after it has been bitten by a mad dog, take a sharp knife and cut a piece right out of the wound, then take a stick of caustic potash, or nitrate of silver, and burn the wound well with it. If you have not got these, burn the wound well with a red hot iron, which will also kill the poison.

5. Lumpy Jaw (Actinomycosis).

This disease is contagious and spreads among cattle. It is caused by germs known as "actinomycosis," generally affecting the upper or lower jaws, but may affect the tongue and other parts of the body. It is communicated from one animal to another by the affected animals slavering on the grass or over feed and other animals taking it up when eating or drinking. These germs pass down into the bowels, where they are taken up into the blood and carried around until they locate in the jaw. They may also be taken into the system from the slaver getting into the wound on another animal. It is thought that this disease may be carried to and affect man by eating the flesh of an animal affected with it.

Symptoms.—If it affects the jaw there will be a hard, bony lump form opposite the roots of the teeth, either in the upper or lower jaws. It gradually works in the jaw, the lump grows, and in the course of time becoming so bad that the teeth loosen and fall out. The animal cannot eat, falls

off in condition and dies. If the tongue, it is generally the thick part at the back that is affected. It thickens and hardens the tongue so much that it sometimes receives the name of

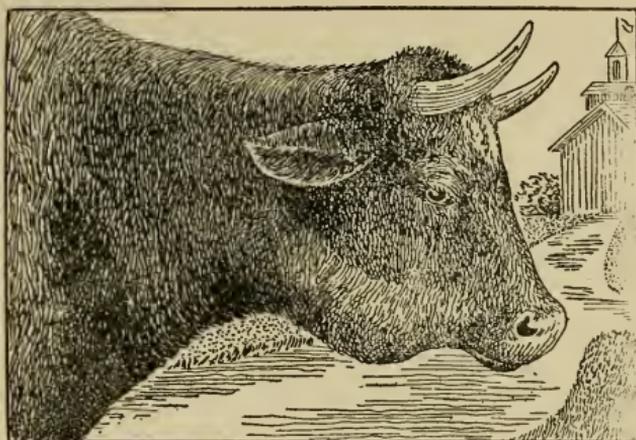


Fig. 72.—Lump-jaw.

wooden tongue. In this case the animal falls off in condition, because of not being able to eat, and soon dies.

Treatment.—If more than one animal in a herd becomes affected and after examining the teeth you find nothing wrong with them and you cannot see the mark of any injury outside around the jaws, and if they are not sore to handle, then be suspicious of this disease. Separate the affected animals from the sound ones and treat as follows:

Give a full grown animal two drams of iodide of potassium, night and morning, on the tongue with a spoon or in the drinking water. Continue this treatment until there is a watery discharge from the eyes and the skin takes on a scurfy appearance. When this takes place discontinue for a few days—six or seven—then repeat until the same conditions reappear. In severe cases it is necessary to repeat four or even five times. In the majority of cases it is necessary in addition to this to blister the lump once a month with iodine ointment during treatment.

Should this fail it is best to destroy the animal and burn the carcass, as there is danger of communicating the disease to others of the herd. The meat should not be eaten, as there is grave danger of communicating the disease to those who eat it.

6. Anthrax.

This is an infectious disease caused by germs, called the anthrax bacilli, getting into the blood. It affects cattle in all parts of the world, and is only noticed in cattle that are grazing on low, swampy land containing pools of stagnant water. When once the disease gets into a pasture field it will remain there for years, and the only way to get rid of it is to break the field up and drain it.

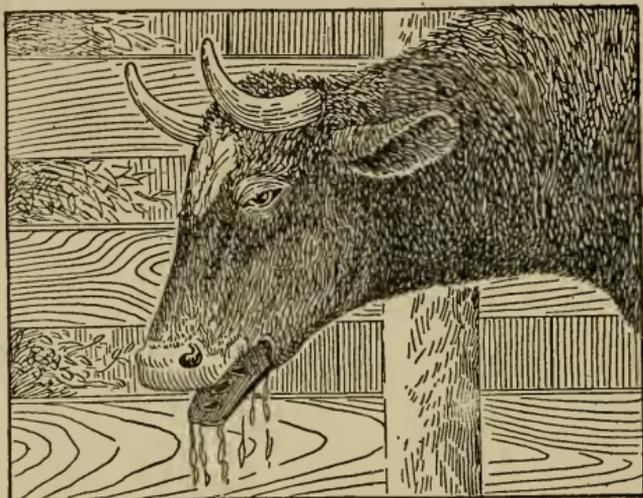


Fig. 73.—A Cow Suffering from Anthrax.

Symptoms.—It more frequently affects young cattle than older ones. The attack is very sudden, and an animal apparently well the night before may be found dead in the morning. In some cases as soon as the animal is affected it drops down, goes into convulsions and dies. In other cases it lasts longer, the pulse runs up to from 80 to 100 beats per minute. The animal will not eat, the whole surface of the body, legs and ears are cold, and it is very dull, stupid and weak. In a short time this dullness gives way to uneasiness. It champs, kicks and paws the ground and appears to be in terrible agony. There is very much difficulty in breathing, the nostrils are enlarged and the mouth open. The lining of the mouth, nostrils, rectum or back bowel and vagina are of a blue color, the manure is first thin and watery looking, then covered with slime and blood. Symptoms gradually get worse, and in a few hours it dies a miserable death.

The germs are taken into the system from eating grass around a swanip or drinking the water from stagnant pools. They find their way from the bowels into the blood, and work around until they locate themselves in the bowels or tissues under the skin. When an animal dies from this disease it bloats up, decomposition setting in very quickly, and there is a blood-stained fluid flows from the mouth, nose and anus. If you have had an animal or two die while pasturing on this kind of land, and showing the above symptoms and appearance after death, send for the government veterinary inspector; he will examine the blood, and if the germs are found you will then be sure of anthrax. Burn the carcasses of the dead cattle and remove the sound ones from the pasture. Drain the field and break it up. This is the best way to get rid of the germs. Sheep are also subject to this disease and present the same symptoms.

Treatment.—There is no effectual treatment, but we recommend vaccination with carbon or anthrax vaccine* as a preventative.

7. Black Quarter.

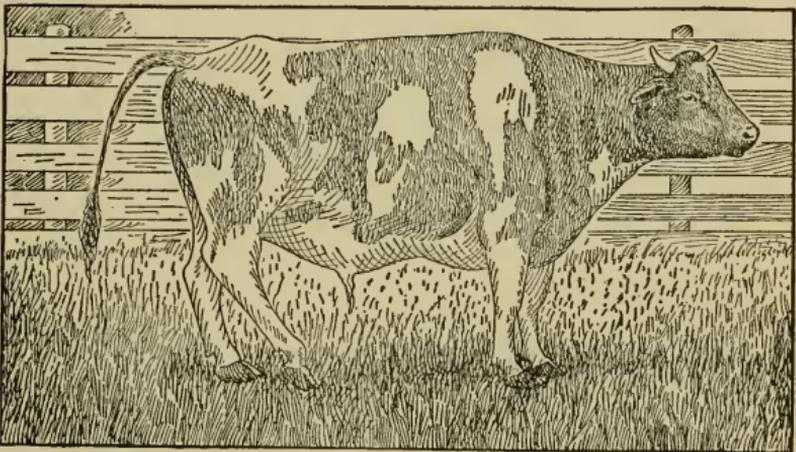


Fig. 74.—Black Quarter.

Black Quarter is extremely infectious and very fatal, appearing more frequently in cattle from six months to three

*Carbon or anthrax vaccine may be obtained from the company whose announcement appears on the latter pages of this book. Full directions are also supplied.

years of age. It, too, is the result of a germ. Cattle grazing on low-lying lands are more liable to be affected.

Symptoms.—About three days after the germs get into the system the animal becomes dull and feverish, the temperature rises as high as 107 degrees and there is lameness in some of the legs, generally in one of the front ones. This is caused from a swelling which usually forms just behind the front leg, but may be in any other part of the body. The symptoms gradually get worse. The animal acts as if it had severe spells of colic, but continues looking around to where the swelling is, breathes heavy, becomes very weak and soon dies. The swelling grows very fast, and when you rub your hand over it, makes a crackling noise as if it contained air. If you cut into the swelling the animal does not feel it, and nothing discharges except a dark red, frothy looking substance, which has a bad smell. If you skin the animal where the swelling is, there are dark brown, dark red and yellow colored patches, and the parts around where the swelling is are soft and easily torn.

Treatment.—There is no treatment for this disease, only to remove the sound animals, destroy and burn the affected ones, and drain and break up the pasture. We recommend the use of black leg vaccine* as a preventative, full directions for the use of which appear on the package.

8. Texas Fever.

This disease affects cattle all through the southern parts of the states, and is caused by germs getting into the blood. These are carried from one animal to another by cattle ticks.

Symptoms.—At first there is dullness, loss of appetite, and the patient leaves the herd and stands or lies down alone. The temperature at this stage is from 105 to 107 degrees, and remains so or nearly so all through the disease. The bowels are constipated, and anything passed is covered with bile. Near the end of the disease the urine or water is of a dark red color. The pulse and breathing are both quickened. The animal becomes very stupid, lies down most of the time, and in a few days death relieves it. In some cases they die in three days, while in others they live for several weeks, and if **an animal does recover it takes it a long time to do so.**

*As to procuring Black Leg Vaccine, see announcement.

Treatment.—In order to keep the disease from spreading do not allow cattle that have these ticks on them to go into other herds. Cattle affected should be put on a pasture by themselves, and the ticks should be picked off and killed. Give the following: Fifteen grains of sulphate of quinine three times a day, either in a drench mixed with a pint of water, in a capsule or on its tongue with a spoon.

CHAPTER XIV.

DISEASES THAT ARE LIABLE TO AFFECT ANY ANIMAL.

1. Tumors.

Tumors are growths which are not inflamed nor sore to handle. They are of various kinds, do not fester and break nor discharge matter as abscesses do, but simply grow. They may affect any part of the body in any kind of animal. In some cases, however, there is a small amount of matter in the center of the lump. Tumors, as a general thing, grow very slowly, and are very hard.

Treatment.—At first they may be stopped growing and absorbed by blistering.

For Tumors on Cattle.—Use the following blister:

Powdered Cantharides or Spanish Fly.....2½ drams.
Vaseline or Lard1 ounce.

Mix and rub in well all you can get on the tumor. Tie the animal's head so that it cannot bite the blister. Grease the blistered part in three days, and in two weeks blister again. Continue until you have blistered it three or four times, and then if this does not stop the growth of the lump or reduce it, it is best to cut it out.

Tincture of iodine is also good to use in some cases. Rub the lump well with it once a day till well blistered, then grease and let it go for a few days, after which wash the grease off with lukewarm water and soap and commence using the iodine again.

For Tumors on Horses.—Use the following blister:

4 Powdered Cantharides or Spanish Fly.....1½ drams.
Vaseline or Lard1 ounce.

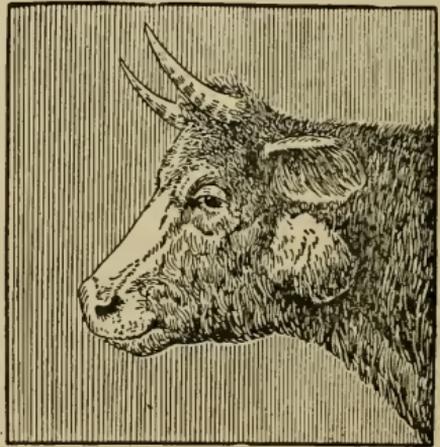


Fig. 75.—Showing the Appearance of a Tumor.

Mix and apply according to directions as given for the blister on cattle. If this does not fix it try the iodine the same as for cattle. Should an operation be necessary dissolve six grains of cocaine in a half ounce of pure water. Inject this with a hypodermic syringe well down into the tumor fifteen minutes before commencing. This deadens the pain and facilitates matters during the operation.

Throw the animal and secure him. Make a long cut in the skin over the tumor and cut around it until you have it cut out. After the tumor is out and the wound is bleeding, take a large piece of dry cotton batting about the size of the tumor and shove it into the opening, then sew up the skin similar to sewing a wound. Leave it sewed up for twenty-four hours; then take a couple of stitches out of the lower part of the wound, take the batting out and dress it by bathing with lukewarm water and soap twice a day. After each bathing dress the wound by inserting melted green salve with a feather up into it and applying white lotion around the outside and inside of the cut. Continue this treatment until healed. If the tumor lies near a large vein such as the jugular vein, and you cannot cut it out, continue blistering it, and if this does not help it, paint the lump over with tincture of iodine every day the same as above mentioned. This treatment may be followed for tumors either in the horse or in cattle.

2. Cancer.

Cancers are angry looking growths generally, affecting cattle, sheep and dogs, and sometimes horses, around the head and neck. They may affect other animals in any part of the body.

Symptoms.—At the first appearance of the cancer—before it gets into the blood—it does not injure the health, but after the cancer once is settled in the blood the animal falls off in condition. The growth develops very rapidly, and the least irritation causes it to bleed. In some cases it gradually eats the surrounding tissue until it causes death. If near a bone it gradually works into it, and when the bone becomes affected there is a very bad smell. When the disease has arrived at this stage it is called bone cancer.

Treatment.—In the first stages of the disease cut it out clear and clean. This sometimes prevents its spreading. It

is best to throw the animal and secure it before attempting to cut the cancer out. As soon as this is done burn the wound well with a red-hot iron, bathe it twice a day with lukewarm water and apply the green salve and white lotion after each bathing. If, at any time afterwards, there should appear to be a red spot growing, tie the animal up and give the spot another good burning with the red-hot iron, and keep this treatment up until it is healed.

In some cases when the disease has run on too long before cutting it out, or after it is cut out, it grows again worse than at first, or where it has been entirely neglected and allowed to run on so long that the bones become affected and smell bad, destroy the animal and burn the carcass, as it is not fit for beef and would be very apt to communicate cancer to anyone eating the meat.

3. Abscesses.

Abscesses are of two kinds, (a) serous, and (b) festered.

(a) *A Serous Abscess* is merely a bruise containing water or serum.

Causes.—It is the result of a bruise and is usually found in the vicinity of the shoulders or under the breast. Any part of the body, however, may be affected.

Symptoms.—About twenty-four hours after the bruise there is a swelling varying in size from an egg to that of a man's head. When you press on it you can tell there is fluid in it, and on opening it you will find it to be watery looking and mixed with blood.

Treatment.—Cut a hole in the bottom part of the lump large enough in which to run your finger. Clean all the fluid out, then bathe the part well with lukewarm water and salt, and insert melted green salve up into the lump through the hole with a feather twice a day. Run your finger into the hole once a day to keep it open until it heals inside. Each time after bathing rub the outside of the swelling with white liniment to assist in removing the thickening and keeping the swelling down.

(b) *Festered Abscesses* are those that contain matter.

Causes.—Distemper, bruises, or a cut healing over some substance left in it which afterwards festers may give rise to a festered abscess.

Symptoms.—Abscesses differ from tumors, as they fester and form matter, are hot and sore to handle, cause the animal to be feverish and in pain, and after a time come to a head and either break or require to be lanced.

Treatment.—Bathe well with hot water and salt, or vinegar, twice a day. If very sore poultice once in a while to help to bring it to a head. Each time after bathing apply white liniment around the swelling. This also helps to bring it to a head. When the abscess is ready to open there is a soft point on it where the hair is falling off and pulls out easily. With a sharp penknife or lance make a cut in it large enough to admit the finger and clean all the matter out. Treat with green salve, bathing and applying white liniment the same as is given in the treatment of serous abscesses.

4. Running Sore (Fistula).

A running sore, or fistula, may form in any animal or in any part of the body.

Causes.—It is usually the result of improper or neglectful treatment of a wound which heals over foreign matter which ought to have been removed before the healing took place. It is also caused from diseased bone, or a small piece of broken bone, which causes continual festering.

Treatment.—In all cases where it has been a wound that is healed up and turned to a running sore, you may come to the conclusion that there is something at the bottom of the wound that is causing the trouble. If in a place at which you can operate without throwing the animal down, by twitching it, do so (this can generally be done in the horse), but if not, throw the patient and secure it. Insert a probe into the hole to see which way it goes and the depth of it. With a sharp knife cut a hole large enough to admit the finger, cut the hole to the bottom of the wound and clean out whatever there is in it. Treat the wound by bathing with warm water twice a day. After bathing each time put melted green salve up into the hole and apply white lotion in and around the cut. Continue this treatment until healed. If caused by a diseased or fractured bone, cut down similarly and take the piece of bone out. If the bone is diseased, scrape it out well with a hard steel spoon, and then treat the wound as before,

5. Struck by Lightning.

The shock is instantaneous, and affects the brain and nerves. If heavy enough it causes immediate death, but if it is not severe enough to cause death it leaves the animal prostrate, unconscious and paralyzed.

Symptoms.—When not killed the animal falls paralyzed and unconscious, the muscles relax, are soft and flabby. In some cases there is twitching of the muscles, breathing hard and slower than natural. In most cases there are spots of hair singed from the body.

Treatment.—Dash cold water on the head, rub the body and legs well to get the circulation up and apply a thin mustard plaster on the back of the head and sides of the neck. Blanket the animal well to keep the body warm, and keep the head cold by applying cold cloths. As soon as strong enough to swallow, if a cow or horse, give half a pint of whisky in a pint of warm water; if a sheep, dog, or pig, give a wineglassful of whisky in half a pint of warm water. Pour the drench down slowly so as not to choke the animal. Give a drench every hour, and turn it over from side to side every once in a while, and attend to its general comfort until better. After the shock has passed off, if the animal seems to be paralyzed give a cow or horse a teaspoonful of powdered nux vomica twice a day on the tongue with a spoon, or in its feed as a nerve stimulant. Give a sheep, dog, or pig one-quarter of a teaspoonful of powdered nux vomica twice a day until strengthened.

Indications of Being Struck by Lightning.—The finding of an animal (previously healthy) dead after a thunderstorm is sufficient to cause suspicion that death was due to lightning. Should this be the case an examination of the body discloses the facts, (1) that the muscles are flabby, (2) that the limbs may be easily moved from one position to another, and (3) in some cases that the hair is scorched in spots about the body.

6. Ergotism.

This disease is most often seen in cattle, and shows itself mostly in the winter and spring of the year.

*Ergot also affects rye and other grain and usually such grains or grasses as grow on low, rich land during damp, hot seasons. The effect is similar in principle to that of smut.

Causes.—Eating ergotized grass, which is nothing more than diseased grass, is the cause. The diseased grass is cut and stored in the usual way, when not eaten in the field, and fed during the winter.

Symptoms.—After cattle have eaten it and it gets into the blood it has such a peculiar contracting action on the heart, arteries and other vessels that it weakens the circulation of the blood so much that in some cases it stops it entirely in the legs, ears and tail, and as soon as circulation in these parts stop they die, rot and drop off. Later on in the disease the brain becomes affected and the animal goes into convulsions and dies.

Treatment.—Change the food entirely, bathe the affected parts with lukewarm water twice a day, rub dry and apply white lotion after bathing. Give the following powder:

Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.
Ground Gentian Root	$\frac{1}{4}$ pound.
Sulphate of Iron	$\frac{1}{4}$ pound.

Mix and give a teaspoonful three times a day to a horse or cow; to smaller animals give one-half of the above dose.

CHAPTER XV.

MISCELLANEOUS INFORMATION.

1. The Pulse.

The pulse of a cow when in normal condition beats forty-eight times per minute. It is then said to be *normal*, that is, natural.

The pulse is usually taken or counted on the small artery crossing the lower side of the under jaw about the centre—the same position as that of the horse. It is more difficult to take the pulse of a cow because of the looseness of the skin, but with a little practice it can be felt quite easily. Over one hundred beats per minute indicates a serious condition.

2. Temperature.

The temperature of the ox as well as that of the horse is a very important factor in determining the extent of any disease with which the animal may be afflicted.

The temperature when in a healthy, natural condition ranges from 99° to 101°. It is then said to be *normal*. Should it rise above or fall below this point it is said to be *abnormal*. An ox is considered to be in a very dangerous condition should the temperature rise above 107°.

The most convenient method of determining the temperature is to place a clinical thermometer in the rectum. In from three to five minutes the temperature is accurately registered.

3. Respiration.

From ten to fifteen breaths per minute is taken by the ox when in a healthy, natural condition and at perfect rest. This may be easily ascertained by noticing the heaving of the chest. Respiration, like the temperature and pulse, is affected by disease.

4. Diseases of the Heart, Arteries and Blood.

These diseases in cattle are so similar to those of the horse that we refer the student to Part II. The pages of contents or index will direct to the proper disease.

5. Feeding Apples to Cows.

We do not wonder that there is strong prejudice against allowing cows, and especially milk cows, to eat apples. For the most part it is well grounded. While it is possible to give a milking cow a few ripe apples without drying up her milk perceptibly, that is not the kind of apples she usually gets. If the cow is in an orchard where apples are falling, she runs every time she hears one drop and eats it greedily, however wormy, sour, green or bitter it may be. All apples have some malic acid in them, even including those that we call "sweet." This malic acid, together with the tannin that is found in the apple peel, and especially in green, small apples, contracts the cow's stomach. If she eats much of such fruit, it gives her the colic just as surely as it does the small boy. The cow's stomach wasn't made to digest such stuff, and so sure as it is put into her stomach there are riot and rebellion. Everyone knows that giving vinegar to cows and rubbing her udder with vinegar will dry her off.

6. Barrenness in Cows and Bulls.

This is a common thing in well-bred cows, especially in Jerseys.

Causes.—Being kept in too high condition, a diseased state of the ovaries, a contracted or diseased state of the neck of the womb, or the womb being deformed, such as the neck being twisted to one side may be the cause. One or other of twin heifers is often barren. Bulls or cows that are too closely inbred in the same line of breeding for several generations may become barren, or what is known as "run out." It is also caused in bulls from fatty degeneration of the testicles—mostly seen in old bulls. Rig bulls (that is, those in which only one or neither of the testicles are down in the scrotum) are sometimes barren. This rule also holds good in horses.

Treatment.—If caused by a cow being in high condition, bleed her; take a half pail of blood away the day before taking her to the bull, or give her a physic of one and a half pounds of Epsom salts in a quart of lukewarm water as a drench. The idea of this is to cool her blood. Examine her, and if from contraction of the neck of the womb, pass your hand up gently and open by working your fingers in it. If from the neck of the womb being to one side, straighten it. In doing this have your hand and arm oiled. In either of

these cases put the cow to the bull immediately after fixing it. If from inbreeding, try and start her to breed by putting her to a mongrel-bred bull.

Little can be done for a barren bull. We, however, highly recommend an impregnator, directions for the use of which are given with the instrument. See announcement.

7. What Constitutes a Dose.

All the doses mentioned in Part III. if not specially mentioned to the contrary, are intended for an average sized cow, steer or bull under ordinary conditions. Consequently in prescribing for calves or young cattle it is necessary to regulate the dose according to the age, size and condition of the animal.

Calves under one year should be given about *one-third* of the dose indicated as an average dose for a cow, steer or bull under ordinary conditions.

Two-year-olds should be given *one-half* of the dose indicated.

Three-year-olds and those older may be considered to require the *average* dose.

Cattle above the average size, such as large bulls, cows, or steers, may be given a *little more* than the average.

PART FOUR





FIG. 76—THE SHEEP AS FOUND IN THE ROCKIES IN THE WILD STATE.

PART IV.

DISEASES AND TREATMENT OF SHEEP AND PIGS.

SHEEP.

SHEEP belong to that class of animals called Ruminants—those that chew their cud. The act known as Ruminantion is fully described in Part III.

The skeleton of the sheep is built on the same principle as that of the ox. It is much smaller, but the bones, joints, etc., are so similar that it is unnecessary to present them here.

The skin differs from that of the ox in the matter of being covered with wool instead of hair. It also contains many small glands for the secretion of oil with which to lubricate and soften the wool.

CHAPTER I.

DISEASES OF THE HEAD.

1. Cold in the Head (Simple Catarrh).

This is a very common affection among sheep. It is an inflamed condition of the lining of the nose and cavities of the head.

Causes.—It is noticed to be more prevalent during washing and shearing time because of the extra exposure to dampness because of washing and to winds because of shearing. Exposure to cold winds or rains at any time, especially in spring or fall, will cause it.

Symptoms.—There is a discharge from the nose, and the affected sheep snuffles, sneezes and coughs. It does not feed well and seems very dull.

Treatment.—The treatment is very simple in most cases. Keep the sheep dry, warm and clean. This often effects a cure in a few days without any medicine. If the disease does not pass off, give

Nitrate of Potash or Saltpetre.....	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root	¼ pound.

Mix thoroughly and give a teaspoonful twice a day on the tongue with a spoon, in the feed or as a drench. Feed hot mashes, and take special care to see that it does not get wet, as the disease may settle on the lungs. If the discharge from the head becomes clogged around the nose wash it off with warm water and soap.

Should this treatment not effect a cure change to half a teaspoonful of ground sulphate of iron three times a day in the feed or on the tongue with a spoon.

2. Caps on the Teeth.

Causes.—Sometimes when shedding the teeth the caps do not fall off but remain upon the new teeth. This may happen to one or more of the grinders, and causes difficulty in eating.

Symptoms.—There is a desire to eat but actions indicate the impossibility to chew the food properly. Food is taken

into the mouth, chewed for a time but then thrown out again. There is loss of flesh without any apparent indication of sickness. If watched closely it will be seen that the tongue is frequently worked about in the mouth.

Treatment.—Should these symptoms be shown, make a thorough examination of the mouth. The capped tooth can be easily detected, as it projects upward higher than the others. Remove the cap with a pair of pincers. No other treatment is necessary.

3. Foreign Substances Lodging in Any Part of the Mouth.

Causes.—It frequently happens that a small splinter of wood, a nail or other foreign substance finds its way into the mouth with the food. In chewing the food this may be caused to wedge between the teeth or penetrate the gums or some other part of the mouth.

Symptoms.—There is a noticeable difficulty in eating, in fact so much inconvenience is caused that it is impossible to masticate the food. The action of the mouth indicates an attempt to expel the obstruction.

Treatment.—The only thing to do when these symptoms are shown is to make a thorough examination and remove it with the fingers, if possible, or if necessary, a pair of pincers.

4. Old Sheep Losing Their Teeth.

Sometimes an old ewe that has lost some of her teeth becomes with lamb. You desire to keep her over another year, although she only has two or three front teeth, which interfere greatly with her eating, and consequently runs down and gets so poor that you think she will not pull through.

Treatment.—Catch her, pull out the remaining front teeth and let her "gum it." As soon as the gums heal she will do well and be able to eat, and will be good for a year or so. The reason she did not do well was because all the food she could get to eat was merely what she could catch with the few stubs of teeth that remained in her mouth. When they are pulled out she can take the food in all right with her gums and chew it with her back teeth, which are generally all right at this age.

5. Grub in the Head.

This is a common disease in some localities, especially if the sheep are pasturing on low-lying swampy lands where there are pools of stagnant water.

Causes.—The disease is transmitted in the following manner: An affected sheep dies and is allowed to remain exposed until eaten by dogs. These in passing across the fields leave their droppings, containing the grub, so that the grass is contaminated by them. They are then taken into the stomach with the grass, after which they find their way into the blood and are by it carried to the brain, where they settle in the centre as near the upper side as possible.

Symptoms.—The symptoms are very peculiar. The sheep holds its head to one side and a little higher than natural, continuing in this manner for a few days—acting very strangely. As the symptoms become more violent there are spells during which actions resemble those of an animal that is blind—plunging into a ditch or running against a fence, wall, or any other obstacle that may chance to be in the way, followed by falling down in a fit of jerking, lasting for a minute or so, after which the symptoms disappear, only to return again in the course of half an hour or so.

In other cases when one side is affected the animal runs round in a circle.

The symptoms as outlined gradually become more violent and frequent, and unless relieved, death follows in the course of a few weeks.

Treatment.—As soon as first noticed give

Spirits of Turpentine $\frac{1}{4}$ ounce or 1 dessertspoonful.

Raw Linseed Oil $\frac{1}{2}$ teacupful.

Mix and give as a drench every second or third day for a week or so. This will kill the grub, which gradually absorbs, and the sheep soon recovers.

During treatment keep the patient in a small field and free from danger of injury when rushing about. Examine the head daily and endeavor to locate a soft spot on the top of the head. Press the bone firmly and as soon as found cut away the skin from over it to about the size of a 25-cent piece. Cut the diseased bone, being careful not to touch the brain. Raise the piece of soft bone out and leave it out. This soft piece of bone, being over where the grub is, will at once give the sheep relief, as the grub will bulge up in the hole and

take the pressure off the brain. Do not attempt to remove the grub, as nature will remove it in a few days itself. The only thing to be done after the bone is cut out is to keep the sheep in a cool place where flies will not bother it and cause maggots. Should this happen, wash the wound clean with lukewarm water and soap, then apply the white lotion with a few drops of carbolic acid in it once or twice a day and it will be all right. The hole in the bone will soon heal over.

A sheep dying of grub in the head should be buried deep, so that dogs cannot get at the carcass and thus cause others to become infected. Never, in any case, pour spirits of turpentine in the nostrils, as it will do no good, is cruel, and sometimes kills the sheep itself. Always give the turpentine as above mentioned.

6. Sore Eyes.

Causes.—Sore eyes are caused by foreign matter—chaff, dust, etc., injury of some kind or catching cold.

Symptoms.—The eye is partly closed and water runs from the corner; it is red, very sore, and inflamed, and may have a scum over it.

Treatment.—Examine closely for foreign substances and remove any that may be detected. To relieve the soreness and arrest the inflammation, bathe twice a day with new milk or warm water, and then apply the eye wash in and around the eye. Keep this treatment up until the natural condition of the eye has been restored.

CHAPTER II.

DISEASES OF THE DIGESTIVE ORGANS.

1. Sore Throat.

Causes.—The causes are similar to those of catarrh, only the throat being the weaker part, the disease settles there instead of elsewhere.

Symptoms.—There is swelling and soreness around the throat, and the animal holds its head and neck poked out. When it coughs it seems to try to save itself all it can. The animal is dull, eats very little, and when drinking the water runs out through the nose.

Treatment.—Give

Nitrate of Potash or Saltpetre.....	$\frac{1}{4}$ pound.
Sulphur	$\frac{1}{4}$ pound.
Powdered Alum	$\frac{1}{8}$ pound.

Mix thoroughly and give a small teaspoonful on the tongue with a spoon three times a day. As well as giving

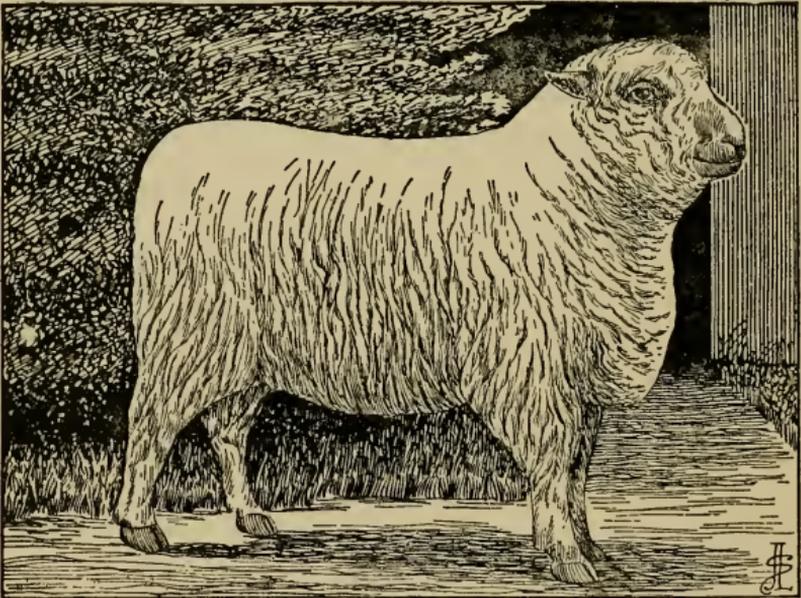


Fig. 77.—Shropshire Breed.

the powder rub the throat three times a day with white liniment. Feed soft food raised high, so it will not have to bend

its head over to eat. Give all the cold water it wants to drink in small quantities at a time; also take good care of it, not allowing it to get wet or cold, and it will soon get all right.

2. Choking.

Causes.—This is not nearly so common in sheep as it is in cattle, but sometimes it occurs when they are fed on sliced roots.

Symptoms.—The choking sheep stops eating at once, froths at the mouth, coughs and continues to work the tongue about in the mouth. These symptoms are frequently attended with bloating and blood-shot eyes.

Treatment.—Pour down a little raw linseed oil as a drench. In some cases this will start whatever is lodged in the throat and causing the trouble. Feel along the bottom of the neck, and if you can find the obstruction try to work it up or down with your hands, but be sure you do not mistake the larynx or Adam's apple for the lump. If this treatment fails, get a probang that is used for choking in cattle and pass it down in the same way as is explained for choking in cattle, being very careful in passing it down, as the sheep is a more tender animal than the cow. Oil the probang well before passing it down.

3. Bloating (Tympantitis).

This disease affects the first part of the stomach—the paunch.

Causes.—A change of food, a feed of wet clover or grain, chilling the stomach with a large drink of cold water or eating frozen roots or grass may account for it.

Symptoms.—There is considerable uneasiness, a frequent change of position—up and then down. The breathing is heavy, accompanied by considerable moaning. The left side is bloated and tapping on this side makes a hollow, drumlike sound, showing that there is gas present.

When tapping a sheep to ascertain the presence of gas, be sure to separate the wool and tap the points of the fingers on the skin.

Treatment.—The treatment must be prompt. Give

Epsom Salts	¼ pound.
Sweet Spirits of Nitre.....	½ ounce or 2 dessertspoonfuls.
Bicarbonate of Soda.....	1 teaspoonful.
Ginger	1 teaspoonful.

Dissolve in a pint of lukewarm water and give as a drench. If this does not give relief in one hour, give:

Raw Linseed Oil1 teacupful.
Spirits of Turpentine.....¼ ounce or 1 dessertspoonful.

Mix and give as a drench. If this does not give relief in two hours, follow with:

Sweet Spirits of Nitre... ..½ ounce or 2 dessertspoonfuls.
Bicarbonate of Soda1 teaspoonful.
Ginger1 teaspoonful.

Mix in a half pint of lukewarm water and give as a drench every two hours until it gets relief.

In very urgent cases when the life of the sheep is endangered it may be necessary to resort to tapping. This operation is performed as follows: Select a point half way between the point of the hip and the last rib, about three inches down from the backbone. Clip the wool from this spot, making a bare space about the size of your hand. Cut a small hole in the skin just large enough to admit the entrance of the trocar and cannula—that used for tapping cattle will do. When the instrument has been disinfected and oiled press it through the incision, downward and inward until it enters the paunch. While the cannula is held in position pull out the trocar. The gas immediately escapes through the hole thus formed, and saves the sheep's life by so doing. When the gas has escaped remove the cannula and allow the incision to heal.

Should a trocar and cannula not be on hand use a pen-knife to make an opening and allow the gas to escape.

4. Impaction of the First Part of the Stomach.

The stomach of a ruminant is fully described in Part III. Notice that the first division merely acts as a sort of store-house for food hurriedly taken into the stomach to be afterward fully masticated. In a young ruminant this division of the stomach is comparatively small, but develops as the animal leaves its milk diet for ordinary food. It frequently happens that the food taken into this division becomes hardened and packed into a sort of mass to such an extent that it does not pass to the next division to be prepared by being rolled into balls and forced again to the mouth for re-mastication.

Causes.—Feeding upon such food as the sheep has not been accustomed to get—grain, etc., being turned upon a

good pasture after being upon a poor one may cause impaction of the paunch. Certain kinds of food, such as a poor quality of peas, straw or clover hay, especially if musty or over ripe, may bring about the same condition.

Symptoms.—The appetite is gone and there is an absence of chewing the cud. The appearance is dull and the teeth are grated together. The breathing is short, accompanied by short, quick grunts as a result of pressure upon the lungs from the quantity of food in the paunch. There is a general sort of stupidity in the actions and little passage from the bowels, and that which does come through is hard and dry.

Pressure upon the left side over the stomach indicates that it is hard and tapping upon it causes a dull, heavy sound, indicating that the first part of the stomach is impacted with food.

Treatment.—Give

- Epsom Salts ¼ pound.
- Ginger 1 teaspoonful.
- Bicarbonate of Soda 1 teaspoonful.
- Sweet Spirits of Nitre.... ½ ounce or 2 dessertspoonfuls.

Mix in a pint of lukewarm water and give as a drench, then wait for twenty-four hours to see if this dose will physic and clean out the stomach. If it does not physic in that time, give:

- Raw Linseed Oil ½ pint.
- Spirits of Turpentine..... ¼ ounce or 1 dessertspoonful.

Mix and give as a drench. After the physic operates, to strengthen the animal, give:

- Whisky 1 wineglassful.
- Ginger 1 teaspoonful.
- Bicarbonate of Soda 1 teaspoonful.
- Oatmeal Gruel ½ pint.

Mix and give as a drench three times a day until the sheep gets strong.

5. Colic.

This is cramps of the bowels.

Causes.—Eating frozen grass or roots, taking a cold drink of water, or eating anything that disagrees with the bowels will cause it.

Symptoms.—The sheep lies down, moans, strikes its feet up against its belly, jumps up and seems quite easy for a few

minutes, when the pain comes on again. This is the only disease in which these symptoms are shown.

Treatment.—Relieve the spasms by giving

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Ginger 1 teaspoonful.
 Bicarbonate of Soda 1 teaspoonful.

Mix in a half pint of lukewarm water and give as a drench every hour until the animal gets relief. In some cases, after you give a few doses and it does not get relief, try this drench:

Raw Linseed Oil $\frac{1}{2}$ pint.
 Spirits of Turpentine..... $\frac{1}{4}$ ounce or 1 dessertspoonful.

Mix and give as a drench and this will sometimes give immediate relief.

6. Inflammation of the Bowels.

This is a common disease in young sheep.

Causes.—Eating a lot of snow, eating dirty pea straw, or a severe chill caused by being out in a cold rain and getting the wool very wet may cause it.

Symptoms.—The pain is severe. The patient changes position frequently—lies down, stands up, and then lies down again—while standing, paws first with one foot then the other. The legs and ears are cold. Pressure upon the belly causes pain and moaning.

Inflammation differs from colic in this particular, that the pain is continuous, there being no easy periods as in colic.

Treatment.—As soon as these symptoms are noticed give

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Fleming's Tincture of Aconite.....3 drops.

Mix in a half pint of raw linseed oil and give as a drench. Turn the sheep on its back and rub in one-quarter of a pound of mustard (wet with vinegar) on its belly where the wool is short. If it is a ram be careful that you do not get any of the mustard around the point of the sheath, as it will cause the sheath to be sore and irritate him. Grease where you blistered, keep it very dry, and in a comfortable, warm place. Give the following drench every hour after the first one until the sheep gets relief:

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Fleming's Tincture of Aconite3 drops.

Mix in a half pint of lukewarm water and give as a drench.

7. Tape Worm.

Tapeworm usually affects young sheep, but may affect old ones. The disease is generally seen in sheep that are pasturing on low, rich pasture fields, where dogs that are affected with tapeworm often run across and leave their droppings, as this is the way the disease is carried, and spreads from one flock to the other. When one sheep becomes affected with tapeworm, the worm grows rapidly until it assumes the length of from ten to fifty feet. It is made up of flat joints about half an inch long. After the tapeworm gets large, frequently these joints become broken off and pass away with the manure. The joint is alive when it comes away and remains alive and crawls about on the grass. Very often another sheep comes along and picks it up, and as soon as it reaches the bowels it begins to grow and forms a new tapeworm.

Symptoms.—There is loss of flesh and a peculiar dull appearance of the eyes. The appetite is good but the food eaten seems to be of little good as the nourishment is absorbed by the worm.

As soon as these symptoms are noticed watch the droppings carefully for joints of the tapeworm. These are flat and about half an inch in length. The finding of these of course is sure proof of the disease. Tapeworm is dangerous and should be treated promptly.

Treatment.—Separate the diseased sheep from those that do not show the symptoms and put them in a stable, not allowing them to eat anything for twelve hours. At the end of this time they are ready for treatment. Give the following:

Oil of Male Shield Fern.....1 dram or 1 teaspoonful.
Raw Linseed Oil½ teacupful.

Mix and give as a drench to each of the affected sheep. After this drench feed them light, keeping them in the stable so that you can watch their droppings. Should this work upon the bowels as it usually does, a sort of bunch of worm often as large as the two hands comes away.

Should the medicine not act in this manner allow the patient no food for another twelve hours and repeat the dose. If a large sheep, give a teaspoonful and a half of the oil of male shield fern. Keep this treatment up until the worm

has passed away. Watch the other sheep to see if any of them become affected. The dose for a small lamb is:

Oil of Male Shield Fern..... $\frac{1}{2}$ dram or $\frac{1}{2}$ teaspoonful.
Raw Linseed Oil $\frac{1}{4}$ teacupful.

NOTE.—This disease affects sheep and lambs far more than stockowners have any idea of. Often these pieces of white, flat worm are seen coming away with the manure, without considering the danger the flock of sheep are exposed to. They allow it to run on, not treated, until a few lambs or sheep die, then treatment is given to the balance after. This unnecessary loss has been sustained, consequently the importance of watching closely as soon as indications of its presence are apparent. A trifling cost and a little trouble often saves heavy loss among a large flock.

8. Fluke Disease.

This is an affection of the liver and is commonly met with in England, more so than in America, being oftener found to affect cattle than sheep.

Cause, symptoms and treatment are similar to those of cattle, for which see Part III.

9. Diarrhoea.

This disease does not occur so often in sheep as it does in cattle.

Causes.—A very cold drink when the animal is dry, a sudden change in the feed, or eating anything that is frozen or very green, will sometimes cause it.

Symptoms.—The sheep is dull, will not eat much, and passes a thin, watery manure often. The hind legs and tail are wet and dirty looking.

Treatment.—Give:

Castor Oil $\frac{1}{2}$ teacupful.
Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
Ginger1 teaspoonful.
Bicarbonate of Soda1 teaspoonful.

Mix in a half teacupful of lukewarm water and give as a drench, then follow up with:

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
Bicarbonate of Soda1 teaspoonful.
Ginger1 teaspoonful.

Mix in a half pint of lukewarm water and give as a drench every three hours until the diarrhoea stops. In very

bad cases add one-quarter ounce, or one dessertspoonful of tincture of catechu in each drench and this makes a sure cure. Give lukewarm water to drink with dry flour dusted in it to make a sort of thin gruel.

For special treatment of lambs see Chap. VIII, Sect. 3.

CHAPTER III.

DISEASES PECULIAR TO RAMS.

1. Inflammation of the Testicles.

This is caused by an injury of some kind, such as the bunt of another sheep or a kick of some kind.

Symptoms.—It is very painful. The ram walks stiff. The bag is swollen and sore to handle. He eats little and lies down most of the time to relieve the testicles as much as possible. If the inflammation is allowed to run on the bag and testicles become blackened and mortified. It passes up the cords of the testicles into the belly and soon kills the ram.

Treatment.—As soon as the trouble is noticed, separate him from the rest of the flock. Keep him in a quiet, cool place and poultice the bag with a hot poultice of half linseed meal and half bran. Change the poultice every three hours, and each time while changing the poultice bathe the bag with hot vinegar for a while before applying the next poultice. If the ram is fat give the following:

Epsom Salts¼ pound.
Laudanum½ ounce or 2 dessertspoonfuls.

Mix in half a pint of lukewarm water and give as a drench. Should the bag fester it is necessary to lance it. Press lightly upon it to ascertain a soft spot. When this condition is present it is fit to be lanced. Open at this point and allow the matter to discharge. Poultice until all the matter has escaped, but as soon as the inflammation has subsided poultice but half of the time.

2. Castration.

Throw the ram and have him held or tied securely.

With a sharp knife make an incision lengthwise on the bag and sufficiently low to prevent the formation of a pocket after the operation and sufficiently large to admit the testicle. Pull the testicle through the opening thus made three or four inches and tie a strong string tightly round the spermatic cord to prevent bleeding. Leave the ends of the string to hang four or five inches from the knot so that when let go they hang from the bag. In a few days they rot off and fall

from it. Cut the cord half an inch from the knot and between it and the testicle. Operate similarly on the other. All that is now necessary is to fill the holes with salt butter and the operation is done.

Should the bag swell bathe it and the cuts with salt butter and lukewarm water. Saturate the fingers with the butter and open up the cuts.

To prevent complications it is absolutely necessary to keep the patient dry and prevent exposure to rain.

The castration of lambs is performed in a similar manner. It is not, however, necessary to tie the cord. Cut this with a sharp pair of scissors. This method prevents bleeding and is better than tying. Fill the incisions in a similar manner and if swelling should occur follow the same treatment as outlined for treatment of rams.

CHAPTER IV.

DISEASES OF THE LUNGS.

1. Bronchitis.

This is inflammation of the lining of the bronchial tubes.

Causes.—Being chased by a dog, inhaling smoke and getting wet are the principal causes of bronchitis in sheep.

Symptoms.—The affected sheep is dull, breathes heavily and quickly. The ears lop over, and, like the ox, it lies down most of the time while suffering with lung trouble. If you listen at the bottom of the windpipe a wheezing noise will be heard.

Treatment.—Keep the animal very quiet in an airy place and give the following:

Sweet Spirits of Nitre.... $\frac{1}{4}$ ounce or 1 dessertspoonful.
Fleming's Tincture of Aconite.....3 drops.

Mix in a teacupful of lukewarm water and pour this down as a drench. In drenching do not raise the head too high, and be very careful not to choke the animal. If the sheep wishes to drink give cold water in small quantities and small, hot mashes and grass or hay to eat. Give the sheep the above drench three times a day for a day or so until it gets relief. If very weak change the drenches to something more stimulating.

Whisky1 wine glassful.
Ginger1 teaspoonful.

Mix in a half pint of oatmeal gruel and pour down very carefully. Give this three times a day until it gets strong and be sure to keep it warm and dry, and allow plenty of fresh air without being in a draft.

2. Filaria Bronchitis.

Causes.—Small germs getting in the system and settling in the lining of the bronchial tubes cause inflammation. It is not very common, but sometimes there is an outbreak of it where sheep are pasturing on low-lying pasture. As a general thing, if one of the flock is affected nearly all the herd show symptoms of the disease in a short time.

Symptoms.—There is a dry husky cough and a falling off in condition. Heavy breathing is caused by the slightest exertion. A wheezing noise may be heard by placing the ear to the neck at the bottom of the windpipe. The appetite is gone and there is no tendency to chew the cud. These symptoms are accompanied by a constant desire to lie down.

It is reasonable to conclude that sheep pasturing on low land and showing these symptoms are suffering from *Filaria Bronchitis*.

Treatment.—Turpentine has a special action from the fact that it passes practically unchanged into the blood and by it is circulated to all organs of the body, where it has a tendency to kill any germs of disease. Give:

Spirits of Turpentine¼ ounce or 1 dessertspoonful.

Raw Linseed Oil½ teacupful.

Mix and give as a drench every third day until the disease disappears.

The inhaling of the fumes of burning sulphur is another good treatment. Drive the affected sheep in an enclosure of some kind, preferably the sheep pen. Place some sulphur in a pan and throw upon it a few hot coals. Remain with the sheep, and when the air has become so saturated as to make it uncomfortable allow the sheep to go. This is a sure method of ascertaining the safe extent to which the sheep may be allowed to inhale the fumes, otherwise there may be danger of an overdose. Repeat this treatment twice a week.

3. Inflammation of the Lungs and Its Covering.

Causes.—This generally comes after sore throat, especially if the patient has been allowed to catch cold. In the majority of cases it is the result of exposure to cold, more especially if the physical condition be in a weak state, as after some other disease—lambing or such.

Symptoms.—There is constant desire to lie down. The ears lop over and the breathing is heavy. The legs and ears are cold and the appetite is gone. There is no desire to chew the cud, but on the other hand the thirst is extreme, there being a tendency to drink greedily. A cough is present at times. Separate the wool over the lungs and place the ear close to the side—a peculiar grating sound may be heard. There is apparently some distress as evidenced by moaning. There is rapid loss of flesh which is followed in nine or ten days by death should relief not come.

Treatment.—Put the sheep in a dry, warm, well ventilated box-stall or stable. If shorn cover the body well with blankets, but if not merely keep dry. Give the following medicine:

Sweet Spirits of Nitre..... $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Ginger1 teaspoonful.
 Fleming's Tincture of Aconite.....3 drops.

Mix in a half pint of water and give as a drench three times a day, being careful not to lift its head too high and choke it. Give plenty of time for the animal to swallow. In a day or so, when better, but weak, give the following as a stimulant:

Whisky1 wine glassful.
 Ginger1 teaspoonful.
 Oatmeal Gruel $\frac{1}{2}$ pint.

Mix and give as a drench three times a day until completely recovered and the appetite is regained.

During treatment give cold water in small quantities but often. If mashes containing flaxseed will be eaten feed them, but if not, feed any other grain that will be eaten.

CHAPTER V.

DISEASES OF THE FEET AND SKIN

1. Foot Rot.

In some parts of the country this is a very common disease. It resembles foul in the foot in cattle.

Causes.—Foot rot is the result of irritation from various causes, among which may be mentioned the splitting of long toes, continual dampness, as when pasturing on low, wet land or being compelled to do a great deal of tramping through dirty, muddy yards.

It is frequently of an infectious nature, being transmitted from one to the other by coming in contact with the discharge from infected feet.

Symptoms.—There is stiffness and lameness and as the disease develops little boils form about the top of the hoof. These break and discharge, at which time the lameness becomes extreme. Finally, if allowed to continue to develop, the hoofs loosen and fall off and the patient dies of exhaustion.

Treatment.—Endeavor to ascertain the cause and remove it, as that condition giving rise to the disease in one member of the flock is likely to cause it to develop in another.

Separate the affected sheep from the sound ones and put the affected ones in a quiet, dry place. If caused by being in a wet place, remove the sound ones to a dry field. Catch the affected sheep, lay them on their sides, and bathe the feet well with luke-warm water and soap, cleaning all the dirt from between the trotters. As soon as you have bathed the feet, poultice them with a hot poultice of half linseed meal and half bran. Leave the poultice on all night, and poultice every night until the sheep is better. Each time before putting on the poultice, and after taking it off, dress the foot with white lotion containing a few drops of carbolic acid. If this does not affect a cure, try the following mixture:

Sweet Oil	4 ounces.
Carbolic Acid .....	.20 drops.

Apply this the same as the lotion before putting on the poultice and after taking it off.

2. Scab.

This disease somewhat resembles mange in horses. It is very serious in some countries, but is not at all common in Canada or United States.

Causes.—It is a contagious disease, being transmitted through the germ or parasites. These multiply extremely fast and do great injury to the skin, at the same time causing severe irritation. There are three classes, namely:

Scoroptes, which burrow into the tissues of the skin;

Dermatodectes, which attach themselves unto the skin—those more frequently encountered in this country—and

Symbiotes, found mostly to attack the feet.

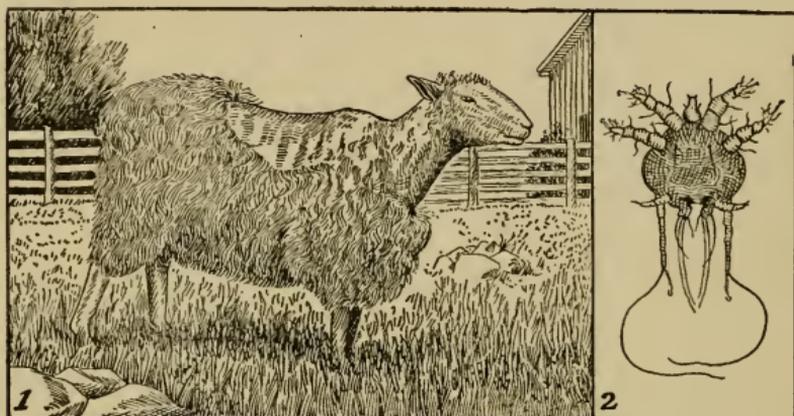


Fig. 79.—1. Showing the Effect of Scab. 2. The Scab Parasite—Magnified.

Symptoms.—There is extreme irritation as evidenced by the continual scratching. The germ may be seen clearly with a good microscope and soon spreads until every member of a flock becomes infected. The wool soon begins to fall out because of the ravages of the germ about the roots and the extreme uneasiness soon causes loss of flesh and a general debilitated condition.

Be careful in handling infected sheep, as there is a possibility that you may yourself become infected.

Treatment.—Clip the wool off in order to allow free access to the skin for the application of medicine. A very cheap and effective remedy is creolin water, made by adding two teaspoonfuls of creolin to a pint of rain water. Shake well and rub in all over the body with a brush. Do this every second day until the disease stops and the wool starts

to grow. If this should fail, there are regular sheep dips for this disease which can be bought at drug stores. It is done up in a package and contains the full directions for using.

As soon as the disease is detected every precaution should be taken to prevent its spreading. Isolate all members of the flock infected and thoroughly clean and disinfect the stables or buildings in which they have been kept. Close the doors and disinfect by burning sulphur.

Falling Out of the Wool.

Causes.—Feeding hot food, such as pea or wheat meal, and keeping them in a place that is too hot may be the cause.

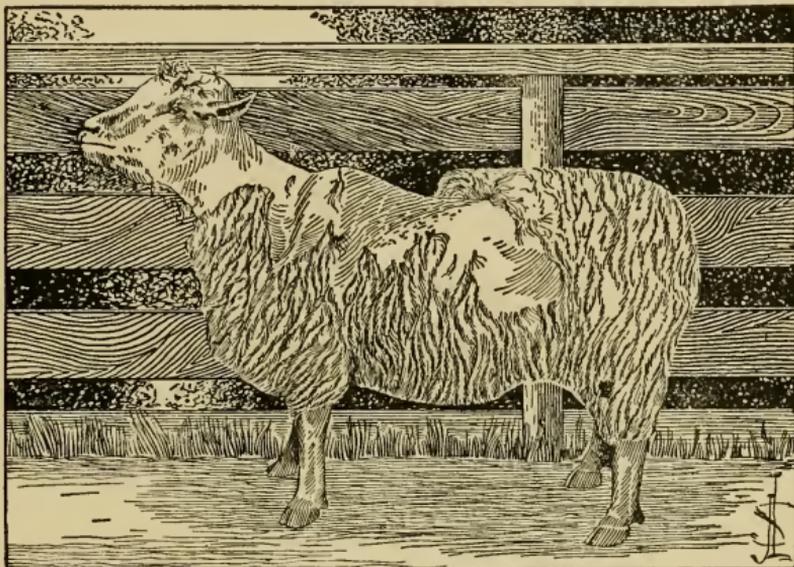


Fig. 80.—Showing the Appearance of the Sheep When Losing the Wool in the Spring.

Symptoms.—In the spring, just about lambing time, the wool becomes loose and falls off in patches. The animal does not seem itchy to any great extent, but rubs some.

Treatment.—As soon as noticed, change the feed and put them in a cooler place, being careful that they do not catch cold. Instead of the rich food, feed roots of some kind to make the blood cool. In very bad cases give:

Nitrate of Potash or Saltpetre	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root	¼ pound.

Mix well together and give a teaspoonful on the tongues of the affected sheep every night. To prevent sheep from losing their wool, keep them in a cool place, feed chopped oats and plenty of roots, such as mangels, to keep the blood cool.

4. Sheep Ticks.

Sheep ticks are best got rid of about shearing time, by catching the lambs and sheep and giving them a good rubbing all over with creolin water, using two tablespoonfuls of creolin to a pint of water. By rubbing it in well with a brush one dressing will generally cure the whole flock. If in other times of the year, it is best to use a regular sheep dip, which can be bought at almost any drug store. The full directions are given with the package.

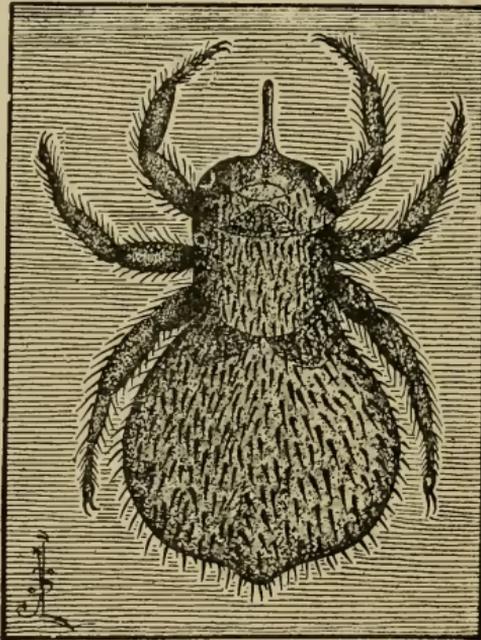


Fig. 78.—A Sheep Tick—Magnified.

CHAPTER VI.

ACCIDENTS.

FOR general treatment of wounds, refer to Part II., where these matters are fully dealt with.

1. Broken Legs.

Causes.—The apparently stupid characteristic possessed by sheep generally of lying upon the road and remaining thus until run over and injured is well known to all. The fact, probably not so well known, that gravel retains the heat obtained from the sun during the day much longer than the adjoining grass accounts for this. The grass becoming cool much more quickly soon causes a collection of dampness in the form of dew, making it a much less comfortable bed.

Treatment.—Should the fracture be so severe that points of the splintered bone pierce the skin, it is better to kill it at once and make use of the skin and carcass. There may be a desire, however, because of its value to save it. This may be done if the sheep be young and the chances are greater if in good physical condition and the fracture slight.

Set the bones to their proper position. Prepare a starch bandage as follows: Saturate a long strip of cotton a couple of inches wide in a fairly thick starch paste. Pull this strip between the fingers and in this manner squeeze from it as much of the starch as possible. It hardens more quickly and will contain quite sufficient for the purpose.

Apply this strip as a bandage, winding it fairly tight around the broken portion of the leg, being sure to have the bones in proper position. When this is done the leg must be kept in position until the bandage has hardened, after which it holds the broken bones in position. Allow it to remain thus for a month or six weeks, during which time the sheep must be kept as quiet as possible.

Examine the leg frequently and should it irritate the leg or be wound too tight, it should be changed. Remove it by cutting it off as soon as the leg is being used naturally.

2. Bites from a Dog.

These may be healed in a short time if treatment be prompt, before complications set in.

Bathe the wound with lukewarm water and soap twice a day and each time after bathing wipe dry and apply the white lotion.

3. Maggots in Wounds.

Maggots more frequently infect the neglected wounds of sheep than those of horses or cattle. They are sometimes found in the vicinity of the bag when from any cause it has festered or bealed.

Treatment.—Wash the parts well with soap and warm water and apply creolin lotion, containing creolin, two table-spoonfuls to a pint of water. The first time you apply the lotion put sufficient on to kill the maggots, then bathe twice a day and apply the creolin lotion to the parts each time after bathing, until healed.

CHAPTER VII.

LAMBING AND DISEASES ATTENDING IT.

I. PREGNANCY.

1. Period of Gestation.

The ewes are usually put in with the ram in November, and give birth five months after service.

By dusting a little red paint on the breast of the ram it is an easy matter to tell which of the ewes have been served, as the paint will be seen on their backs.

2. Abortion.

The term *abortion* is applied to cases in which delivery takes place at least twenty days or more before the natural time, which, as we have stated, is five months.

Causes.—Abortions are of two classes, namely (a) Contagious and (b) non-Contagious or accidental.

Contagious abortions are the result of a bacteria germ, which may be transmitted from an affected animal to another. See Part III.

Non-Contagious abortions are the result of accident, injury or some unusual condition—change of temperature, exposure to cold winds or rain, overfeeding, drinking excessive quantities of cold water, eating certain herbs or corn fodder which is covered with smut, giving stringent physic medicine, slipping and being chased by dogs are the causes more frequently met with.

Treatment.—In ordinary cases rest and quiet in a warm, comfortable stable is all that is necessary, recovery usually being complete in a few days.

For contagious abortion refer to the treatment described for that of the cow, Part III. The diseases are so similar that the same treatment should be followed.

3. Lambing Signs.

The bag of the young ewe begins to enlarge during about the third month, while that of the older is about a month later in showing signs of enlargement. This continues until

a day or so before delivery, a few hours before which the bag and teats become hard and full. She is very antagonistic to dogs and such other animals as may chance to be about her quarters. Her eyes take on a somewhat wild look and she desires to be quiet and alone. These symptoms are soon followed by labor pains, then the appearance and breaking of the water bag, followed by the front legs and head and finally the body of the lamb.

II. TROUBLES ENCOUNTERED IN LAMBING.

4. Unnatural Delivery.

(a) **Front legs out and head turned back.**—Raise the rear quarters of the ewe high, oil the hand and press the front legs back, pass the hand in and turn the head straight and pull gently on the head and legs.

(b) **Head and neck out, legs turned back.**—Raise the rear quarters high, oil the hand, press the head and neck back into the womb, straighten the legs and gently bring them forward with the head.

(c) **One front leg and head out.**—The lamb cannot come in this position. Raise the rear end of the ewe high, press the head and leg back and bring the other leg forward so that both legs and head come together.

(d) **Twins—a leg of each out.**—Press these back and be careful to bring two legs of one of the lambs, as sometimes a mistake is made and a leg of each is again brought forward.

(e) **Lamb coming rear end first.**—It is occasionally the case that straining brings nothing to the outside. Oil the hand and make an examination. The tail and rump may be felt. Raise the rear quarters as before. Press the lamb upward and forward, slip the hand down along the lamb's hind legs and hook the finger around it, draw it upward and backward until it projects straight from the passage. Bring the other hind leg out in the same manner. When this is done bring the lamb away rear end first. In such cases it is imperative never to attempt to turn the lamb or attempt to bring it head first.*

*It sometimes happens that the passage, especially of young ewes is so small as to prevent the admission of a man's hand. In a case of this kind the next best thing is to secure the assistance of a boy and instruct him what to do. Superintend the work to see that it is done properly.

5. Neck of the Womb Closed.

Should the neck of the womb be closed, as indicated by the failure of delivery to take place, give:

- Epsom Salts¼ pound.
- Fluid Extract of Belladonna15 drops.

Mix in a half pint of lukewarm water and give as a drench, then follow with:

- Fluid Extract of Belladonna15 drops.

Mix in a half pint of lukewarm water. Give this drench every two hours until it acts on the neck of the womb and opens it so that she can lamb without difficulty.

6. Treatment of the Ewe after Delivery.

As soon as delivery has taken place cause the mother to get upon her feet to allow the womb or lamb-bed to recede into its natural position and induce her to lick the lambs.

III. DIFFICULTIES AND DISEASES FOLLOWING DELIVERY.

7. Retention of the Placenta—The Lamb-bed Not Coming Away.

In a case of this kind give the ewe a hot drink, and then leave her alone, allowing her to lie down, and if it does not come away then give:

- Epsom Salts¼ pound.
- Sweet Spirits of Nitre.....¼ ounce. or 1 dessertspoonful.
- Fluid Extract of Belladonna.....15 drops.

Mix in half a pint of lukewarm water and give as a drench, and as soon as the medicine operates it loosens the cleaning, allowing it to come away all right.

8. Lamb-bed Turned Out.

Causes.—Lying with the hind quarters too low causes the womb or lamb-bed to press into the pelvic or hip cavity, thus causing pain, and consequently straining, which may be kept up until the lamb-bed is expelled.

Symptoms.—The lamb-bed is about the size of a man's head, and provided with numerous small buttonlike projections, to which the cleaning is attached during pregnancy.

The ewe is weak and is usually noticed lying with the bed protruding from behind.

Treatment.—As soon as noticed, if there is any cleaning attached to the button-like processes, take it off, then bathe

the bed well with lukewarm water and place a sheet or clean bag under it to keep it up and also keep it clean. Have a man on each side to hold the hind end of the sheep up. When your hands are well oiled, start to turn it in, commencing at the vulva and continue to turn it in until it is all in the passage, then shove the womb back to its natural place with your hand before leaving it. With a needle and twine used for sewing wounds, put two or three stitches in the vulva, leaving only sufficient opening through which the water may pass. Remove the stitches in a day or so when the straining has ceased. After the womb has been returned there is likely to be some straining. To relieve this give:

Epsom Salts $\frac{1}{4}$ pound.
 Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Fleming's Tincture of Aconite2 drops.

Mix thoroughly and give as a drench. After this, give a warm bran mash, and the following drench every hour until straining ceases:

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Sweet Spirits of Nitre ... $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Fleming's Tincture of Aconite2 drops.

Mix in half a pint of water and give as a drench.

9. Inflammation of the Milk Bag (Garget).

Causes.—Catching cold after lambing, a profuse overflow of milk, an injury, insufficient demand for the milk or the lamb not keeping the bag sufficiently empty may give rise to garget.

Symptoms.—The bag becomes largely swollen with milk—is hard, hot, tender and inflamed. The ewe seems feverish and is in pain. If you try to milk her at this stage, only a watery, curdy milk comes out. If not checked now, the inflamed part of the bag will commence to fester and form matter, and will either break or have to be lanced. Sometimes, instead of the bag festering, it becomes mortified, and if not checked, the mortification goes up into the belly and kills the ewe.

Treatment.—It is always best, if a ewe loses a lamb, or when the lambs are being weaned, to watch the bag and milk her out once in a while until she goes dry. When the bag is swollen and inflamed, milk her out once or twice, bathe her bag three times a day with warm water and vinegar, and in a day or so she will come all right. When neglected until it

festers, watch the bag and continue bathing it with warm water and vinegar. As soon as a soft spot appears in the bag, lance it to allow the matter to escape. Continue bathing and applying the white lotion twice a day until all the swelling is gone and the bag is healed. In cases where the bag becomes mortified, bathe a great deal with warm water and vinegar, and continue applying white lotion three times a day each time after bathing, until the mortification is checked. The mortified part will separate from the healthy part in the course of time, and drop off. Then bathe well with warm water and soap twice a day and apply white lotion each time after bathing. As soon as healed it is best to fatten the ewe and butcher her. During treatment, feed well and take extra care of her to keep her strength up until she gets better.

10. Drying a Ewe.

Give a tablespoonful of Epsom salts dissolved in a half teacupful of lukewarm water once a day for a week. Bathe her bag with warm forge water or warm vinegar. Follow the same treatment as that given for drying a cow in Part III.

Forge water has a good effect in retarding and drying up the secretion of milk because of the iron it contains, which acts as an astringent upon the milk glands.

The physic is given as a preventative of contamination of the blood.

CHAPTER VIII.

DISEASES AND TREATMENT OF LAMBS.

IT must be remembered that the proper time to lay the foundation of a sound constitution and a robust, vigorous physical condition of the lamb is during the months that it



Fig. 81.—The Sheep Louse.
This Parasite is Frequently the Cause of Much Annoyance and Consequently Loss of Flesh.

is being carried by the mother. As a general rule that which has a tendency to produce these characteristics in the mother will exercise a similar effect upon her unborn offspring. Therefore, to fortify the lamb against ailments that may attack it during the earlier months of its life, properly care for the mother by the provision of wholesome, nutritious food and comfortable quarters.

1. Weakness—General Debility.

Causes.—Insufficient nourishment and improper care of the mother is probably the cause in the majority of cases. Being born exposed to cold and dampness, thus getting a chill, disease of the mother or forced delivery may account for it.

Treatment.—If the result of unfavorable conditions at birth, remove the patient to a warm, dry place. Hand-rub it well until perfectly dry and give with a spoon:

Whisky1 teaspoonful.

Mix in a tablespoonful of its mother's milk. Give this amount every hour or two until it is strong enough to suck.

2. Constipation.

Constipation is a term applied to a condition of the bowels in which the food is not passed along through them in the natural way—to use a common expression, the lamb is “bound up.”

Causes.—This condition arises sometimes without any apparent cause whatever. Cow's milk when given should be diluted with water, about two parts of milk to one of water, to which should be added a little sugar. Cow's milk in its full strength is very liable to cause the bowels to become constipated.

Symptoms.—There is a slight fullness at the sides—a little more than is naturally the case. There is also occasional straining as if trying to pass something, but without success. Pain soon follows together with a refusal to suck.

Treatment.—Give the following:

Raw Linseed Oil1 dessertspoonful.

Whisky1 teaspoonful.

Mix this in a tablespoonful of the ewe's milk and pour it down with a spoon once a day until the bowels seem all right.

Give an injection of half a teacup of lukewarm water and a little soap into the back bowel with a small syringe three times a day until the bowels move.

Keep the patient comfortable and warm.

3. Diarrhoea.

Causes.—It may be because of eating something disagreeable or it may be the result of a chill.

Symptoms.—There is passage of a watery manure from the anus. The tail and hind legs soon become wet and sticky. There is no desire to suck and he seems quite dull. This disease is very weakening unless promptly checked.

Treatment.—Give a teaspoonful of whisky and one of castor oil in a dessertspoonful of the mother's milk, mix and

shake well and pour it down with a small spoon. If not relieved in four hours, give five drops of laudanum and a teaspoonful of whisky mixed in a dessertspoonful of the ewe's milk. Give this with a spoon, being careful not to choke the lamb. Repeat the dose every four hours until the diarrhoea is checked. Be sure to keep the lamb in a warm, comfortable place until it is all right. As well as attending to the lamb in such cases, see that the mother's bag is kept milked out to prevent inflammation.

4. Cutting Off Lambs' Tails.

This operation is generally performed on ewe lambs and on ram lambs that are being kept for breeding purposes. The operation is best done in the latter end of May, when the lambs are from two to six weeks old.

While an assistant holds the lamb select the second or third joint. At the point selected sever the tail at one stroke with a sharp knife. This is easily done.

Should the bleeding be profuse, which is not usually the case, apply a little of Monsell's solution of iron with a feather. Should this not be at hand burn the end of the stump by touching it with a red-hot iron.

5. Castration.

Castration of lambs is fully treated in Chap. III., Sect. 2, of this Part.

PIGS.
CHAPTER IX.
GENERAL DISEASES AND TREATMENT.

1. Sore Throat.

This is more often met with in young pigs from three to six months old, but may occur at any age.

Causes.—Getting cold, changing from a warm to a cold pen, or getting wet in cold weather may cause it.

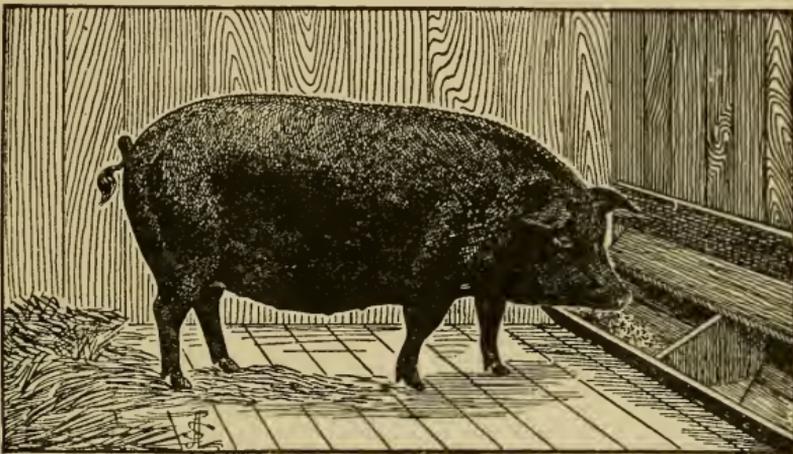


Fig. 82. —The Hog.

Symptoms.—There is sneezing and coughing. When attempting to drink the water runs through the nose. The throat is swollen and very tender. All the pigs of the herd are likely to become affected if exposed to the same conditions.

Treatment.—Make the pigs as comfortable as possible, by having the pen dry and lots of bedding in it. Feed soft, warm food, with a large dessertspoonful of sulphur in it, which will be enough for six small pigs. Give the sulphur twice a day.

Should the pigs get so bad as not to even attempt to eat give:

Sulphur	¼ pound.
Nitrate of Potash	¼ pound.

Mix well together and throw half a teaspoonful back on the tongue three times a day. This gargles the throat. Rub white liniment around their throats each time you give the medicine, and if it is a valuable pig, and a bad case, poultice the throat with hot poultices of half linseed meal and half bran. Change the poultice every couple of hours until the pig is better.

2. Acute Indigestion.

This is where the stomach is distended with food and gas. It is mostly seen in pigs six to twelve months old.

Causes.—A poorly fed pig getting into a field of peas or other grain may so fill the stomach as to cause acute indigestion. It may happen as a result of heavy feeding when pigs not used to grain are first put in for fattening, especially if the heavy feeding is not commenced gradually.

Symptoms.—Loss of appetite, bloating, uneasiness and pain are among the most noticeable symptoms, and, should these present themselves under conditions such as previously outlined, there may be little doubt as to the disease.

Treatment.—The dose for a pig from six months to a year old is as follows:

Epsom Salts	3 dessertspoonfuls.
Bicarbonate of Soda	1 teaspoonful.
Ginger	1 teaspoonful.
Sweet Spirits of Nitre	1 dessertspoonful.

Mix in a half pint of lukewarm water and pour down the pig after it has been caught and turned on its back. Give only lukewarm water to drink and no feed until the medicine operates. If not better the next day repeat the dose. In giving the drench do not pour it down too fast for fear of choking the pig. If the cause be from getting a large feed of wheat or peas it sometimes swells so much that it ruptures the stomach. In such cases nothing can be done. As soon as the rupture takes place the pig soon dies. If you want to be sure of rupture, open the pig and you will find a hole in the stomach.

3. Stunted or Chronic Indigestion.

This is a common thing in young pigs when they are being weaned and started to feed. Before they get used to it strong food such as peas, wheat and corn is too much for young pigs' stomachs and causes indigestion. It is also caused by worms.

Symptoms.—The pig seems to eat well but does not grow or thrive.

Treatment.—Prevention is better than cure, and in this case is frequently possible by proper care in feeding.

When young pigs are being weaned they should never be fed on hard, hot feed, but should get milk and swill until about three months old, and then brought gradually to hard feed by giving a little at a time. Young pigs are so much troubled with worms that they should get a handful of hardwood ashes and charcoal put in the feed twice a week, one handful being enough for six young pigs. Give them plenty of salt, for pigs getting ashes, charcoal and salt in this way seem to thrive half as well again. When pigs are stunted, change from hard to soft feed, and for six pigs give:

Sulphur	½ pound.
Bicarbonate of Soda	½ pound.
Nitrate of Potash or Saltpetre.....	¼ pound.

Mix thoroughly and give a tablespoonful in the feed night and morning until they begin to thrive, also give them plenty of hardwood ashes, charcoal and salt in the feed, as explained above.

4. Constipation.

This is liable to affect pigs at any age, but is more often noticed to affect stunted pigs.

Causes.—In young pigs it is generally the result of chronic indigestion, or worms in the stomach, while in older pigs it is caused by feeding on dry food without getting exercise, that is, being kept in a small pen.

Symptoms.—The pigs are very dull, refuse their food, lie down most of the time, and seem fuller than natural. They strain to pass something but nothing comes. Young pigs do not thrive well. The rectum, or back bowel, is bulged out, and in some cases is turned out entirely. They seem full and do not eat as they should. If not attended to they become stunted and pine away until they die.

Treatment.—Catch the young pigs and pour down a tablespoonful of Epsom salts and a half teaspoonful each of ginger and bicarbonate of soda dissolved in half a teacupful of lukewarm water. Give this every day until the bowels are nice and loose. After the physic, continue the treatment by giving hardwood ashes, charcoal, sulphur and salt, as recommended for chronic indigestion. To older pigs give:

Epsom Salts	2 dessertspoonfuls.
Ginger	1 teaspoonful.
Bicarbonate of Soda	1 teaspoonful.

Dissolve in a teacupful of lukewarm water and pour down as a drench, after catching the pig and turning it on its back. Give hardwood ashes, charcoal, sulphur and salt as mentioned for chronic indigestion. For aged pigs (two or three years old) use the same treatment as is given for medium sized pigs, only give a larger dose. They can stand about a quarter of a pound of Epsom salts with a teaspoonful of bicarbonate of soda and ginger dissolved in a pint of lukewarm water. Repeat this dose every second day until the bowels are open. As well as giving the medicine, give exercise every day, which helps the physic to operate.

5. Diarrhoea.

This is the very opposite to constipation.

Causes.—It is generally caused by a sudden change in the food, eating something that is frozen, or excitement by being chased.

Symptoms.—The manure runs away like water. The pig is dull and refuses to eat, but is very thirsty and greedy for drink.

Treatment.—Change the food, and give a gruel drink of

Dry Flour	1 teacupful.
Bicarbonate of Soda	1 dessertspoonful.
Ginger	1 dessertspoonful.

Mix in a half pail of lukewarm water and give as a drink three times a day. The above is the proportion to give six small pigs. If in young pigs sucking a sow, give the mother

Dry Flour	½ teacupful.
Bicarbonate of Soda	1 teaspoonful.
Ginger	1 teaspoonful.

Mix in a half pail of lukewarm water and give three times a day. As well as the above treatment, keep the pigs warm, dry and clean, and they soon get all right.

6. Worms.

This mostly affects young pigs.

Symptoms.—The pig eats well but does not seem to thrive well, and sometimes small worms pass away in the manure.

Treatment.—Give a handful of charcoal and hardwood ashes in the food twice a week, also give half a teaspoonful of sulphur for each pig twice a day in the food. This generally kills the worms.

7. Turning Out of the Rectum or Back Bowel.

Causes.—This is generally caused in young pigs by getting dry food to eat, causing the bowels to become costive. Straining to pass manure turns the back bowel out. When pigs rise on their hind legs with their front feet upon the front of the pen every time they are fed, or jumping a low fence and getting caught and lying with the belly over the fence may cause the back bowel to turn out.

Symptoms.—There is a bulging out of the bowel from half the size of a hen's egg to even larger than a hen's egg. This is red and angry looking, and after a time becomes blackened.

Treatment.—As soon as noticed give the bowel a syringing out with lukewarm water and soap to clean any hard manure out of it, then wash it off clean, oil the bulged out part and shove it back to its natural place. As soon as this is done, if a small pig, give a dessertspoonful of Epsom salts mixed in half a teacupful of lukewarm water. Pour this down as a drench, and give one-half teaspoonful of sulphur mixed in sloppy feed twice a day. This keeps the bowels free and the pig will generally be all right. Have the pig fastened in its pen so that it cannot jump up on its hind legs. In a case where the bowel is blackened or comes out two or three times after putting it in, do not return it, but leave it alone and the piece of dead bowel will drop off of its own accord. The pig will be all right in a week or so, but give the physic and sulphur as mentioned to keep the bowels loose.

8. Blind Staggers.

This is a disease that affects the brain and nerves.

Causes.—Being kept in a dirty, ill-ventilated, poorly drained, small pen causes the blood to get in such a bad state

that it becomes stagnant. This disease is mostly seen in pigs under a year old.

Symptoms.—The pig will be dull, stands in a corner with its ears lopped over, will not eat, and when it goes to walk runs against anything in its way. In a short time the ears, nose and around the head turns to a blue color, caused by the stagnant blood. The bowels are costive, and the pig becomes duller and duller, until convulsions come on and it dies. When one pig becomes affected in a pen where there are thirty or forty, the same condition will cause it in the other pigs, and we have seen cases where farmers might have lost half a dozen pigs in a few hours. When you find the disease is affecting your pigs, let them out of the pen into open air, and clean it out thoroughly.

Treatment.—As soon as one pig becomes affected let them all out of the pen into the open air for a few hours, and afterward put them in a clean pen. Treat the affected one by dragging it out into the open air and rubbing it well with cloths to get the circulation started. Give the following:

For a pig 3 months' old, give 1 tablespoonful of Epsom Salts.

For a pig 3 to 6 months old, give 2 tablespoonfuls of Epsom Salts.

For a pig 6 to 12 months' old, give 3 to 4 tablespoonfuls of Epsom Salts.

As well as this put from a teaspoonful to a tablespoonful or two (according to the age of the pig) of good brandy, also a teaspoonful of ginger and bicarbonate of soda in the drench. Dissolve in half a teacupful of lukewarm water, and pour down as a drench after turning it on its back. As soon as the drench operates it will relieve the pig. In some cases persons have been known to cut off the ears and tail with a view to getting the circulation of the blood started, but the hand rubbing is better and is no so cruel and does not disfigure the pig.

9. Founder or Sore Feet.

Causes.—This is a very common thing in pigs, especially when fattening them and feeding them on hard, dry feed, when they are in a small pen with very little straw on the floor. Driving them on a hard road or getting a feed of wheat when not used to it will cause it.

Symptoms.—The pig will be dull and lie most of the time. When it moves around the front feet are as sore that it walks with its hind feet well under it with the front feet

stuck out ahead. In some cases the feet are so sore that the pig squeals when it is forced to put its weight on the front feet. From the severe pain of the feet and not being able to get around to eat its food it soon falls off in condition and becomes very gaunt.

Treatment.—If in the summer time, turn the affected pigs out where they can root in the ground, and pour water in the hole where they lie every day to keep the ground wet, as this helps cure the sore feet. Mix half a pound each of sulphur and nitrate of potash or saltpetre, and give a teaspoonful of the mixture in a slop twice a day to each of the affected pigs. If in the winter keep the pig in a warm, dry place. Give a physic of Epsom salts (use the proportion given in blind staggers), feed light and give the mixture above mentioned. Poultice the front feet every night and the pig will soon get all right.

10. Black Teeth.

These are very small black teeth which are found in the sides of the mouth when young pigs are born. They continue growing for some time, but after the pig gets larger they drop out of their own accord. These teeth sometimes grow in such a manner that they cut and poison the tongue and make it so sore that they cannot eat. In a little while, if not attended to, the tongue becomes so badly swollen that often the pigs will die from starvation and blood-poisoning. We have seen cases where three or four pigs in one litter died from black teeth.

Treatment.—Catch the young pigs and examine each one of them. If they have black teeth, pull them out with a pincers and they will soon be all right. It is a good practice to catch and examine a litter of young pigs, for if the black teeth are taken out in time it will often prevent some of them from dying before you notice them being sick.

11. Lice.

These lice are large and resemble ticks on sheep, only they can run very fast. We have seen cases where the pigs were literally covered with them. Pigs that have lice on them do not thrive well, and they are a great preventive to fattening pigs, because they irritate and cause them to be continually rubbing and scratching themselves.

Treatment.—Wash the pig well with creolin water, which is a sure, cheap and simple remedy. The strength of creolin to be used is two tablespoonfuls to a pint of water. Rub the creolin water in all over the pig with a stiff brush. It generally takes two washings to make a complete cure. The second application should be put on about a week after the first. As well as this, clean the pen thoroughly, shake lime around the floor, and put fresh, clean straw in for them to lie on.

12. Hog Cholera.

This is an infectious blood disease, and is sometimes called anthrax. It is noticed to break out in herds of hogs all over the country.

Symptoms.—The first symptoms are 'dullness, drooping of the head and ears, loss of appetite, and the pig goes away by itself to lie down. It seems very feverish, hot, and in some cases will lie quiet and die very suddenly, while in other cases, as the symptoms advance, it has pains in the bowels, will lie on its side, moan with pain, then jump up, run around, squeal and grunt in a very painful manner. The pig at times gets easy spells and becomes quiet. If you catch and examine it you will find that the skin of the belly, thighs, front legs, throat, and around the nose are of a purple color, and in some cases on account of the high fever, the skin broken out in a rash. In the last stages of the disease there is diarrhoea, and the manure which is very thin, is of a black color and has a very bad smell. The pig rapidly loses strength, gets a cough, begins breathing very heavy, and in a few hours is so weak that it can hardly stand. In some cases it dies in from six to ten hours after being smitten with the disease, while in other cases it lives for a few days. The rash that comes out on the skin soon causes it to slough, and the skin drops off in places, giving the animal a bad appearance. Although this is a very fatal disease and most of the pigs die that are affected with it, occasionally cases get better when the treatment is taken in time.

Treatment.—As soon as any of the pigs are noticed sick, separate the sick ones from the others and put them in a dry, clean pen. Give the following medicine to each, using

your own judgment as to the proportion to give the different sized pigs:

Epsom Salts2 to 4 dessertspoonfuls.
 Sweet Spirits of Nitre.1 teaspoonful to 1 dessertspoonful.
 Sulphur1 teaspoonful to 1 dessertspoonful.

Mix in half a teacupful of lukewarm water and pour down as a drench after turning the pig on its back. If this operates on the bowels before the disease gets too bad, it will often save the life of the pig. If this disease breaks out in your herd of pigs, send for the government veterinary inspector. He will come and examine the pigs to make sure of the disease and help you to prevent it from spreading.

13. Fits.

Fits usually affect young pigs.

Causes.—Worms are the cause in the majority of cases.

Symptoms.—The pig is first noticed not to be thriving well, and after a time is noticed to take fits. Its legs begin jerking, its head and neck bends back and it continues champ-ing its teeth, and after working in this manner for a while, falls over as if it were dead. In a short time it gets up and seems all right for a little while, when another fit comes on. Fits occur every little while for a few days, but it finally gets so bad that death is the result.

Treatment.—For a pig two months old give

Raw Linseed Oil½ teacupful.
 Spirits of Turpentine1 dram or 1 teaspoonful.

Mix well and pour down as a drench. Repeat this dose once a day until the bowels move and the pig seems relieved. Afterward feed lots of charcoal, hardwood ashes, salt and sulphur, as for stunted pigs, to get rid of the worms.

CHAPTER X.

DISEASES PECULIAR TO SOWS.

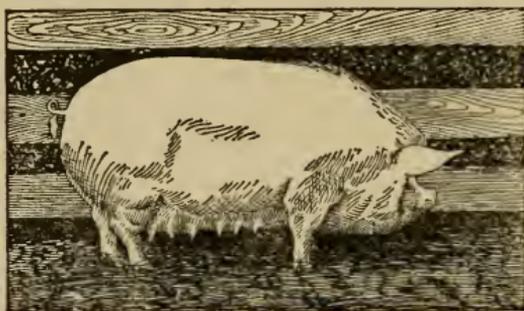


Fig. 83.—A Yorkshire Sow.

1. Period of Gestation.

The average time from service of the boar until delivery of the pigs is three months, three weeks and three days.

2. Indications of Pregnancy.

In a month and a half after being put to the boar, she begins to get larger and continues getting larger until pigging time.

3. Pigging—Delivery of the Young.

Just before she pigs she is noticed to be uneasy, and starts to make her bed. If anything disturbs her she makes a fuss and seems excited. After her bed is made she seems sick and lies down for a short time. The labor pains come on, she strains and the water bag appears and breaks. If the pigs are coming all right, she will soon be delivered of one. The front feet and head should come first but sometimes they come with the hind feet first. In a few minutes more she strains again and another pig is delivered, and so on until they are all delivered. After this there is usually no trouble unless the sow has too much bedding and she smothers the little pigs.

4. Difficulties During Delivery.

It is frequently the case that a little help is necessary during the delivery as the young pigs may not come naturally, and consequently become lodged in the passage.

If coming head first with the front feet turned back or coming rear end first with the legs turned back under it, oil your hand, pass it into the passage and press the pig back into the womb, catch the legs with the finger and bring them forward even with the head, or when rear end first, straighten hind legs backward, so as to come before the rump. Pull slightly and there is usually no further difficulty.

If the sow is too small for the passage of a man's hand, have a boy oil his hand and perform the operation as described under your direction.

Be sure to keep the hands and fingers well oiled and avoid rough usage, as such causes the parts to swell and thus makes the work much more difficult.

5. Milk Fever.

This disease is occasionally met with in sows, but the causes are not clearly understood.

Symptoms.—Symptoms are generally noticed as soon as the sow is through pigging. When the little pigs attempt to suck they cannot get any milk. Try to milk her and no milk will come. The teats are soft instead of being full and hard, showing that there is no milk being secreted in the teats. The sow seems very sick, is feverish and does not take notice of her little ones, nor eat, but is very thirsty and will drink a great deal if she can get water to drink.

Treatment.—Give the following to a large sow:

Epsom Salts	¼ pound.
Sweet Spirits of Nitre.....	¼ ounce or 1 dessertspoonful.
Ginger	1 teaspoonful.

Mix in half pint of lukewarm water and pour down as a drench, first turning the sow on her back and prying her mouth open with a stick to get the drench down. Follow with

Nitrate of Potash or Saltpetre.....	¼ pound.
Sulphur	¼ pound.

Mix thoroughly, and to a large sow give a teaspoonful on her tongue with a spoon twice a day, or in soft feed. Give plenty of lukewarm slops to eat, bathe her milk glands three times a day with lukewarm water, rub the parts dry each time after bathing and keep the little pigs sucking to try to bring her back to her milk. Attending to her in this way for a few days usually effects a cure.

While the sow is sick keep the little pigs alive by feeding milk from a newly calved cow. Weaken the milk one-

third with lukewarm water and sweeten it with sugar. Pour this down with a spoon, or let them suck it out of a bottle. Keep them sucking the sow as much as you can.

6. Inflammation of the Milk Glands (Garget).

This is generally noticed immediately after pigging.

Causes.—Catching cold, or losing some of the pigs and not having enough left to keep the bag sucked out, thus allowing the glands to get so full with milk that they swell and become sore and inflamed, is usually the cause.

Symptoms.—The sow seems dull, feverish and does not care to eat. When the pigs suck her pain is caused and they do not get much milk. The milk glands are swollen, hard, hot and tender.

Treatment.—Give the same medicine inwardly with the same directions as is given for the treatment of milk fever. In addition bathe the milk glands well three times a day with lukewarm water and vinegar, each time after bathing rub the glands dry, and in severe cases where the young pigs are not sucking her, rub the glands with white liniment. After putting on the liniment oil the parts with oil or lard to soften the glands and prevent the liniment from blistering. In cases where the disease runs on, and the glands fester and form matter, they should be lanced to let the matter out, then treated by bathing with lukewarm water and soap twice a day. Apply the white lotion each time after bathing until the glands heal up. In bad cases it is best to wean the young pigs.

7. Pig Bed or Womb Turned Out.

This is generally noticed immediately after pigging, where the sow is left lying with her hind end lower than the front, causing the pig bed to work back into the passage. This results in pain and consequently straining, which finally forces it out.

Symptoms.—The womb, or pig bed, is turned out behind. It is larger than a man's head, and in a very short time becomes very red and swollen and a miserable looking sight. It should be put back as soon as noticed before it swells much.

Treatment.—Bathe the womb well with lukewarm water to take the swelling down and make it clean and warm, then have a couple of men to raise the sow's hind end straight up

while you start turning the womb in at the passage. Continue turning it in until it is all in the passage. Oil the hand and arm, if the sow is large enough for your hand to pass into the passage, if not, secure the services of a boy with a small hand. Press the pig bed right back into its place. As soon as you have done this, sew up the vulva—the opening of the passage to the womb—putting two or three stitches across it. Put them in quite deep, just leaving space enough at the bottom through which to pass water. Leave the stitches in for a day or two until she stops straining, then cut the stitches, pull them out and she will be all right. After you have put the bed back, if still straining, give:

Laudanum $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Sweet Spirits of Nitre.... $\frac{1}{4}$ ounce or 1 dessertspoonful.
 Fleming's Tincture of Aconite..... 2 to 3 drops.

Mix in a teacupful of lukewarm water and pour down as a drench after turning her on her back and prying her mouth open with a stick. If she does not get relief in two hours, repeat the drench, and continue repeating it every two or three hours until the straining ceases.

8. Drying a Sow.

Give a teaspoonful of sulphur in her feed twice a day. Bathe the milk glands with lukewarm water, vinegar or warm forge water once a day for a week and allow her to run outside.

CHAPTER XI. CASTRATING AND SPAYING.

I. CASTRATING.

1. Old boars can be castrated at almost any time of the year, but it is said that the colder the weather the better, as long as the weather is dry and they are kept in a dry place.

Catch the boar, turn him on his back and tie him securely with a rope so that he cannot get up or hurt you. Take hold of the testicle with the left hand, and with a sharp knife in the right make a cut in the bag large enough to allow the testicle to come through.



Fig. 84.—A Yorkshire Boar.

Make the cut in the underside of the bag so that it will not form a pocket afterward. As soon as the testicle is out, separate the covering where it is attached to the underside, by cutting it off. Pull the testicle and cord out three or four inches and tie a strong string tightly around the cord to prevent bleeding. Leave the ends of the string four or five inches long so that they will hang out of the cut. As soon as the cord is tied, cut the testicle off half an inch below the knot. Operate on the other testicle in the same manner.

2. Young boars may be castrated without tying the cord with a string. Cut it off with a sharp scissors, as this stops the bleeding.

3. Very young pigs may be castrated by opening the bag, drawing the testicle out and scraping the cord with a knife until it is off, or by severing the cord with a pair of scissors.

4. In all cases after you are through castrating the pig, and before you let him up, fill the cuts with salty butter.

5. If the cuts swell considerably and the pig seems stiff and sore in a few days after he is castrated, catch him and

open up the cuts with your finger and allow the matter that has formed in the bag to run out. This is one thing that should never be neglected after castrating any animal. Use butter upon the fingers when doing this.

II. CASTRATING WHEN THE BAG IS RUPTURED.

1. Ruptures are caused in young pigs by standing on the hind feet with the front feet up on the front of the pen when you go to feed them. In other cases it is noticed to be present at birth.

2. Rupture is present when the bag is enlarged by the bowels coming out into it. When you catch the pig and press on the enlargement, you can press the bowel back into its place, but as soon as you let go it comes out again.

3. Operate on a ruptured pig as follows: It is best to castrate ruptured pigs when they are young—about five or six weeks old. If a large boar, starve him for twenty-four hours before operating, so that his bowels will be empty. They then slip back to their place easier while castrating him. Have help enough to hold the hind end of the pig well up while you press the bowels back. This is easily done when they are empty, and his hind end being higher than his front causes them to stay back better while operating on him. Take the testicles out in the same manner as you would a pig that was not ruptured, only make the cuts as small as you can. After each testicle is out, sew up the cut with a needle and thread (the same as used for sewing up wounds). Put the stitches in about one-quarter of an inch apart, so that the bowels cannot slip out.

If a small pig, let him run with the others, but if a large pig, keep him in a quiet place and do not give him much to eat for a few days until the cuts swell. The swelling keeps the rupture back. Leave the stitches in until they rot out of their own accord.

III. SPAYING.

Be sure that hands, instruments, etc., are scrupulously clean and thoroughly disinfected.

It is best to operate through the left flank.

Tie the sow to an inclined plank, the head to the lowest end. Make an incision in the left flank a little below and in front of the point of the hip, large enough to admit two fingers, care being taken not to injure the intestines. Insert

the fingers and catch hold of the horn of the womb. Draw it gradually out sufficiently far enough to have access to the ovary. Remove the ovary with a pair of spaying scissors. Operate on the other ovary in a sniliar manner.

When the ovaries have been removed, sew the incision with a couple of stitches and let the sow go.

It is a good plan before attempting to operate to watch carefully while an experienced hand is spaying a sow. By doing so the method is much more easily grasped, and when once understood becomes very simple.

There is not as a general rule any complications likely to foilow spaying.

CHAPTER XII.

ACCIDENTS AND MISCELLANEOUS.

1. Choking.

Choking is not usual but is sometimes met with.

Causes.—It is generally the result of greediness. An apple, a potato, or piece of something too large to pass into the stomach lodges in the gullet. The danger of course is the pressure to the windpipe becoming sufficient to “shut off the wind” and cause immediate death.

Symptoms.—There is continuous coughing and running of saliva from the mouth. When attempting to eat the food runs back out of the mouth.

Treatment.—Pour down a little raw linseed oil, and then if you can feel the obstruction in the tube along the neck, try to work it around with your hand to get it to slip down. If the obstruction is caught in the back part of the mouth, remove it by prying the mouth open with a stick and working it out with another stick or a long pincers. If so solid that you cannot get it out or rub it down after giving the oil, use a probang such as is used for cattle when choking, pass it back through the throat into the œsophagus, and push the obstruction down into the stomach. Before attempting to pass the probang, tie a rope around the upper part of the mouth and have the head held up, then place the gag across the mouth and run the oiled probang down in a similar manner to that outlined for cattle.

2. Wounds.

Causes.—Bites of dogs or other pigs, going through a barb wire fence and getting caught on a barb and running against a nail are some of the more common causes.

Treatment.—If a very bad rip or tear, it is best to catch the pig and sew it up with the same kind of needle and thread as is used to sew up wounds in horses. Put the stitches three-quarters of an inch apart, fill the wound with green salve, let the pig go and it will soon heal up, as pigs' flesh heals very quickly. Watch the wound to prevent mag-

gots from attacking it. If they do, wash the wound out well with lukewarm water and soap, apply the white liniment to kill the maggots, fill the wound with green salve and it will soon heal.

3. Fracture of a Leg.

Causes.—This may be caused in various ways, such as being hit by a stone, being kicked, or by getting the foot through a hole in the floor and giving the leg a wrench.

Symptoms.—The pig cannot use its leg in walking. It hangs loose. If you take hold of the leg and twist it you can hear the ends of the broken bones grating upon each other.

Treatment.—If a fat pig, and about ready to kill, it is best to butcher it. If a pig you desire to save, and the ends of the broken bone are not penetrating the skin, try to treat it. Take a long bandage, soak it in starch (same as is used for starching clothes). When drawing the bandage out of the starch, draw it between the fingers and scrape it with a knife to get as much of the starch out as you can. It will harden quicker. Roll the bandage up so that it will be handy to put on the leg, then set the broken bone to its place, and apply the bandage moderately tight. After it is on, hold the leg and bandage straight until the bandage hardens. It will then hold the bone to its place. Keep the pig very quiet and feed it so that it will not have to stir about. Leave the bandage on for three or four weeks, until the pig can use the leg all right, then remove by cutting it off. If the break is in the hip, or some place where you cannot bandage it, leave the pig in a very quiet place, and sometimes the broken bone will knit together itself.

4. Broken Back.

This is very often met with in sows when they are very thin and weak after suckling pigs. It happens very easily sometimes. A very slight tap on the nose will sometimes break a sow's back. Getting hit over the back, slipping, or something falling and hitting her over the back will sometimes cause it. It may occur in other pigs in the same manner, but they are not so liable to be hurt as weak sows just after weaning the little pigs.

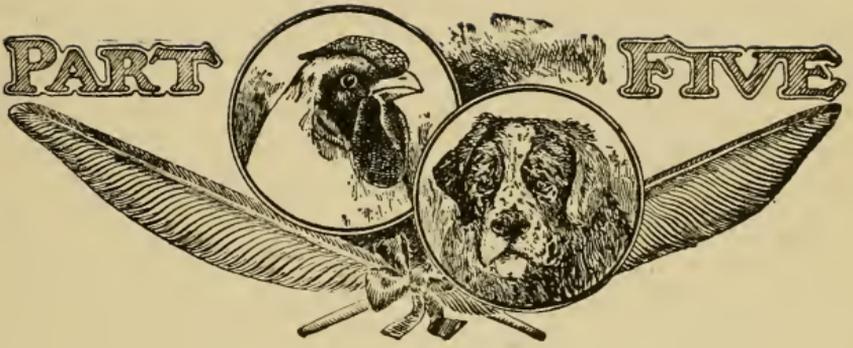
Symptoms.—All at once she loses power of her hind quarters and drags them after her. If you prick the hind

parts with a pin you notice that she cannot feel it but lies quite helpless.

Treatment.—Put the sow in a small, clean pen with a good bed, and feed her so that she will not be hungry and try to move about. Give her one or two teaspoonfuls of sulphur a day in the feed to keep the bowels loose. Keep her as quiet as possible and she will probably get well in the course of time.

5. How to Ring a Pig.

The object of ringing pigs is to keep them from rooting. The best way to ring them is to make a noose on the end of a small rope, slip it into the mouth, draw it tight on the upper jaw, and place the rope over a beam or something to draw the pig's head up tight. Secure a pincers and ring, which can be obtained at any hardware store, place the ring in the pincers, and while the pig is pulling back, close the ring on the nose so as to catch about one-quarter of an inch of gristle. This is done by pressing upon and closing the handles of the pincers. Be careful not to put the ring back farther than one-quarter of an inch, and see that there is no rust on the ring before putting it in. Put in from one to three rings, according to the size and age of the pig. If the nose should fester after ringing, it is best to take the ring out.



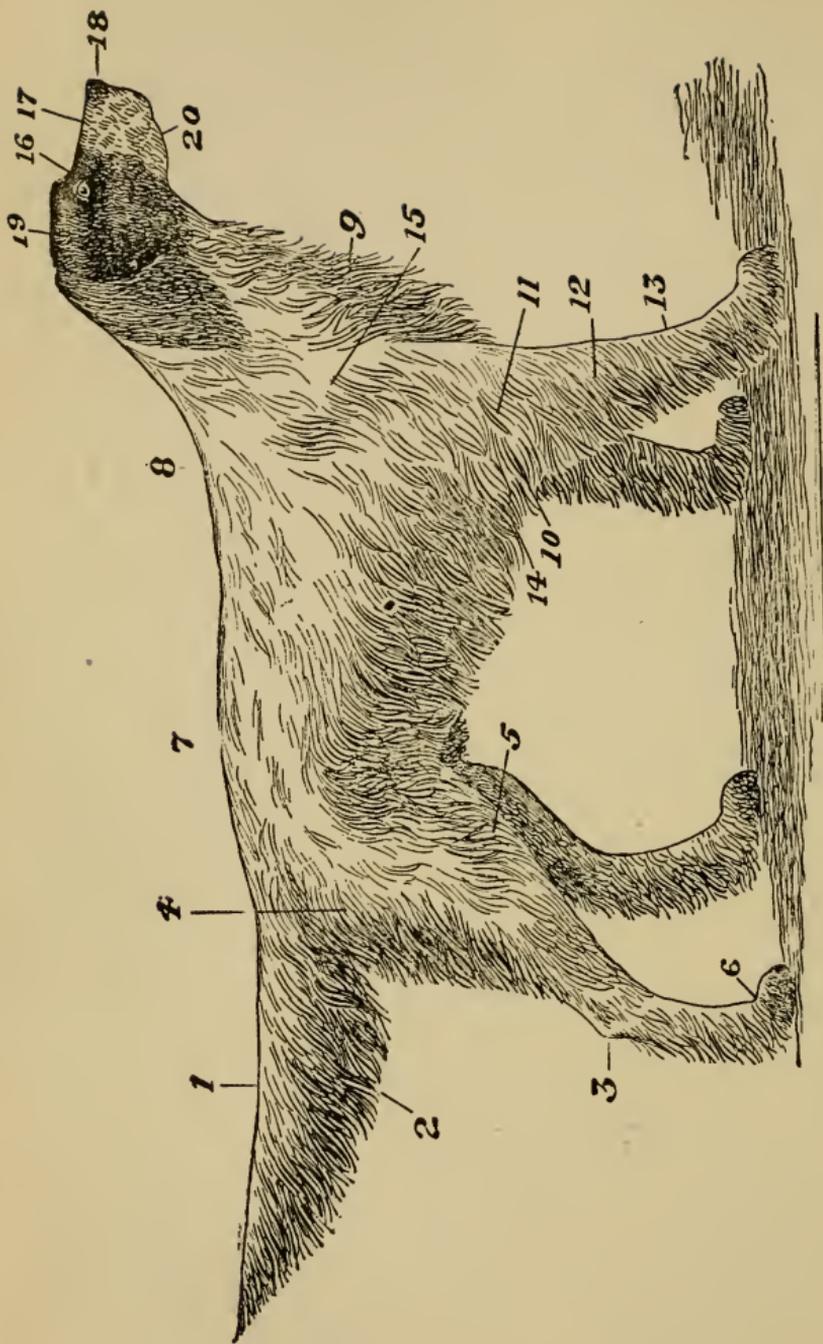


PLATE XVI.—AN ENGLISH SETTER.
 DOG CHART, SHOWING PARTS COMMONLY SPOKEN OF IN DESCRIBING A DOG.

EXPLANATION OF PLATE XVI.
AN ENGLISH SETTER.—A DOG CHART.

Plate is presented for the purpose of illustrating the terms more generally used in speaking of the dog. Some of the parts vary slightly according to the breed spoken.

- | | |
|------------------|---------------------|
| 1. Tail. | 11. Arm. |
| 2. Brush. | 12. Forearm. |
| 3. Hock. | 13. Knee. |
| 4. Rump. | 14. Chest. |
| 5. Stifle. | 15. Shoulder Blade. |
| 6. Pastern. | 16. Stop. |
| 7. Huckle-bones. | 17. Nasal-bone. |
| 8. Shoulders. | 18. Nose. |
| 9. Brisket. | 19. Skull. |
| 10. Elbow. | 20. Flews or Chaps. |

7 to 8. The Couplings.



FIG. 85—SPECIMEN OF THE GREAT DANE.

These dogs have mild dispositions and make good companions for children as well as being excellent watch dogs.

PART V.

DISEASES AND TREATMENT OF DOGS, CATS AND POULTRY.

DOGS.

“ * * The dog, in life the firmest friend,
The first to welcome, foremost to defend.”

Who doesn't own a dog? The answer to this question suggests the all but universal interest of mankind in the care and treatment of this most faithful of all man's servants.

If you chance to be one of the vast majority of men and have the honor to possess a servant and friend so faithful, the careful study of the pages that follow will aid you in giving him the care and treatment he deserves.

CHAPTER I.

GENERAL CARE AND TREATMENT OF INVALID DOGS.

1. Housing.

If the dog has the good fortune to possess a home of his own, let that home be warm, clean, comfortable and well ventilated. He deserves it. The dog house should be large enough to admit of his moving about in it. Place the door in such a position that drafts may be avoided. A good plan is to hang a heavy blanket over the door in cold weather.

If necessary to have him tied, attach the chain to a swivel ring in the top of a post driven flush with the top of the ground to prevent the chain from becoming tangled. See that his collar is properly adjusted and sufficiently wide to prevent irritating his neck.

Give him a reasonable amount of exercise every day.

During cold weather he requires a nice soft bed of straw or shavings. This should be changed every one or two weeks. In warm weather he is more comfortable without it.

2. Disinfecting.

It is to the owner's interest as well as to the comfort of the dog that his quarters should be frequently disinfected and cleaned thoroughly. Disinfect by burning sulphur. Use a little good insect powder to prevent lice, ticks and such vermin.

3. Feeding.

Once each day is often enough to feed a matured dog, although twice a day may not be objectionable provided only sufficient food is given for his requirement. Refuse from the kitchen in the majority of cases is good diet, but if this is not sufficient other wholesome food should be added. Should he have plenty of strenuous exercise feed him accordingly. Too much meat is not a good thing, although bones are excellent. Chewing and picking at a large bone stimulates the saliva and aids digestion, while at the same time it cleans and betters the condition of the mouth and teeth. As a general rule a mixed diet is beneficial.

Sick dogs are not likely to starve to death, so do not attempt to force eating. The dog's own stomach is a good guide, and where food is revolting the reasonable conclusion is that it is not good for him. It is impossible to lay down rules as to what should be fed more than to say that each individual case must be studied and fed according to its particular requirements.

Plenty of pure, fresh water, especially in hot weather, is always essential.

4. Washing.

Cleanliness of body as well as cleanliness of the house is essential to health. Use lukewarm water and the best soap—castile is good—and wash him as often as it is thought necessary under the particular conditions that may exist. After saturating the coat with water rub in a little of the soap to make a lather, then rinse well with clean water. Be careful in cold weather to see that he is thoroughly dry before being exposed to cold. In nice warm weather the danger of cold is not so great.

5. Administering Medicine.

This is an operation that requires tact, time and patience. Here again a general hard and fast rule cannot be laid down. A few suggestions may, however, be beneficial.

Many medicines may be given by rolling the dose up in a piece of meat. When following this plan use two or three pieces, having the medicine, say in the second piece. Expose all to view and give the first to cover suspicion. Then, after a little tempting, give the second and then the third. The object is to have the dog become anxious and thus bolt it down.

It is frequently an easy matter to merely open the dog's mouth wide, place the medicine far back in the mouth and hold the head up a little until it is swallowed. If the dog be quiet and good-natured this is quite safe, although where there is danger that he will not take such treatment kindly this plan is not to be recommended.

Should the dog be fairly large and not particularly vicious, two persons may give the dose easily. While one sits on a chair, holds the dog's body firmly between his legs and the head slightly raised with his hands, the other draws the cheek out and pours the medicine between the cheek and

teeth well back. There is no necessity to force the teeth apart, merely keep the head elevated until the dose is swallowed.

A vicious dog must of course as a last resort be muzzled and securely tied so that the danger of being bitten, as well as the irritation to the dog by being roughly handled, may be avoided.

6. Temperature.

A clinical thermometer placed in the rectum under normal conditions registers from 100° to 102° . Below 97° or over 106° indicates a serious derangement of the system.

7. The Pulse.

The pulse may be felt just inside of the thigh and varies normally with age. The pulse of pups ranges from as low as 120 to as high as 160 beats per minute. This decreases gradually until at maturity or over a year it ranges normally from 70 to 90 per minute.

In taking the temperature or pulse see that the animal is not excited and at perfect rest.

CHAPTER II. BREEDING.

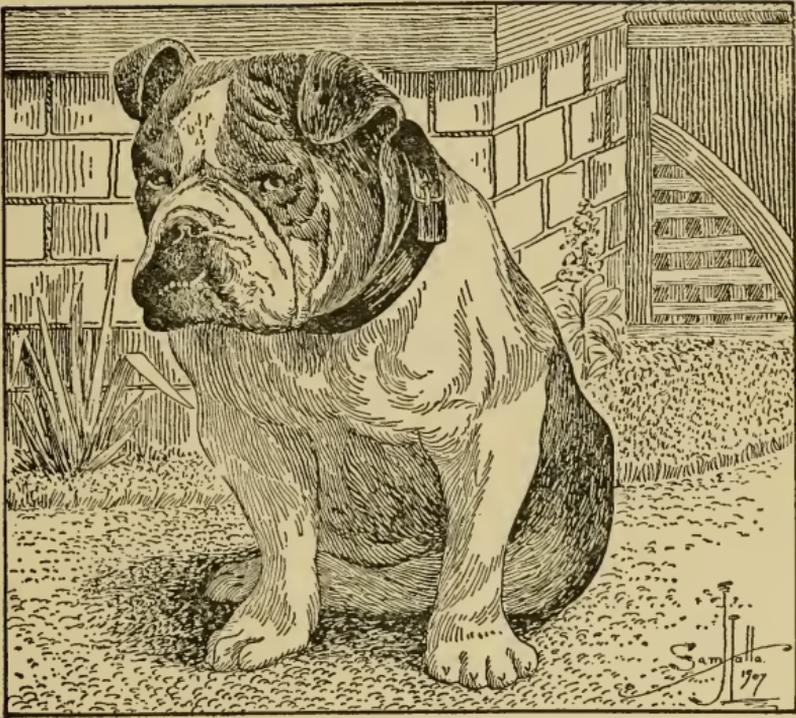


Fig. 86.—An English Bulldog. Popular opinion brands him as vicious, no doubt because of his appearance. He is, however, one of the most affectionate and intelligent of dogs.

1. Period of Gestation.

A bitch usually comes in heat twice a year, but some come oftener than this. She is nine days coming in heat and nine days going off, during which time she will take the dog about nine or ten days. It is best to keep the bitch shut up during the eighteen days, so that no other dog except the one from which it is desired to breed may be allowed with her.

It is nine weeks from the time of service until the mother is delivered of her pups.

2. Breeding for Sex.

A bitch served when first coming in heat will produce females, but if allowed to remain in heat for seven or eight days after she would have accepted the dog and then served, will produce males.

3. Treatment During Pregnancy.

During the nine weeks' period of pregnancy the bitch should be kept comfortable and warm if during the winter, fed wholesome food and kept free from lice, etc., so that no trouble will follow when whelping or pupping time comes. Keep plenty of fresh water so that she can get it at any time. See that she has sufficient but light exercise. See that she is, although not extremely fat, in good condition.

About ten days before delivery it is a good plan to give a very mild laxative of castor oil. During the last ten days of gestation avoid giving or allowing her any violent exercise or eating anything that is liable to upset her stomach. She should be carefully cared for, but the less dosing with medicine the better.

See that a warm, comfortable place, well ventilated, disinfected and free from lice, ticks, etc., is provided for her so that she has by the time whelping approaches become quite used to it.

4. Whelping—Pupping.

The approach of delivery is indicated by a desire to be alone and by the anxiety of the bitch to prepare a nest. If she has been properly cared for during the pregnant period no assistance will be necessary.

Difficulties, however, may arise. Should the pups not come naturally assistance should be given.

The head may come first with the front legs turned back, and be caught at the shoulders. In this case shove the pup back a little, slip your finger in under the front legs and bring them forward, and it will then come all right.

If the front legs are coming out and the head and neck are turned back, shove the pup back a little, and straighten the head and neck up along with the front legs.

Sometimes the pup comes backwards with only his rump and tail up in the passage; in this case shove the pup back and straighten up the two hind feet, and bring the pup away backwards.

Before starting have your fingers and hands oiled so as not to irritate the bitch; sometimes a small hook will be of some use, but if you use one be very careful not to tear her.

5. Treatment After Whelping.

Bitches are not very liable to disease after pupping and the only thing to be done is to see that she is dry, clean and warm, and that the pups are sucking her all right.

A nice warm dish of oatmeal porridge and milk is a good thing as soon as she shows a desire to eat.

6. Cutting Pups' Tails.

This is usually done when the pup is about a month old. The length of the tail to be left on varies with the breed of the pup; find out the length you want to leave it and then find the joint, and cut it through with one stroke of a sharp knife. They do not usually bleed, but if it should, touch the spots with Monsell's solution of iron, or if you have not got this just touch it with a red hot iron, which will stop it, but in most cases it will be all right without anything.

7. Weaning.

Should the mother be strong and healthy and have an abundant supply of milk, leave this to nature, unless for some reason it is necessary to do otherwise.

At the age of from four to six weeks the mother may be taken from the pups, gradually at first—an hour or two each day, then during the whole day, remaining with them only at night, and finally taken away altogether.

8. Rearing the Pups.

At as early an age as possible and before being weaned teach the pups to drink milk, then a little bread and milk, and so on, until they will eat almost anything that is good for them.

When taken from the mother feed light, wholesome food and keep them dry, warm and comfortable. Watch closely for indications of worms and such maladies as are likely to attack them.

Feed often at first, but as they get older the number of the meals may be reduced.

Watch for loose teeth and remove them, as this may be done easily. The time during which the temporary teeth are shed and the permanent set takes their place varies from five to ten months according to the breed and condition.

Observe carefully cleanliness, good and proper food, regularity in feeding, plenty of exercise and pure, fresh air.

9. Mammitis.

Causes.—Mammitis is the result of separating the pups from the mother too soon after whelping. This may be necessary because of disease or death of the pups, or it may be the result of indiscretion of the owner. Exposure to cold or an injury may cause it.

Symptoms.—There is soreness and a red appearance of the milk glands. The secretion of milk is curdled and in severe cases may be tinged with blood or pus. Abscesses may form and break. High fever and loss of appetite always accompany mammitis.

Treatment.—When possible, if the bitch can be induced to accept, allow a pup to suck. Give

Epsom Salts	2 drams.
Bicarbonate of Soda.....	½ teaspoonful.

Mix in a little lukewarm water and give twice a day until the bowels are well relaxed. Bathe the milk glands thoroughly twice a day with warm water, wipe dry and apply goose oil.

Should abscesses form lance them when ready and follow the same treatment as outlined above.

CHAPTER III. CASTRATION AND SPAYING.

I. CASTRATION.

1. **The best time** to castrate a dog is when he is young, although it may be done at any age.

2. **The operation** should be performed as follows: Roll the dog in a blanket, turning his front legs back and his hind legs forward so as to catch them in the blanket, and have him held on his back with his hind end stuck out of the blanket enough to get at the bag. Take hold of the testicle with your left hand, and with a sharp knife in your right, let out the testicle by making a cut in the bag large enough to let it out. Separate the covering which is attached to the back part of the testicle with your knife; as soon as this is cut draw the testicle well up, and if a young dog cut the cord off with a scissors, which will stop the bleeding, but if an old dog, tie the cord tight with a piece of strong string, leaving the ends long enough so that they hang out of the bag. Cut the testicle off about one-half an inch below where it is tied. Operate on the other testicle in the same way, fill the holes with salty butter and let him go.

II. SPAYING.

The operation of spaying consists of removing the ovaries from the bitch to prevent her coming in heat and becoming with pup.

1. **The best time** to operate is at the age of from six to nine months, just before she comes in heat the first time. It may, however, be done at any time. We have even performed the operation upon a pregnant bitch without injury. When performed during pregnancy she is liable to lose her pups. In any case it is better that she be thin.

2. **Prepare her** for the operation by feeding only milk for twenty-four hours before commencing.

3. **The instruments** required are a sharp knife, a sewing needle and string (such as is ordinarily used for wounds), a probe (made of a piece of wire about eight inches long, rounded on one end to prevent injury when passed into the

womb), and a pair of scissors. Have also a large sponge and about eight ounces of sulphuric ether.

4. **The operation** should be performed as follows: Place her upon a table or box so that she can be conveniently handled, saturate the sponge with sulphuric ether and hold it tight to her nose, making her breathe right through the sponge. Watch her carefully, and as soon as she is under the influence of it so much that she has no power of herself

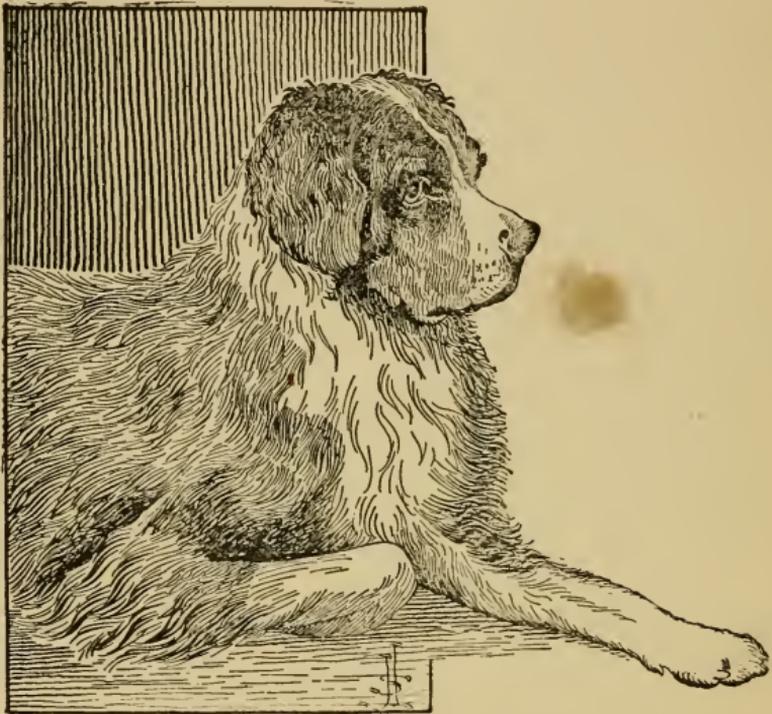


Fig. 87. Specimen of a Long-haired St. Bernard. A Splendid Breed of Large Dogs, Being Strong, Active and Intelligent.

then take the sponge and ether away from her nose and commence to operate. Have some one to watch her head all the time, and when she commences to stir a little place the sponge saturated with ether to her nose again until she is quiet. Continue this all through the operation, but be careful not to give her too much, just enough to keep her asleep. Have the bitch on her back. Commence operating by oiling the probe and passing it carefully up into the passage until it is in the womb. Make a cut about an inch long in the

center of the belly, between the four last teats. Oil your fingers and insert the first finger of the left hand into the cut, while with your right you take hold of the probe and press it down at the outer end so that the end inside will be raised toward the hole in the skin of the belly. With your finger in the cut feel the end of the probe. The part you feel is the womb. Slip your finger forward under the womb and bring the two horns that branch out from it up and out through the hole with your finger, then draw one of the horns well up until the ovary, which is about the size of a pea, comes outside. With the scissors cut it off. Do the same with the other horn, cutting off the other ovary. Wash the parts clean with carbolic water—five drops of carbolic acid to a pint of lukewarm water—shove them carefully back to their place and sew up the skin by putting in a few stitches. After this take the sponge away from her nose, pour a little cold water into her mouth and let her come to. Keep her very quiet for a week or so, feeding mostly on new milk, and she will come all right.

The operation is very simple when once you have performed it and know how to go about it. A person wishing to become an expert at spaying had better thoroughly examine the womb, horns of the womb and ovaries in a dead bitch before trying the operation on a live one, as it will give a better idea how to go about it.

CHAPTER IV.

ACCIDENTS.

1. Wounds or Cuts of Any Kind.

If the wound is torn much, tie the dog's mouth with a rope or muzzle him so that he cannot bite you, also tie his legs to hold them firmly. Stitch the wound up with a needle and twine (the same as is used for sewing wounds on horses). There is no necessity for using medicine on it afterwards, but just leave the dog in a dark, quiet place and allow him to lick the wound, which is the best medicine you can use. If the wound is where the dog cannot get at it to lick it, bathe twice a day with lukewarm water and castile soap, and each time after bathing wipe dry and apply the white lotion.

2. Sprains.

Generally speaking the best treatment is to do all possible to induce the dog to give the sprained tendons a rest. In severe cases when he can be prevented from licking the parts the use of the white liniment is beneficial.

3. Fractures.

Causes.—Fractures usually result from an accident—being kicked by a horse, jumping through a fence, etc. Two often, however, they are the result of a kick or injury that should never have happened.

Symptoms.—The symptoms vary according to the part affected. If a fracture of the neck bones the dog dies instantly, if in the back it causes paralysis of his hind quarters, if in the hip or hind leg it is easily told, as the dog cannot use the leg and hops along on the other three while the broken one is dangling; if a fracture in the front leg, he acts similar to when the fracture is in the hind leg. To make sure of a fracture, catch the dog and move the affected parts and you can hear the ends of the broken bone grinding on each other.

Treatment.—If the fracture is in the back, there can be nothing done but destroy the dog, to put him out of pain. If the hip or shoulder bone is fractured and it is a young dog, keep him perfectly quiet and the bones will soon knit.

together, but if a very old dog there is not much chance of the bones knitting together, although they might. If the fracture is down on the leg set the broken bone to its place and make a long, starch bandage (which is a bandage soaked in starch and then wrung out as dry as possible). Roll the bandage around the fractured leg, letting it go two or three inches above and below the fracture, wrap it moderately tight and hold the leg and bandage straight until it hardens. Keep the dog quiet and leave the bandage on for three or four weeks until the bones are healed and he can use his leg all right.

4. Scalds and Burns.

Unless these are very severe it may be well merely to keep the patient quiet, clean, warm and comfortable. If prevented from licking the parts applications of the white lotion is beneficial and will soon cause them to heal.

Should proud flesh make its appearance in the wound, burn it out with a stick of caustic potash.

5. Poisoning—Rat Poison, Strychnine or Arsenic.

Causes.—The dog gets at these poisons often through accident. It frequently happens that they are purposely placed in his way by contemptible persons, who take this sneaky method of avenging themselves against the owner of the harmless brute.

Symptoms.—Severe pains appear very quickly after the poison is eaten. He takes fits, slobbers at the mouth, the eyes bulge out and are bloodshot, and he keeps trembling all over. If the dog shows the above symptoms, and you have had poison around the place, or he has been anywhere that he could possibly get it, you may conclude that he has been poisoned.

Treatment.—The treatment must be quick. Give the dog an emetic to make him vomit. This is the only way you can save his life. The idea is to get him to throw up the poison from the stomach before it gets absorbed into the blood. Give him one dessertspoonful of salt dissolved in a half teacupful of lukewarm water as a drench, or one teaspoonful of mustard dissolved in a half teacupful of lukewarm water as a drench. Either will cause vomiting. But the best of all, if you have it, to make him vomit, is to give from half a teaspoonful to a teaspoonful of sulphate of zinc dissolved in

a half teacupful of lukewarm water as a drench. If you can get him to vomit soon enough it generally saves his life.

6. Dog Bites.

For accidents of this kind to the dog see section I.

Should you yourself be bitten by a dog the matter should not be neglected, but a physician should be consulted at once.

7. Sore Feet.

Causes.—This usually results from long runs over the rough ground or through damp grass.

Treatment.—Rest is required and cleanliness of the feet absolutely essential.

Bathing the feet in a solution made by steeping white oak bark in water to which has been added a little alum is an excellent method of hardening the feet.

CHAPTER V.

DISEASES OF THE SKIN.

1. Mange.

Mange is the result of a germ or parasite burrowing into the skin. This parasite may be easily communicated from one dog to another. They multiply extremely fast and when the disease once starts it soon spreads over the whole body, mostly affecting the skin of the back, head and neck.

Care should be taken in its management as persons may become affected.

Causes.—The principal causes to be noted are dirty, filthy kennels, sleeping in dirty stables or damp places and allowing the skin and hair to become dirty.

Symptoms.—Extreme irritation of the skin is the most noticeable symptom. He rubs and scratches himself until the hair comes off in spots and frequently the skin bleeds. The hair is dry and scurfy and the physical condition in general becomes run down.

Absolute certainty as to the presence of the disease may be obtained by the examination of the skin or scales under a microscope. The parasite may be clearly seen.

Treatment.—If the weather is warm clip the hair off short, and give him a thorough good washing with lukewarm water and soap, after this rub him dry and apply the creolin wash by rubbing it well into the skin all over the body. Use two dessertspoonfuls of creolin to the pint of water and apply it once a day until the dog stops rubbing himself, the skin heals and the hair starts to grow out. As well as this, give a teaspoonful of sulphur in his milk twice a day if a large dog. Give the sulphur in proportion to the size of the dog. If in the winter time just clip the hair off and apply the creolin wash, but do not wash him with water.

See that the sleeping quarters are well cleaned and disinfected to prevent the disease from spreading. Feed nutritious, wholesome food and keep the patient warm.

2. Fleas, Lice, Ticks.

Causes.—Dirty kennels and filthy sleeping quarters are responsible for fleas, lice and ticks. They may, however, be communicated from a dirty, affected animal to a clean and properly cared for dog, but if cleanliness is rigidly observed the chances are that little trouble will be encountered in keeping him free from these pests.



Fig. 88.—A Cat and Dog Flea—Magnified.

Treatment.—Thoroughly clean, disinfect and whitewash the dog kennel or sleeping quarters. Add fresh bedding and keep the place in this condition.

If in the summer time, wash the dog with lukewarm water and soap, then rub him dry, after which rub him thoroughly with creolin wash every third or fourth day until the fleas are killed. One washing is usually enough to kill the fleas. Use two dessertspoonfuls of creolin to the pint of water to wash him with.

3. Tumors or Growths on the Skin.

As soon as these are detected it is best to cut them out clean.

Secure the dog (See Chap. VIII, Sec. 2) and skin the lump out with a sharp knife. Do not put anything on the wound thus made, merely allow the dog to lick it. It is dangerous to attempt the application of medicine, as the licking of it may cause him to be poisoned.

4. Eczema.

Unlike mange, for which it is very frequently mistaken, eczema is not contagious.

Causes.—It arises from poor diet and injudicious feeding, such as may cause the stomach to become deranged.

Symptoms.—It usually makes its appearance about the legs, neck and back and may in time spread almost all over the body, attacking also the stub of the tail. The skin is dry and scrufty and small pimples, or sort of blisters, make their appearance. These are extremely itchy and filled with a watery fluid. Rubbing or scratching these causes them to break and form small scabs. For this reason, as we have stated, it is often mistaken for mange. An examination, of

course, with the microscope, does not disclose the mange parasite.

Treatment.—Treatment must be external as well as internal. If it is thought that stomach derangement is caused by worms, treat for these. Endeavor to get the stomach and digestive system in good condition by giving attention to proper feeding.

Apply the creolin wash to the affected parts and keep the skin and dog quarters dry, comfortable and clean. Eczema is often very stubborn and time and patience are required to effect a cure. Cleanliness, proper food properly given and the applications of the creolin wash will soon produce the desired effect.

CHAPTER VI.

DISEASES OF THE RESPIRATORY ORGANS.

1. Inflammation of the Lungs (Pneumonia).

Inflammation of the lungs is often attended with pleurisy, which condition is designated pleural pneumonia.

It is commonly met with and often proves fatal, especially if following some other weakening disease, as it frequently does.

Causes.—Exposure to severe cold, especially if in a weakened condition. Swimming in cold water in the spring or fall, being clipped or washed and then exposed to cold, sudden change of the weather or injury to the side may account for it.

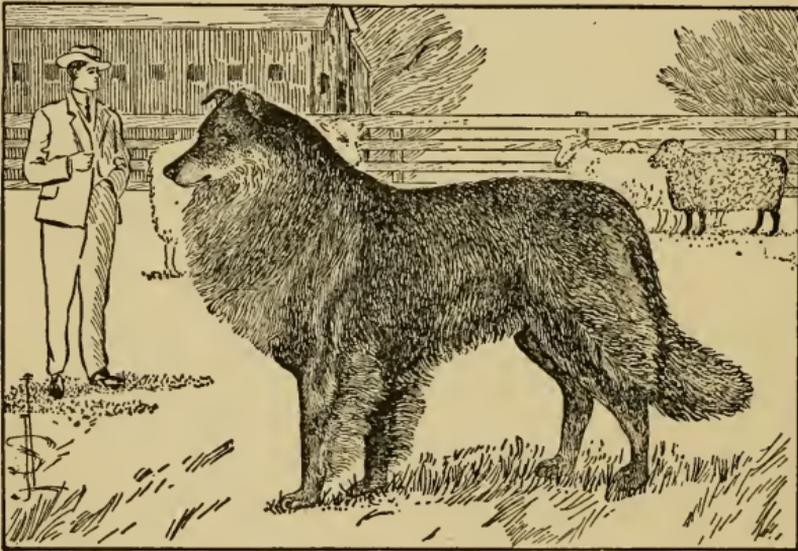


Fig. 89. A Scotch Collie. Well Known as the Best of Sheep Dogs.

Symptoms.—The most noticeable symptom is quick and labored breathing—the inspiration full, the expiration short. He sits most of the time with his head pushed forward. When standing the front legs are spread apart. As the

disease progresses there is a haggard expression and coldness of the extremities. The disease when not checked develops rapidly and soon results in death.

Treatment.—Place the patient where he may have plenty of fresh, cool air, free from dampness and draft. Keep the body warm and comfortable by blankets and disturb him as little as possible. Rub the legs and bandage them. Give small quantities of gruel, broth or new milk. Keep the bowels free with small doses of castor oil. Poultice the sides with half linseed meal and half bran until relieved. To allay the fever give

Tincture of Aconite.....½ to 1 drop.

every fifteen minutes for two hours then hourly for eight hours.

When convalescence begins be extremely careful of exposure or anything that may cause a relapse. An ordinary dog may be given a one grain capsule of quinine three times a day until fully recovered.

Introduce regular food and exercise gradually.

2. Cough (Laryngitis) and Cold in the Head.

Causes.—Similar to those outlined in Sec. I. of this chapter.

Symptoms.—The appetite is gone and the dog is dull and feverish, with a discharge from the nose. When laryngitis is present, there is also soreness of the throat, difficulty in swallowing and a husky cough.

Treatment.—Keep the dog comfortable, warm and dry, free from drafts, with plenty of pure, fresh air. Clothe the body according to the season. Feed soft foods—gruel, broth or new milk—for a few days. Give

Chloride of Potash 2 to 3 grains.

Place this on the tongue with a spoon two or three times a day. In very severe cases poultice the throat with warm linseed meal and bran.

3. Bronchitis.

This is an inflammation of the bronchial tubes or the branches of the trachea, or windpipe, leading to the lungs.

Causes.—Exposure to cold and dampness is generally the cause. A neglected cold may result in bronchitis.

Symptoms.—There is a dry, hacking cough often followed by vomiting of slimy froth mixed with a little blood. The eyes are often bloodshot and the nose is hot and dry.

Treatment.—Treatment should be similar to that outlined in Sec. 2 of this chapter. A good medicine for a bronchial cough is made as follows:

Licorice Extract	½ ounce.
Sweet Spirits of Nitre.....	½ ounce.
Spirits of Camphor	¼ ounce.

Mix this in about a cupful of lukewarm water and give a dessertspoonful to an ordinary-sized dog two or three times a day.

4. Asthma.

It is usually noticed to affect aged dogs, although it may be found in others.

Causes.—Sudden change of climate, prolonged derangement of the digestion, over-feeding and lack of exercise are the most prevalent causes.

Treatment.—The most effective treatment is proper attention to the general condition. Feed light, easily digested, nutritious food and keep the bowels regular by doses of castor oil.

5. Pleurisy.

Causes.—These are similar to those of cold or bronchitis.

Symptoms.—The symptoms are as outlined for pleural pneumonia, Sec. 1, but it may be noted that when the pleura, or covering of the lungs is inflamed the ribs are more or less fixed, while the abdominal muscles are brought more into action.

Treatment.—Follow the same treatment as outlined in Sec. 1.

6. Consumption.

Dogs, like men, are born with a predisposition to consumption. Care, therefore, should be exercised to see that breeding stock is free from its ravages.

Causes.—It may be hereditary or may be the after-effects of some weakening disease. Poor nourishment, in-

breeding or lack of exercise promotes conditions for its establishment in the system.

Symptoms.—There is a general loss of flesh and vitality, accompanied by a hacking cough.

Treatment.—All that can be done is to give the strictest attention to the diet and general care. Strive to build up the system with light, easily-digested food and a little cod liver oil. Keep the patient warm, comfortable and dry.

7. Cold.

For causes, symptoms and treatment see Sec. 2.

A cold may affect one or all of the organs of the body and if neglected finally settles upon that organ or organs which may be the weakest.

CHAPTER VII.

DISEASES OF THE DIGESTIVE SYSTEM.

1. Indigestion (Dyspepsia).

Indigestion is inability to abstract from the food taken into the stomach the nourishment necessary for the building up and sustaining of the body.

Causes.—Lack of exercise, improper food and irregular feeding are among the causes. It may be the after effects of some other disease that may have left the digestive organs in a weakened condition.

Symptoms.—Ravenous appetite, alternating periods of loss of appetite, occasional spells of vomiting, constipation, alternating periods of diarrhoea, are among the more noticeable symptoms. These are accompanied by loss of flesh and a dry, dusty coat of hair.

Treatment.—Remove the cause if possible. Give a reasonable quantity of clean, wholesome food regularly, with plenty of fresh, clean water to drink. Give

Syrup of Buckthorn... 1 to 2 ounces or 4 dessertspoonfuls.

Vary this dose to the size of the dog and give every day for a week or ten days or until the bowels are operating regularly.

If the case is a severe one, in addition to this give a half teaspoonful of Bicarbonate of Soda on the tongue, night and morning. It must be remembered that careful feeding and regular exercise are absolutely necessary to bring about a cure.

2. Gastritis (Inflammation of the Stomach).

Causes.—Anything that may cause acute derangement of the stomach and secretory glands.

Symptoms.—There is very severe pain and the dog lies with his legs spread out. When standing he has a sort of doubled up appearance. Pressure on the left side of the

stomach causes pain. He is somewhat feverish and the nose is hot and dry. Vomiting is also present.

Treatment.—Give

Opium	¼ grain.
Calomel	½ grain.

Make in the form of a pill and place it well back upon the tongue. This is sufficient for a good-sized dog. Vary the dose accordingly. Gastritis is practically an acute attack of indigestion and the same treatment of feeding should be followed.

3. Constipation.

This is when the bowels are unable to force the food forward in the natural way.

Symptoms.—The dog refuses food, seems very dull and dumpish. The belly seems fuller than natural and he is often noticed to strain, but does not pass much. Anything that does come away is hard and dry.

Treatment.—For a small or young dog give

Syrup of Buckthorn.....¼ ounce or 1 dessertspoonful.

Pour this down twice a day, night and morning, until the bowels are moved. For a large dog give one-half ounce or two dessertspoonfuls of syrup of buckthorn twice a day until it acts on him. Castor oil is also recommended to be given in the same proportions as the syrup of buckthorn. As well as giving the medicine mentioned give an injection of a teacupful of lukewarm water with a little soap in it twice a day. Give the dog gentle exercise once a day and see that he has nothing but new milk to drink during the time he is sick.

4. Worms.

Symptoms.—The dog has a good appetite, but does not thrive well. His hair is dry looking and dusty. Occasionally there is a worm noticed to pass away in his manure. Sometimes dogs affected very badly with worms take fits.

Treatment.—For a medium-sized dog give

New Milk	4 dessertspoonfuls.
Oil of Male Shield Fern.....	1 dram.

Pour it down by putting it well back in the mouth with a spoon or bottle and holding his head until he swallows it.

Give this dose every third day until the bowels are moving free and the dog is relieved of worms.

The Tapeworm often affects dogs, and when worms are suspected a strict watch should be kept for pieces of the worm in the manure.

Dogs become infected in the same manner as other animals.

If evidence of tapeworm is found, shut the dog up for a day and allow him nothing to eat, then give a dose of castor oil. In the course of twelve hours give the worm medicine as above and watch the droppings until the head of the worm is found, or until satisfied the worm has been expelled. The head of the tapeworm is very small, often not larger than a pin head, and is attached to the sections of the body by a small neck that broadens out at the base.

5. Diarrhoea.

This is not a very common disease in dogs, but is sometimes seen, and is generally caused from a change in his food.

Treatment.—Keep the dog very quiet, and in some cases boiled new milk with a little dry flour in it checks the diarrhoea without any medicine. If this fails, give to a small dog half a dram or half a teaspoonful of laudanum and a teaspoonful of whiskey in a tablespoonful of new milk as a drench. For a large dog give one dram or a teaspoonful of laudanum and a tablespoonful of whisky mixed in half a teacupful of boiled milk and flour as a drench. Repeat the drench three times a day until he gets all right. During the treatment keep the dog very quiet and give very little to eat except boiled new milk with a little dry flour sifted in it.

6. Inflammation of the Bowels.

Causes.—Prolonged constipation or the presence of indigestible food in the bowels may cause inflammation.

Symptoms.—The dog stands with the back humped up and the belly drawn in. Loss of appetite and great thirst are also present.

Treatment.—Give:

Opium	$\frac{1}{4}$ grain.
Calomel	$\frac{1}{2}$ grain.

to a good-sized dog—vary the dose accordingly.

In very severe cases it is a good plan to bathe the belly in warm water, wipe dry and rub it with the white liniment.

Pay strict attention to the diet. See Section 1 of this Chapter.

7. Piles.

Causes.—The usual cause of piles is constipation or the opposite condition, diarrhœa.

Symptoms.—These may be external or internal. Bleeding may or may not be present.

Treatment.—See treatment for constipation, or diarrhœa, as the case may be. Apply the white lotion to the parts. Give attention to the diet and general condition.

CHAPTER VIII.

DISEASES OF THE EYE AND EAR.

I. THE EYE.

1. Sore Eyes.

This is usually the result of some condition giving rise to inflammation.

Causes.—A piece of foreign matter—a speck of dust, chaff, etc.—an injury such as a scratch or bite may cause sore eyes.

Symptoms.—The eye is very red, sore and inflamed, and after a time a little scum will form over the sight. The eyelids, in some cases, are swollen and tears run from the corners.

Treatment.—Catch the dog, examine the eye, and if there is anything in it, remove it at once. Bathe with new milk twice a day, and each time after bathing apply the eye wash mentioned in Part VI. until he gets all right. While treating keep him in a cool, dark place.

2. Enlargements or Growths in the Eye.

Causes.—These in all probability are the result of constitutional debility or in some cases may develop from injury to the eye.

Symptoms.—In some cases the eye itself becomes so enlarged that it bulges out of its socket, which gives the dog a very unsightly appearance. In other cases cancerous growths affect the eye, and the cancer grows until it hangs out of the eye onto the cheek.

Treatment.—In either of the above cases treat by removing the eye. First, put a muzzle on him or tie his mouth with a strong, small rope so that he cannot bite you, then tie his legs firmly. When you have the dog securely tied, stick a hook into the affected eye and pull outwards and upwards, and with a sharp knife cut around the eye, separate

it from the eyelid and draw the eye up as far as you can. You will find it attached at the back by the muscles, nerve and artery of the eye. Tie a string tight around the back part so that it will prevent bleeding, then cut the eye off in front of the string, leaving the string on. For after treatment, bathe the parts with lukewarm water and castile soap once a day, and each time after bathing apply the white lotion and it will soon heal up. Keep the dog in a dark, cool, quiet place during treatment.

II. THE EAR.

3. Canker.

Causes.—This is a common disease in dogs that run through long, wet grass.

Symptoms.—There is a discharge of matter from the ear, which has a bad smell. He holds his head to one side, and if you go to catch him to examine the ear he will be very much afraid, showing that it is very sore.

Treatment.—Bathe the ear well with lukewarm water and castile soap once a day. Wipe dry each time after bathing and inject a little white lotion into the ear with a syringe and he will soon get all right.

4. Deafness.

This is very common in old dogs.

Symptoms.—The dog seems stupid, and when you call him he does not hear you.

Treatment.—If an old dog, and the cause is from age, there cannot be anything done; but if a young dog, and the deafness is caused from wax in the ear or anything like that, wash it out with lukewarm water and soap, after which drop a few drops of sweet oil into the ear. Do this every second day and in a short time it will effect a complete cure.

CHAPTER IX.

MISCELLANEOUS DISEASES.

1. Distemper.

This is a very common disease in dogs from three to six months old, but may affect them at any age. It is mostly seen during the fall, winter and spring. This disease somewhat resembles distemper in horses.

Causes.—It is caused by parasites, or germs, getting into the blood and setting up the disease in the same manner as distemper in horses. Allowing the affected dog to be with other dogs communicates the disease to them.

Symptoms.—The dog is very dull and sleepy looking, tries to get in a quiet, dark place and refuses to eat. His eyes run water, and after a time they become very sore. In a few days his hair becomes dry and there is a discharge from the nose, eyes, and sometimes from the penis. The bowels are costive and he falls off in condition. The symptoms gradually get worse, and if he does not get relief he will go into convulsions or fits and soon die. Like other diseases of this kind it must run its course, which should last about nine days.

Treatment.—The treatment is very simple. Give the affected dog nothing to eat but new milk and the following medicine:

Nitrate of Potash or Saltpetre.....	.....$\frac{1}{8}$ pound.
Sulphur .....	.....$\frac{1}{8}$ pound.
Ground Gentian Root.....	.....$\frac{1}{8}$ pound.

Mix thoroughly together, and to a large dog give half a teaspoonful of the mixture three times a day on his tongue with a spoon or in his milk. Regulate the dose in proportion to the size. Keep him in a quiet, clean place, wash the discharge from his eyes and nose with lukewarm water, and afterwards wipe dry with a soft cloth. If the bowels are costive, give from a teaspoonful to a dessertspoonful (according to the size of the dog) of syrup of buckthorn once a day until the bowels move freely. After this give a dose once

or twice a week to keep the bowels free, and in a week or so the dog will begin to get better. Be careful not to let him get cold until he recovers.

2. Mad Dog (Hydrophobia or Rabies).

This disease originates spontaneously in dogs and cats without being bitten, and is mostly seen in very hot weather and in hot climates. It may also be caused by dogs or cats being bitten by another mad dog or cat.

Symptoms.—The affected dog is first noticed to become excited, runs about and bites at everything that comes in his way. Saliva runs from his mouth and his eyes are bloodshot. After this he will have a spell of quietness, and lies down in an out-of-the-way place. He seems to have a depraved appetite, will eat clay and all sorts of dirt. Suddenly, he again becomes excited and runs about biting at everything that comes in his way, the same as at first. A mad dog rarely, if ever, goes out of his way to bite anything. In running about he keeps snapping his teeth, and once in a while gives a peculiar howl. He has great difficulty in swallowing, and in some cases cannot swallow at all. These symptoms gradually get worse until the dog dies. The time until the disease affects a dog after being bitten varies from ten to fifteen days.

Treatment.—As soon as the dog is noticed to be mad, have him destroyed, for he is very dangerous to have around, and, besides, there is no cure for it. In cases where a dog has been bitten by a mad dog or cat and before violent symptoms appear, cut the piece out where he was bitten and burn the hole with caustic potash, nitrate of silver or a red hot iron. This destroys the poison before it gets into the system.

3. Influenza.

Influenza is very similar to an ordinary cold, between which it is often difficult to distinguish.

Causes.—Similar conditions to those outlined in Section 2 of Chapter VI. may cause it.

Symptoms.—These are also similar to those of cold; they are, however, more pronounced, the fever is higher, the nose very hot and dry and the cough severe.

Treatment.—Give:

Rhubarb	2 grains.
Ipecacuanha	1 grain.

Mix and give as a powder.

Keep the dog inside, dry, warm and comfortable and feed light, nutritious food.

4. Chorea.

Chorea affects the nerves, causing the affected part to jerk constantly.

Causes.—It is very often noticed after a dog has had a very severe attack of distemper, or it may be caused by an injury.

Symptoms.—There is a continual jerking of the muscles around the affected part when the dog is resting.

Treatment.—There cannot be much done for it after the disease has once set in, but by giving from one-quarter to one-half a dram of bromide of potassium twice a day on his tongue with a spoon or in a little new milk, according to the size of the dog, as soon as the disease is noticed, a cure will result in the majority of cases.

5. Overgrown Claws.

This affection is mostly found in lap dogs and house pets.

Causes.—Lack of outdoor exercise which prevents digging and scratching in the ground is the principal cause.

Symptoms.—The nails grow so long, if not cut, as to curl round and pierce the sole of the foot, causing it to be very sore.

Treatment.—Cut off the ends of the claws with a pair of clippers. Should the foot be sore, poultice for a few days and apply vaseline.

6. Rheumatism (Kennel Lameness).

Causes.—Dampness and exposure may cause it.

Symptoms.—It may affect any part of the body, but usually is found to settle in the hind legs. In bad cases there is fever, constipation and dryness of the nose.

Treatment.—Give a physic of Epsom salts every day; two drams in lukewarm water is sufficient for an ordinary dog.

In addition to this give 10 to 30 grains (according to the size) of salicylate of soda in a little water three times a day.

Bathe the parts twice a day with lukewarm water, wipe dry and apply the white liniment.

7. Rheumatic Fever.

This is merely a very severe attack of rheumatism accompanied by much fever. Follow the treatment outlined in Section 6 and keep the diet rigidly free from meat.

8. Fits or Convulsions.

Fits are of three kinds, according to the cause and organs affected.

Causes.—1. Apoplectic fits are the result of brain trouble and usually result in sudden death.

2. Epileptic fits are the result of cutting teeth or some other violent irritation.

3. Ordinary fits are the result of some digestive derangement—worms, constipation, diarrhœa, etc.

Symptoms.—In the first of these the dog suddenly falls, lies quietly, does not froth at the mouth and breathes heavily until death comes.

Frothing at the mouth and grinding of the teeth are two symptoms always present in epileptic fits.

Frothing and grinding may not be present in ordinary fits.

Treatment.—Nothing can be done effectively for apoplexy.

A hot bath will often relieve epileptic fits in pups if caused by cutting teeth. If necessary give an injection of

Warm Water	6	tablespoonfuls.
Ether ..	6	drops.

This usually proves effective. In addition give

Bromide of Potassium.....	2	grains.
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twice a day for a couple of weeks.

CATS.

CATS—country cats at least—are to all intents and purposes “freewill agents.” They roam about at leisure, feed upon birds and mice—their natural prey, have access to the kitchen and, in the great majority of cases, enjoy more freedom and receive less attention than any other domestic animal.

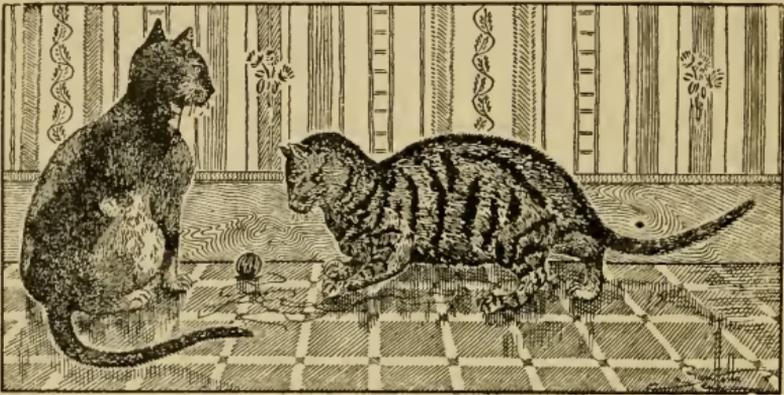


Fig. 90. The Cat—a Playful Disposition.

The breeding of cats, however, for exhibition purposes is becoming quite popular, and this necessitates curtailing to some extent the unlimited freedom enjoyed by the less aristocratic members of the feline fraternity. To produce such stock requires care, patience and attention, and the hints given for treatment of invalid cats are directed particularly toward such as it may be necessary to deny at least unlimited freedom.

CHAPTER X.

DISEASES AND TREATMENT OF CATS.

1. Invalid Cats.

1. **Cleanliness** is just as necessary in the treatment of cats as in the treatment of any other animal. They are by nature scrupulously clean in their habits, so that if given a chance will require little attention in this respect. A box containing a little dry earth is all that is necessary, placed where it is easily accessible. The contents should be changed frequently and the cat house thoroughly disinfected with sulphur fumes at stated periods. A little flowers of sulphur sprinkled on the bedding and among the hair of the cat's fur will keep away lice, fleas, etc.

2. **Giving medicine** to a cat is not an easy matter, and requires patience and tact. It can be done in much the same manner as that outlined for dosing a dog, to which you are referred.

3. **Feeding** invalid cats is quite a simple matter. The stomach is a pretty sure guide, together with the one precaution that the diet should be light, easily digested and nutritious.

4. **Kittens**, when weaned, should be fed frequently—four, five or six times a day. Milk or milk and bread is a good diet. Slightly cooked or raw meat with bread is good for older cats. There are also prepared foods of good quality that may be obtained from reliable dealers.

2. Cat Diseases.

Cats are very sensitive and show signs of being ill more noticeably than do most other domestic animals.

Symptoms.—Generally speaking, the most noticeable symptoms are loss of appetite, dry scurfy coat, and a hot, dry condition of the nose. During the time such symptoms are noticed, there is a tendency to be alone, preferably in some dark corner, where, unless in pain, most of the time is spent in sleep. When in pain the cat indicates its condi-

tion by whining and crying. Otherwise symptoms are similar to those of the dog under similar conditions.

The more common diseases affecting the cat are:

1. **Mange.**—Treat this disease much in the same manner as in the case of a dog, regulating the treatment accordingly

2. **Diarrhoea and Dysentery.**—Give:

Paregoric	20 drops.
Lime Water	1 teaspoonful.
Brandy	10 drops.

Mix and give every three or four hours.

3. **Constipation.**—For constipation nothing is better than a little castor oil, one-half to a teaspoonful every two or three hours while necessary.

4. **Worms.**—The symptoms and treatment for worms in cats are similar to those of dogs. Regulate the dose accordingly.

5. **Colic.**—The most noticeable symptom of colic is crying. Give a mild laxative of castor oil, a half to a teaspoonful. Follow in a couple of hours with a pill of

Calomel.....	$\frac{1}{8}$ of a grain or less.
Opium.....	$\frac{1}{8}$ of a grain or less.

Regulate this dose of course to the size and condition of the patient.

6. **Jaundice or Yellows.**—Give mild laxatives of castor oil every day when necessary to keep the bowels regular and a half teaspoonful of bicarbonate of soda in the drinking water each day.

7. **Inflammation of the Bowels.**—Follow the same treatment as that given for colic.

8. **Fleas and Lice.**—Treat in the same manner as dogs.

9. **Fits.**—Fits are due to the same causes as those of dogs. It may be added that too much meat or other indigestible foods may account for them. In this case give a laxative and remove the cause.

10. **Consumption, Wasting Away.**—Give every attention to the diet. Keep this as nutritious and easily digested as possible. Keep up the physical condition by having a small saucer of emulsion or pure cod liver oil always where the patient can lap it. This is a good plan in all lung troubles

and also as a stimulant and preventative. Cats in such cases particularly and at all times should have access to fresh grass. Grass is the great natural cat and dog medicine. A little grown in a box of fresh earth will supply this during the winter.

11. Colds, Distemper and other diseases treat similar to those of the dog.

3. Breeding.

The period of gestation is nine weeks and varies slightly with different breeds:

Little trouble may be expected at the time of delivery if the health and condition has been properly cared for during pregnancy. Apply the same principles laid down for the treatment of the bitch.

Kittens are quite helpless as well as blind when born, the eyes beginning to open about the ninth day. They may be safely weaned at the age of four weeks. Take one at a time from the mother in order (with similar treatment to that of the bitch) to regulate the flow of milk and avoid complications, such as milk fever in the mother.

Sore eyes of kittens may be mildly treated with the eye wash given in Part VI.

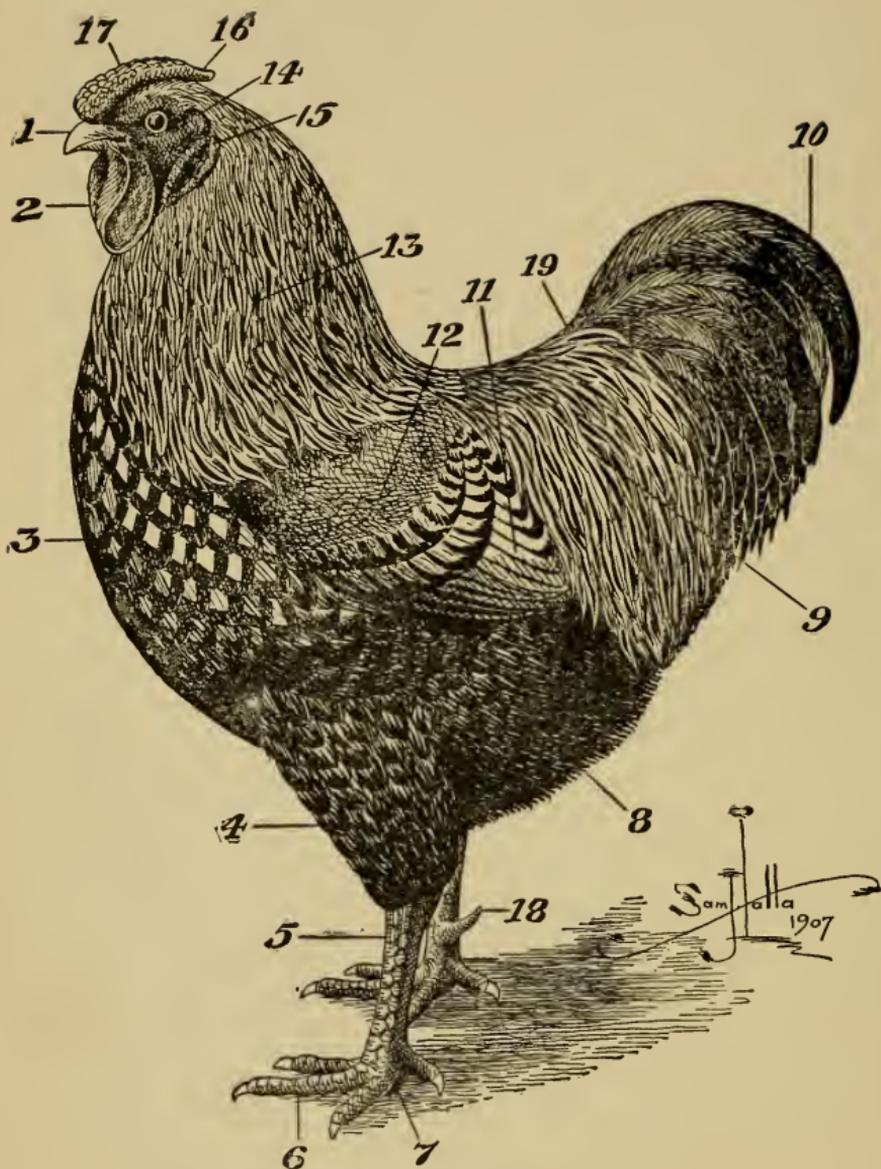


PLATE XVII.—A SILVER WYANDOTTE MALE.
 ILLUSTRATING THE TERMS COMMONLY USED IN SPEAKING OF A CHICKEN.

EXPLANATION OF PLATE XVII.

A SILVER-LACED WYANDOTTE.

The terms here shown are those more frequently used in describing a chicken.

1. Beak or Bill.
2. Wattles.
3. Breast.
4. Thigh.
5. Shank.
6. Toe.
7. Heel.
8. Fluff.
9. Saddle.
10. Sickle.
11. The Flight of the Wing—Upper and Lower Web.
12. Wing Bow or Shoulder.
13. Hackle.
14. Ear.
15. Ear Lobe.
16. Spike.
17. Comb.
18. Spur.
19. Coverts.

POULTRY.

IT is an old and true saying that "an ounce of prevention is worth a pound of cure." This seems to be particularly applicable to the subject of Diseases and Treatment of Our Domestic Fowl. Viewing the matter therefore

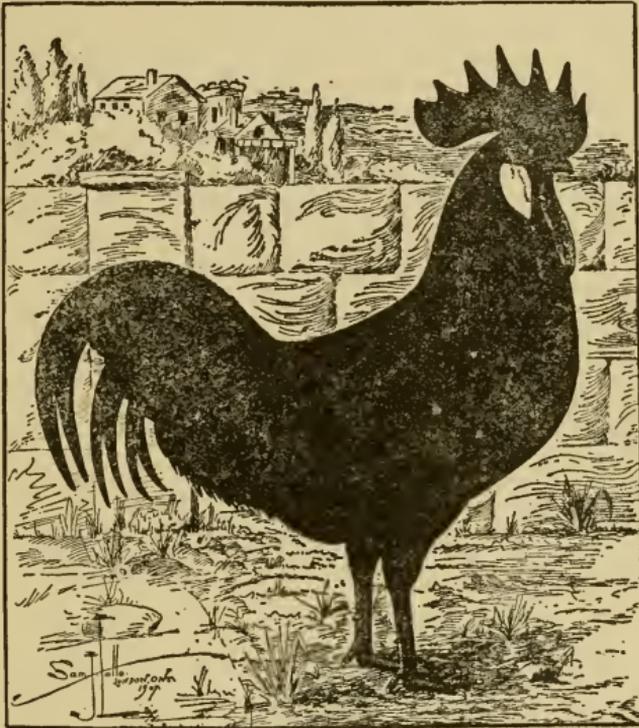


Fig. 91. A Black Minorca Cock—Sketched from Life.

in this light we may venture an apology for deviating to some extent from the lines followed in former pages in treating of the diseases of horses, cattle, sheep and pigs.

CHAPTER XI.

DISEASES AND TREATMENT OF DOMESTIC FOWL.

THE diseases to which poultry are subject seem to be peculiarly due to such conditions of rearing, feeding and care for which but poor excuse can be offered that we deem it within the province of The Veterinary science to briefly outline what we consider such proper conditions as will tend to reduce to a minimum the possibility of disease. It is, therefore, important, if this is to be attained, to carefully study the principles briefly laid down for the securing of healthy, vigorous and profitable stock.

No doubt some of the methods outlined may, to the farmer or poultry man who has been accustomed to allow his stock to shift for themselves, upon first thought appear somewhat elaborate, and, possibly, not such as will insure sufficient profit to guarantee the trouble and expense; but we feel confident in saying that he who follows, in principle, the plans suggested, will be amply repaid for all the trouble and expense, both financially and in the reduction of the amount of trouble in treating disease.

CHAPTER XII.

GENERAL OBSERVATIONS ON TREATMENT— HATCHING, HOUSING, FEEDING, ETC.

WE shall endeavor to outline briefly the conditions as we have suggested from the securing of the stock until it has been bred and the offspring matured.

1. THE BREED.

It would be impossible within the space at our disposal to discuss the merits or demerits of the many breeds of poultry now being raised. Each fancier thinks the breed he keeps the best for his purpose, and no doubt all have their particular points of superiority. There are, however, a few general points upon which all may agree and the recognition of which may be of benefit.

1. Study the merits of each breed.
2. Select that which appears to be best suited for your purpose, whether it be for egg production, for market fowl or for both.
3. In deciding consider the facilities that are possible for care, feeding, etc.
4. Do not keep more than can be properly cared for.
5. Keep nothing but the best, well-bred poultry—mongrels are neither attractive nor so profitable.
6. The most popular breeds, according to the advertising columns of a well-known poultry journal, are as follows: 1. Wyandottes (including all varieties). 2. Plymouth Rocks (white, barred or buff). 3. Orpingtons (including all varieties). 4. Leghorns (white and brown).
7. Other breeds worthy of being considered in making a choice are Cochins, Brahmas, Spanish, Rhode Island Reds, Minorcas, Langshans, Hamburgs, Games and Andalusians, each no doubt, as we have state, possessing characteristics that commend them to the fancy and requirement of certain individuals.

2. THE POULTRY HOUSE.

In the first place it is absolutely necessary for good results that poultry be kept separate from the other stock. It is not only necessary for the well-being of the poultry, but for the other stock as well.

We recommend, too, that, even by the ordinary farmer, the breeding stock be kept in a house by themselves.

When building a new poultry house try to obtain the following conditions and keep the same points in view when renovating the old one:

1. **Size.**—The size of the poultry house may vary not only with the number of fowls kept, but also with the conditions under which they are kept. A farmer having other out buildings may be able to get along well with a smaller poultry house than he who does not possess these. The exclusive poultry man is compelled to make provision for food space, etc., for which the farmer may use space in other buildings. To place this matter of size clearly we present such a house as may be recommended for a flock of fifty to seventy-five, making provision at the same time for say fifty or sixty chickens until such time as the flock is again reduced for the winter.

2. **Warmth.**—By all means have it warm. Here again we cannot lay down hard and fast rules, as conditions again vary to such a great extent. That proposed is boarded outside first with half-inch lumber, over which is put one thickness of tar paper; then boarded on the outside with matched lumber. The roof is composed of plain sheeting covered with one thickness of tar paper and shingles. On the inside it is boarded once and lathed and plastered. We recommend plastering as a preventative against lice and vermin of all kinds.

3. **Ventilation.**—Ventilation is provided for by placing ventilators made of tin or 1 in.x4 in. strips with slides at the bottom and projecting through the roof.

4. **Floor.**—The floor is of lumber except in the scratching shed, in which the ground serves as a floor. We find that the board floor is dry and in all other respects the best.

5. **Light.**—Ample provision should be made for the admission of light.

6. Roosts, nests, etc., and other matters of detail may be arranged to suit the requirements of the breed and the fancy of the owner.

We herewith present a plan of such a house as we think meets the several demands necessary for the purposes with which The Veterinary Science is intended to deal—the prevention of disease.

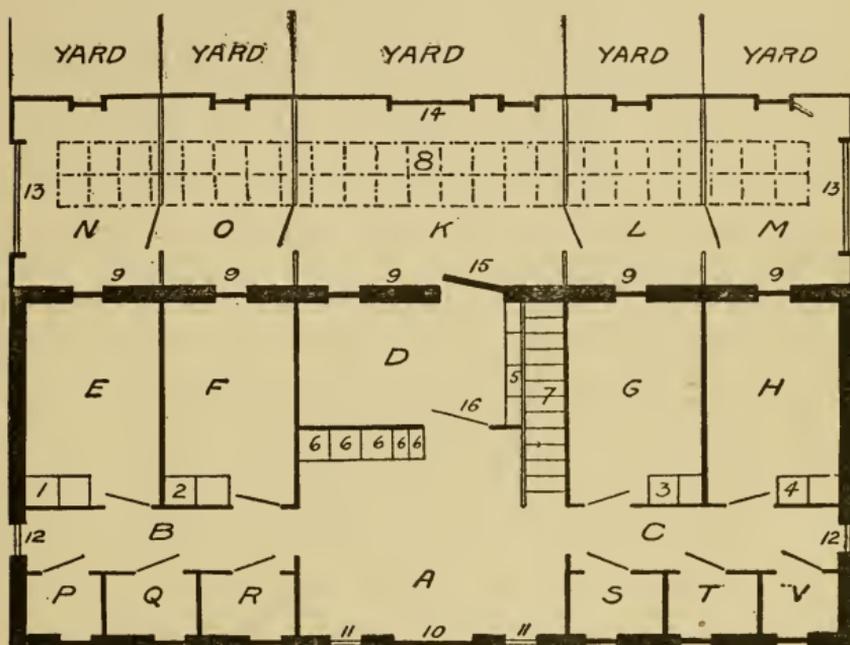


Fig. 92. A Model Poultry House. Ground Plan.

Fig. 92, Ground Plan.—Size, 28 ft. by 36 ft. A is a room 12 ft. by 10 ft., provided with feed bins (6, 6) and from which the stair leads to an upper room well lighted and in which are built cages (3 of fig. 94) for the isolation of sick birds, and in which may be kept shipping coops, etc., size 12x10. Band C, in which are windows, 12, 12 is a hall 3 ft. wide. P, Q, R, S, T, V are single bird compartments provided with small doors to give access to the yard. Over these are setting compartments of the same size, in which too may be kept cockerels or other birds that it may be necessary to keep from the others. The front of these single compartments are made of poultry wire, as also are the doors, but the partitions are of half-inch boards. (See 4 and 5 of

fig. 94). E, F, D, G and H are living and roosting rooms, each 6x10, with nest boxes 1, 2, 3, 4. The partitions and doors (See 1 and 5 of fig. 94) are closely boarded to the height of 2 ft., above which is poultry netting. N, O, K, L, M are the scratching sheds—single boarded. In the roof are placed windows (8) sufficient to admit plenty of light. Two large windows (13, 13) are also placed in each end. At 9, 9, 9, 9, 9 are placed windows over the small doors to allow plenty of light to the living rooms. The partitions here too are boarded to a height of 2 ft. Poultry wire is excellent for these purposes in order to admit free diffusion of the light admitted through the roof. No floor is placed in the scratching shed. Large doors are placed at 10 (the front door), 16, 15 and 14 to allow free access with a wheelbarrow if necessary. 14 may be merely a storm door, 16 as well as all the other partition doors are boarded up 2 ft. from the bottom, the remaining portion of slats or netting. 10 and 16 are warmly built and well fitted.

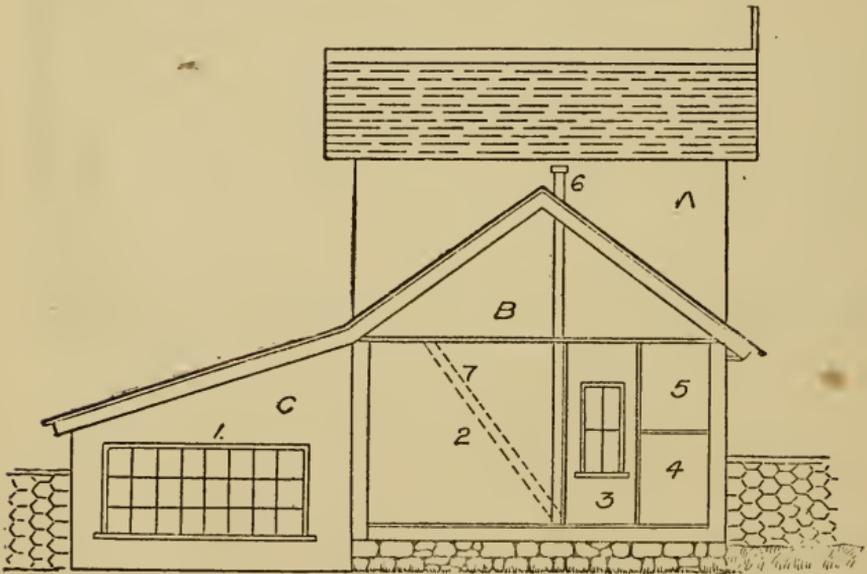


Fig. 93. A Model Poultry House—End Elevation.

Fig. 93, End Elevation.—The height of the two wings—B is 8 ft. to the eaves, A is 16 ft. to the eaves. The scratching shed, C, is 6 ft. high at the eaves. 6 is a ventilator placed by the hall partition and made by nailing 1 in.x4 in. strips in the form of a box. A slide opening is placed at the bot-

tom. 7 is the stair; 3, the hall; 4 and 5, the single bird compartments; 2, the living and roosting room.

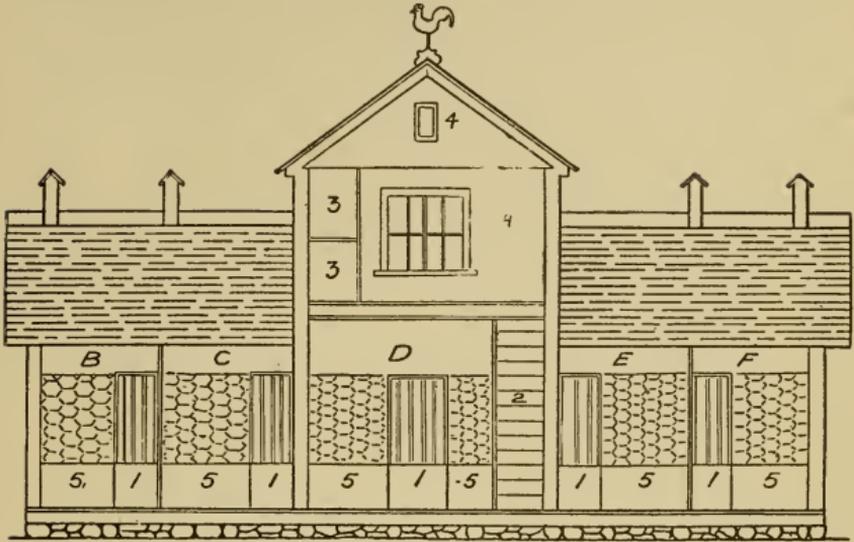


Fig. 94. A Model Poultry House. Front Elevation.

Fig. 94; Front Elevation.—A is the isolation room; 3, 3, single bird compartments; 4, ventilator; 1, 5, close boarding at the bottom of the partitions and doors; B, C, D, E, F, roosting rooms, and 2, the stair.

3. NESTS.

Keep the nests free and clear of lice. Place them where they can be easily reached and have a sufficient number, so that when a hen wants to lay she can be accommodated.

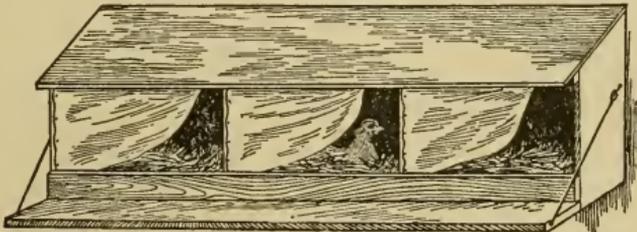


Fig. 95. Showing a Simple Plan for Arranging Ordinary Nests for Laying Hens.

The nest should not be too large—so large as to allow two or three hens on it at the same time. It is a good plan to provide each nest with a curtain and a door step (See fig. 95). These accommodations prevent crowding, breaking

the eggs, etc., which may be the cause of egg eating. Notice the provision made for dropping step at night to prevent roosting on it and also the top of the nests for the same reason.

Gather the eggs frequently but do not annoy the hens. Use china nest eggs to prevent breakage.

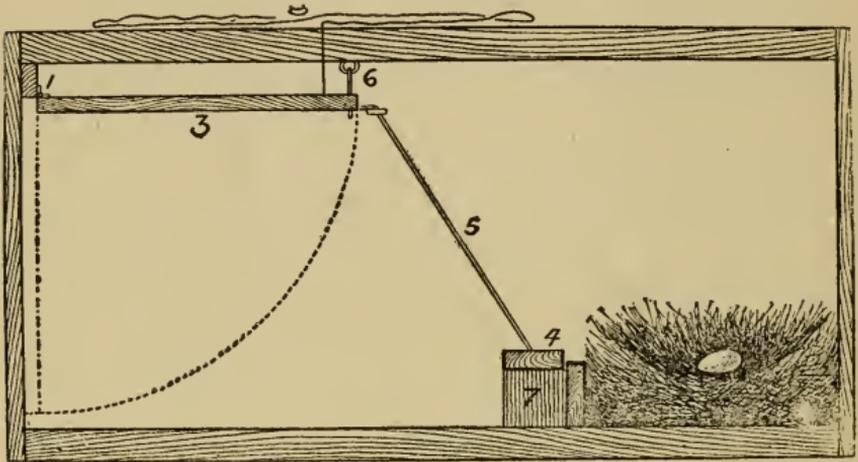


Fig. 96. A Trap Nest—Side View. 1, 2. Hinges. 3. Door. 4. Trip Board on which the Hen Steps when Entering the Nest. 5. String Attached to the Trip Board and to a Hook which Holds the Door Open. 6. Hook Suspending the Door. 7. Strip upon which one End of the Trip Board Rests. 8. String Attached to the Door by which it is Opened to Liberate the Hen.

A Trap Nest is made in such a manner as to catch the hen as soon as she goes in to lay. Here she is kept until liberated. The object in doing this is to find out exactly how many eggs each hen lays. Then it is possible to breed from the best layers. By the use of the trap nest and by acting upon the information it supplies, the egg production and breed of the flock is greatly improved. Figs. 96 and 97 show the plan of arranging the trip. 4 is a half-inch strip 4 in. wide, upon which the hen steps when entering the nest, A. Her weight presses down the strip and by means of the string, 5, the hook, 6, is pulled out and the door, 3, of the nest falls shut. The hen, of course, is caught and must remain until liberated, by which time she will have laid, and the door is hooked up again for the next. There are many different and elaborately made nests, but this simple, home-made contrivance serves the purpose and is easily made. The door is hinged, 1 and 2, to 2-in. strips, which are also

used for panels and at the bottom, against which the door falls. A string, 8, is added to open the door and liberate the hen.

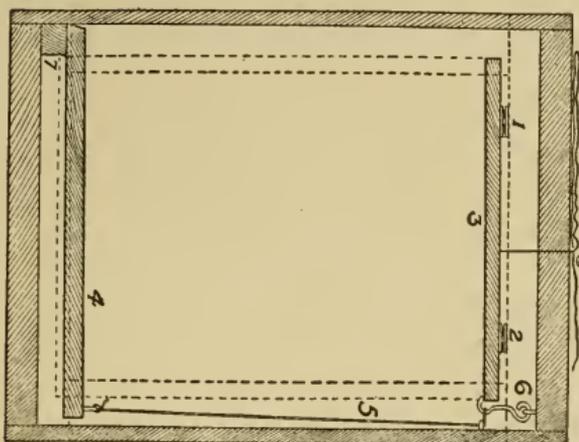


Fig. 97. Plan of Trap Nest—End View. The Figures Refer to the Same Parts as Those of Fig. 96.

By breeding according to the information supplied by the trap nest, the egg production has been raised to upward of three hundred eggs from one hen in a year.

4. HOW TO SECURE FERTILITY IN EGGS.

A following out of the suggestions here given, in principle at least, is bound to bring success in securing fertile eggs.

It is absolutely necessary to have the male and female of the proper sort. To be such they should possess the following characteristics.

The male should be of medium size—in accordance with the class of fowl—strong, healthy, vigorous and active. He should be such as is attentive to all the females of his flock. It frequently happens that a cock bird takes a particular fancy to certain females. This should be watched, and when found to be the case remedied by a change. Remember that with age cock birds, as well as other males of the animal kingdom, become useless for breeding purposes.

The female should also be of medium size and possess a strong, healthy physical make-up. Pullets a year old to two years of age are better than those younger or hens that are older, for egg production for breeding purposes.

The general condition of both male and female should be medium. By this we mean that they should not be too thin nor yet too fat—one is as detrimental to the production of fertile eggs as the other. There is, however, less danger of sterility in hens extremely thin than in those extremely fat.

The diet should be varied. Plenty of grit, oyster shell and charcoal should be accessible at all times. Beef cuttings and clover are splendid dessert, during the winter and spring before there is a chance to get outside; in fact, any kind of green stuff—turnips, mangels, etc. The bulk of the food should be wheat and oats, but screenings, buckwheat, and other seeds may be given. It is a mistaken idea that fowl may be fed any old way at all. They should be fed regularly and as nearly as possible what they require and no more. Better to feed hard, dry food among the chaff and straw on the floor than in a trough, as in this manner plenty of exercise is obtained. Supply plenty of fresh water, as stale water is just as injurious to them as to any other animal. Milk is also good. Soft food should also be given periodically.

The hen house should be warm, dry, well-ventilated and free from contamination (See description of a model poultry house). Even should such be the case, plenty of freedom in the open air is all the better, as plenty of exercise is necessary to the production of fertile eggs. However, when the weather, as it is during much of the Canadian winter, is such as to prevent this, provision should be made for as much exercise as possible. To accomplish this there should be a large shed, such as to protect from cold winds and rain, in which to run during the day. This shed should have provision for scratching and dusting in the ground and for this reason is better without a board floor. Straw or chaff should be thrown about the floor, but changed frequently—once a week at least. Provision, of course, should be made for an abundant supply of sunlight. Here is a suggestion that we consider good, namely: A little grain thrown about amongst the straw in the scratching shed after they have gone to roost will keep the fowl busy in the early morning and the exercise may prevent them catching cold before being fed at the usual time.

5. HATCHING.

Hatching may be conveniently divided into two classes: (a) Hatching by natural processes, and (b) artificial incubation. The first implies the use of the mother hen, while the latter that of the incubator. The merits of these we shall not attempt to discuss, our purpose being to outline each in so far as each relates to the rearing of healthy chicks, and thus fortifying them against the ravages of the diseases to which they are subject.

(a) Hatching by natural processes is the system more commonly used by the farmer and smaller poultry man. While there are a great many methods advocated, each having individual merits, we here present that which we find in our experience to be the best.

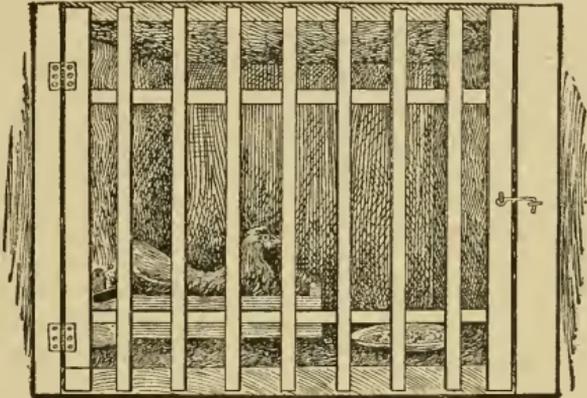


Fig. 98. A Setting Box.

When the hen exhibits a desire to set, provide what may be termed a setting box (Fig. 98). This should be large enough to contain the nest, a dusting place, feed place and drinking pan. A packing box with from four to six square feet floor space will answer the purpose. Tack this upon the wall of the hen house or in some other comfortable, well-ventilated position. Attach a door such as may be made of ordinary lath. The purpose of this is to protect and prevent annoyance to the hen. Make a small compartment in one corner by nailing two strips, a foot or fourteen inches long and about three or four inches wide, together at the ends and securing them to the floor and sides. In the bottom of this place a couple of inches of dry earth and upon this build

the nest of dry grass, hay, fine straw or some other suitable material. Now the very important part of the preparation comes in thoroughly disinfecting this temporary abode of the hen and making it proof against lice. Disinfect by burning sulphur inside, during which the slat door should be covered with a blanket to prevent the fumes from escaping, so that they will more thoroughly penetrate every crevice of the box. Sift a little insect powder and supply some ashes in which to allow the hen to dust herself. This may also be arranged in another corner like the nest. It would be a good plan to whitewash the box thoroughly inside and out after the fumigation with sulphur. The setting box is now ready; direct your attention to the hen.

We have assumed that she is now free from lice, but should this not be the case must be got rid of. For this purpose refer to Chap. XIV, Sect. 1.

Place the hen in the box and a china nest egg or another egg in the nest, a little clean, fresh drinking water in the pan and a small quantity of food on the floor. Close the door and leave her quietly alone. Upon examination the next day, in ninety-nine cases out of a hundred, she will be setting quite contentedly on the nest.

When you are thus satisfied that she intends to attend to business, place eleven to fourteen eggs under her, according to her size. Place only so many as she can nicely cover.

All that is further necessary is to supply fresh water every day and a little food and be on the alert to detect the presence of lice. This is absolutely necessary for the well being of the chickens when they are hatched.

It may be added that good results have accrued by placing two or three hens in the same setting box, there being plenty of room for exercise, dusting, etc. This, however, is not recommended.

Egg Testing.—We strongly recommend removing the unfertilized eggs from the nest, and for this purpose they should be tested. This may be easily done even by the inexperienced at about the end of the fifth day after placing them under the hen.

Make an egg tester as follows: Cut four boards about eighteen or twenty inches long and from four to six inches wide—just large enough so that when they are nailed together to form a box without ends it slips down over the

lamp or lantern. (Fig. 99.) In one of these pieces cut an opening about three or three and a half inches in diameter, just high enough so that when the box is adjusted over the lamp the opening is opposite the light. Cut a piece of heavy black cloth about four or five inches square sufficiently large to cover the opening in the side of the box. In this cloth cut a circular opening a little smaller than an egg and tack the cloth over the opening in the box. A very inexpensive but excellent egg tester is now complete.

On the evening of about the fifth or sixth day take the eggs one at a time carefully from the nest, place them against the opening in the cloth. The light shines through the egg, and, being excluded by the sides of the tester, enables you to see whether or not the germ is developing. A fertile egg shows a dark, heavy spot (Fig. 100). An unfertilized egg appears clear and watery (Fig. 101). Place only the fertile eggs back in the nest and throw the others away.

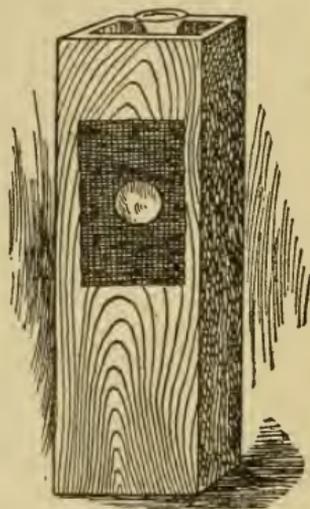


Fig. 99. A Simple, Effective Home-made Egg Tester.

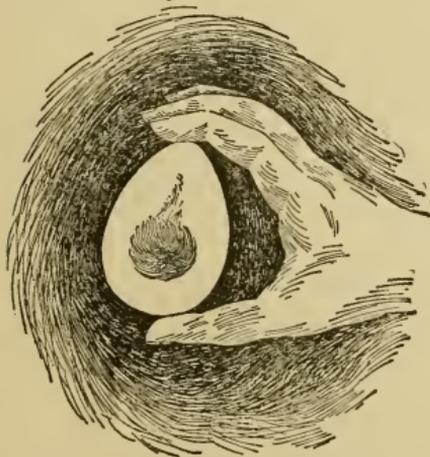


Fig. 100. A Fertile Egg as Seen When Placed Against the Opening of the Tester.

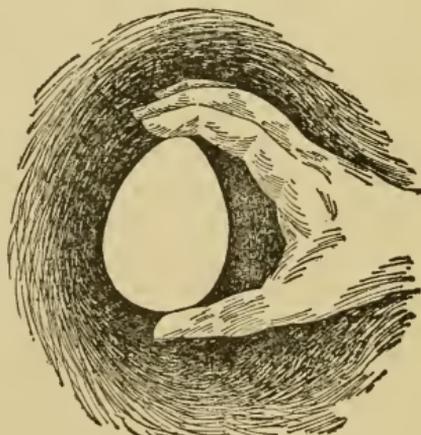


Fig. 101. An Infertile Egg.

Keep a strict watch during the time the hen is setting, so that accidents that may possibly happen can be promptly

attended to. Supply fresh water and a little feed each day and the hen will do the rest.

On the morning of the twenty-first day after the eggs were warmed in the mother's nest, indications of chick life in the outer world may be looked for. In only rare cases will it be necessary to do more than allow them to look after themselves. The last act in the development of the chick before breaking the shell is the absorption of the remaining portion of the yelk. This serves to nourish the body for at least thirty-six hours after birth, so that there is no necessity for being in a hurry to remove the chicks from the nest. This need not be done until they are all out of the shells and thoroughly dry—provided, of course, that the eggs were all placed under the hen at the same time.

(b) **Hatching by Artificial Processes.**—By this is meant the use of an incubator. All good dealers in these machines supply full directions for their use, so that it is unnecessary to go into any exposition of the system here.

6. THE BROODER OR COLONY HOUSE.

Strictly speaking, the term brooder is applied to a heated house for young chickens, the purpose of which is to take the place of the mother hen.

When the chicks are ready to be removed from the nest, they should be made comfortable in a small house which we choose to call the brooder, or colony house, assuming, of course, that the spring is far enough advanced to allow of their being placed outside. This little house should be warm, dry, airy and well ventilated, proof against cats, dogs, etc., and provided with a run for the chicks. The mother may be allowed to run out with the chicks if the run is not too large.

The most economical is that which may be large enough to serve as a home until they are able to take care of themselves when the new stock are put in together. We suggest the following: (see Fig. 102).

The floor should be built upon 2x4 scantling to serve as runners, of matched boards, close and detached from the house so that cleaning may be done easily and well, size 2 ft. 6 in.x4 ft. 6 in., a little larger than the house.

The house should be 2 ft.x4 ft., shanty roof, 24 in. high on the low side and 3 ft. on the high side,

The roof should be made proof against rain and project a couple of inches all round.

The front should be provided with a door hinged at the top and the opening covered with another door of poultry wire hinged at the bottom. Slats may be attached to the

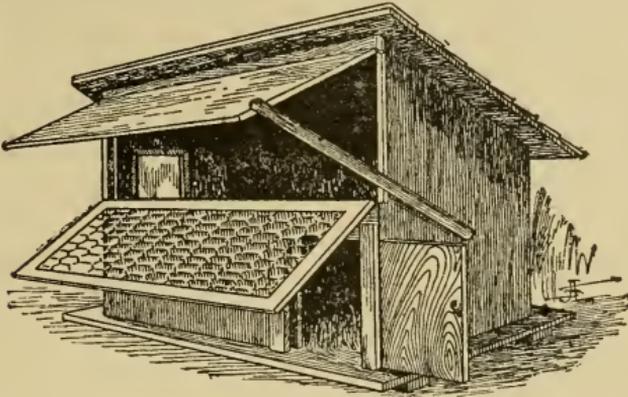


Fig. 102. A Colony House—a Very Convenient and Useful House for the Mother and Young Chicks.

side to admit of it being opened by degrees, thus allowing plenty of air circulation and during hot days turning the house into a shed in which the chicks may sit sheltered from the hot sun. A glass, 10x12, may be placed in each, or one end, and a roost six inches from the floor. In that part of the front below the door place the slide door, 8x12.

The yard should be at least 4 ft.x12 ft., consisting of a frame made of 2 in.x1 in. strips and covered on top, both sides and one end with poultry wire. The top may be coarse, but the sides should be sufficiently fine to prevent the young chicks from getting out. Place this against the front of the house.

The colony house would therefore consist of three movable parts—the floor, the house proper and the yard.

Before placing the mother and the chicks in their new home, take the same precautions against disease germs, lice, etc.

Place the house and yard for the first few days at least in a warm, comfortable position in the yard and always where green grass is accessible.

Follow these instructions and we know by experience that the trouble and annoyance caused by gapes, lice and roup will be reduced to a minimum.

7. Care and Feeding of Young Chickens.

Place a couple of wall trays in the colony house containing a little chicken grit and a little lime. As a first feed sprinkle upon the floor a little grit, dry bread crumbs and crumbled hard-boiled egg. Bread crumbs and hard-boiled egg make excellent diet for the first week. Then prepare a food composed of:

Millet	1 pound.
Bran	2 pounds
Cracked Corn	2 pounds.
Oat Meal	1 pound.
Ground Bone	$\frac{1}{2}$ pound.
Chicken Grit	$\frac{1}{2}$ pound.

Mix this thoroughly together while dry. Feed a little of this mixture each day. The best plan is to place the food in position every night so that the chicks have access to it in the early morning. A little finely cut beef scraps—fresh—may be given as dessert.

When the chicks are a couple of weeks old feed:

Chopped Wheat	2 pounds.
Chopped Corn	2 pounds.
Chopped Oats	2 pounds.
Ground Bone	1 pound.

Mix this dry. To prepare, mix what is required for a feed with a little water. Do not make it "mushy," merely sufficiently damp to be crumbled between the fingers.

Vary this diet with a little screenings, small grain, etc., as the chicks grow.

Always keep an abundant supply of fresh water constantly where it is easily accessible.

We do not claim that this course of feeding is the only successful one that may be followed; we merely claim that it is not theoretical but practical, as we have followed such a course and found it to produce strong, healthy and vigorous stock.

Observe the following precautions:

1. Feed only what is required.
2. Keep the quarters dry, warm, well ventilated and scrupulously clean.
3. Constantly keep a lookout for lice and vermin of all kinds.
4. Provide variety of food, but only such as is fitted for chicks.
5. Examine the hen for lice as well as the chicks.

8. PRECAUTIONS AGAINST DISEASE.

Disease is not an absolute necessity, neither is it a necessary evil, as many suppose. Except possibly when the result of accident, disease is the result of improper conditions—conditions that would not exist were proper care and feeding closely followed. Try to adhere closely to the hints following and the possibility of disease will be reduced to a minimum.

1. Secure healthy, vigorous stock to breed from.
2. Keep their quarters warm, dry and well ventilated.
3. Keep them clean—scrupulously clean.
4. Make provision for plenty of exercise in the fresh air.
5. Kill or shut up all the male birds not required.
6. Isolate at once any members of the flock that may become diseased. Run no chances.
7. Keep always on hand a proper supply of remedies for use in emergencies.
8. Act in every particular in accordance with "Prevention is better than cure."
9. Feed fresh, uncontaminated food and only what will be eaten.
10. Remember your fowl, as well as yourself thrive best on a variety of food.

CHAPTER XIII.

DISEASES OF THE HEAD, THROAT AND LUNGS.

1. Common Cold.

Causes.—What may cause a cold in any other animal may produce the same effect in fowl—exposure to cold, damp quarters, cold rain and drafts—especially if the vitality is low and the physical condition not as it should be.

Symptoms.—There is a discharge from the nose and sneezing, as if to get rid of it. The nose may become plugged to such an extent as to cause breathing through the mouth. There is also a swelling of and running of water from the eyes.

Treatment.—Remove the cause. See that the hen house is dry and warm and drafts are prevented. Provide for good ventilation and plenty of sunlight.

Feed warm food. A spoonful of ginger or a little common black pepper added to the mash is a good thing. Wash out the mouth with a little warm water and salt and bathe the nostrils if badly clogged up. Apply a little of the eye wash to the eyes and head.

2. Roup.

Roup is considered by all poultry men the worst and most dreaded disease than can afflict poultry.

Causes.—Roup may be the result of a neglected cold. Unclean, damp, poorly ventilated quarters, accompanied by poor feeding, are conditions ideal for the development of roup. Just so far as these conditions exist, just so great is the liability of becoming affected.

Symptoms.—The first noticeable symptom is a discharge from the nostrils accompanied by sneezing, being merely the appearance of an ordinary cold. As the disease progresses the discharge is more profuse and thick, frequently drying about the mouth and nose. The eyes soon become inflamed, the birds stand about with the feathers

ruffled, the appetite gone, the eyes closed, the head drooped and may frequently gape. An examination of the mouth shows the membrane lining to be inflamed, red and swollen. The throat is also affected and clots of phlegm collect in

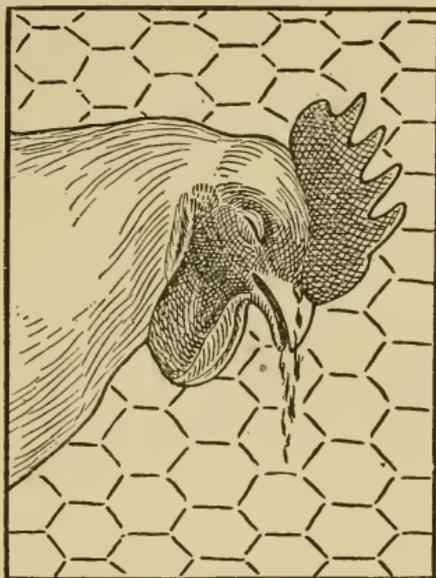


Fig. 114. Suffering from Roup.

the back of the mouth and entrance to the throat. If still unchecked, sort of boils form on the head comb and about the eyes, sometimes also in the mouth and on the tongue. These symptoms as outlined indicate severe physical derangement, which soon results in death.

There are many remedies for roup, but we think the following, as is given in "Success With Poultry," is one of the very best:

Treatment.—Pen the fowl in warm, dry quarters, and keep out all drafts of cold and damp air. Feed hot bran, mashed potatoes and meat, and medicate the throat, mouth and nostrils with chloride of sodium or common salt, as follows: Take a bucketful of warm water; put a teacupful of salt in this amount of water; then catch the fowl, examine the throat and nostrils, removing all mucous matter out of the nostrils. Fill a pint cup for each afflicted fowl, hold it by the feet—head down, choke it until the mouth is wide open

and then insert the head into the solution, comb down, so the medicated water may enter the cleft in the palate and go out at each nostril and into the throat. Each should be separately treated.

Kerosene injected into the nostrils is good; also camphorated sweet oil. Ten drops of coal oil or kerosene added to a pint of water for a flock of twenty fowls will often effect a cure. When this remedy is applied, do not attempt to prepare one of the flock for table use for three or four weeks thereafter, as the entire carcass will be tainted with coal oil.

IMPORTANT.—In treating roup, be careful to remove the affected fowl from those apparently healthy, and thoroughly disinfect the fowls' quarters. Watch the flock carefully and at once isolate any that may show signs of the disease. Remove also any discharge from the nostrils that may collect on the feathers under the wings or on the breast. Be sure and protect the sick fowls from all drafts and feed easily digested food. When the fowls look stupid and droopy, feathers rough and no appetite, reduce their food to even fasting.

3. Inflammation of the Windpipe.

Causes.—It is usually the result of exposure.

Symptoms.—The symptoms are similar to an ordinary cold. The breathing, of course, is interfered with and there is in some instances a sort of wheezing and rattling in the throat. Open the fowl's mouth wide and examine the throat and windpipe. It is found to be quite red and there may also be some phlegm present in the passage.

The inflammation may extend far down the pipe and affect the branch tubes leading to the lungs, thus constituting a case of bronchitis, or the upper part only may be affected, being a case of laryngitis.

Treatment.—Treatment in both cases is practically the same. In mild cases treat as a common cold. Should the inflammation become severe it may be necessary to make the treatment somewhat special.

Procure a box, say 2 ft.x3 ft., and sufficiently high to allow the patient to stand in it. Place a quart of bran in a saucepan and pour upon it a quart of boiling water and

then a few drops of carbolic acid. Place this in the box with the patient. The bran and water will continue to steam for some time, the steam is charged with the disinfectant and breathed by the patient. Remove in a few minutes and replace by another if necessary. Be sure to avoid drafts and cold, both at the time of and after this treatment.

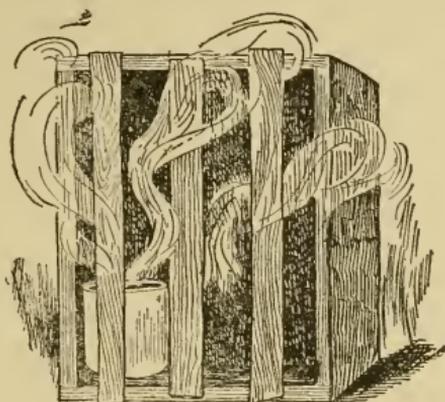


Fig. 103. A Steaming Box.

1. Gapes.

This disease derives its name from the peculiar manner in which the patient raises its head and opens its mouth. It is a very serious matter to deal with, and something that is often quite wrongly treated. We give our own special experience and method of coping with it. This we have found to be quite successful.

Causes.—It is not generally known that gapes is caused by a small reddish worm in the trachea or windpipe. We are unable to say just what is the origin of these worms further than to state that they always make their appearance in dirty, filthy, damp runs and pens.

The disease is infectious, and members of a flock become infected in the following manner: The worm multiplies very rapidly, the eggs are many. These and the worms also are coughed up and become adhered to the grass, feed, etc., and find their way into the drinking pans and feed dishes. Here they are eaten by the healthy fowl and find their way again to the windpipe. The worms and eggs are also eaten by other insects, particularly the common earth worm, and in this manner are also eaten by the fowl.

Symptoms. — Small chickens are very frequently attacked when exposed to favorable conditions, as we have outlined. The patient is "dumpish," sits about in the run and gapes frequently. This is a sort of straining, the head is raised, the eyes partially or wholly closed, and the mouth thrown wide open in a sort of yawn. This action is frequently accompanied by a sneeze or cough. There is soon loss of flesh and death.



Fig. 104. Chicks Suffering from the Effect of the Gape Worm.

Treatment. — Prompt and stringent measures are necessary. Endeavor to remove the cause at once and isolate every bird affected or showing the least signs of the disease.

Sprinkle lime all over the floors and over the ground of the runs. This kills any of the worms and destroys the eggs that may be on the ground. It also kills all insects that may be a medium of carrying them. Boil out and disinfect all the feed dishes and water pans; in fact, make a genuine and general clean up. If possible change the run altogether to other grounds. We cannot impress these precautions too strongly, as it is absolutely necessary that they be taken not only to cure the disease, but to prevent its recurrence.

If the infected chickens are very bad and not very valuable, it may be better to kill them and burn the bodies and see that none of the discharge is allowed to remain about without being covered with lime.

The windpipe may be swabbed out if very carefully performed. Put a couple of drops of carbolic acid in a pint of lukewarm water and use a feather with a stiff stem, but very soft, fluffy end. Open the mouth wide, dip the feather into the water, shake it, and carefully insert it into the windpipe, the opening of which may be easily seen. Turn the feather easily by rolling the stem slightly between the fin-

gers and pull it gently out. Burn the discharge and feather after the operation. Look carefully for the worms and be careful not to choke the patient.

We recommend this treatment as a last resort, and may say for the encouragement of the uninitiated that we have succeeded in saving valuable birds by this treatment.

Constitutional treatment is also necessary. In addition to proper food and clean quarters as outlined, give the bird, daily, a small piece of camphor, about the size of a grain of wheat, and a few drops of turpentine in the drinking water, or mixed in the food, about 10 drops to the pint.

5. Apoplexy.

Fowls sometimes die of apoplexy—rupture of a blood vessel of the brain.

Causes.—Laying hens that are allowed to become very fat are frequently found dead on the nest, indicating that the rupture was due to straining while endeavoring to expel the egg.

Treatment.—Nothing can be done except to remove the cause and remedy the conditions by proper feeding.

6. Large Lice on the Head of Chicks.



Fig. 105. A Chick Suffering from Lice.

Causes.—These lice appear on the head of the young chick because of the neglect of proper precaution, as outlined in Sect. 5, Chap. XI.

Symptoms.—The chick is “dumpish,” refuses to eat and the irritation caused by the louse soon causes death.

Treatment.—Remove those possible—one louse may kill a chick—and smear the top of the head with a little pure lard.

7. Sore Head.

This is known among many poultry men by the name of chicken pox.

Causes.—The principal cause is exposure to damp, cold rains and cold winds. It frequently follows such weakening diseases as roup or cholera.

Symptoms.—It makes its appearance on the wattles, comb, earlobes and about the eyes in the form of warty-like projections. Some of these are not larger than a pinhead, while others become as large as the end of the finger.

Treatment.—Remedy defects in feeding and care by endeavoring to ascertain the cause and removing it. This prevents a recurrence of the disease. Apply the white lotion with a feather to the affected parts.

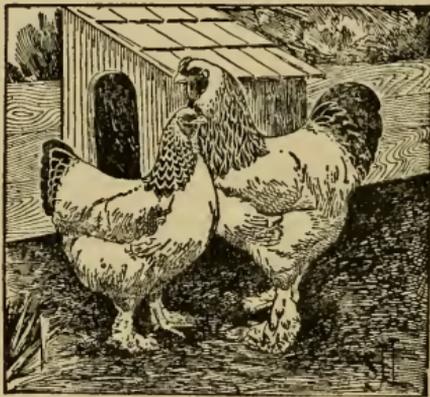


Fig. 106. A Favorite Asiatic Breed, the Light Brahma.

CHAPTER XIV.

DISEASES OF THE SKIN, LEGS AND FEET.

1. Lice.

When once hen lice gain a foothold they increase very rapidly and become a perfect nuisance to the hens and the owner. In some cases they spread to other buildings and get on the stock. Hen lice are very small and have a reddish appearance.

Causes.—Dirt, filth, neglect of disinfection and proper care is usually the cause. Lice may be introduced into a clean house and healthy flock by birds that are infected with the parasite.

Symptoms.—These are at once apparent—ruffled feathers, constant picking and finally loss of vitality. We have seen cases become so bad that the hen simply sat down in a corner, gave up entirely and died.

Treatment.—The first step to be taken to get rid of the hen lice is to drive all the hens out of the hen house, close up the windows and doors, put a pound of sulphur in a pot,

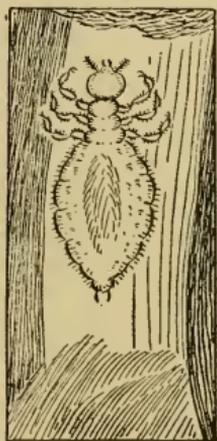


Fig. 107. Brahma.
Chicken Louse Magnified.

put some coals in it to start the sulphur burning, and keep it burning for about half a day. The fumes from the sulphur will go into all the cracks and thoroughly fumigate the place and kill the lice. After this open the doors and windows and clean the place out thoroughly and put in plenty of hardwood ashes and coal dust for the hens to roll about in. This kills the lice on the hens. In the course of a week drive the hens out of the hen house again and burn sulphur as you did before; this will rid you entirely of the pest. Watching the hens and giving them

plenty of ashes and coal dust to roll in will keep the lice off them after this. It is also a good plan to feed plenty of sulphur and new milk, give every night, two tablespoonfuls of sulphur to a quart

of new milk; this is about the proper dose for twenty-five hens. The sulphur passing off through the pores in the skin helps greatly to kill the lice. Whitewash the walls, ceiling, roosts and nests and put clean straw in the nests. This effects a complete cure. If the lice are in other buildings treat in just the same way.

This treatment for killing hen lice will also kill the germs of other diseases, such as roup, etc., and is a process through which a hen house should go every fall and spring to keep disease from the fowl. It is also a good plan to thoroughly spray the house by blowing coal oil into the cracks and crevices and about the roost and nests before whitewashing. An ordinary spray pump may be used.

2. Scaly Leg.

Causes.—Scaly leg may be transmitted from one fowl to another. Dirty, filthy quarters is the most frequent cause. The scales are the result of a parasite burrowing into the skin of the shanks and toes.

Symptoms.—It appears as a rough, warty, dry deposit on the legs and toes.

Treatment.—Place a tablespoonful of lard on the stove and warm it, remove from the stove and add an equal quantity of coal oil. Saturate the legs and toes once a day with this solution, applying it with a stiff feather or varnish brush. Continue this treatment until the scales may be easily removed or fall off. Keep the fowls' quarters dry and clean and see that lice are not present. When the scales fall off, apply a little of the white lotion or vaseline.

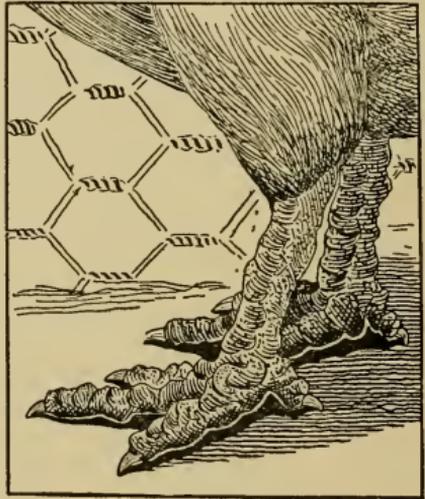


Fig. 108. Legs Affected with the Scaly Leg Parasite.

3. Chicken Pox.

See Section 7, Chapter XIII.

4. Fishy Skin.

Cause.—There seems to be a predisposition in some breeds to this disease. Dirty runs are by many supposed to cause it.

Symptoms.—It has much the same appearance as mild forms of scaly leg. It differs, however, in that no parasite is at work.

Treatment.—Correct diet, clean quarters and applications of vaseline or white lotion is all that can be done.

5. Stone Bruises, Sore Feet.

Causes.—These are the result of striking the feet violently against the hard roost or other hard substances.

Symptoms.—The affected bird walks in such a manner as to indicate the soreness of the feet. The sole of the foot is at first swollen and afterward, as the disease develops, the swollen portion contains matter.

Treatment.—In the earlier stages it is often relieved by painting with iodine. Should the matter form it is necessary to open the swelling with a sharp penknife and allow it to discharge.

Should it be necessary to lance, care must be exercised to prevent dirt and foreign matter from entering the wound. After washing the opening and rinsing it out with carbolic water (5 drops to a pint), place the fowl in a warm, dry place, upon the floor of which has been placed clean, dry straw. Should the case be a bad one, it may be necessary to bandage the foot with clean, white, old cotton or linen. Treat the foot each day as above mentioned and apply the white lotion.

6. Leg Weakness.

See Rheumatism, Chapter XVII, Sec. 4.

7. Dropsy of the Feet.

Causes.—Lack of exercise, heavy feeding, frost bites or bruises may cause a dropsical condition of the feet.

Symptoms.—The feet are tender and quantities of watery fluid form under the skin.

Treatment.—The best treatment is to ascertain the cause and remove it. Correct diet, proper care, clean, dry quarters and bathing twice a day with lukewarm water is all that is necessary. Provide soft underfooting to prevent irritation.

CHAPTER XV.

DISEASES OF THE DIGESTIVE ORGANS.

1. The Digestive Organs.

Fowls do not masticate their food, but swallow it whole. It passes through the oesophagus or gullet into a sort of bag situated in the upper portion of the breast. This is called the crop. Here the food is moistened and passed along the alimentary canal to the gizzard, receiving at the same time the juices necessary to digestion. Here by the strong muscles of its sides the food is ground against small stones, pieces of grit or other hard substances until it is reduced to a soft, pulpy mass, after which it passes into the intestines. These vary much in length and size according to the size of the bird, ranging in an ordinary barn-yard fowl from four feet to ten feet in length and from one-tenth to a half an inch in diameter, being smaller nearest to the gizzard.

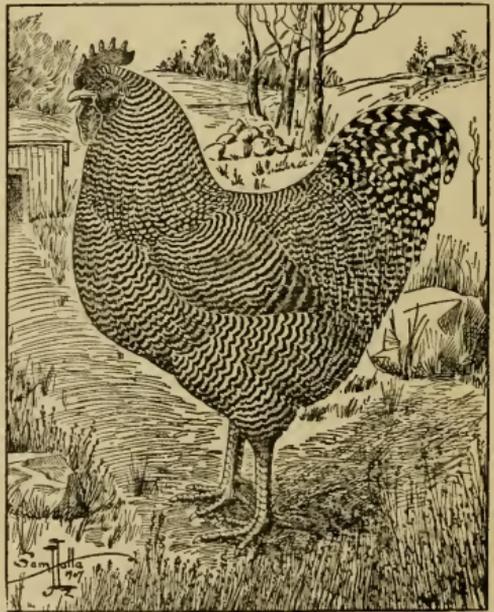


Fig. 109. A Barred Plymouth Rock Cock—
Sketch from Life.

Opening into the rectum or latter

portion of the intestines are two small sacs, or blind bowels. The rectum is much dilated near the anus and into this opens canals or tubes from the liver and egg sac.

2. Cholera.

Causes.—Cholera is very contagious. The cause is over-crowding; bad sanitary management, unwholesome or irregular food, etc. *C h i c k e n* cholera is not very well understood by poultry raisers, and we believe it is a fact that a great many diseases are called cholera simply because

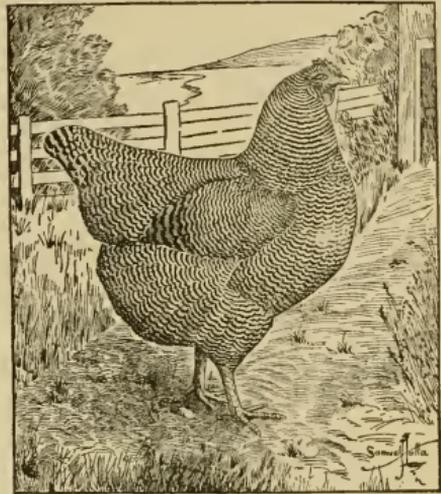


Fig. 110. A Barred Plymouth Rock Hen—
Sketch from Life.

not understood. Everyone who keeps fowls should be able to tell cholera from other diseases, for without such knowledge it is impossible to treat it properly.

Symptoms.—The fowl has a very sleepy, droopy appearance; it is very thirsty and has a slow gait and gapes often. Sometimes the fowl staggers and falls down from great weakness. The comb and wattles lose their natural color, generally turning pale and sometimes dark. There is diarrhœa with a greenish discharge, or like sulphur and water. The crop fills with mucus and wind, and at last the food is not digested. Breathing is heavy and fast, the eyes close, and in a few hours the fowl dies.

Treatment.—The first thing to be done when cholera makes its appearance is to give the coops and yards a thorough renovating. Disinfect with carbolic acid, 40 drops to the pint of water. Remove all affected fowls and burn the carcasses of dead ones. The best and most effective remedy for cholera that we have ever used is coal oil or kerosene. The coal oil should be given about four times a week, as follows: Take a feeding of corn and wheat and let it soak in the oil a few hours, and then feed to the fowls, or mix it

soft food, one teaspoonful of oil to every two quarts of corn meal. While treating do not give much water to drink.

3. Canker or Ulcerated Mouth.

Causes.—Canker is caused by filthy quarters and musty or unwholesome food.

Symptoms.—It makes its appearance as running sores on the head, in the mouth or throat accompanied by a watery discharge from the eyes.

Treatment.—Take a warm water and a little salt and wash the head and eyes, also swab out the throat and mouth. Remove ulcers with a quill and apply powdered borax to the places left bare. Repeat this treatment twice a day and a cure will be effected.

4. Crop Bound.

This is impaction of the food in the crop.

Causes.—Eating indigestible food or some foreign substance—bone, dry grass—that may obstruct the passage or eating a very large quantity of grain may cause it.

Symptoms.—The mass of food may be felt easily.

Treatment.—The best treatment for crop bound is castor oil. Give the fowl two teaspoonfuls in one dose. If this does not clear it in 48 hours it may be necessary to open the crop and remove the contents.

Carefully remove the feathers from a greater portion of the crop and chill the skin with a piece of ice or ice-cold water. Make an incision in the skin from two to three inches in length, according to the size of the bird, near the top. Draw the skin back and make another opening in the crop so that the two openings do not come opposite each other, as this helps healing after the operation. Remove

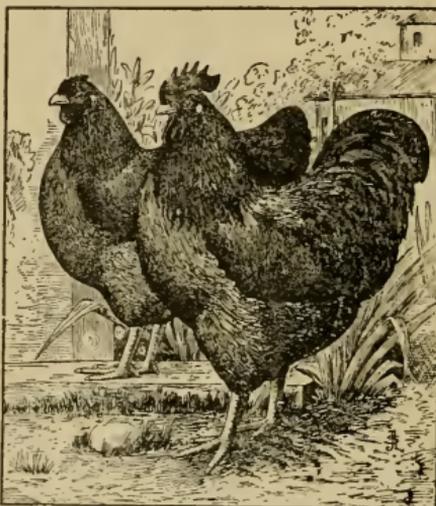


Fig. 111. A Pair of Orphingtons—a Splendid Utility Fowl.

the contents carefully. Sew the cuts with fine catgut separately.

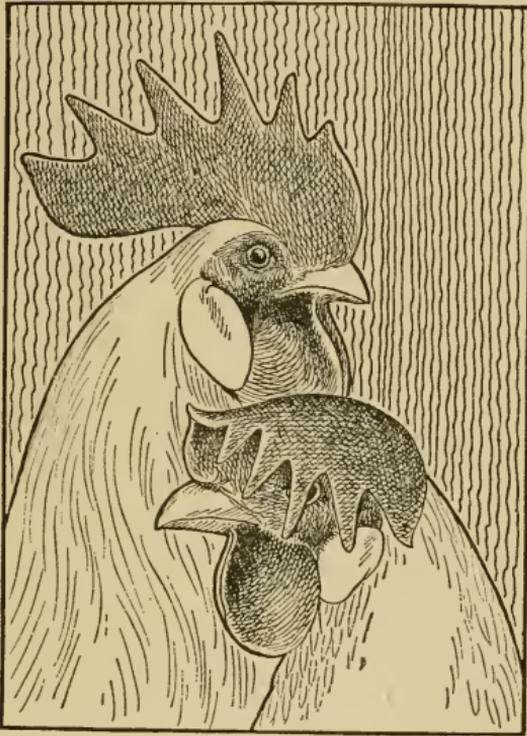


Fig. 112. Heads of Leghorn Cock and Hen—a Fine Good-laying Breed.

Feed soft, light, nutritious food consisting of softened bread and sweet oil for a week. Then introduce regular diet gradually.

5. Dyspepsia, Indigestion.

Causes.—Poor diet and poor feeding are the more general causes. A continuous diet of wheat or any one kind of grain and scarcity of grit or sand may cause it.

Symptoms.—A general run-down condition is the most noticeable symptom.

Treatment.—The best treatment is to correct methods of feeding and care as outlined in Chapter XII.

6. Dysentery, Diarrhoea, Scours.

Causes.—Disagreeable diet, change of food, exposure to cold and wet or great irritation because of being annoyed by lice may cause it.

Symptoms.—These are most noticeable in the droppings.

Treatment.—Avoid giving soft food and give only what may be digested. Feed in such a manner as to cause plenty of exercise by throwing the grain amongst the straw on the floor of the coop. A small pinch of bicarbonate of soda in the feed—a dry mash—is good. A little lime thrown in the drinking water is also good.

7. Constipation, Bound Up.

Causes.—It is usually the result of indigestion.

Treatment.—Give a teaspoonful of castor oil once a day or a little oftener in bad cases. Regulate the diet as outlined in Chapter XII.

8. Enteritis, Inflammation of the Digestive Canal.

Causes.—The principal cause is improper feeding—lack of variety, too heavy feeding, want of gravel or grit and irregularity.

Symptoms.—These resemble cholera. The appetite is gone. There is a general drowsy, sleepy condition accompanied by diarrhoea.

Treatment.—Correct methods of feeding and a little care will effect a cure and is often all that is necessary. In severe cases give

Spirits of Turpentine	15 drops.
Raw Linseed Oil	4 tablespoonfuls.

Mix and pour a teaspoonful down the throat once every 10 hours, morning and evening.

9. Liver Complaint.

Causes.—Overfeeding of strong food as meat or giving strong medicines may give rise to it. It is sometimes the after effect of some weakening disease such as cholera or roup. Fat fowls are more subject to it.

Symptoms.—The most noticeable symptoms are loss of appetite and flesh. There is also a yellowish appearance of the comb, wattles and about the eyes.

Treatment.—If the bowels are constipated give a teaspoonful of castor oil, but only when necessary. Reduce the diet to easily digested and nutritious food. If possible give the patient plenty of freedom in the open air. This

malady is frequently very stubborn and requires time. Proper treatment, however, is better than medicine.

10. Worms.

Causes.—Fowls become infected in the same manner as sheep. See Part IV.



Fig. 113. Asiatics—White Cochine. A favorite large fowl.

Symptoms.—The principal symptoms are loss of appetite and a generally weakened condition.

Treatment.—Place those affected in a coop where they can be denied anything to eat for twelve hours. At the end of this time mix a soft feed to which add for 10 ordinary fowl the following:

Epsom Salts 1 ounce.
Oil of Male Shield Fern $\frac{1}{2}$ dram.

Dissolve the salts in the water used to mix the feed and add the male shield fern. Another good remedy is composed of turpentine and raw linseed oil in equal quantities. Give

after fasting in the same manner. One to two teaspoonsful is sufficient for a dose, according to the fowl, and should be repeated once a day until the bowels move freely.

After treatment bring the fowls back gradually to the regular diet.

11. Limberneck, Wry Neck or Drunk Fowl.

Causes.—This disease is the cause of poisoning by eating maggots from a dead carcass as an advanced stage of decay. One dead fowl is sufficient to cause a whole flock to be affected. Decayed meat of any kind may cause it.

Symptoms.—There is enlargement of the pupils of the eyes as in other cases of poisoning. There is loss of control of the muscles of the neck, thus giving rise to the name limberneck. The neck often hangs limp or bent to one side.

Treatment.—Keep the birds affected in a warm place and avoid excitement. Give a dessertspoonful of the following to each fowl:

Oil of Turpentine.....	6 ounces.
Sweet Oil	6 ounces.

Follow in an hour with a dessertspoonful of the following mixture:

Cow's Milk, Sweet.....	1 pint.
Ginger	1 teaspoonful.

Repeat every hour. As soon as improvement is noticed introduce the regular diet gradually.

CHAPTER XVI.

DISEASES OF THE HEAD, COMB AND WATTLES.

1. Frost Bites.

Frost bites are commonly met with, especially among flocks of fowl not provided with sufficiently warm quarters or a scratching shed. Leghorns or other birds possessing a large comb are more likely to become frozen, more especially when in poor condition.

Symptoms.—The comb or wattles when frost bitten present a purplish appearance, being darker and more approaching to black the more severely frozen. The general condition otherwise is apparently not affected.

Treatment.—Place the fowl in a moderately warm place so that it is not exposed to direct sunlight. Apply a salve made of

Coal Oil	3 dessertspoonfuls.
Lard	2 dessertspoonfuls.
Quinine	2 teaspoonfuls.

If allowed to remain too long after being frozen before commencing treatment nothing can save the frozen parts from decay. If, however, the case is taken in time and properly treated as we have directed, decay may be prevented, the circulation restored and the parts brought back to normal conditions.

2. Black Rot, Dead Comb.

Causes.—The main cause of dead comb is a poor physical condition resulting from improper care and poor diet.

Symptoms.—The comb in the early stages of the disease presents a slightly dark, purplish color usually commencing at the ends of the spikes. This color gradually becomes darker, finally becoming quite black as the disease progresses. The bird is weak, listless and in generally poor physical condition.

Treatment.—The first attention should be directed to the general comfort of the bird by providing a warm, dry, clean, sunny place for it. Correct the improper diet by supplying grit, old plaster and vegetable food. Bathe the comb twice a day with lukewarm carbohc water (5 drops

to a pint of water), wipe dry and apply the white lotion each time after bathing. This disease is frequently very stubborn and requires time and patience to cure and we strongly advise the strictest attention to care and proper diet as soon as it makes its appearance among a flock.

3. Sore Eyes.

Causes.—Sore eyes may result from one of two main causes: (1) The introduction of foreign matter—dust, chaff, etc.—into the eye, and (2) some constitutional derangement.

Symptoms.—The membranes of the eye are inflamed and red and there is a watery discharge.

Treatment.—Endeavor to ascertain if possible the cause and remove it.

Bathe the eyes and head when swollen with lukewarm water, wipe dry and apply the eye wash twice a day. Should an ulcer or boil appear below the eye, when ready, this may be gently opened and the contents squeezed out. Continue bathing and applications of the eye wash, which with proper diet and care will effect a cure in a few days.

4. Comb and Wattle Wounds.

Causes.—These, of course, are usually the result of fighting. It frequently happens, too, that the fowl injures the comb by constant rubbing against the poultry netting when endeavoring to get out of the enclosure.



Fig. 115. A Pheasant.

Treatment.—Should bleeding be very profuse and danger of bleeding to death be apparent, apply at once a little Monsell's solution of iron. If this is not at hand, dip the head in a handful of ordinary wheat flour. When the bleeding is stopped or if no danger is anticipated of bleeding to death,

and the comb or wattles are badly lacerated, stitch the parts carefully together with fine white silk thread, and treat as an ordinary wound. Keep the patient separated from others until it is entirely healed, as other birds are inclined to pick at it.

5. Fungoid.

Fungoid is contagious and birds affected should be at once isolated.

Causes.—It is usually the result of improper care and injudicious feeding.

Symptoms.—It affects the comb and wattles and first appears in the form of small lumps containing a hard core. In the course of three or four days these small boils break and discharge a yellowish, watery fluid. The affected portions are itchy and cause scratching, which in turn promotes the progress of the disease and causes bleeding.

Treatment.—If the bird affected is not valuable, it is best to kill it and burn the carcass, especially if the disease is well developed. Should the disease be detected in the early stages treat as follows:

Tie the legs three or four inches apart to prevent scratching the head. Bathe the comb twice a day with lukewarm carbolic water (5 drops to a pint), wipe dry and apply the white lotion. The diet should be nutritious and mixed and given to the bird warm. Supply plenty of fresh, pure water and keep the patient in a warm, dry, well ventilated, light place.

6. Pip.

Causes.—Pip, as it is called by many poultry men, is the after-effect of some weakening disease such as roup or cholera, although it may make its appearance in fowls that have attained a run-down condition because of improper feeding or care.

Symptoms.—The most noticeable indication apart from the generally deranged physical condition is in the tongue, which becomes coated with a fairly hard coating.

Treatment.—With a penknife or some other convenient instrument carefully remove the coating and wash the tongue with lukewarm water in which has been dissolved a little common salt. Correct the improper diet and otherwise give careful treatment in housing and the improved condition soon gives satisfactory results.

CHAPTER XVII.

MISCELLANEOUS DISEASES.

1. Feather Eating.

This is a habit of eating the feathers pulled from other members of the flock or from the bird itself.

Causes.—A great many reasons have been advanced as to why a fowl acquires this habit, the most reasonable being that feather eating results from a lack of animal food. There is one thing certain, that where a properly mixed diet is supplied with plenty of bone and chopped meat this habit is very rarely if ever met with.

Symptoms.—It is usually first suspected by noticing the feathers being pulled or broken about the tail and hackle. A close watch soon discloses the fact, as the feather eaters may be seen pulling and eating the feathers.

Treatment.—We believe the only remedy is a correction of the diet and supplying a proper amount of animal food. Some have advocated smearing the feathers with something nauseous or bitter, but this is a poor remedy and if change of diet with the addition of plenty of animal food does not prove effectual, get rid of them as soon as possible.

2. Egg Bound.

Causes.—The two great causes for being egg bound are (1) being too fat and (2) constipation.

Symptoms.—There are frequent attempts to lay followed by inactivity. The hen in a short time becomes almost unable to move and if disturbed immediately tries to lay. Upon close examination the egg may be felt.

Treatment.—Treatment for this trouble requires care and judgment. If constipation is suspected give an injection into the rectum of warm water containing a little soap. Should this fail, remove any obstruction from the rectum that caused the stoppage of the egg; inject into the egg passage a little lubricant—raw linseed oil is good. The lubricating of the egg passage when no obstruction exists in the rectum is often all that is necessary.

As a last resort, if there is still failure, puncture the egg, allowing the contents to come away and take the shell away in pieces. To allay inflammation of the passage give an injection after this of a little raw linseed or olive oil containing a little of the white lotion.

3. Soft Shelled Eggs.

Causes.—The laying of soft shelled eggs is the result of improper diet.

Treatment.—Allow the hens more exercise if possible. Feed more lime and vegetables. A few shovelfuls of old plaster in a box where they can get to it easily is an excellent thing for this defect. Sand is also good, as also are oyster shells and grit, but old plaster is better still.

4. Leg Weakness, Rheumatism.

Causes.—Exposure to cold and dampness accompanied by improper feeding is sometimes the cause.

The principal cause of leg weakness, in most strain of fowls, arises from inbreeding or breeding the same strain of fowls for too long a period. It is also caused by overfeeding, which increases the weight of the body out of proportion to the muscular strength of the limbs and usually occurs in the larger breeds.

Symptoms.—The first symptoms is lameness, soon followed by greater weakness of the legs, the fowl going but a short distance and then sitting down. As the disease progresses the patient gets "off its feet" altogether.

Treatment.—Do all possible to avoid exposure to cold and dampness. Feed less food and no corn or other fat-forming products. In the first stages, give:

Sulphate of Iron.....	¼ pound.
Sulphate of Lime.....	¼ pound.

Mix and give the fowl about the size of two peas of the mixture on its tongue twice a day. If, however, the bird is unable to walk chances are against it.

5. Egg Eating.

This habit, when once formed, is hard to get rid of.

Causes.—It may have its origin in having had access to broken eggs. It more frequently, however, has its cause in improper diet—insufficiency of animal food.

Treatment.—If from want of animal food, feed more ground bone and meat.

It is a good plan to trim a little off the end of the beak of the offender with a sharp knife, and then allow her to try satisfying this morbid desire for eggs on one made of china. It is said that one or two attempts to break a china egg with a bill pared to the quick is sufficient to bring about a cure.

6. Fits.

Causes.—These are usually due to some other physical derangement, such as may be caused by exposure to the hot sun or to the presence of worms.

Symptoms.—The bird suddenly falls, flutters about and finally, in many cases, becomes insensible.

Treatment.—Ascertain the cause, if possible, and treat accordingly.

Cold water to the head is a good remedy.

7. Sterility (Barrenness).

This term is applied to a condition of either male or female, the consequence of which is the production of infertile eggs.

An infertile egg is one which, when subjected to proper conditions, fails to produce a chick because of the absence in it of the life germ.

Causes.—Infertile eggs may, of course, be due to the male or to the female, and may be the result of a great many causes unnecessary to enumerate here, more than to say that these causes are, as a rule, in the great majority of cases due to conditions directly opposed to those outlined in the following section to ensure the production of fertile eggs.

Treatment.—Remove the cause by bettering the condition and endeavoring to carry out the principles laid down for the securing of fertility, Chap. IX, Sect. 4.

8. Vertigo.

Causes.—Excessive feeding of fat-producing food, producing an over fat condition causes the brain to be affected, thus giving rise to vertigo.

Symptoms.—Partial control of the limbs is lost and the patient frequently runs about in a circle.

Treatment.—Cease feeding heavy fat-producing food; feed less and allow plenty of exercise. For immediate relief of an attack, place a cold water cloth to the head or pour cold water upon it.

9. Dropsy.

Cause.—Dropsy is the cause of poor feeding and improper care. It may occur in old birds or be the result of some other disease which leaves the bird in a generally run-down condition.

Symptoms.—A watery fluid forms under the skin about the lower portions of the body, and in severe cases may extend to the legs.

Treatment.—Medicines are of little avail and the best treatment is to act on the principles outlined in Chapter I. for the securing of healthy, strong stock.

10. Gleet, Clap, Gonorrhœa.

Causes.—This disease is infectious and may be communicated through the male bird.

Symptoms.—The principle symptoms are inflammation of the passage and a discharge of a whitish, watery fluid.

Treatment.—If noticed in a hen isolate her at once and examine the male bird carefully.

Bathe the parts with warm water, wipe dry and apply a lotion made by diluting the creolin lotion with an equal quantity of water. Apply this with a feather well into the opening. In an hour after bathe again with warm water, wipe dry and apply the white lotion with a feather.

Be careful when treating this disease, as any of the discharge getting into a cut on the hand or into the eyes may cause extreme soreness, pain and inflammation.

11. Anaemia.

Anæmia is applied to a generally "run down" condition in which the bird has little vitality.

Causes.—Improper diet and care or some wasting disease that may leave the fowl in this condition are the principal causes.

Treatment.—A confirmed case cannot be cured. If noticed in the first stages proper care and nutritious food are all that is necessary.

CHAPTER XVIII.
DISEASES OF TURKEYS, DUCKS AND GEESE.

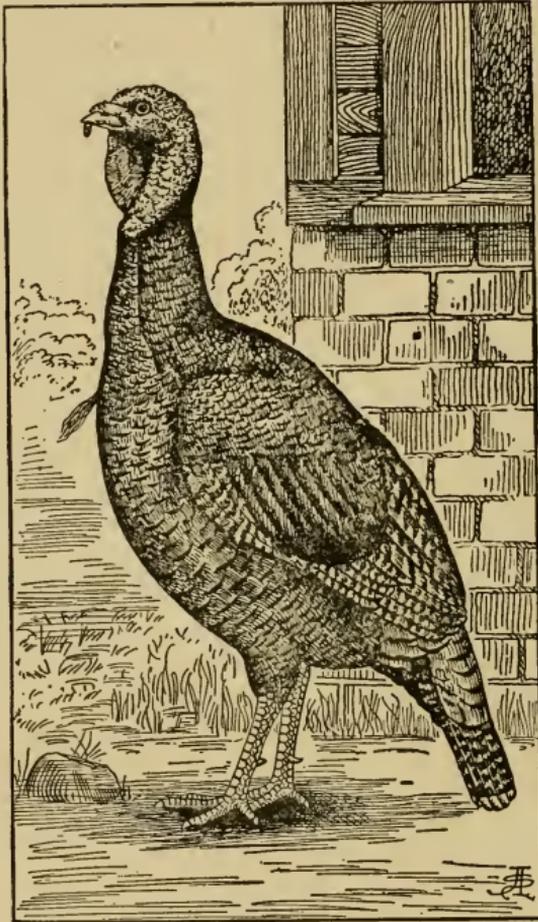


Fig. 116. The Turkey—Male.

1. Big Head in Turkeys.

This is a disease mostly seen in turkeys, but occasionally in other fowl. It may affect turkeys at any age, but mostly when young.

Causes.—It is caused by small germs or parasites getting into the system and affecting the head. When one turkey becomes affected it generally spreads through the whole flock.

Symptoms.—The first symptom noticed is swelling around the head, usually in front of the eyes. In some cases the swelling only affects one side of the head, and develops until it closes the eye right up, and the turkey goes around with its head to one side. In other cases both sides become swollen at the same time, and closes both the eyes. Although these swellings are mostly in front of the eyes, they may affect other parts of the head, and even the feet in some cases. If not treated, it gradually increases around the head until it works into the throat and kills the turkey. If in the foot, it swells and becomes so bad that it finally dies.

Treatment.—When this disease gets into a flock of turkeys, if not treated it kills nearly all the members of the flock before it stops. Separate the diseased turkeys from the sound ones, and give to a medium-sized bird three drops of spirits

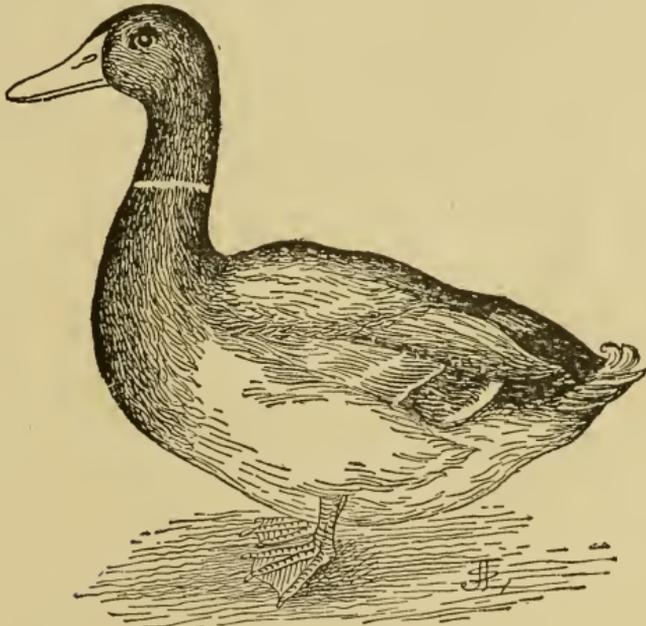


Fig. 117. A Rouen Drake.

best way to give this is to pour it down with a spoon. Give of turpentine mixed in a teaspoonful of raw linseed oil. The

this dose once a day and rub around the swelling with white liniment once a day. This gradually cures if taken in time. If the swelling is very large before starting to treat it, split the lumps open with a sharp knife and squeeze the cheesy matter out. Then fill the hole and rub the swelling with white liniment; continue this treatment until the turkey is all right. Be careful not to let the liniment into the eye while applying it to the head.

2. Ducks.

Ducks are not subject to the same number of diseases as chickens, although they too have many. These, as a general rule, may be traced to the same great cause, namely, that of improper care and feeding. Provide plenty of water in a swimming pond in addition to what we have outlined for chickens and little trouble will be experienced.

All diseases of ducks may be successfully treated as outlined for chickens when conditions are similar.

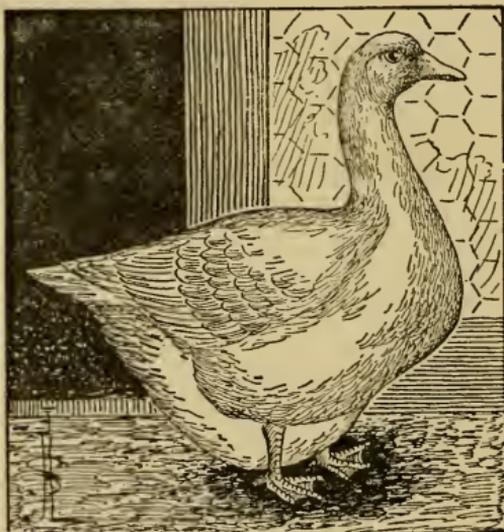


Fig. 118. An Embden Goose.

3. Geese.

The causes, symptoms and treatment of diseases of geese are similar to those of other poultry and may be treated in the same manner, regulating the dose of medicine, of course, to the size of the bird.

PART

SIX



PART VI.
MEDICINES AND RECEIPTS.

MEDICINES.

Medicines may be conveniently divided into three great classes, according to the source from which they are obtained, namely:

1. Animal; products of the animal kingdom.
2. Vegetable; products of plants, trees, roots, etc.
3. Mineral; products of the mineral kingdom.

It is very important that persons interested in the study of Veterinary Science should give the matter contained in Part VI. their careful attention, as the names, sources, action and use, as well as the amount to give as a dose, and the time for operation, are carefully dealt with.



CHAPTER I.

MEDICINES OBTAINED FROM THE ANIMAL KINGDOM.

1. Ammonia.

Source.—Ammonia is obtained from plants and animals. There are several forms, but that mostly used in practice is strong liquor ammonia, which is used mostly for making liniments.

Action and Use.—See receipt for white liniment, Chapter V., Section 1.

2. Cantharides or Spanish Fly.

Source.—Cantharides is obtained from flies which receive the name Spanish Fly on account of so many of them coming from Spain. The flies are of a green color, an inch in length, and are captured in nets, then killed by pouring boiling water or vinegar on them. After this they are dried in the sun or by artificial heat, are ground and made ready for use in practice.

Action and Use.—Its chief action is as a sweat blister. It is one of the principal ingredients in sweat blisters which are used for sweating thickenings or lumps on any part of the body, that are not on the bone, such as curbs, tumors, thickenings left after a wound has been healed, etc. As to how to use Powdered Cantharides see the receipt for sweat blister, Chap. V. Cantharides can also be had in the form of a tincture, but this is not extensively used. The proportion to use Powdered Cantharides for a sweat blister is, 1 to 2 drams of the Cantharides to an ounce of vaseline or lard, according to how heavy the skin of the horse is. For cows use it a little stronger.

3. Chloroform.

Source.—Chloroform was discovered in 1832. It is a colorless, pungent fluid with sweet taste and characteristic odor. It is slowly decomposed by sunlight, and therefore should be kept in a dark place.

Action and Use.—It is sometimes used internally in small doses to relieve pain and the accumulation of gases. There are other agencies cheaper and better suited to the purpose, so that this use is not extensive.

Its principal use is as an anæsthetic because of its action in deadening the sensory nerves and making the patient insensible to pain during an operation or in severe cases of parturition.

In administering chloroform proceed as follows: Throw the patient and secure it to prevent injury. Saturate the inside of the inhaler with chloroform and place it over the animal's nose. Add a little chloroform every few minutes when necessary until the eyelid ceases to move when the finger is placed on it. During the giving of chloroform keep the finger on the pulse to see that it remains steady and strong, and allow plenty of fresh air to be breathed with the fumes of chloroform.

As soon as under the influence of the drug remove the inhaler to admit fresh air. During the operation should the patient show signs of surviving, give a little more.

Caution.—Do not administer chloroform to an animal whose heart is known to be weak.

Dose.—For internal use give a horse $\frac{1}{4}$ ounce or 1 dessertspoonful; cattle, $\frac{1}{4}$ ounce or 1 dessertspoonful; sheep and pigs. 25 to 50 drops. Give in a little syrup or raw linseed oil.

CHAPTER II.

MEDICINES OBTAINED FROM THE VEGETABLE KINGDOM.

1. Aconite.

Source.—Aconite is the product of a plant that grows in cool, mountainous countries. The form of aconite we recommend and use is Fleming's Tincture, which is got from the root of the plant.

Action and Use.—Aconite acts on the heart and blood vessels, causing the heart to beat slower, and in this way lowers blood pressure in the system, thus it is good in most kinds of inflammation where the animal is in good condition. It is used now in nearly every case in place of bleeding.

Dose.—Fleming's Tincture of Aconite—For horses, 3 to 10 drops; cattle, 8 to 12 drops; sheep, 2 to 3 drops; pigs and dogs, 1 to 2 drops.

2. Alcohol.

Source.—Alcohol is obtained from certain kinds of wood, grapes, beets, potatoes, etc. It is not used much in its pure state for treating stock, but is used in the form of liquors for medicines. One preparation, known as methylated spirits of alcohol is used in making liniments.

Action and Use.—Its action is as a stimulant, and it also acts on the kidneys as a diuretic. It is mostly used in the form of liquors, such as whisky, gin, beer and ale. For external use see Chapter V.

Dose.—For horses (whiskey), 1 to 2 wineglassfuls; cattle, 2 to 4 wineglassfuls; sheep, 1 wineglassful; pigs and dogs, 1 to 2 dessertspoonfuls. For horses (gin), 1 wineglassful; cattle, 1 to 2 wineglassfuls; sheep, 1 to 2 teaspoonfuls; pigs and dogs, 1 teaspoonful. For horses (beer and ale), $\frac{1}{2}$ to 1 pint; cattle, 1 pint; sheep, $\frac{1}{4}$ to $\frac{1}{2}$ pint; pigs and dogs, 1 wineglassful.

3. Aloes.

Source.—Aloes is obtained from a plant grown in the West India Islands. There are three kinds, Barbadoes, Soc-

trine and Cape. The Barbadoes is the best, and is the kind mostly used for stock. It is of a liver-brown color, bitter to the taste and is usually bought either in the form of a powder or lumps.

Action and Use.—Aloes acts as a physic and blood purifier. It is used in a great many diseases, especially in the horse. It should not be given to a pregnant animal except in very urgent cases.

Dose.—For horses, 8 to 10 drams; cattle, 1 to 2 ounces; sheep, 2 to 4 drams; pigs and dogs, 1 to 2 drams. To prepare aloes for a drench it must be dissolved in water that is just lukewarm, for if the water is too warm it spoils the action of the aloes, and if it is too cold it will not dissolve properly. For giving it as a ball, see Chapter V. It takes aloes twenty-four hours to operate on the bowels in horses and cattle, and after giving them a dose they should always be left standing quietly for forty-eight hours.

4. Aniseed.

Source.—Aniseed grows in the form of berries on bushes that grow in Spain, Germany and Southern Russia. The berries are dried and ground, this being the form in which we use it.

Action and Use.—It stimulates digestion, sweetens the stomach, and in cases where the stomach is deranged it relieves the gases that form. It is splendid for animals that are recovering from weakening diseases to give an appetite and build them up.

Dose.—For horses, 1 dessertspoonful; cattle, 1 dessertspoonful; sheep, 1 teaspoonful; pigs and dogs, $\frac{1}{2}$ to 1 teaspoonful.

5. Arnica.

Source.—Arnica is obtained from a plant that grows in mountainous countries of Central Europe, Asia and America. The form we use is the Tincture of Arnica, which is taken from the root of the plant.

Action and Use.—It is not used much internally, but is used externally in the form of a cooling lotion for sprains, wounds, etc.—one ounce or 4 dessertspoonfuls of arnica to a pint of water and applied twice a day. It is also used to rub race horses' legs before and after bandaging to keep them from getting stiff and sore.

6. Belladonna.

Source.—Belladonna is the product of a plant known as Deadly Nightshade. It grows wild in some parts of Great Britain, and is also cultivated to a great extent. The form used mostly in practice is the Fluid Extract of Belladonna.

Action and Use.—It soothes, softens and relaxes the parts to which it is applied and is extensively used in almost any part of the body to relieve the pain and check the inflammation. The Extract of Belladonna is strong and must be used carefully.

Dose.—Fluid Extract of Belladonna—For horses, 1 dram or 1 teaspoonful; cattle, 1 dram or 1 teaspoonful; sheep, 10 drops; pigs and dogs, 3 to 5 drops. Belladonna is extensively used for diseases of the eyes in the form of an eye wash. For further information look at the receipt for eye wash at the back of this book. It is also greatly used for dilating or opening the neck of the womb, in any animal, where it remains closed when ready to be delivered of their young. It is used a great deal for this trouble in cows.

7. Benzoin.

Source.—Benzoin is obtained from a tree called styrax benzoin, which grows in the southern part of Asia. It is got by cutting a hole in the bark and catching the sap which soon becomes hard and brittle.

Action and Use.—The form in which it is used is known as Compound Tincture of Benzoin, or Friar's Balsam, which is prepared from the gum. Its chief action is in healing wounds and is used by painting the wound over with a feather twice a day. It is especially useful for caulks, or where a nail has run in the foot, to counteract the effect of the poison. It is used but little internally.

8. Buckthorn.

Source.—Buckthorn is obtained from the ripe berries of a shrubby bush that grows along the North Pacific Coast. The form in use is known as Syrup of Buckthorn.

Action and Use.—It is principally used as a mild physic for dogs.

Dose.—For a dog give 1 to 2 ounces; cats, $\frac{1}{2}$ ounce. A very good plan is to give a dessertspoonful of the syrup every night and morning until you get the desired results.

9. Camphor.

Source.—Camphor is the product of a tall, evergreen tree known as the Laurel Camphor, which grows in Japan, China, and different parts of Europe. The branches are cut and boiled in water and the camphor rises to the top in the form of gum.

Action and Use.—It is mostly used in mixtures for coughs, sore throat and heaves. It is best used as directed in the receipt for chronic cough, and heaves or broken wind.

10. Castor Oil.

Source.—Castor Oil is obtained from the seeds of a shrubby tree that grows in Africa, Southern Europe, and South America.

Action and Use.—It is a mild physic, similar to raw linseed oil. It is used but little for horses or cattle, but is sometimes given to dogs, pigs, and young animals.

Dose.—For horses, 1 pint; cattle, 1 pint; sheep, $\frac{1}{4}$ pint; pigs and dogs, 1 ounce or 4 dessertspoonfuls. It takes about twenty-four hours to operate on the bowels of horses and cattle, while when given to sheep, pigs and dogs it only takes about twelve hours to operate. The best way to give castor oil to pigs and dogs is to give 2 dessertspoonfuls every night and morning until you get the action required.

11. Catechu.

Source.—Catechu is obtained by boiling the chips of a tree that grows in Africa and Southern Asia. The form mostly used in practice is known as Tincture of Catechu.

Action and Use.—It acts as an astringent on the bowels for diarrhoea. Thus it is used in cases of diarrhoea, and checks it in most animals. It is also used for coloring the White Lotion, a few drops making it a nice dark color.

Dose.—Tincture of Catechu—For horses, 2 to 4 drams or 2 to 4 teaspoonfuls; cattle, 4 to 6 drams or 4 to 6 teaspoonfuls; sheep, 2 drams or 2 teaspoonfuls; pigs and dogs, 1 dram or 1 teaspoonful. These doses may be given in gruel or in a pint of lukewarm water three or four times a day until the diarrhoea is stopped.

12. Croton Oil.

Source.—Croton Oil is extracted from the seeds of a tree that grows in the southern parts of Asia.

Action and Use.—It is a very severe physic when given internally. It is sometimes given to cattle and horses when the bowels are severely constipated, but is never given until all the milder physic medicines fail.

Dose.—For horses, 15 to 20 drops; cattle, 30 to 40 drops; sheep, 5 to 10 drops; pigs and dogs, 2 to 3 drops. For horses and cattle, give it in a pint of raw linseed oil; for sheep, give in a half a pint of oil, and for pigs and dogs, give it in two tablespoonfuls of castor oil.

13. Cocaine.

Source.—Cocaine is an alkaloid extracted from the leaves of *Erythroxylum coca* and its varieties. The hydrochloride is that more generally used. It is in the form of colorless crystals which dissolve readily in water, alcohol or glycerine.

Action and Use.—A few drops of a 5% solution placed within the eyelids dilates the pupil. When in contact with the sensory nerves it causes paralysis and is consequently used as a local anæsthetic for all kinds of operations.

Dissolve six grains of cocaine in a half ounce of pure water and inject with a hypodermic syringe into an ordinary-sized tumor. It so paralyzes the sensory nerves locally that the tumor may be removed without causing pain. The quantity used varies of course according to the extent of the operation.

14. Digitalis.

Source.—Digitalis is obtained from the leaves of a plant that grows in many parts of the country. The leaves are dried and ground, and in this form is placed upon the market.

Action and Use.—It is a heart and lung tonic, used mostly mixed in powders that are given in weakening diseases, such as influenza, distemper, and lung troubles. It is also mixed in powders that are given for heaves.

15. Elecampane.

Source.—Elecampane is obtained from a plant which may be found growing along the roadside and in pasture fields of cool countries. The root is dried, ground and used as a powder.

Action and Use.—It is more generally used as a constituent of cough powders and is a splendid medicine for heaves.

Dose.—For horses, 1 to 2 drams; cattle, 1 to 2 drams; sheep, $\frac{1}{2}$ to 1 dram; pigs, $\frac{1}{2}$ to 1 dram; dogs, $\frac{1}{4}$ to $\frac{1}{2}$ dram. Give mixed with the feed three times a day.

16. Gamboge.

Source.—Gamboge is obtained from the sap of a tree that grows in Southern Asia. It is used in the form of a yellow-white powder.

Action and Use.—It is a powerful physic, mostly used for cattle where mild physics, such as salts and linseed oil, fail. When given to cattle it is combined with other medicines in this form:

Epsom Salts	1 pound.
Common Salt	2 desertspoonfuls.
Gamboge	1 ounce.
Bicarbonate Soda and Ginger.....	1 desertspoonful each.

Mix in a quart of lukewarm water. In this way it makes a powerful physic and very rarely fails. It is used in bad cases of constipation of the bowels and impactions of the stomach.

17. Gentian.

Source.—Gentian is obtained from the root of a plant that grows in the mountainous parts of Europe. The root is dried and ground, and in this form it is used.

Action and Use.—It is a bitter tonic for the stomach and system in general, used in all kinds of powders that are given to animals that are weak and run down in condition requiring a tonic.

Dose.—For horses, 1 desertspoonful; cattle, 1 desertspoonful; sheep, 1 teaspoonful; pigs and dogs, $\frac{1}{2}$ teaspoonful. These doses may be given twice a day in food or on the tongue with a spoon.

18. Ginger.

Source.—Ginger is obtained from a plant grown in South America and the West India Islands. The plant is dried and ground, and in this form it is used.

Action and Use.—It acts as a stimulant, relieves the gases and sweetens the stomach. It is used to a great extent with physic drenches to prevent griping; and also in medicines used for colic, indigestion and a great many other diseases.

Dose.—For horses, 1 large teaspoonful; cattle, 1 dessertspoonful; sheep, 1 small teaspoonful; pigs and dogs, $\frac{1}{2}$ teaspoonful. These doses can be given every two or three hours.

19. Iodine.

Source.—Iodine is obtained from sea plants, and is used in the form of a dark brown tincture.

Action and Use.—It is not often used internally, but is used externally for sweat blisters for thickened glands by painting the lump with a feather once a day until it blisters, then greasing the parts and letting it go for two or three days until it heals, then washing it off with lukewarm water and soap and blistering again as before mentioned.

20. Linseed.

Source.—Linseed is used mostly in the forms of linseed meal and raw linseed oil, obtained from flax seed.

Action and Use.—Raw linseed oil is given as a very mild physic, or what is called a laxative. The dose of the oil is one pint poured down as a drench. In all cases, after giving it to a horse or cow, allow them to stand in the stable the next day and feed light for a few days. Linseed meal is used mostly, when given internally, for fattening cattle and for animals recovering from weakening diseases. The flax seed itself boiled is better for feeding young and sickly animals than the linseed meal. Linseed meal is also used for drawing poultices, and is one of the best that can be had. It should always be mixed with boiling water.

21. Laudanum.

Source.—Laudanum is used in the form of a tincture, and is a preparation from opium obtained from a plant that grows in warm parts of Asia.

Action and Use.—It is sometimes used externally for rubbing on painful swellings. In this way use one-third tincture laudanum and two-thirds white liniment. Apply three times a day after bathing. It is used internally in almost every disease where there is pain, as it relieves pain and spasms, and in this way helps greatly to check inflammation.

Dose.—For horses, 1 to 2 ounces or 4 to 8 dessertspoonfuls; cattle, 1 to 2 ounces or 4 to 8 dessertspoonfuls; sheep

and pigs, 2 to 4 drams or 2 to 4 teaspoonfuls; dogs, 20 to 25 drops. It is given in a pint of lukewarm water as a drench, and may be given as often as every two hours in severe cases.

22. Marshmallows.

Source.—Marshmallows is obtained from a plant that grows in this country, generally in the vicinity of rivers.

Action and Use.—It is chiefly used in poultices, mixed half and half with linseed meal and makes one of the most effectual drawing and soothing poultices there is. It is also used when boiled, the tea from it being mixed with lukewarm water for bathing the milk-bag, for garget, milk-fever, etc. It makes a very soothing bath for sore or irritated wounds or swellings. Use one teacupful of the tea to a pint of lukewarm water.

23. Mustard.

Source.—Mustard is obtained from a plant which grows in most parts of Europe. The seeds are dried and ground, and in this form used in practice.

Action and Use.—It is chiefly used for mustard plasters which are applied over the bowels in severe cases of colic or inflammation to relieve the pain and check the inflammation. In lung troubles it is applied over the ribs and chest, to the back in diseases of the kidneys, and around the throat for sore throat. To make a mustard plaster of ordinary strength for a thin-skinned horse mix a quarter of a pound of mustard with two dessertspoonfuls of flour and enough vinegar to make it in the form of a paste. In very severe cases use the mustard and vinegar without the flour on cattle and horses with very thick skin. Instead of applying it to an animal with a cloth, merely rub it into the hair over the parts to be blistered.

24. Nux Vomica.

Source.—Nux Vomica is obtained from the seeds of a small tree that grows in India and Australia. These seeds are dried, ground, and used in this powdered form.

Action and Use.—It is a nerve stimulant, and is used in all cases of paralysis where the nerves have lost their power. Use it by taking equal parts of gentian and powdered nux vomica, mix thoroughly, and for horses and cattle give a dose of one teaspoonful three times a day in the feed or on

the tongue with a spoon; for sheep, pigs or dogs give one-half teaspoonful.

25. Olive Oil.

Source.—Olive Oil is extracted from the seeds of an evergreen tree that grows in Southern Europe.

Action and Use.—It is not used internally to any extent, but is used externally for soothing and healing irritated wounds. It may be used in its pure state or be mixed with carbolic acid—10 drops of carbolic acid to 4 ounces of olive oil.

26. Oil of Tar.

Source.—Oil of Tar is a product of the pine tree, and is used in the form of a dark, thick, sticky liquid possessing a tar-like smell.

Action and Use.—It is chiefly used in cases of chronic cough and is a very effectual remedy. Give a teaspoonful three times a day in the horse's feed, or on the tongue with a spoon.

27. Oil of Male Shield Fern.

Source.—Oil of Male Shield Fern is obtained from a shrub that usually grows along the side of the road in most temperate countries. It is a dark, thick, oily liquid.

Action and Use.—It is a most effectual remedy for worms, especially tapeworms, in all animals.

Dose.—For horses, 3 to 4 drams; cattle, 3 to 4 drams; sheep and pigs, 1 to 2 drams; dogs, $\frac{1}{2}$ to 1 dram. Before giving it to cattle and horses have them starved for twenty-four hours, then give the above mentioned dose mixed in a pint of raw linseed oil or gruel; feed very light for three days, and if the worm has not come away repeat the dose every third day until it does. Give it to sheep and pigs in the same manner, only in half the quantity mentioned of raw linseed oil or gruel. Give it to dogs in half a teacupful of new milk, in the same manner as for horses and cattle. For further particulars see "Tapeworm" as treated for different animals.

28. Pepper.

Source.—Black pepper, which is the kind mostly used for animals, is from the berries of a climbing plant that grows in the West Indies.

Action and Use.—It is used internally as a stomach stimulant to heat the stomach and bowels, and in this way helps to relieve the pain in colic, indigestion, etc.

Dose.—For horses, 1 dessertspoonful; cattle, 1 dessertspoonful; sheep and pigs, 1 teaspoonful; dogs, $\frac{1}{2}$ teaspoonful. In mixing up this drench it is often combined with whiskey, and makes a good colic drench.

29. Quassia Chips.

Source.—Quassia Chips are obtained from a handsome tree that grows in the West India Islands. It is odorless but bitter to taste.

Action and Use.—It is used mostly as an injection for pinworms. To prepare it for injection refer to "Pinworms" in Part II.

30. Sulphuric Ether.

Source.—Sulphuric Ether is prepared from sulphuric acid and rectified spirits of alcohol, and is used in the form of a clear liquid possessing a very strong odor.

Action and Use.—It is used a great deal for putting animals asleep for operations, especially dogs. For particulars refer to "Spaying," Part V. It is sometimes given for indigestion or colic, both in horses and cattle, to relieve the pain and gases.

Dose.—For horses and cattle, 1 ounce or 4 dessertspoonfuls mixed in a pint of lukewarm water. It may be given every two hours. When the pain is severe, it is a very effectual remedy.

31. Salicylic Acid.

Source.—Salicylic Acid is obtained from a plant and is used in the form of a white powder.

Action and Use.—It has a special action in cases of rheumatism. As to method of using it, refer to the receipt given for rheumatism, Parts II. and III.

32. Sweet Spirits of Nitre.

Source.—Sweet Spirits of Nitre, or Nitrous Ether, is chiefly a preparation of alcohol. It is in the form of a clear liquid which has a sweet taste and smell.

Action and Use.—In small doses it acts on the kidneys and skin. For this purpose give horses and cattle a quarter of an ounce or one dessertspoonful in drinking water once a day. For sheep, pigs and dogs give a teaspoonful in their drinking water or food once a day. In large doses it acts on the bowels and stomach to relieve pain and gases. Thus it is good in the different forms of indigestion and colic.

Dose.—For horses, 1 ounce or 4 dessertspoonfuls; cattle, 1 ounce or 4 dessertspoonfuls; sheep, $\frac{1}{2}$ ounce or 2 dessertspoonfuls; pigs and dogs, $\frac{1}{4}$ ounce or 1 dessertspoonful. Mix in a pint of lukewarm water and give as a drench. See special instructions for the different diseases in which it is used. This is a medicine that is used a great deal in practice, as you will see all through the book, and should be thoroughly understood.

33. Spirits of Turpentine.

Source.—Spirits of Turpentine, also called Oil of Turpentine, is obtained from a tree. It is used in the form of a clear, oily looking liquid.

Action and Use.—Internally, for horses and cattle, it is used in one ounce or four dessertspoonful doses mixed with a pint of raw linseed oil. In severe cases of acute indigestion and colic it relieves the pain and gases. It is also used in this proportion for killing the long, round worms and bots in horses. For further particulars see "Bots" and "Long Round Worms" in Part II. Internally, for sheep and pigs, the dose is one-quarter of an ounce or one dessertspoonful mixed with half a pint of raw linseed oil. It is used for the same purposes as it is in horses and cattle. It is used externally in liniments. Refer to the receipts for making white liniment and acid liniments in Chapter V.

CHAPTER III.

MEDICINES OBTAINED FROM THE MINERAL KINGDOM.

1. Alum.

Source.—Alum is obtained from alum salts.

Action and Use.—It is mostly used externally in the form of washes for healing wounds. It is also dusted upon wounds in the form of a powder, and is very drying and healing. It is also used in gargle powders for sore throat, influenza and aphtha, or sore mouth.

Dose.—Its use internally is best seen in the receipt for gargle powders. For making a wash use a tablespoonful of alum to a pint of water.

2. Arsenic.

Source.—Arsenic in its pure form is not much used in practice, because it is too strong and powerful. The form that is used is known as Fowler's Solution, which is prepared from arsenic, and is in the form of a liquid.

Action and Use.—It is a powerful tonic for the stomach and system in general, and is especially used after weakening diseases, such as distemper. It often causes the animal to thrive when everything else fails.

Dose.—For horses, $\frac{1}{2}$ ounce or 2 dessertspoonfuls; cattle, $\frac{1}{2}$ ounce or 2 dessertspoonfuls; sheep, 1 dram or 1 teaspoonful; pigs and dogs, $\frac{1}{2}$ dram or $\frac{1}{2}$ teaspoonful. Give this medicine combined with an ounce of whiskey and half a pint of gruel twice a day until the animal gets better and is strong.

3. Black Antimony.

Source.—Black Antimony is a black, heavy, grayish powder that has neither smell nor taste.

Action and Use.—It is not used much in the way of medicine, only to color condition powders, etc. It should not be used for this purpose, as it is very irritating and injurious

to the system. When it is used as a coloring material for powders it is in this proportion: one teaspoonful of black antimony to a pound of whatever is required to color.

4. Butter of Antimony.

Source.—Butter of antimony is used in the form of a brown liquid.

Action and Use.—It is never used internally, for it is an irritating poison, but it is used externally for curing thrush in horse's feet, and for burning growths off around the feet that come from the quick. It is also good in cases where a nail has run in the foot. After the nail is extracted and the nail-hole pared out, drop a few drops in the hole to kill the rust and poison.

5. Bromide of Potassium.

Source.—Bromide of Potassium is prepared from seawater, and is usually in the form of a white crystal powder, which has a salty taste.

Action and Use.—Its chief action is to quiet the nerves in nervous diseases, such as lockjaw (tetanus), or in convulsions, chorea and other painful diseases.

Dose.—For horses, 1 teaspoonful; cattle, 1 teaspoonful; sheep, $\frac{1}{2}$ teaspoonful; pigs and dogs, $\frac{1}{4}$ teaspoonful. The dose may be given three or four times a day, according to the severity of the case.

6. Biniodid of Mercury (Red Precipitate).

Source.—Biniodid of Mercury is bought in the form of a heavy, bright-red powder.

Action and Use.—It is chiefly used for blistering bony enlargements, such as spavins, ringbones, sidebones, splints, etc. The proportion in which it is used is 1 to 2 drams to the ounce of vaseline, or lard, according to the breed of the horse and thickness of the skin. Have the mercury and vaseline, or lard, thoroughly mixed before using, and three days after applying the blister grease the part with lard. For further information, see particulars for mercury blister, Chapter V.

7. Carbolic Acid.

Source.—Carbolic Acid is obtained from coal tar and petroleum. The pure Carbolic Acid is got in the form of a crystal, but it is generally bought in the form of a liquid.

Action and Use.—It has a very cleansing effect on a wound, and is greatly used for that purpose. It is also used for fumigating stables by sprinkling a little around on the floor. It is very rarely, if ever, used internally. The strength in which carbolic acid should be used in bathing a wound is 10 drops to half a pail of water. For a lotion use 20 drops to a pint of water. For making carbolic oil use 25 drops of carbolic acid to a half-pint of olive or sweet oil, that is about two or three drops of acid to the ounce of oil. It is a mistake to put too much acid in a wash or lotion, as instead of it having a cleansing effect it will then burn the wound and stop the healing action. A very good healing salve is made out of 5 drops of carbolic acid to an ounce of vaseline.

8. Calomel.

Source.—Calomel is prepared for medicine in the form of a heavy white powder.

Action and Use.—Its chief action is as a physic, and it also clears the bile from the liver. It is given in cases of jaundice and other liver troubles and is also used for drying up thrush in the feet of horses. See "Thrush," Part II.

Dose.—To give it to a horse combine $\frac{1}{2}$ dram of calomel with 4 drams of bitter aloes and give in the form of a ball. See also Chapter IV. For cattle give 1 dram of calomel with 1 pint of raw linseed oil.

9. Chlorate of Potash.

Source.—Chlorate of Potash is obtained by mixing other medicines together, and is bought in the form of crystals or in a white powder.

Action and Use.—Its principal action is to thicken the blood in diseases where the blood is too thin, such as in button farcy. It is also very soothing in cases of sore throat.

Dose.—For horses, 2 to 4 drams or 1 teaspoonful; cattle, 2 to 4 drams or 1 teaspoonful; sheep, 1 dram or $\frac{1}{2}$ teaspoonful; pigs and dogs, $\frac{1}{2}$ dram. For sore throat, place a teaspoonful on the tongue three times a day.

10. Caustic Potash.

Source.—Caustic Potash is obtained from pearl ashes. It is put up in white pencil-like sticks.

Action and Use.—It is never given internally, but is used to burn warts and growths by wetting the stick and rubbing it over them. It is also used for burning poisonous wounds (dog bites, etc.) to kill the poison. The sticks must be kept in a corked bottle, as the air dissolves them. While using the stick wrap a piece of paper around the end you hold in your hand so that it will not burn your fingers.

11. Chloride of Zinc.

Source.—Chloride of Zinc is generally bought in the form of round white pencil-like sticks.

Action and Use.—Its principal action is as a powerful caustic for burning off growths, warts, etc. It is not used internally.

12. Creolin.

Source.—Creolin is one of the many products of coal tar. It is bought in the form of a thick, dark fluid and smells like tar.

Action and Use.—It is used in the form of healing lotions for wounds, scratches, grease and such like diseases. For use in the form of a lotion use $\frac{1}{4}$ ounce or 1 dessertspoonful to the pint of water, shake well before using. It is also a very effectual remedy for killing lice, ticks or fleas on any animal and is used in mange and scab in sheep. In cases of this kind use $\frac{1}{2}$ to 1 ounce or from 2 to 4 dessertspoonfuls to the pint of water, shake well before using. Creolin is a very cheap medicine. It is used a great deal at present and is still gaining in favor. It is best to buy the Creolin in its pure state and mix it into washes and lotion as you want to use it, as when it is mixed with water for some time it loses its strength. You therefore see the necessity of buying it in its pure state and mixing it as you want to use it.

13. Crude Petroleum Oil.

Source.—Crude Petroleum Oil is the oil as it comes out of the ground.

Action and Use.—It is principally used for oiling horses' feet in the form of hoof oils, and is a good remedy for killing ringworm on cattle, horses and other animals. In cases of this kind use it to paint around the ringworm. It is a very cheap and effectual remedy. See ringworm, Part III.

14. Hyposulphite of Soda.

Source.—Hyposulphite of Soda is used in the form of a white powder or crystals.

Action and Use.—It is a good blood purifier and is combined with equal parts of gentian, and used to clean the blood and build up the system after weakening diseases. Use hyposulphite of soda one-half pound and gentian one-half pound, mix well together and give of the mixture as follows:

Dose.—For horses, 1 dessertspoonful; cattle, 1 dessertspoonful; sheep, 1 teaspoonful; pigs and dogs, $\frac{1}{2}$ teaspoonful. The above dose may be given two or three times a day according to the case.

15. Iodide of Potassium.

Source.—Iodide of Potassium is used in the form of a white crystal powder.

Action and Use.—Its chief action, when given internally, is as an absorbant, that is as in dropsy of the belly and chest, it absorbs the fluid. It is also used where there is a thickening around the throat, legs or milk glands. It is not used, however, to any great extent on account of its being very expensive.

Dose.—Mix it with equal parts of ground gentian root and give a teaspoonful to a cow or horse twice a day and one-half teaspoonful to other animals.

16. Lime.

Source.—Lime is used in the form of lime water. Internally it is a good medicine for derangement of the stomach, for diarrhoea, and is a good thing to sweeten the stomach.

Doses.—For horses, 1 ounce or 4 dessertspoonfuls; cattle, 1 ounce or 4 dessertspoonfuls; sheep, $\frac{1}{4}$ ounce or 1 dessertspoonful; pigs and dogs, 1 teaspoonful. Lime water is sometimes used for heavy horses by putting 1 ounce or 4 dessertspoonfuls into their drinking water twice a day. Unslacked lime is used for disinfecting stables, etc., by dusting it in its dry form around on the floor.

17. Monsell's Solution.

Source.—Monsell's Solution is a preparation of iron. It is used in the form of a brown, sticky liquid.

Action and Use.—Its chief action is for stopping blood in a wound of any kind, and also for scabbing the wound over. It is a good remedy for open joint and leaking of the navel in foals. It is applied to the parts with a feather four or five times a day.

18. Nitrate of Silver.

Source.—Nitrate of Silver is used in the form of white pencil sticks.

Action and Use.—It is used for burning off warts, proud flesh in cuts and growths in any part of the body by merely wetting the stick and rubbing it to the parts. Keep the sticks corked in a bottle, as they dissolve when exposed to the air.

19. Nitrate of Potash or Saltpetre.

Source.—Nitrate of Potash or Saltpetre is used in the form of a white crystal powder.

Action and Use.—Its chief action is on the kidneys and blood. It causes the kidneys to secrete an extra amount of urine. It is used a great deal in practice in almost all lung troubles, also in cases where the blood is bad and where the sheath and legs are swollen.

Dose.—For horses, 1 teaspoonful; cattle, 1 teaspoonful; sheep and pigs, $\frac{1}{2}$ teaspoonful. If given for the kidneys, give once a day, if for lung troubles, see particulars under that heading.

20. Oxide of Zinc.

Source.—Oxide of Zinc is in the form of a white, fine powder.

Action and Use.—It is mostly used in making up healing salves, in the same proportion as for the receipt that is given for chapped or sore teats in cows.

21. Sulphuric Acid.

Source.—Sulphuric Acid is in the form of a light brown liquid.

Action and Use.—At one time it was used a great deal as a caustic for burning warts, etc., but is not so much used now, as it is too irritating, its place being taken by better

caustics, such as chloride of zinc, nitrate of silver and caustic potash. It is used externally in the form of liniments. See also the receipt for acid liniment, Chapter V.

22. Sulphate of Copper.

Source.—Sulphate of Copper, blue vitriol or blue stone, is in the form of a blue crystal.

Action and Use.—Its chief action when given internally is in checking discharges, such as nasal gleet or chronic catarrh, and whites or leucorrhoea. For this purpose, refer to the receipt to be used internally in the above named diseases. Externally, it is used for wounds that are not healing well and have proud flesh in them, by grinding it fine and dusting it on the wound every two or three days according to how much it burns it.

23. Sulphate of Iron.

Source.—Sulphate of Iron, or commonly called green vitriol, is in the form of a crystal, similar to sulphate of copper, only of a lighter shade in color.

Action and Use.—It is one of the best mineral tonics and is used combined with gentian, in equal parts, for almost every case where the system is run down and requires building up. For horses and cattle give a teaspoonful three times a day; for sheep and pigs give one-half a teaspoonful. It is also used in the same form for killing long round worms and pinworms in horses. For full directions as to how to use it in this case refer to the receipt of worm powders given in this Part.

24. Sulphate of Zinc.

Source.—Sulphate of Zinc is used in the form of a white crystal powder, and resembles Epsom salts in appearance.

Action and Use.—When used internally it is in the form of an emetic to cause vomiting. As to how it is used refer to "Poisoning," Part IV. When used externally it has a healing action. See the receipt of white lotion. It is also used as a drying wash for clap or gonorrhoea in horses and whites in mares. Refer also to those diseases.

25. Sugar of Lead.

Source.—Sugar of Lead is also called Acetate of Lead.

Action and Use.—It is not used internally to any great extent, but is used externally for healing washes, such as in white lotion and eye wash, fully explained in Chapter V.

26. Salt or Sodium Chloride.

Source.—Common Salt is obtained from brine pumped from the ground.

Action and Use.—It is an essential article of food, and something every animal should have regularly. Horses, cattle, sheep and pigs should have it in front of them all the time for, it should be remembered, stock cannot thrive well without it. Rock salt is the best form in which to have it, as the animals can lick it whenever they want it. It is used externally by throwing a handful of salt in a pail of lukewarm water, and in this form it makes a very effectual wash for bathing swellings and wounds.

27. Salts.

Source.—Salts are used in two forms, Epsom and Glauber. Both kinds are in a white crystal form.

EPSOM SALTS.

Action and Use.—Its chief action is as a physic for cattle, sheep and pigs, and is used to a great extent, as you will notice on reading the treatment of the above mentioned animals. Although salts is a good physic it should not be given to horses, aloe being far the best physic for them.

Dose.—Cattle take from one pound to one and one-half pounds dissolved in a quart of lukewarm water with a tablespoonful each of ginger and common soda and given as a drench. This physic takes twenty-four hours to operate on the bowels. It is always best after giving a dose to wait twenty-four hours for an action before giving any more. Sheep and pigs take one-quarter of a pound dissolved in a pint of lukewarm water with a teaspoonful each of ginger and bicarbonate soda and given as a drench. Wait from twelve to sixteen hours for an action on the bowels before giving any more.

GLAUBER SALTS.

Action and Use.—It is not so much used as the Epsom Salts, but is used in horses and cattle for their blood by

grinding it up fine and giving a tablespoonful in a hot mash every night.

28. Sulphur.

Source.—Sulphur, or Brimstone, is used in a yellow powdered form.

Action and Use.—It is a good medicine, when given internally, to act on the blood and clear it. It also acts on the skin and helps to kill parasites or germs, thus being good in mange and other skin diseases.

Dose.—For horses, 1 dessertspoonful; cattle, 1 dessertspoonful; sheep, 1 teaspoonful; pigs and dogs, 1 teaspoonful. Give every night in a hot mash or soft food. It is best given combined with gentian root and nitrate of potash or saltpetre as is explained in the treatment of swelling of the limbs (anascara) in horses.

29. Soda, Bicarbonate.

Source.—Soda Bicarbonate or Bicarbonate of Soda is a compound of sodium.

Action and Use.—In moderate doses it has a tendency to increase the flow of gastric juices and thus aids digestion. It is consequently given for indigestion and flatulence. Because of the sweetening effect it is given for derangement of the stomach, combined with other medicines.

Dose.—For horses, 1 to 2 drams or 1 to 2 teaspoonfuls; cattle, 1 to 2 drams or 1 to 2 teaspoonfuls; sheep and pigs, $\frac{1}{2}$ to 1 dram or $\frac{1}{2}$ to 1 teaspoonful; dogs, $\frac{1}{2}$ teaspoonful. It is mixed with other medicines, given on the tongue with a spoon or as a drench.

30. Tartar Emetic.

Source.—Tartar Emetic is supplied in the form of a white powder, is devoid of odor and has a sweet metallic taste.

Action and Use.—It is little used in practice. Because of its expectorant action it is often combined with cough powders, especially in chronic cases.

Dose.—Horses, 1 to 2 drams; cattle, 1 to 2 drams. It is usually mixed with other powders and given twice a day.

31. Vaseline.

Source.—Vaseline, a product of petroleum oil, is used in the form of a yellow salve.

Action and Use.—Vaseline has a very healing and soothing action on wounds or irritated parts, and is used in nearly all kinds of healing salves, also for mixing blisters, etc.

32. Verdigris.

Source.—Verdigris is a preparation from copper salts, and is used in the form of a blue, fine, heavy powder.

Action and Use.—It is but little used now internally, as sulphate of iron and copper take its place. It is used for making up healing salves for wounds, etc. See also the receipt for green salve.

RECEIPTS.

It must not be supposed that the hints herein given for the use and applications of the various medicines, receipts for which follow, are the only uses and applications for which they are intended. References to these may also be found throughout the book.

CHAPTER IV.

PRESCRIPTIONS FOR INTERNAL USE.

1. Physic Drench for Horses.

Bitter Aloes	8 drams.
Bicarbonate Soda	1 dessertspoonful.
Ginger.	1 teaspoonful.

Dissolve in a pint of lukewarm water and give as a drench, always allowing the horse to stand in the stable a day after giving it.

This is one of the best physics known to clean out a horse's stomach and bowels, and also for purifying the blood.

2. Physic Drench for Cattle.

Epsom Salts	1 pound.
Brown Sugar	½ pound.
Common Salt.....	2 dessertspoonfuls.
Ginger	1 dessertspoonful.
Bicarbonate Soda.....	1 teaspoonful.

Dissolve in a quart of lukewarm water and give as a drench. This makes a good general physic for a cow that is not thriving well.

3. Physic Ball for Horses.

This contains the same ingredients as the physic drench, only it is prepared in a different way, as follows:

FIRST.—Grind up eight drams of bitter aloes good and fine.

SECOND.—Add a few drops of water to make it sticky when rolled.

THIRD.—Roll it in a teaspoonful of ginger into the form of a long ball, so that it will be about one-half inch in diameter and two or three inches long.

FOURTH.—Roll it neatly in a piece of paper, and before giving it to the horse oil the paper, so that it will slip down easily. Place it well back into the mouth and hold the horse's head up until he swallows it. The action of this ball is the same as that of the physic drench.

4. Ball to Act on the Liver and for Worms.

FIRST.—Grind up four drams of bitter aloes, moisten it and roll it into the form of a ball.

SECOND.—Make a hole in the end of the ball and drop in one-half dram of calomel, wrap it in paper, oil the paper and give it as you would a physic ball.

5. Powders to Act on the Kidneys and Blood.

Nitrate of Potash or Saltpetre.....	¼ pound.
Sulphur	¼ pound.
Ground Gentian Root.....	¼ pound.

Mix thoroughly and give a teaspoonful three times a day in the food or on the tongue with a spoon. If for a cow, give a dessertspoonful twice a day. To a sheep, give a teaspoonful twice a day. This is a good powder for starting an animal to thrive, but before giving it, it is best to give a physic drench. If a horse, give aloes; if a cow, give salts.

6. Worm Powders.

Sulphate of Iron.....	¼ pound.
Ground Gentian Root.....	¼ pound.

Mix thoroughly and give a teaspoonful three times a day in the food or on the tongue with a spoon. This powder is only intended for bots, round worms and pin worms in horses. It is also a good tonic powder. Before and after using the powder give a physic drench.

7. Cough Powders.

Sulphur	¼ pound.
Nitrate of Potash or Saltpetre.....	¼ pound.
Powdered Alum	½ pound.

Mix thoroughly and give a teaspoonful three times a day to a horse or cow on tongue with a spoon. If a sheep, pig or dog, give half a teaspoonful three times a day on the tongue with a spoon. This is a splendid powder for a gargle in all cases of sore throat, or sore mouth, and also makes a good cough powder.

8. General Condition Powder.

Nitrate of Potash or Saltpetre.....	¼ pound.
Bicarbonate Soda	¼ pound.
Ground Aniseed	¼ pound.
Femigreek	½ pound.

Mix thoroughly and give a tablespoonful every night in a bran mash, but if in a case where you want to fatten the animal quickly give a tablespoonful twice a day in a bran mash. To horses that are working hard give a tablespoonful every Saturday night in a bran mash to keep them in good working condition.

9. Colic and Indigestion Drench.

Sweet Spirits of Nitre.....1 ounce or 4 dessertspoonfuls.
 Laudanum1 ounce or 4 dessertspoonfuls.
 Fleming's Tincture of Aconite.....10 drops.
 Bicarbonate Soda1 teaspoonful.
 Ginger1 teaspoonful.

Mix in a pint of lukewarm water and give as a drench every two hours for colic, indigestion and inflammation. For further particulars refer to diseases of the stomach and bowels.

CHAPTER V.

PRESCRIPTIONS FOR EXTERNAL USE.

1. White Liniment.

The following proportions make one quart of the liniment. Use either a quart bottle or a quart self-sealer to mix it in:

FIRST.—Put in one-half pint of drinking water.

SECOND.—Put in two ounces or eight dessertspoonfuls of spirits of turpentine and shake thoroughly for five minutes.

THIRD.—Beat up one hen's egg, put it in and shake thoroughly for five minutes.

FOURTH.—Put in two ounces or eight dessertspoonfuls of methylated spirits of alcohol and shake thoroughly for five minutes.

FIFTH.—Put in two ounces or eight dessertspoonfuls of strong liquor ammonia and shake thoroughly for five minutes.

SIXTH.—Put in enough drinking water to make up a quart, then shake thoroughly and the liniment is ready for use.

This is one of the most effectual remedies known for all kinds of sprains and bruises where the skin is not broken. The longer this liniment stands (if the bottle is kept corked) the stronger and better it gets. For making larger or smaller quantities of the liniment add to or take from the proportions as given.

2. White Lotion.

The following proportions make one quart of White Lotion. Use either a quart bottle or a quart self-sealer to mix it in.

Put in one-half ounce of each of the following:—Sulphate of zinc, sugar of lead and pulverized alum, add enough water to make a quart and shake thoroughly,

This makes a most effectual lotion for healing all kinds of wounds and bruises where the skin is broken, also where the skin is irritated, such as in scratches, grease, etc.

3. Acid Liniment.

Persons getting this liniment that are not experienced in handling drugs had better get the druggist to mix it for them, as it is a little dangerous mixing the sulphuric acid with other drugs, and requires to be carefully handled. The following are the proportions for one quart which is best mixed in a quart bottle or a quart self-sealer:

FIRST.—Put in two ounces or eight dessertspoonfuls of spirits of turpentine.

SECOND.—Put in one-half ounce of sulphuric acid. Pour this very slowly into the bottle by letting it run down the inside of the bottle, which is better turned sideways. Take about five minutes to pour it in.

THIRD.—Pour slowly into the bottle two ounces or eight dessertspoonfuls of methylated spirits of alcohol.

FOURTH.—Pour in enough cider vinegar to make a quart, then shake well and it is ready for use.

It is a most effectual sweat blister for removing puffy enlargements, such as bog spavin, wind galls, thoroughpins and other puffy swellings around the legs, by applying it every third day. It is also an effectual remedy for sweeny, curbs, etc., when it is necessary to work the horse. It is also an effectual remedy for rheumatism when used to rub the affected joints every third day. It is also used in various other ways as you will notice through the book.

4. Creolin Lotion.

The following proportions are for one pint of Creolin Lotion:

FIRST.—Pour one-quarter ounce or one dessertspoonful of creolin into a pint bottle.

SECOND.—Pour in enough drinking water to make a pint, shake well and it is ready for use.

This makes an excellent healing lotion for wounds, and by making it double strength is a most effectual wash for destroying germs, parasites, lice or ticks on all animals. It is used in various other places as you may see in this book.

5. Eye Wash.

The following proportions are to make an eight-ounce bottle of eye wash:

Sulphate of Zinc.....	½ dram.
Sugar of Lead.....	½ dram.
Fluid Extract of Belladonna.....	30 drops.

Add enough hard water to make eight ounces, shake thoroughly and the wash is ready for use.

This makes a very cheap and effectual wash for sore eyes, or sores around the eyes in all kinds of animals. Apply twice a day after bathing with lukewarm water or new milk.

6. Carbolic Oil.

The following proportions are for a four-ounce bottle:

Olive or Sweet Oil.....	4 ounces.
Carbolic Acid	20 drops.

Shake well together and this makes a splendid application for healing wounds.

7. Green Salve.

The following are the proportions for making green salve:

FIRST.—Take of mutton tallow, one-half pound, lard, three-quarters of a pound, beeswax, two ounces; put in a pot and stir over a hot fire until it is melted.

SECOND.—Continue stirring, and pour in one-half ounce of verdigris. Stir it over the fire for fifteen minutes.

THIRD.—Take off the fire and add one ounce of spirits of turpentine and continue stirring until it is cold, when it is ready for use.

This is one of the best healing salves known, especially when a wound is nearly healed, as it keeps the wound soft, draws the edges together and allows the hair to grow over better. Melt it in a spoon and apply with a feather.

8. Mercury Blister.

Binioid of Mercury or Red Precipitate.....	1½ drams.
Vaseline or Lard.....	1 ounce.

Mix thoroughly and this is one of the best blisters for blistering bony enlargements, such as splints, spavins, ring-bones, sidebones, etc. Rub into the part well, grease it three days after, and in three weeks repeat the blister. Repeat in

like manner until you have the required action. In case you want a heavier blister add another half dram of the biniodid of mercury. For further directions see treatment of diseases above mentioned.

9. Fly Blister.

Powdered Cantharides or Spanish Fly.....1½ drams.
 Vaseline or Lard..... 1 ounce.

Mix thoroughly, and this is one of the best sweat blisters for blistering thickenings or enlargements in any part of the body where they are not on the bone. Use the same directions as are given for the mercury blister.

10. Hoof Ointment.

Raw Linseed Oil¼ pint.
 Crude Petroleum Oil¼ pint.
 Neatsfoot Oil¼ pint.
 Pine Tar¼ pint.

Mix well and apply every night with a brush all over and under the hoof—even a little in the hair above the hoof. Clean out the hoof before applying.

CHAPTER VI.

MISCELLANEOUS INFORMATION.

1. Emergencies.

Certain diseases develop very quickly, prompt action is necessary and no matter how careful the stock owner may be in the care and feeding of his stock, they are always exposed to conditions over which he has no control. Accidents, too, will happen in the best regulated herds, so that we strongly recommend the keeping of at least a small stock of medicines on hand to be used in cases of emergency—inflammation, colic, indigestion, broken limbs or sprained muscles—when prompt treatment may save the animal.

2. List of Medicines That May be Kept on Hand.

The following are among those that are more frequently used:

1. Sweet Spirits of Nitre4 ounces.
2. Laudanum4 ounces.
3. Fleming's Tincture of Aconite.....½ ounce.
4. Raw Linseed Oil 1 pint.
5. Epsom Salts1 pound.
6. Bitter Aloes8 drams.
7. White Liniment1 bottle.
8. White Lotion1 bottle.

The liniment and lotion cost but little when mixed by the quart, and they are very handy and useful for such accidents as sprains, sore shoulders, cuts, etc.

Other medicines may be obtained at any time from a drug store, and as they are used in cases not so urgent it is scarcely necessary to keep them always on hand.

The cost of the medicines named in this list is trifling compared to the loss which may be avoided by having them on hand and which otherwise may be incurred by the loss caused by delay in going to the drug store just when they should be used.

Note.—In purchasing fluid medicines from a druggist, the bottle often costs more than the medicine placed in it, consequently always take a bottle with you.

3. What Constitutes a Dose.

All the doses mentioned in Part VI. of the Veterinary Science, unless otherwise specially stated, are such as should be given to an animal of average size and under ordinary conditions. The dose in other cases should be regulated accordingly.

4. Apothecaries' Measure of Weight and Prescription Writing :

	1 grain	gr. j.
20 grains.....	1 scruple	ʒj.
3 scruples.....	1 dram	ʒj.
8 drams.....	1 ounce	ʒj.
12 ounces.....	1 pound	lb.j.

5. Apothecaries' Measure of Capacity and Prescription Writing :

	1 minim, min.	Mj.
60 minims.....	1 fluid dram	fʒj.
8 fluid drams.....	1 fluid ounce	fʒj.
20 fluid ounces.....	1 pint	Oj.
8 pints.....	1 gallon	Cj.



GLOSSARY.

AN EXPLANATION OF THE TERMS MORE COMMONLY USED IN VETERINARY PRACTICE.

A.

- Abdomen.**—The belly.
Abnormal.—Not natural.
Abortion.—The expulsion of the young from the womb before the natural time.
Abscess.—A swelling or “gathering” containing pus or matter.
Absorbent.—A medicine to counteract an acid state in the intestines.
Absorb.—To soak up.
Acidity.—A sour condition.
Acute.—A severe and sudden attack.
Adhesive.—Sticky.
Affection.—Disease.
Alimentary.—Applied to the stomach and bowels—the alimentary canal.
Alkali.—A medicine to counteract the effect of an acid
Albumen.—The white of an egg.
Aloes.—A bitter drug. See Part VI.
Ammonia.—See Part VI.
Amputation.—The cutting off of a leg or other member of the body.
Anaesthetic.—A medicine to deprive the animal of feeling.
Anus.—Opening from the rectum or back bowel.
Antidote.—A drug to counteract the effect of a poison.
Antiseptic.—That which prevents decay.
Aperient.—A medicine which causes the bowels to move gently.
Aqua fortis.—Strong water. The common name for nitric acid.
Arrow-root.—A West Indian plant.
Arsenic.—A gray-colored metal forming the poison known by this name and also by the name of rat’s-bane.
Articulated.—Jointed.
Assimilation.—The abstracting of nourishment from the food.
Astringent.—A medicine to cure looseness of the bowels.
Auricle.—A cavity of the heart.

B.

- Barrenness.**—Not capable of producing offspring.
Balsams.—Healing medicines.
Bile.—A fluid secreted by the liver.
Bilious.—A condition produced by an over secretion of bile.
Boracic.—An acid obtained from borax.
Brimstone.—Roll sulphur.
Bronchia.—Branches of the windpipe.
Bronchial.—Pertaining to the bronchia.
Bronchitis.—Inflammation of the bronchial tubes.
Bursa.—A sack or pouch.

C.

- Catheter.**—A tube for extracting the urine from the bladder.
Caustic.—That which burns the flesh.
Calomel.—See Part VI.
Canine.—Pertaining to dogs.
Carbon.—A black-colored chemical; lampblack; graphite.
Carbonate.—A compound with carbon; carbonate of lime, soda, etc.
Carbonic acid.—A compound of carbon and oxygen. Breath of animals contain small quantities.
Casein.—A constituent of milk.
Castrate.—To remove the testicles.
Cervix.—The neck.
Cervical.—Pertaining to the neck.
Chronic.—Protracted, slow.
Chalk.—Carbonate of lime.
Chlorine.—Forms chlorides with lime, soda, etc.
Chyle, chyme.—Applied to the food in the process of digestion.
Common salt.—Sodium chloride.
Concussion.—A violent shock or undue pressure, as concussion of the brain.
Congelation.—Becoming solid.
Corrosive Sublimate.—The bichloride of mercury.
Coagulate.—To thicken. Coagulation or thickening of the blood.
Collapse.—A complete breakdown, as a nervous collapse.
Combustion.—Burning.
Congestion.—The gathering of blood to a certain part.
Constipation.—Applied to a condition of the bowels when the manure is not forced from them naturally.
Contagious.—“Catching.”
Contamination.—Decay.
Contusion.—A bruise.
Convalescence.—The period of recovery.
Costive.—See constipation.
Crisis.—The point at which a change in the progress of the disease takes place.
Cud.—The food being chewed after first being swallowed and again brought to the mouth.
Cyst.—A bag, pouch or sack.

D.

- Decomposition.**—Putrification or decay.
Dentition.—The getting of teeth.
Diagnosis.—Arriving at a conclusion as to what disease is present.
Disinfectant.—A medicine which has the effect of destroying parasites and germs of disease in the air and about the stables and outhouses.
Dislocation.—The changing from the natural position. Dislocation of the petella.
Distillation.—Changing a fluid to the form of vapor and then condensing again.
Domestic.—Animals commonly used by man.
Dorsal.—Pertaining to the back.
Drastic.—A very powerful dose of medicine.
Dung.—Manure.

E.

- Ecraseur.**—An instrument used for castrating.
Emetic.—A medicine the effect of which is vomiting.
Emulsion.—A mixture containing oil.
Epidemic.—Prevalence of disease.
Epsom Salts.—Common salts.
Epidermis.—The outer skin.
Eruption.—Disease affecting the skin.
Essences.—Liquids containing the extracted virtues of a drug.
Evaporation.—Going off in the form of a vapor.
Excrement.—The refuse from the bowels, dung, manure.
Expansion.—Becoming larger.
Exhalation.—A breathing out.
Expiration.—Exhalation.

F.

- Fermentation.**—Decomposition.
Fetid.—Bad smelling.
Fibrin.—A constituent of muscle and of the blood.
Fistula.—An abscess.
Flexibility.—Bending without breaking.
Flatulence.—Presence of gas or wind.
Flushing.—Cleansing by rinsing with water.
Foetus.—The young in the womb.
Fodder.—Horse and cattle food.
Fomentation.—An outward application to ease pain.
Follicle.—A small cavity.
Foramen.—A small opening.
Forceps.—A pincers.
Function.—The particular use of an organ.
Fungus.—A mosslike growth.

G.

- Gas.**—Commonly used for airlike formations in the stomach, bowels, etc.
Gargle.—Any liquid used for washing out an organ, particularly the throat.
Gastric.—A digestive fluid. Pertaining to the stomach.
Genital.—Pertaining to the organs of generation.
Gestation.—Carrying the young in the womb.
Gizzard.—An organ in the digestive system of a fowl in which the food it ground into pulp.
Gland.—An organ secreting a fluid.
Glutinous.—Sticky.
Grit.—Hard, gravelly substances fed to fowl.
Gullet.—The throat.

H.

- Hair.**—A growth on the skin as distinguished from wool. It affords warmth and acts as a medium for carrying off refuse from the body.
Hemorrhage.—Bleeding.
Hereditary.—Being transmitted from parent to offspring.
Hernia.—Rupture.
Hypodermic.—Inserting under the skin.

I.

- Impotence.**—Applied when the power of generation is lost.
Incision.—A cut.
Incubation.—Development of the life germ in an egg.
Incisor.—A front tooth.
Inorganic.—Not possessing organs.
Infection.—The transmitting of disease.
Inflammation.—A condition indicated by redness and swelling.
Inflate.—To charge with air or gas.
Inhalation.—A breathing in.
Inoculation.—Transmitting disease by injecting under the skin.
Intermittent.—Taking place at intervals.
Intussusception.—The slipping of one part of a tube into another.
Iodine.—See Part VI.
Impaction.—A packing of large quantities of food in some part of the digestive canal.

L.

- Larva.**—The undeveloped insect.
Lactic Acid.—The acid of sour milk.
Labia.—The lips.
Lacrymal.—Pertaining to the tears from the eye.
Larynx.—The upper portion of the windpipe.
Laxative.—A medicine which causes the bowels to move.
Lice.—Wingless parasites.
Ligament.—A binding for the joints.
Lime.—The oxide of calcium.
Linseed.—Flaxseed.
Liniment.—An ointment for bathing bruises, strains, etc.
Lumbar.—Pertaining to the loins.
Loins.—The lower part of the back.
Lymph.—A colorless, nutritive fluid.

M.

- Mammal, Mammalia.**—Animals that suckle their young.
Mammary.—Pertaining to the milk glands.
Maxilla.—The jawbone.
Maximum.—The greatest.
Membrane.—A thin, transparent tissue.
Minim.—A drop.
Minimum.—The least.
Morbid.—Unhealthy.
Mortification.—Decay, putrefication.
Mucous.—The membrane lining such cavities in the body that communicate to the outside.
Mucus.—A fluid secreted by the mucous membrane.
Muscle.—Fleshy fibre.

N.

- Nasal.**—Pertaining to the nose.
Narcotic.—A medicine to relieve pain.
Normal.—Natural, healthy.
Nutritive.—Having nourishment.
Nutrition.—Nourishment.

O.

- Oesophagus.—The throat.
 Opiates.—Medicines containing opium given to relieve pain.
 Optic.—The large nerve of the eye, pertaining to the eye.
 Orchitis.—Inflammation of the testicles.
 Ossification.—Turning to bone.
 Ovary.—The female organ producing the ovum.
 Ovum.—The egg or life germ.
 Oxide.—A compound with oxygen.

P.

- Palpitation.—Irregular beating of the heart.
 Pancreas.—A digestive gland secreting the pancreatic fluid.
 Paralysis.—Loss of power.
 Parasite.—A small animal living on another.
 Parotid.—A gland secreting the saliva.
 Patella.—The stifle.
 Periodical.—At different times.
 Penis.—The genital organ of the male.
 Parturition.—The act of bringing forth young.
 Parturient.—Pertaining to parturition.
 Pharynx.—The cavity at the back of the mouth.
 Placenta.—The cleaning or afterbirth.
 Plaster of Paris.—Gypsum, sulphate of lime.
 Pleura.—The lung covering.
 Post Mortem.—After death.
 Pregnant.—Carrying the young.
 Pulmonary.—Pertaining to the lungs.
 Pulse.—The beating of the heart as felt in the arteries.
 Purgative.—A strong opening medicine.
 Pus.—A mattery fluid.
 Pustules.—Pimples containing pus.
 Putrid.—Rotten.
 Pylorus.—The opening from the stomach to the intestines.

Q.

- Quick Silver.—Mercury.
 Quick Lime.—Unslacked lime.

R.

- Respiration.—Breathing.
 Rectum.—The latter part of the bowels.
 Resolvent.—That which counteracts inflammation.
 Retina.—The nervous portion of the eye.
 Rumenotomy.—An operation of opening the rumen or paunch.
 Rumen.—The paunch of cattle.
 Ruminant.—A cud-chewing animal.
 Rumination.—Chewing the cud.

S.

- Saliva.—A fluid secreted into the mouth by the salivary glands.
 Sanitary.—Such as to promote health.
 Sanitation.—Methods of making sanitary.
 Sheath.—The outer covering of the penis.

- Serous.**—Like water.
Scrotum.—The bag containing the testicles.
Soluble.—That which may be dissolved in water.
Solution.—Water containing another substance.
Solvent.—A medicine dissolved in water.
Speculum.—An instrument by which the mouth is held open.
Spasms.—Alternate expansion and contraction of the muscles.
Spaying.—The operation of removing the ovaries.
Spinal.—Pertaining to the spine or back.
Stimulant.—A medicine that increases the vitality quickly.
Strangulation.—Death by choking.
Stricture.—The contraction or decreasing in size of an organ.
Submaxillary.—Under the jaw.
Symptom.—An outward sign.

T.

- Testicles.**—The “stones” of the male. The “nuts.”
Thorax.—The chest.
Tonic.—A medicine to increase the strength.
Trachea.—The windpipe.
Tracheotomy.—Operating on the trachea.

U.

- Udder.**—The milk bag.
Ureter.—A tube leading from the kidneys.
Urine.—The “water.” The secretion from the kidneys.
Uric Acid.—The acid contained in the kidney secretion.
Urinary.—Pertaining to the urine.
Uterus.—The womb.

V.

- Vagina.**—The passage leading from the womb.
Vascular Tissue.—Tissue containing vessels or tubes.
Varicose.—Enlarged veins.
Venous.—Pertaining to the veins as venous blood distinguished from arterial blood.
Ventilation.—The supplying of fresh air.
Vermifuge.—A worm medicine.
Vertebra.—The back bone.
Virus.—Poisonous matter.
Vulva.—The opening to the vagina.

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