



The veterinary manual : (for horse-owners, and as a text-book for students of agriculture)

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THE VETERINARY MANUAL

BOOKS ON SPORT

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THE
VETERINARY MANUAL

(FOR HORSE-OWNERS, AND AS A
TEXT-BOOK FOR STUDENTS
OF AGRICULTURE)

BY

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"The Dog-Owners' Companion," "Horse-Owners' Companion," "Diseases
and Accidents of the Dog," "Every-Day Ailments and Accidents
of Cattle," etc., etc.*



ILLUSTRATED

R. A. EVERETT & CO.,
42 ESSEX STREET, STRAND, LONDON, W.C.

1901

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TO THE

RIGHT HON. THE EARL OF ABERDEEN, P.C., G.C.M.G.

PREFACE

THE object of this elementary "Veterinary Manual" is to supply the intelligent horse-owner with a thoroughly reliable book upon the general management of the horse in health, and its treatment when suffering from accidents, or labouring under disease.

Likewise, to serve as a text-book for agricultural students presenting themselves for examination in this division of the Veterinary Art.

Every possible care has been taken to make the work "practical" in its teaching, with an avoidance of technical terms, without sacrificing facts of importance.

The author trusts that it will be found to fulfil these conditions.

October, 1900.

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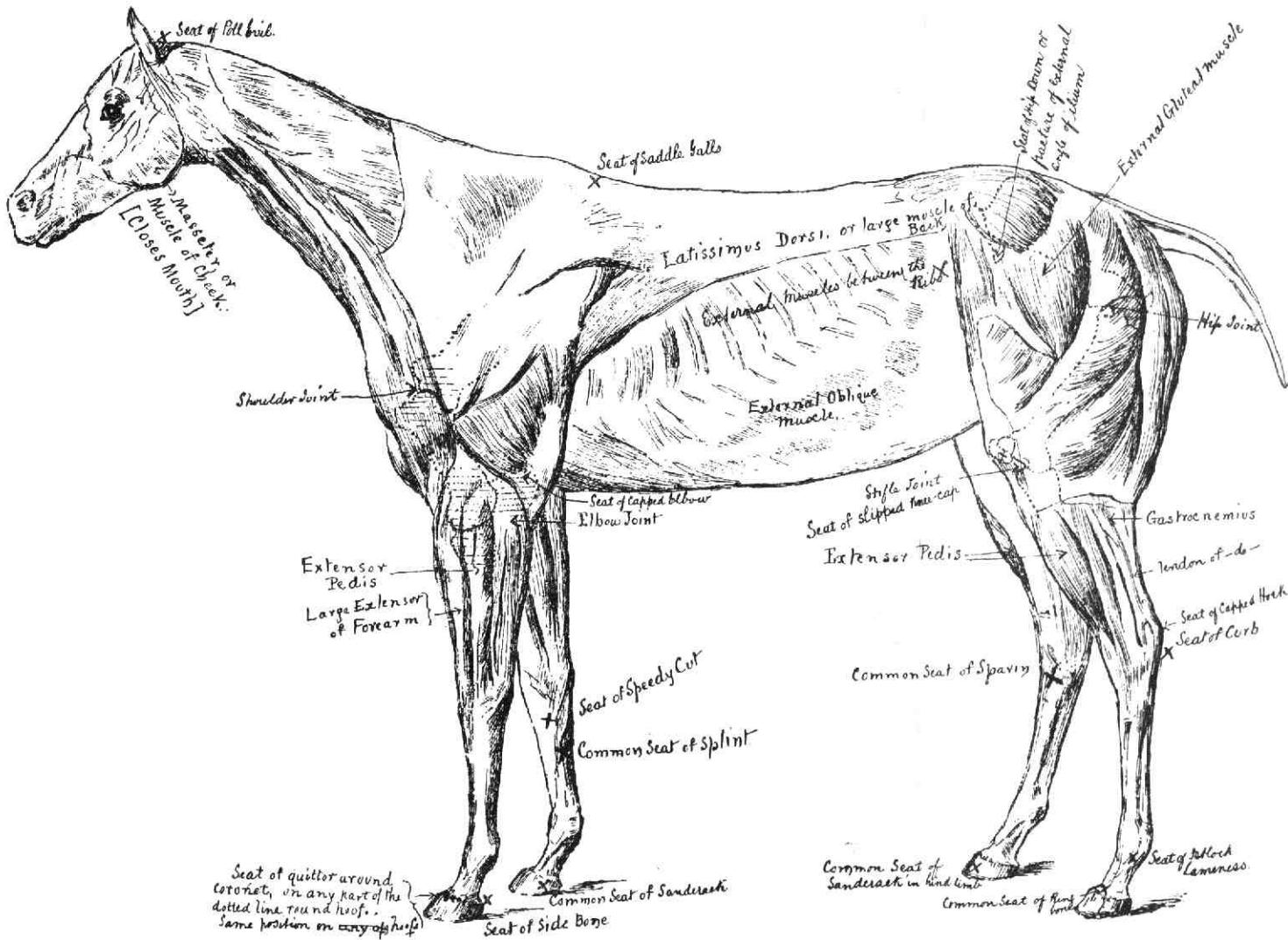


Fig. 16.—SOME SUPERFICIAL MUSCLES, AND THE SEATS OF CERTAIN COMMON DISEASES.

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Veterinary Manual for Horse-Owners

INTRODUCTORY

Stable Management.

WHEN choosing a site for the erection of a stable it is desirable to select ground having a decided elevation, sandy soil, a southern aspect, ready water supply, and capable of being freely drained.

We know that it is not always an easy matter to secure a site having all the above-mentioned conditions, but we should never advise the erection of a stable unless the doors and windows can be placed so as to face the south, and the ground capable of affording good drainage.

It is most pitiable to see the lodgings in which many horses are placed, in fact, one would think that those who had the construction and designing (if the latter word be applicable at all), of certain stables in both town and

country places, that every effort had been made towards rendering the occupants' life one of misery and ill-health instead of comfort.

The walls of a stable should be built of stone or concrete, but if good bricks are to be had within reasonable distance, the outlay is less.

Many stables are built of wood, or corrugated iron, especially if a tenant's fixture is desired; but we do not recommend the employment of these materials under any other circumstances, as they are distinctly inferior to the foregoing. However well constructed, they make a stable cold in the winter, whilst corrugated iron renders it excessively hot in summer.

If the latter be used to form both walls and roof, it is advisable to line it with boarding. The floor should be made out of some material impervious to urine.

A roughened cement floor we like the best, and if the workmanship is properly carried out there is not, in our opinion, anything to surpass it.

The chief faults alleged are, that it becomes very slippery, and is liable to crack.

The first objection can be overcome by leaving a good rough face on it, along with diamond-shaped areas, whilst "cracking" is either the outcome of defective labour, or through frost.

To be permanent the cement should be laid upon a deep and well compressed stone foundation.

Bricks, unless specially prepared, are unsuitable for stable flooring, absorbing, as they do, a large amount of urine, etc.

Devonshire buffs (Candy & Co., London) are largely employed as a stable flooring. They are damp-proof bricks, having a deep longitudinal groove for drainage.

Cork has recently been introduced for the same purpose, but we are unable to speak as to its utility.

Cobble stones are frequently used, though a stable floor thus constituted has only one claim, and that is the worst possible.

A floor of this nature becomes very slippery when wetted, is exceedingly difficult to clean, allows the ready entry of excretions, and causes unequal distribution of pressure upon the limbs.

Whatever be the nature of the material selected to form the floor, there should be a gentle slope from front to rear and side to side.

When cement has been used for the stalls it is an excellent plan to have a shallow central channel, two inches in width, into which numerous shallow conduits flow (feather arrangement).

The channels last named should not extend to more than ten inches on either side of the stall division, otherwise it renders the floor more difficult to clean.

These channels can then empty themselves into a surface drain (covered or open) running along the foot of the stalls.

As a rule loose-boxes have the floor so laid that there is a gentle slope from the sides to the centre, with surface gutters and drain-pots.

Wherever possible we recommend that a loose-box or boxes be built quite separate from the stable, so that in the event of any of the horses having disease of an infectious nature, they can then be kept away from the healthy animals.

This, of course, will all depend upon the space at command. The ordinary size for a loose-box is 12 feet by 12 feet, but to be roomy they should be from 14 to 17 feet.

For a range of, say, four or six loose-boxes the dimensions first named are all sufficient. As to height, this at the ridge should be 12 feet, and at eaves 8 feet. The width for the doors ought to be 3 feet 8 inches. About the same height will be sufficient for a stalled stable.

The stalls can be arranged either in single or double rows, the former for preference.

Eight pairs can be accommodated in two ranges of stalls, eight on each side, the width of the stalls between the divisions being 6 feet, and the depth 9 feet 4 inches, leaving a passage 9 feet wide between the ranges. For cart horses the stall divisions should be constructed of some strong material, such as wrought iron or steel, though stout boarding is much cheaper if less durable. A combination of the two makes a good job. At the head the stall division should be about 7 feet, sloping to 4 feet 6 inches at the post. Depth of stall about $9\frac{1}{2}$ or 10 feet.

Nine feet is ample depth for the lighter breeds of horses.

When space and funds are limited, "swing bales" can be substituted for the other forms of divisions.

The swing bale may be either single or double, and composed of some hard variety of wood, such as elm, oak, or teak.

The double swing bale is by far the best form. The head end of the bale can either be attached with a hook to the wall, or to the manger, whilst behind it is fixed with a long chain and hook to the beam above.

Regarding manger fittings, etc., for stalls and loose-boxes, these are to be had in almost endless variety, therefore the reader will do well to consult the illustrated catalogues of such leading firms as the St. Pancras Iron Works Co.; Musgrave & Co.; Macfarlane & Co., Glasgow; Bolton

& Paul, Norwich, etc. A feature worthy of mention in connection with the free supply of fresh drinking water is the patent supply cock (St. Pancras Co., London), which provides for the "inlet" and "outlet" of water into the manger through one opening. It is an excellent and inexpensive device.

As to the harness-room, we advise that this be lined with match boarding, and so situated as to be well away from the part the horses live in, otherwise decomposing animal and vegetable matter causes tarnishing of the fittings and damage to the leather, etc.

Every harness-room should be kept dry and warm, so that either a fire-grate or closed stove is essential.

Small closed stoves, having a hot-water boiler attached, are economical, and their cost is only a matter of fifty shillings or so. For keeping bits, etc., free from rust, dust, and tarnishing, a glass case is advantageous; whilst for clothing, etc., a harness-room table, provided with drawers and cupboards, is an exceedingly useful article.

The designing of this is a matter of individual taste.

Ventilation.—It has been estimated that a horse takes into his lungs about 100 cubic feet of air per hour. The atmosphere in a state of purity consists of two colourless gases, termed oxygen and nitrogen, in the proportion of one fifth of the former to four-fifths of the latter.

The chief impurity in the air is a very heavy colourless gas, bearing the name of carbon dioxide, and its presence in the atmosphere results from the air given out, during the process of breathing, by both animals and plants, as well as the product of the burning and decay of the various substances composing the universe.

This gas is a mixture of one part of carbon with two of oxygen.

It is very harmful or even poisonous to animals.

In addition to this, other impurities exist in the air ; for instance, ammonia is abundant in the atmosphere of neglected stables.

Sewers, marshes, manure-pits all tend to render the atmosphere impure.

The objects of ventilation are not only to provide a supply of pure air to the lungs, but also to remove bad or injurious gases from the stable.

When horses are kept in an impure atmosphere they never thrive, besides they are certain to have severe attacks of such diseases as influenza, whenever this disease is at work in a neighbourhood.

Diseases of the lungs and general breathing apparatus are much less common amongst horses who have a free supply of pure air.

It is not a very difficult matter to ventilate a stable, though one must not forget that, although this has been done, the atmosphere admitted into the building will continue to be impure if a manure heap is anywhere close at hand. Such should be quite 20 yards away. Analysis proves this distance to be requisite.

Wind is the most powerful ventilating medium known. In order to take the fullest advantage of this we should have the doors and windows of the stable opposite to each other, which can be done without having a draught. As previously stated, a width of thirty feet is desirable, and it favours the purification of the stable air.

The "inlet" ventilator may take the form of a ventilating window, opening inwards, and having a chain adjustment.

This arrangement directs the air upwards, and it can be placed a little higher than the horse's head. It also serves for lighting purposes. The opening (inlet) should always be based upon the fan-like principle of the Sherringham valve.

The "outlet" can be arranged as a tube fixed in the roof. If this is fitted with a syphon, one-half of it will act as a shaft for the supply of fresh air and the other portion as an outlet for the foul air.

Air-bricks around the eaves, a ground ventilator, a swing window, and an extractor in the roof, form a summary of all that will be required under ordinary circumstances.

Drainage.—The object of this is to carry away the liquid material within the stable.

A horse passes about thirty pounds of solid matter and six quarts of liquid during a period of twenty-four hours. Some of this may be deposited whilst the animal is at work.

There should be no underground drainage within the stable. The drainage ought to be "surface," therefore in sight, or at once capable of being seen, as in the case of covered surface drainage.

It is all very well to hear people speaking about "well-trapped" drains. There is a good deal of fallacy connected with this statement. It must be remembered that a trap is only efficient so long as it contains its proper quantity of water—*i.e.*, the water seal. During drought it may in this way become useless. Frequent flushing is indispensable if it is to be of any service. Further, a trap may harbour decaying liquids, acting as a contaminator.

The surface channel can be run along the foot of the stalls, having a fall towards each end, and continued outside

the stable, say for a distance of three or four yards, and pouring its contents into a sewer pipe here. This surface gutter can be made a foot in width and about four or five inches in depth.

There should be complete disconnection—in the event of having drain-pipes inside the building—between the stable drain and the sewer, and this may take place some little distance away from the stable. Six to eight inches in diameter is a suitable size for sub-soil pipes, having a fall of three or four inches every four yards. A concrete foundation makes a good bed for them to rest upon.

Cleanliness is just as important as the two preceding. Surface drains should be washed daily, and during dry weather the sewer flushed by throwing an extra pailful of water down it. It has been argued that there are thousands of horses standing in stables without any drainage at all, and they yet remain healthy and vigorous. The word "healthy" in these instances has often been found to give place to the more rational expression "apparently" healthy, and as such it appears to my mind the only one compatible with common-sense. The author is not prepared to adduce any proof beyond that of ordinary reasoning and every-day observations of health and the difficulty of curing certain diseases whenever and wherever such adverse agencies are at work. Therefore, keep everything clean and in good order.

Bedding.—It is a very important matter to see that your horse has a good bed to lie upon when he comes in after a hard day's labour. Most horses are alive to the luxury and ease afforded by such,

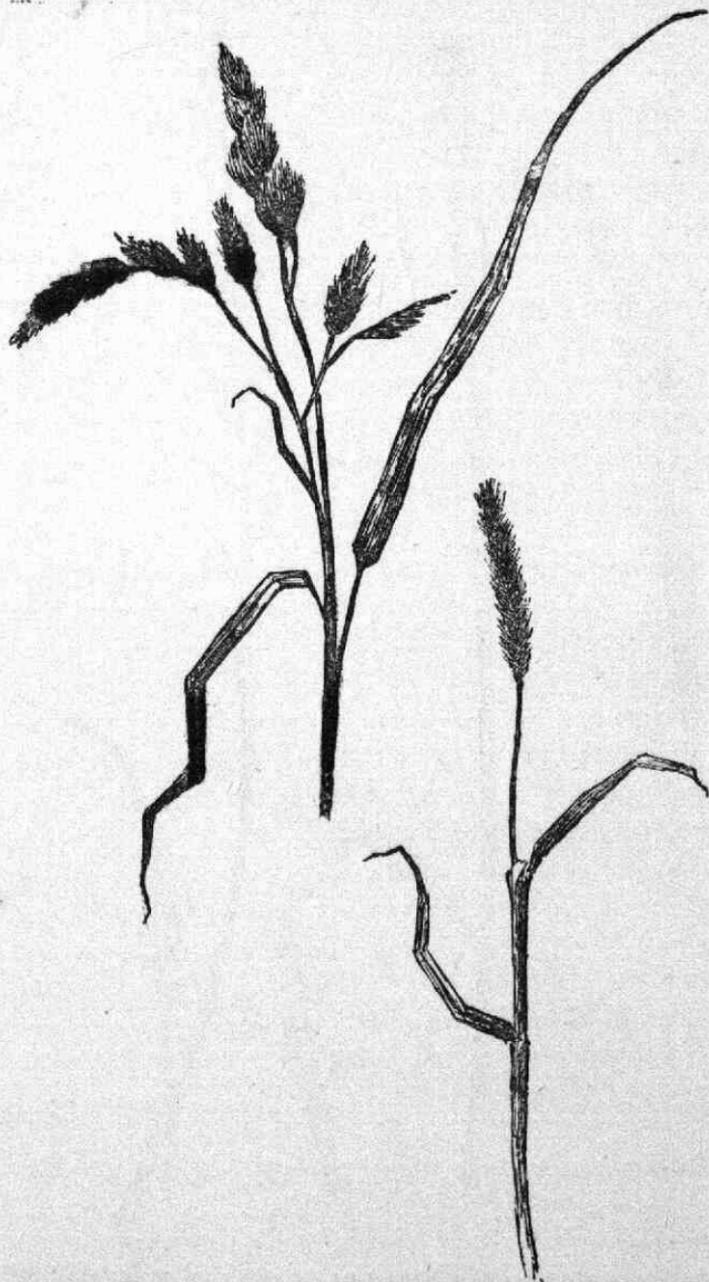


Fig. 1.—ROUGH COCK'S-FOOT GRASS (*Dactylis glomerata*).

Fig. 2.—MEADOW FOX-TAIL (*Alopecurus pratensis*).

Both good grasses.



Fig. 3.—TIMOTHY, OR CAT'S-TAIL GRASS (*Phleum pratense*). Fig. 4.—PERENNIAL RYE GRASS (*Lolium perenne*).

I am aware that some horses are said "never" to lie down and rest. If this be true, it is certainly not the rule.

A sick horse will very readily take advantage of a "full stretch." There is not the least doubt that it is absolutely cruel to see the way some men distribute a handful of straw over a loose-box or stall floor for the horse to lie upon. These gentlemen likely enough lie upon a Lincolnshire "down" themselves, and yet often begrudge their brute a comfortable bed. Straw, peat-moss litter, sawdust, bog-earth, sand, etc., are the substances usually used for the purposes of bedding.

Probably there is nothing to match the first-mentioned. If the straw is very long it can be cut across.

Sawdust is largely used by contractors (also in certain private stables), and it does very well. Horses having an inclination to eat straw won't go to this length.

Moss litter always gives one the idea of being untidy, but it is extensively used, and, probably, appreciated, besides having a pecuniary advantage. Dried brackens also make good and inexpensive bedding.

All wet litter and dung should be taken away first thing each morning. It is a matter for individual consideration whether the whole of the bedding shall or shall not be taken up during the daytime. If the horse is at work all day there is no necessity for this. Removal of the soiled bedding will suffice. Moss litter is not usually cleared away during the daytime. A raking over and removal of dung, etc., usually suffices, whilst, as in the case of sawdust, a fresh supply replaces that removed.

Never put straw, etc., under the manger. This is a very bad plan.

Grooming.—As soon as the horse comes in from exercise or work he should be cleaned.

“Strapping” with a wisp of straw (damp) is useful enough in its way. The “dandy” brush is the best appliance.

If the legs are going to be washed this must not be done until they are dry. After washing dry them well, and put on a set of bandages. The feet ought always to be washed as soon as the horse comes in. If the animal is hot it should be well clothed, or else walked about till cool.

Clipping.—In the autumn and spring of each year the horse throws off its hair, excepting that covering or forming the mane and tail, both of which are shed gradually. The hairs over the face, inside the thighs, and along the neck, are the finest and softest.

Exposure to cold makes the coat long, coarse, and rough.

The clipping machine is the most rapid means of removing the hair. Any horse having a naturally fine coat, and plenty of grooming through the winter, is better without any interference in this way.

When a horse has been once clipped it will require the same process carried out once every year afterwards.

Over-heated stables must not be permitted in order to prevent clipping, as the former is likely to be productive of far more harm than the latter.

The chief aversion to clipping arises through risk of a chill. There is not the slightest fear of this happening if the horse is well rugged up for a few days.

The clipping of the legs and saddle is more a matter of individual condition.

Singeing is largely practised, and very useful for removing the long hair off the belly, thighs, and under the jaw, etc.,



Fig. 5.—SWEET SCENTED VERNAL GRASS (*Anthoxanthum odoratum*). Fig. 6.—ROUGH-STALKED MEADOW GRASS (*Poa trivialis*).



Fig. 7.—HARD FESCUE
(*Festuca duriuscula*).



Fig. 8.—TALL FESCUE
(*Festuca elatior*).

but it is not every horse that will stand to allow this process to be carried out. Choose a dry day for singeing.

Clothing.—In summer the clothing must be very light, or else it is better not to use any. During the cold weather a stout brown blanket answers the purpose. Night-clothing is desirable, and does away with having filthy wet rugs in the daytime.¹

Flannel bandages are useful, but some men object to their use.

Watering.—Horses should have their water before being fed. It is a very bad practice "to feed" first and "water" the animal afterwards. As a matter of common sense it follows that a large portion of the food material will be flushed out of the stomach, a receptacle in which the food undergoes important digestive changes before being absorbed by the intestines. If you want to have a broken-winded horse you can, by feeding, watering, and then driving it immediately afterwards.

Foods and Feeding.—Substances such as hay, oats, beans, maize, green forage, bran, chaff, swedes, carrots, etc., are commonly used as foods for horses.

The amount and nature of the food to be given must be regulated by the nature of the work to be performed, together with the present condition of the animal.

The small size of the horse's stomach shows the necessity of giving food often and in a small amount.

To work a horse on a full stomach, more especially fast work, is productive of the most hurtful results.

¹ Chase's patent adjustable rugs are neat and well fitting. They obviate the use of a roller.

It is the best plan to feed about a couple of hours before working. If possible, feed the animal four times daily. Never allow a horse to gorge itself, such being a prevalent cause of disease.

It has been shown that hay passes out of the stomach into the intestines, during the beginning of digestion, more rapidly than oats, but subsequently the latter pass out the fastest. This is important as showing that hay should be given first and then corn, thus allowing the more nutritive food to remain the longest in the stomach.

Good hay should be one year old, rather green, have a pleasant smell, contain plenty of flowering heads, be free from weeds, and show such grasses as timothy, perennial or Italian rye, crested dog's-tail, meadow fescue, and meadow fox-tail. (See Fig. 2.)

A very common admixture with one or more of the foregoing is the rough cock's-foot, a grass whose properties have probably been over-estimated. Badly-saved, dusty, musty, and mow-burned hay are all unfit for horses to eat, the last-named being a fruitful cause of excessive urination (diabetes), consequently loss of flesh.

The average yield of hay per acre is about two tons.

About 12 pounds of hay is quite enough for harness horses per day. Thoroughbreds may only have a few pounds, while heavy-draught horses sometimes have as much as thirty pounds of hay daily. Ten to fourteen pounds of oats daily is the average amount.

Crushed beans—say a couple of pounds—can replace the same quantity of oats. A mixture is certainly the best. Both oats and beans ought to be quite 12 months old. The latter must be split. Good oats are plump, hard, not shiny



Fig. 9.—YELLOW OAT GRASS
(*Avena flavescens*).



Fig. 10.—MEADOW FESCUE
(*Festuca pratensis*).



Fig. 11.—ITALIAN RYE
(*Lolium italicum*).



Fig. 12.—CRESTED DOG'S-TAIL
GRASS (*Cynosurus cistatus*).

FOR HORSE-OWNERS

(new ones are), and have a pleasant mealy odour. About 38 to 42 lbs. should be in the bushel.

Hunters do well on 12 lbs. of oats, 2 lbs. of beans, and 6 lbs. of hay per diem. Crushed oats favour digestion, more especially in aged or old horses. Maize is used by some companies for feeding their horses. Wheat should never be given. The writer has seen vigorous horses struck down with fever in the feet through partaking of growing wheat.

Chaff, mixed with corn, assists digestion, so does bran. Boiled potatoes and chaff are very fattening, but produce "softness" of flesh. Meadow-hay chaff is as good as any other. About a pound and a half of the best oil cake, or linseed cake, are excellent materials for building constitution.

Causes of Disease.—Every disease has what is known as a "predisposing" cause, or else an "exciting" cause; sometimes both.

Predisposing causes are such as affect the bodily condition of the animal, rendering it a more likely subject than in the case of another animal exposed to the same adverse conditions. For instance, a horse having a sickle-shaped hock is very liable to spring a curb, upon the slightest injury about this part, and which the exciting cause brought into view.

Conformation, then, may be a powerful predisposing cause of disease.

From the nature of its surroundings an animal can be predisposed to certain diseases.

"Hereditary predisposition" to such diseases as spavin,

ring-bone, splint, roaring, weak digestion, etc., etc., is probably due to nothing but transmitted structural likeness—the actual disease not being handed down. This seems the more tenable explanation.



Veterinary Management.

Slinging.—Sometimes it becomes necessary to have recourse to mechanical means for affording the horse support. Many veterinarians have an appliance for raising a recumbent horse of any size with the greatest of ease. This arrangement is carried out by a free-running, endless chain and pulleys, with a broad girthing for the horse to receive its support in an equable manner. Such an appliance is known as the "slings." Almost any intelligent horse-owner can improvise some arrangement to afford temporary support; for instance the animal may be slung between the shafts of a cart, with some stout sacking as a girth. In the Fen lands of Norfolk it is a common custom to raise a horse to its feet by means of two carts placed with their ends facing each other, having the recumbent horse between them. Cords are now passed (two or four) from end to end of the carts, of course going under the animal's body. The shafts of the previously up-tilted carts are then used as levers, which, by the aid of a few strong arms, soon raise (lever-up) the horse.

Casting or Throwing Horses and Colts.

—The horse is usually cast by means of the hobbles, with detachable rope and chain.

Before casting the animal it is always desirable to withhold food on the evening prior to doing so. It is usual to prepare a soft bed or litter for the horse to fall upon.

Colts are readily thrown for castration, etc., with a simple, strong hempen rope of a sufficient length. The rope is

doubled upon itself and a loop formed at the doubled end, which loop goes over the head, passes down the neck, until it comes to rest as a sort of collar in front of the shoulders.

The free ends of the ropes are passed between the fore legs—the right one being intended for those pulling on the right side, and the left for those on the left side of the animal—and then around the pasterns, from without to within (sometimes the opposite), receiving a twist or two, each rope returning to the shoulder collar through which they are passed, and in the direction from whence they have come, so that we have a sort of backward leverage. Those in charge of the left and right ropes both give strong pulls backward, thus drawing the colt's hind limbs towards the chest. Keep the head "well back" as soon as the colt is down. This will prevent him from rising until the ropes have been "hitched off."

Twitch.—This is a very simple way of controlling both horses and colts. It will do wonders in this direction at times. A simple form of twitch is made out of a stout short length of a broom-handle, having a hole bored through it at one end, so as to pass a piece of thin cord through it, and forming a loop which is now placed upon the horse's nose and twisted moderately tight, with the right hand holding and turning the handle. Gentle tightening, or a slight jerk, will usually suffice to keep the animal pretty obedient.

Less frequently the noose is placed around the ear, or over the hock-joint, or rather a little bit above it.

The Cradle.—This is an appliance for fastening

around the animal's neck in order to prevent it from inflicting self-injury after blistering, firing, etc.

A simple and effectual cradle is readily made by threading cylindrical pieces of wood together with intervening short lengths.

Bamboo cradles are exceedingly light, yet inexpensive.

Firing.—This is largely employed by the veterinary surgeon for the treatment of chronic inflammation in tendons, joints, etc.

The firing iron acts in much the same way as a blistering agent, though its effects may be more severe.

Necessarily its application is followed by a blemish, though, of course, this may be of little importance.

Line firing and point firing are the usual styles adopted.

The last named is particularly applicable in the case of such diseases as splint and spavin.

The depth of the lines will depend upon the effect desired. It is usual to smear the part with blistering ointment as soon as it has been fired. This increases the reparative inflammation, which is the aim of the actual cautery.

Another method of firing is by the thermo-cautery.

Administering Medicines.—For giving the horse liquids there is nothing to surpass a large-sized soda-water bottle.

The head can be supported either with the twitch on the nostrils, or a cord put around the upper jaw, then throwing the cord over a cross beam in order to elevate the head.

The latter must be kept well up, otherwise the medicine will certainly be partially spilled.

The operator takes his position to the left of the animal's head and at the side, inserting the mouth of the bottle into the cheek of the same side, but don't put the neck of the bottle between the teeth.

The tilting of the bottle should be done slowly, yet surely. It is a bad practice to rush the draught.

When about to give a bolus or ball, take the latter between the tips of the thumb and first and second fingers.

The coat should be taken off, otherwise the sleeves will be a hindrance. Back the animal into its stall or some corner, grasp the tongue with the left hand and deliver the ball with the right, taking care to place the bolus well back upon the tongue, in which the whole secret of success lies.

It is an advantage to have an assistant to hold the horse's head with a bridle, minus the bit. If the ball has been delivered well home there is no fear of its being rejected.

A little practice will enable the amateur to gain confidence. Wide-mouthed horses are the best subjects for this purpose.

Powders can, if tasteless, be mixed with a little damp bran, corn, etc.

Such substances as nitre, bromide of potash, etc., will often be taken in the animal's drinking water. Electuaries—medicines mixed with treacle, malt, honey, etc.—are smeared on the tongue, cheeks, etc.

Vesicants or Blisters.—A blister (vesicant) is often, very often, used for horses. They excite inflammation in the skin and tissues beneath, so that if there is any internal or deep-seated inflammation going on, it is thought that by using a blistering agent we can, to some extent at

least, relieve such through the production of external redness (ruberfacients) or actual blisters, blebs, or vesicles. When the limbs or sides of the chest are blistered, it is necessary to take precautions to prevent the animal injuring itself, either through rubbing or licking the blistering agent.

It is usual to clip the hair off the part, and then wash it with soap and warm water.

If the blister acts too severely, we may smear the blistered surface with some greasy substance such as vaseline or palm oil. Boiling water, turpentine, ammonia, mustard, Spanish-fly, and croton oil are commonly used for blistering purposes. Mustard paste ought not to be left on longer than half an hour, otherwise the skin may be damaged. Wash it off with warm water, and dry. Boiling water must be used with care. Cloths are wrung out in it, and then fastened on with a piece of waterproof sheeting.

Hot flannels are wrung out in turpentine, then applied.

For sore throats the turpentine liniment will be sufficient in most cases.

Blistering Ointment.

R̄. 1. Powdered Cantharides,	-	1 ounce.
2. Venice Turpentine,	- -	1 ounce.
3. Resin,	- - -	1 ounce.
4. Vaseline,	- - -	2 ounces.
5. Yellow Wax,	- - -	$\frac{1}{2}$ an ounce.
6. Lard,	- - -	$3\frac{1}{2}$ ounces.

Melt 1, 4, 5 and 6 together in a jar, over hot water, for about twelve hours, and then put the jar in boiling water for fifteen minutes or so. Strain through muslin, and press

the straining cloth free from all the juicy matter. When cold it is ready for use.

Chloroform is a colourless liquid having a pleasant smell. It is given to the horse as an inhalation for lessening or completely subduing any feeling towards pain.

The animal is usually first of all "thrown" and secured, not being allowed to rise until the effects of the chloroform have passed off.

It is hardly necessary to say that care is required in the administration of this drug. It appears to do better when mixed with ether and spirits of wine. There is no fixed amount laid down for the administration of this drug. The circumstances of the case will regulate its use. The most important matter is to take note of the animal's breathing, because the respirations cease before the heart stops beating.

Clysters or Enemas.—These are liquid or semi-liquid substances, injected into the lower end of the bowel.

A clyster syringe or funnel is needed for the purpose of introducing the injection.

The enema may be "plain" or medicated in accordance with the purpose for which it is employed.

Nutrient enemas consist of eggs, brandy, gruel, etc.

About one quart is sufficient for one injection. The nutrient material is absorbed from the bowel. This kind of clyster is useful whenever food cannot be taken by the mouth, or at least when the animal necessitates extra nourishment without having to excite it through "drenching."

When the fluid injected has to be "retained" it should be small in amount, say a quart; but if its expulsion is wished for, large in amount—one to three or four gallons.

A couple of gallons of tepid water, a quarter of a pound of treacle, and 3 ounces of turpentine, with a little soap, makes a useful laxative clyster in case of a stoppage in the bowels. The hand should empty the rectum before giving a clyster. For diarrhœa a quart of tepid starch gruel, and 2 ounces of laudanum added, will be found useful.

Disinfectants and Deodorants. — The former destroy and the latter neutralise obnoxious odours.

Either of these substances may be in the form of a gas, liquid or solid.

For instance *chlorine* and *sulphurous acid* are both gases; *carbolic acid* either a liquid or solid. Jeyes' and Condy's fluids are liquids, although the latter is but a solution of a solid. Sanitas is in both liquid and powder forms.

Corrosive sublimate is only a disinfectant when moisture is present. Disinfectants also include such substances as *hot lime* and *boiling water*, because both of these are destructive to organic germs. For *disinfecting stables* there is nothing to surpass *chlorine gas*, which is cheap and easily made by making a *mixture of equal parts of common salt and black oxide of manganese*, placing these in a shallow tin vessel, and pouring upon the mixture two measures of oil of vitriol and two measures of water. Now apply heat (burning coals) and close doors and windows. This same gas can be made by pouring strong muriatic acid upon *black oxide of manganese* and using heat. Chloride of lime is a compound of this gas with lime.

Sulphurous acid gas is easily made by throwing about half a pound of *flower of sulphur* over some *red-hot coal*, placed upon a shovel.

Chlorine gas is recommended for purification subse-

quent to outbreaks of such diseases as influenza, glanders, strangles, etc.

After the gas has been allowed a few hours to act, it is a very good plan to lime-whiten the walls and wash the floors with carbolic acid and water. About three wineglassfuls of carbolic acid to every pailful of water will be sufficient.

Pernanganate of potash or soda is a cheap and good deodorant.

It forms when dissolved in water the so-called "Condy's fluid." Add a teaspoonful to every gallon of water.

A couple of pounds each of copperas and blue stone, four ounces of carbolic acid, along with $2\frac{1}{2}$ gallons of water, makes a cheap and effectual agent for cleansing drains.

Formalin.—One of the most recent disinfectants is a substance known as "Formalin." This agent can be used either in a liquid or gaseous form.

The Alformant lamp is sold for the generation of the gas.

Air sterilisation and thorough disinfection are said to be very completely done where Formalin is used.

Chinosol is an excellent disinfectant.

Respiration, or Breathing.—When the horse is at rest it breathes from 9 to 13 times per minute, though this is liable to considerable variation.

Exercise, food, surroundings, disease, etc., all materially increase or decrease the respiratory movements. When a horse is under the influence of a general anæsthetic, as chloroform, it is very necessary to carefully watch the respirations.

Quick and laboured breathing points to disease of the lungs; slow and shallow to brain mischief, though of course such may exist apart from either of these diseases.

The Temperature of the Horse.—The instrument used for ascertaining the amount of bodily heat is called a clinical thermometer, and the place to take the temperature is within the anus (rectum), though sometimes—in the mare—the vagina is used instead. The difference is but slight.

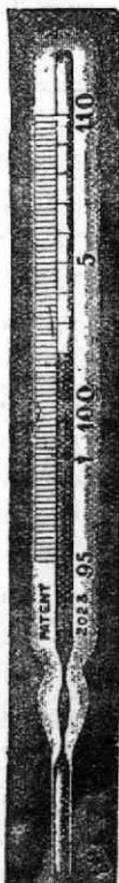


Fig. 13.—
CLINICAL
THERMOMETER,
Fahrenheit Scale.

A clinical thermometer is composed of a bulb—containing mercury—and stem, with a little detached piece of mercury called the “index” or “register.”

Thermometers having two scales are sold. These are the degrees upon the Fahrenheit and Centigrade.

The first is the most suitable for amateurs.

On looking at a clinical thermometer it will be seen that the stem bears the figures 95, 100, 105, 110. These have the same meaning as in the case of an ordinary thermometer.

A little careful inspection shows that between each of the whole numbers four “long” strokes are present, each indicative of one degree, so that we have after the figure 95, 96, 97, 98, 99, and so on.

These “long” strokes are again subdivided with “short” strokes—fractions of degrees—each of which has the value of $\frac{2}{10}$ ths of a degree.

Let us suppose that the index stood at the first “short” stroke after 95 it would imply that the temperature was 95 and $\frac{2}{10}$ ths, correctly written thus 95·2.

If at the second “short” stroke 95·4;

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the third 95·6; the fourth "short" stroke 95·8, the next degree being 96° F.

Before using the clinical thermometer the index should be shaken down below 97°. This can be done by holding the tip of the stem between the fingers and knocking the ball of the hand upon the knee.

The temperature should always be taken about the same hours—at morning and evening, the latter temperature being normally slightly higher, but not more than fractions of a degree.

After exercise, the temperature rises greatly. The normal temperature of the horse is 100 to 101·6, more rarely 102° F. In extreme fever it rises to 108° F. or thereabout. Common temperatures are 104 and 105° F.

Some thermometers have the index magnified, which facilitates the reading.

In order to take the horse's temperature raise the tail with the left hand, hold the thermometer by the tip of the stem and insert the bulb and about one inch of the stem gently through the anus, keeping hold of both tail and thermometer for three or four minutes—though some clinicals will register in 30 seconds or so. A little moisture will facilitate the entrance of the thermometer into the bowel. Be careful not to break the instrument. If properly employed it is a very valuable aid to the diagnosis of certain diseases, and one which readily marks the rise and fall of febrile disturbance.

The Pulse.—The pulse is due to an alternate relaxation and expansion in the walls of the elastic tubes—arteries—of the body, caused through the pumping of blood into these vessels by means of the heart.

The pulse of a healthy horse should beat regularly at the rate of 36 to 40 times per minute.

A very good place to take the pulse is beneath the lower jaw at the cheek, placing the tips of the fingers firmly yet lightly upon the artery as it winds round the jaw. The animal must be kept very still.

The "character"—hardness, softness, fullness, etc.—is even of greater importance than the actual number of pulsations in a given time, but this requires a great deal of experience to thoroughly appreciate its value.

Local Authority.—In the event of any horse-owner believing that he has in his possession an animal (horse) or animals suffering from one of the below-mentioned diseases, he should, without delay, report his suspicions to the nearest Local Authority, which in rural districts may be represented by the constable.

The legislated diseases of the horse are :—

Glanders and Farcy,

Anthrax,

Rabies,

and in the Shetland Isles—

Sarcoptic Mange.



Fig. 14.—SOME USEFUL APPLIANCES.

1, Glass for measuring liquids; 2, Filler; 3, Graduated Quart Glass Jug; 4, Scales with, 5, the Weights; 6, Mortar and Pestle; 7, Stopped Bottle for liquors; 8, Stopped Bottle for solids.

A.

Abdomen, Wounds of.—(*See* Wounds.)

Abortion.—(*See* Birth, Premature.)

Abscess.—An abscess is a collection of matter, either within the body, or external to it.

Abscesses vary in their shape, size, number, and contents. For instance, matter may collect at one point and confine itself to this situation, but supposing that an injury has extended over a larger area (*e.g.*, skin of rump) then the collection of matter will be more diffused (spread), perhaps extending, in this case, partly down the hind limb. Opportunity for spreading is favoured by looseness of skin, consequently it is in these situations where the largest abscesses are usually found. The huge dimensions which an abscess at the point of the shoulder attains affords a good example. The circumscribing of an abscess is brought about through condensation of the surrounding tissue.

The contents of a well-formed abscess consist of a creamy, pleasant-smelling fluid known as "pus."

Distinctive terms are often employed in accordance with the cause, contents, and progress of the abscess. In reality such distinctions are hardly necessary, though it is as well

to mention these. When the contents are of a watery nature, it is known as a "serous" abscess: if the formation of matter is tardy, "chronic" or "cold" abscess—this latter usually requiring a blister to hurry it up.

A "specific" abscess or abscesses are such as are intercurrent and characteristic of some particular disease, for instance strangles, glanders-farcy, blood-poisoning, etc.

The so-called "serous abscess," commonly occurring at the points of the elbow and hock, arises through bruising of the skin and tissues subjacent to them. The "pointing" (coming to a head) of an abscess indicates its maturity, and when such is completed, its coverings give way, unless opened artificially, thus allowing the contents to drain off. Previous to the escape of matter, if beneath the skin, the latter takes on a shiny appearance, while the finger "pits" when pressed upon the pointed summit of the swelling.

This pointing is considerably influenced by the situation of the abscess, along with the resistance offered through the surrounding tissues or organs.

When the textures around the abscess prevent it from pointing, it frequently adopts the unpleasant method of making one or more channels, pipes or sinuses, in this way establishing a communication with the outer surface. This is useless for the cure of the abscess; in fact, rendering it worse, because the sinus may become diseased (*see* Quitter).

An abscess in connection with the brain, heart, kidneys and bowels, is the most dangerous, perhaps always fatal; while the same thing in the liver, lungs, or pleura (*i.e.*, the coverings of the latter), though dangerous, is less so.

Being inaccessible, treatment has no immediate effect

upon such. It is the rupture of the abscess, as a rule, which brings about fatal results under these circumstances.

Treatment.—When the abscess is situated superficially, an effort must be made to get it to “point” as soon as possible. For this purpose heat and moisture are usually applied. Frequent fomentations with hot water or poultices form a ready means of application.

The layman can adopt whichever of these methods is most convenient to him, but, be it remembered, that both require thoroughly doing for one or two hours at a time, with subsequent protection of the part against cold or chills.

As soon as the swelling “points” and “pits,” at the top of the former, make a clean cut—say an inch in length—selecting the most dependent point of the swelling. A sharp penknife can be made to answer the purpose of a lancet.

As soon as the contents have escaped, wash the cavity out with a solution of creolin or carbolic acid (2 drachms to a pint of water), using a small syringe (a human clyster syringe answers very well) for the purpose.

The wound should be kept open for two or three days. This can be done by inserting a piece of tow, and then removing it at the end of this time. When the abscess has been very large, the skin will likely have become greatly stretched, so that it “bags” after the matter has escaped. This need not cause the layman the least concern, as it usually reverts to its normal condition.

When the abscess seems tardy in its development (cold or chronic abscess), the best plan is to give it a good rubbing with blistering ointment (taking the usual precautions, *see* Blistering), and opening whenever ready. Hastening the

formation of matter in an abscess by means of a blister is a most excellent plan; in fact, the writer is disposed to recommend it in preference to fomentations or poultices, provided that the part is not blistered too early on. For the abscess under the jaw, in strangles, the author would advise the layman to adopt such, because it is not always convenient to foment or poultice (*see* Strangles).

Serous swellings at the points of the hock and elbow are alluded to under the headings of capped hock and elbow.

It might not be out of place to mention that the initial stages of both the foregoing are often greatly benefited through the alternate daily use of hot and cold water, followed by vigorous shampooing of the part afterwards. A couple of stiff dandy brushes will serve towards this latter purpose. Channels (sinuses or pipes) in communication with an abscess-cavity will require laying open to the depths of the latter, otherwise little good can be expected (*see* Quitter and Fistula of the Withers).

Abscesses occurring during blood-poisoning, strangles, etc., require to be treated upon the same general plan, but additional constitutional treatment will be necessary in the former and the irregular variety of the latter (*see* these diseases).

A certain amount of constitutional disturbance is present whenever an abscess is in process of formation, therefore good food is indispensable. If any stimulant is needed let it be a teacupful of brandy, mixed with half an ounce of bicarbonate of potash, given in a pint of cold water, twice daily.

Actinomycosis.—This is a parasitical disease, produced by the ray-fungus (*actinomyces*) attacking the

tongue, glands below the ear, and other organs of the body, such as the lungs. Another species of the same fungus attacks the cord going to the testicles, producing a hardened and thickened (scirrhus) condition of this (*see Scirrhus Cord*), which is not infrequent, especially when castration has been carried out on straw, or where such has been allowed to get into the wound inadvertently.

Actinomycosis affecting the tongue of the horse is denoted by the swollen and painful condition of the organ. There is dribbling of saliva from the mouth, and "quidding" of food. In addition to this the tongue is hard, and contains nodules embedded in its substance.

Treatment.—Half ounce doses of iodide of potash in the drinking water, three or four times daily, continued for several weeks. Dress the tongue with chloride of zinc (40 grains to every ounce of water), or with tincture of iodine.

Age, Influence of, in the Production of Disease.—The periods of predisposition towards disease are those of youth and old age.

The foal is liable to suffer from certain affections, from which the adult animal is exempt.

With increasing age, the bones become more brittle, the tendons, ligaments, and muscles decrease in their sustaining powers, consequently there is an increased tendency towards an alteration in the relationship of joints, etc., rendering the latter less capable of executing their freedom of movement. The tendency towards the deposit of bony material is specially marked during the first three or four years of life.

Irreparable diseases of the joints are most frequent

amongst old horses, more especially such as have had severe work, with indifferent attention.

Irregularities of the teeth, weak digestion, and enfeebled circulation, are specially marked amongst this latter class of animals.

Amaurosis, or Glass Eye.—

INTRODUCTION.—The nerves of sight (optics) spring from the base of the brain, and in doing so they cross, the right nerve going to the left eye, and the left to the right.

Each nerve pierces the back of the eyeball, ultimately expanding and forming the innermost coat of the eye, known as the "retina." Now it is a paralysed condition of the retina which constitutes the so-called "glass eye," in which the organ assumes this appearance.

So far as outward appearances are concerned, the eye is quite healthy, but incapable of transmitting impulses, or in other words, the animal is unable to see with it.

The causes of glass eye are various.

When the horse is unconscious, the eye appears to be in this condition, resuming its healthy activities with the return of consciousness. Any pressure upon the optic nerve may bring it about.

It has been stated earlier on that the nerves of sight cross each other, hence it follows that an amaurotic (glassy) eye of the left side implies that the right nerve is at fault and *vice versa*.

Severe bleeding and lightning stroke are occasionally followed by a glassy condition of one or both eyes.

We have seen it occur after a megrim seizure, presumably through some pressure brought to bear upon the nerve.

Treatment.—This will entirely depend upon the causation,

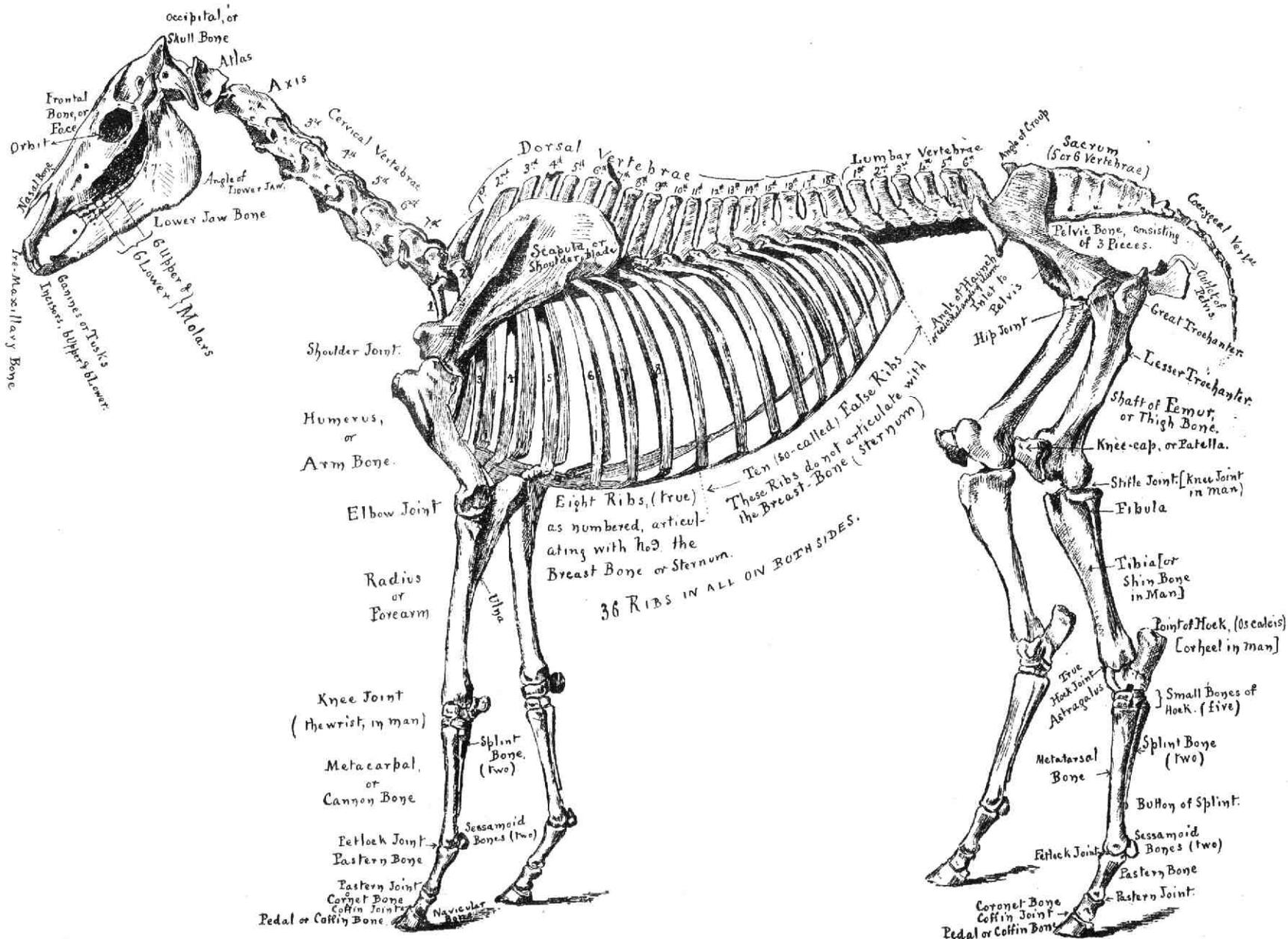


Fig. 15.—THE SKELETON OF THE HORSE.

Return of sight can only be prognosticated after having ascertained this.

Anæmia.—In a loose sense this term is employed to indicate an impoverished condition of the body, denoted by pallor of the membranes lining the eyelids and cheeks, etc., along with general unthriftiness, and as such it is common.

In reality the word means a deficiency in the total amount of colouring matter in the blood. Under this meaning of the term, we believe that we are fairly correct in saying that there is no great amount of evidence to show that horses are sufferers from anæmia, though its occurrence is quite possible in this animal.

Anatomy, Elementary, of Horse.—

A. THE SKELETON.—The bony framework of the horse comprises a number of vertebral segments forming the backbone, to which the hind limbs are, indirectly, united by means of the pelvic girdle or basin bone.

The fore limbs, on the other hand, are merely slung on to the trunk through the medium of flesh (muscle).

The two hind limbs correspond to the legs of man, while the fore ones are represented by the arms of the latter, so that, strictly speaking, the horse only possesses two legs.

The bones of the neck (cervical-vertebræ) are seven in number, the first one being termed the *atlas* (carrying the head, instead of the world); the second the *axis*.

The articulation of the former bone with the condyles of the head allows the "nodding" movements, while with the latter it enables the head to rotate upon its axis.

The remaining five bones articulate amongst themselves,

but the last one does so with the first pair of ribs and the first dorsal vertebræ, of which the horse has eighteen, to which the ribs are articulated by their upper ends.

The spines of the dorsal vertebræ are highest in the region of the withers; in fact, along with the muscles, etc., they constitute this latter. Each vertebræ, like those in the region of the neck, has a body, transverse projections or processes, spines, and articulates with the vertebræ in front and behind.

The loins are formed by five or six lumbar vertebræ, the first of which articulates with the last dorsal, while the last does the same with the first segment of the sacrum, the latter comprising five bones, the last of which is joined to the first bone of the tail.

The bones of the tail vary in number, but usually come within the numbers twelve and sixteen.

Each segment of the vertebral column has a more or less circular opening (the neural canal) running through it, the whole chain forming the "neural canal" and serving to lodge the spinal cord. The cranial cavity may be regarded as the beginning (dilated part) of the canal, where it is the largest, becoming obliterated at the fourth or fifth bones of the tail. The articulating surfaces between the bodies and oblique processes have cartilage interposed between the former, as "discs," and the latter in delicate layers.

The movements, though chiefly flexion and extension, are by no means limited to these. The neck and tail have the greatest mobility. If, say, any of the bones in the loins become fused together through disease, the animal has a rigid look about this region; though an important defect, it would be particularly so in the case of hunters. Here vertebral motion is essential. The ribs number eighteen

pairs, of which the first eight are known as "true," because they are joined directly to the sternum or breast bone, while the remaining ten have their attachments to the cartilages in front of them.

The first rib is the shortest. The length of the ribs increases from the first to the ninth inclusive, diminishing from that to the last, while the breadth increases from the first to the sixth inclusive, constantly decreasing from that one to the eighteenth.

The ribs contain a great deal of spongy bone material, conferring upon them their natural elasticity, though this chiefly depends upon their cartilaginous prolongations.

The sternum or breast bone consists of six bony segments and bears eight articular depressions for the reception of the rib cartilages.

It forms the floor of the chest, and to some extent a portion of the chest wall, and likewise affords attachments for muscle (flesh).

Each fore-limb is built up from twenty bones. Starting from above to below we begin with the *shoulder-blade* or *scapula*, which is a flat triangular bone, with the base uppermost, carrying a flexible plate of cartilage, and the apex below, having a small circular articular surface, into which, or rather before which, the large articulating area (in comparison) of the arm bone or *humerus* fits, the two forming the *shoulder-joint*. The humerus or bone of the arm has a spiral appearance, and along with the upper end of the forearm and ulna forms the elbow joint.

The *radius* or *forearm* is the longest bone in the fore limb, the ulna being shorter, united to its hinder surface, but its movements are limited to its upper end only. The development of the ulna in animals is in direct relation

to the division of the foot. The knee joint comprises seven or eight small bones, articulating amongst themselves, with the radius above, cannon and splint bones below according to their positions.

In the upper row there are four bones and in the lower three, in some instances four.

The next bone is known as the *cannon or large metacarpal bone*, through which the weight of the body is transmitted to the digit, represented by *three* pieces known as the *phalanges*.

The small metacarpal or splint bones are attached behind and at the sides of the cannon bone.

The inner bone is thickest and longest, and with its fellow and the cannon bone in front it helps to form a canal, which is the most frequent seat of splint.

The single digit contains three pieces—the first being the *pastern bone*, to which *two small* bones termed the *sessamoids* are added. These bones are united to each other, and articulate at the back and lower end of the cannon bone, completing the bones of the fetlock joint. Behind they form a groove to allow free play of the flexor tendons, *i.e.*, tendons running down the back of the limb. The second is the coronet bone, articulating above with the lower end of the pastern bone, the two forming the pastern joint, while the lower end fits on to the articular surface of the coffin bones, to form the coffin joint.

The coffin bone, in its natural state, rests within the horny hoof, into which it is dovetailed by numerous leaf-like structures of a sensitive and insensitive nature. In the fresh state the former cover the front and sides of the bone; the latter, the inner surface of the wall of the hoof. This bone is very hard in structure, and has

numerous canals in its interior, which serve to lodge blood-vessels. Its backward projections are known as the wings, which carry two flexible plates of cartilage. Transformation of these latter into bone-like material constitutes "side bones." The navicular bone articulates with the two last. It is a small ship-shaped bone, over the lower surface of which a tendon (perforans) plays (seat of navicular disease). In structure it is hard and compact, though, in spite of this, its fracture is by no means unknown, especially if diseased.

The pelvic girdle is composed of three bones (ilium, ischium, and pubes), which, in adult life, are fused together.

On the one hand the girdle is united to the sacrum by ligaments, while below it articulates with the heads of the thigh (femur) bones.

In the mare the transverse diameter of the "inlet" and "outlet" of the pelvis is greater than in the male.

The pelvis is a basin-shaped cavity formed by the union of the *sacrum*, *root of the tail*, and *pelvic bones*.

It has the form of a short cone, the apex of which is pointing backwards, and it contains a number of important organs in connection with the digestive, urinary, and reproductive systems.

The thigh consists of one bone, viz., the *femur*. It is a long bone, and the largest in the framework. The lower front articulating surface allows the patella or knee-cap to glide upon it, while behind it is articulated to the shin bone or tibia, the whole forming the hinge-like stifle joint, completed of course by ligaments, etc. The tibia or shin bone has another small bone (the fibula) attached behind at its outer side. The patella is irregular in shape. The former bone is not uncommonly fractured.

The hock is formed, like the knee (wrist), of two rows of bones. In front (alone) is a screw-like bone (the astragalus), forming with the lower end of the shin bone the true hock joint. It is here where the chief range of movement in this joint comes from.

The point of the hock is formed by the top of heel bone (or calcis). The remaining four bones of the joint are smaller, articulating amongst themselves, and other bones entering into the formation of the joint.

The next bone is the metatarsal (corresponding to the cannon bone in the fore-limb), while the remaining bones (phalanges, etc.) are just a repetition of those described in the fore-limb.

The muscular system of the horse is powerfully developed and adapted for endurance of all kinds.

The muscles in the region of the loins and hind-quarters are particularly powerful.

Practically speaking, there are no muscles beneath the knee or hock, but merely the tendinous continuations of the flexors and extensors.

The muscles constitute the active organs of locomotion, and they are arranged in groups or layers upon or within the bony framework. In shape a muscle may be long, short, round, or flattened. In many instances muscles taper towards their tendinous ends.

All muscles (sphincters excepted) have what is known as their "origin," *i.e.*, the most fixed portion, and an "insertion" which is usually the part moved through the medium of the contracting muscle,

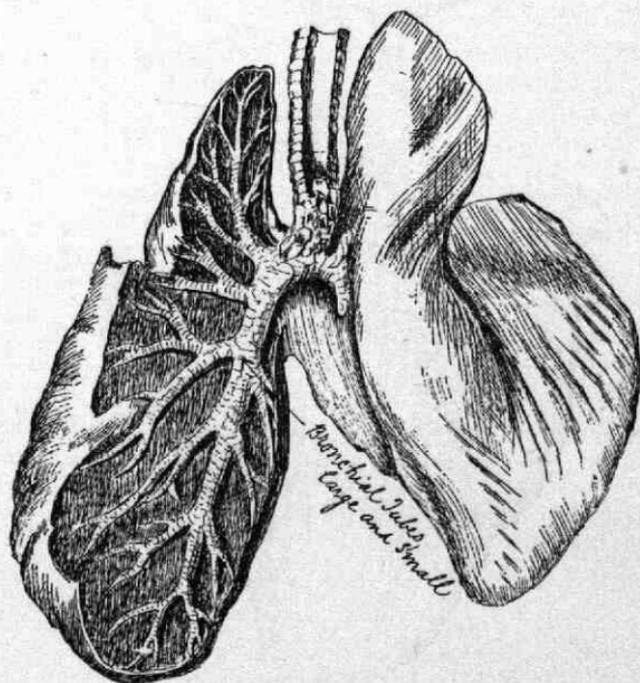


Fig. 17.—LUNGS OF HORSE.

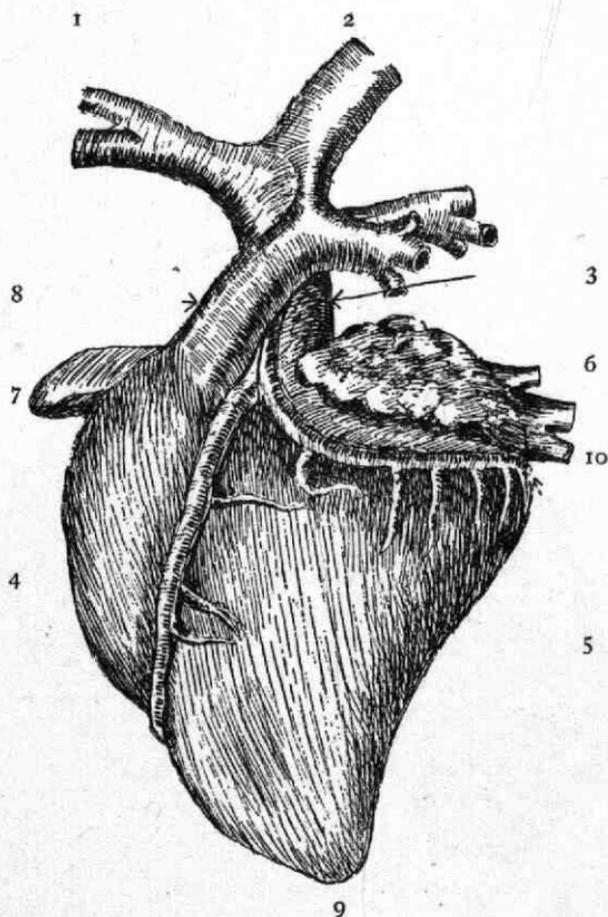


Fig. 18.—HEART OF HORSE.

1 and 2, Branches of Aorta supplying fore and hind parts of body with blood ; 3, Common Aorta ; 4, Left Ventricle, driving blood throughout body ; 5, Right Ventricle, driving blood to lungs and back again to left lobe of Auricle ; 6, Right Lobe of Auricle ; 7, Left Lobe of Auricle ; 8, Pulmonary or Lung Artery ; 9, Apex of Heart ; 10, Base of Heart.

B. INTERNAL ORGANS.—

1. *Organs of Respiration.*

The respiratory apparatus of the horse is well developed, and consists of the nasal passage with adjacent parts, larynx or voice box ; trachea or windpipe ; large and smaller bronchial (air) tubes, ending in the lungs. A portion of the windpipe is within the cavity of the chest, while the lungs occupy the right and left sides of this. Each lung is a bright pink in colour, collapsing when the cavity of the chest is opened.

The lungs are covered by delicate membranes known as the pleuræ.

The heart lies in the middle line of the chest, and is enclosed within a bag—the heart bag (pericardium).

It lies between the bodies of the dorsal vertebræ from the fourth to the tenth inclusive, and responds to the four ribs behind the second. It is suspended by large vessels.

In a medium-sized horse it lies (as regards its front part) about four or five inches from the entrance of the chest.

The partition behind the heart, separating the right from the left lung, is in the horse riddled by numerous minute openings, so that if this animal has an attack of pleurisy confined to one side, and a watery-like fluid is poured out, as a result of the inflammation, it follows that both sides of the chest will come to contain the liquid. By tapping one side only, the watery fluid can be removed.

In addition to this, the chest contains nerves, blood-vessels, glands, etc. The midriff (diaphragm) separates the organs of the chest from—

2. *The Digestive Organs and Abdomen.*

The digestive apparatus begins at the mouth and ends at the anus. The gullet extends from the back of the mouth to the stomach, and in passing down the neck runs behind and a little to one side of the windpipe. It is a muscular tube serving for the passage of food and liquids.

Its entrance into the stomach is different from other animals. The regurgitation of food into it (vomiting) is of uncommon occurrence, the horse being rarely observed to vomit.

The stomach is small, and only about one-half of it concerned with digestive processes, the gullet being continued (dilated) into the other portion.

The total capacity is about three gallons. The spleen (melt) is attached to it.

Food is almost constantly passing out of the stomach into the bowels.

The intestines are divided into "large" and "small," the total length being about 130 feet.

The small intestines begin at the digestive (pyloric) end of the stomach, terminating and opening into a blind portion of the large intestines known as the cæcum, the opening into which is guarded by a valve.

Following the cæcum we have about 20 feet of very large intestine termed the double colon, the capacity of which is about 16 gallons. It consists of four parts, and has three flexures or bends.

The double colon is the seat of many digestive disorders, and the frequent home of numerous parasites. It terminates

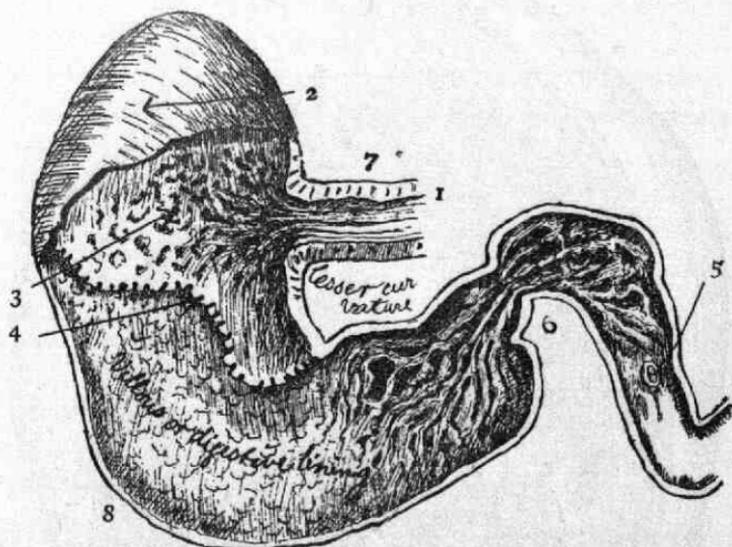


Fig. 19.—STOMACH OF THE HORSE, WITH PORTION OF WALL CUT AWAY TO SHOW INTERIOR.

1, Gullet; 2, External Surface of Wall; 3, Cuticular Lining or non-digesting portion of Stomach; 4, Boundary Line or Cuticular Ridge; 5, Entrance of Liver and Pancreatic Ducts; 6, Pyloric Sphincter; 7, Cardiac Sphincter; 8, Greater Curvature.

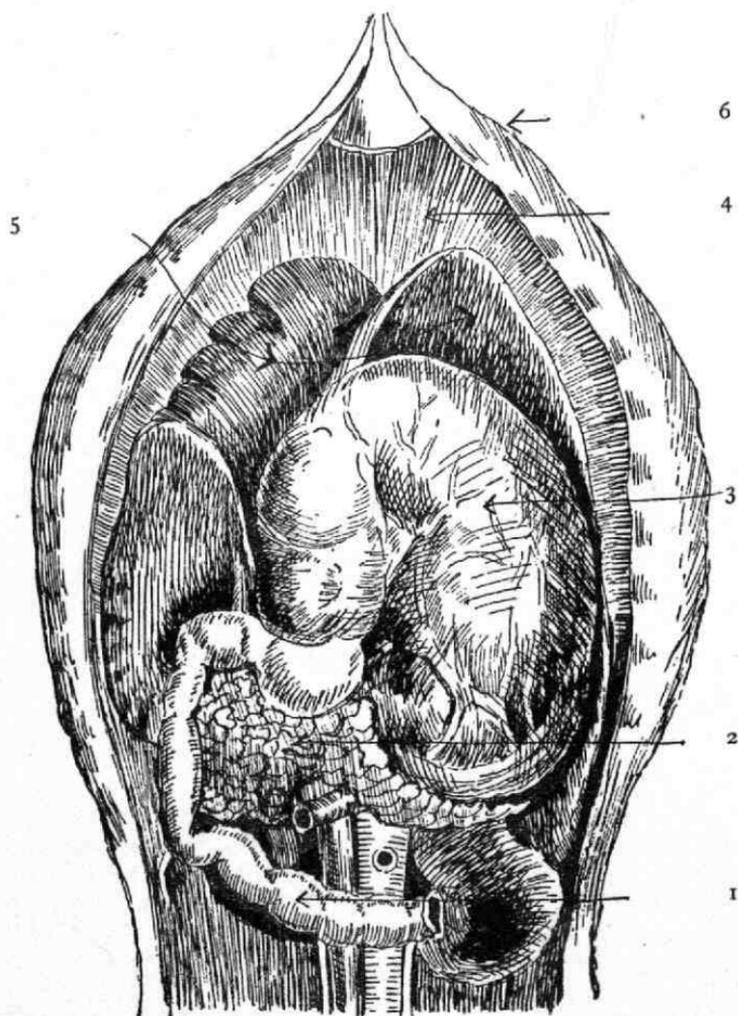


Fig. 20.—SOME INTERNAL ORGANS.

1, Duodenum ; 2, Pancreas ; 3, Stomach ; 4, Diaphragm ; 5, Liver ;
6, Exterior of Body Wall.

in the single or floating colon (10 feet), which ends in the rectum or straight gut (2 feet), and this as the anus.

The liver is large, chocolate in colour, and lies immediately behind the "midriff," inclining a little towards the right side. The gall bladder is absent, therefore the bile is continually, during digestion, passing into the beginning of the small bowel.

The liver serves as a storehouse for reserve food-material (animal starch or glycogen), manufactures bile, and arrests various poisonous materials.

The sweetbread or pancreas secretes a digestive fluid, which it pours into the beginning of the small bowel. It is a yellowish colour, turning black after death.

In the young animal (which occasionally persists in the adult) there is a gland (thymus gland) occupying the lower portion of the neck.

The saliva-secreting glands assist the digestive processes. These are chiefly in the region of the jaws and mouth.

The parotid is the principal one. It lies in the space below the ear, and is sometimes swollen in disease (mumps). Its duct or outlet passage is occasionally the seat of fistula.

The abdomen or belly likewise contains portions of the urinary and generative organs, as well as blood-vessels, nerves, glands, etc.

3. *The Urinary Organs*

comprise the kidneys, and the tubes serving to convey the urine from them to the bladder, the bladder and its tube leading the urine outside the body. The suprarenal capsules are above the kidneys. Their function is unknown.

4. *The Generative Organs.*

Like the urinary organs, these are partly within the belly and partly in the pelvis. They differ, of course, in the two sexes; but the most important ones of the male are:—The penis; the testicles, including the bag or scrotum lodging them; the excretory duct of the testicles; the seminal vesicles or reservoirs for the fertilising fluid; prostate gland and spermatic cord.

The chief female reproductive organs are:—The ovaries, and their tubes opening into the uterus or womb; the womb, the vagina or passage leading away from this, and ending in the vulva, the lips of which are situated immediately below the anus. The udder or mammary gland, plus its teats, is regarded as an accessory reproductive organ.

5. *Other Organs, Blood-Vessels, etc.*

The brain, lodged within the cranial cavity, is covered by three membranes, of which the outer one is the toughest, and the inner the most delicate.

The same three membranes are continued as coverings over the spinal cord, the latter extending to the root of the tail.

The brain has a rich blood supply, though many of the vessels are exceedingly minute.

Its weight is about 22 ounces, and it is divided by a longitudinal groove into a right and left hemisphere. These are termed the "cerebral" lobes, composed of white

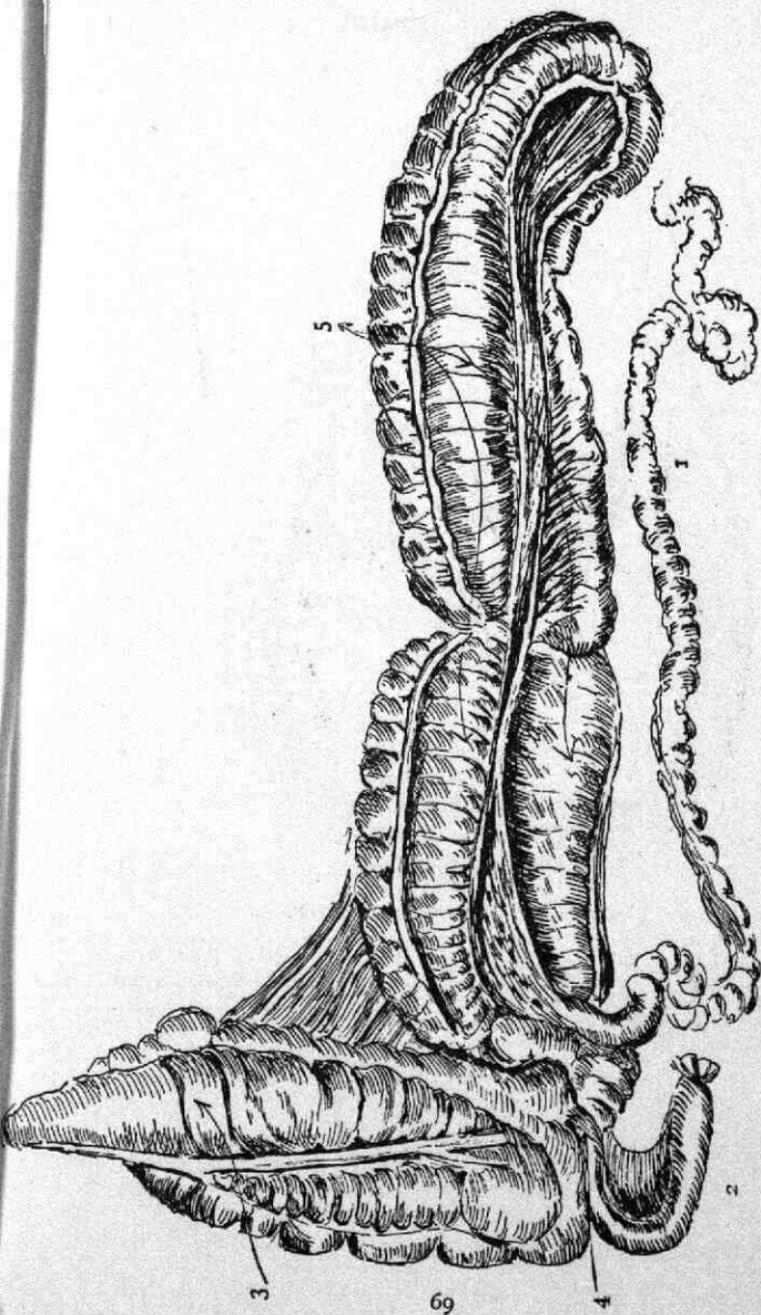


Fig. 21.—LARGE INTESTINE OF HORSE.

1, Single or Floating Colon ; 2, Small Bowel ; 3, Its Opening into the Caecum or Blind Gut ; 4, Caecum ; 5, Double Colon and Bands.

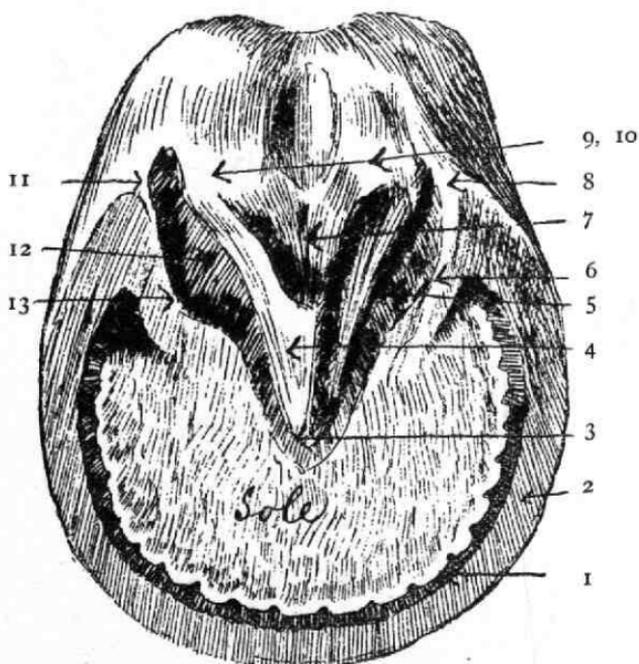


Fig. 22.—SOLAR ASPECT OF HOOF.

1, Junction of Sole and Wall; 2, Wall; 3, Point of Foot Pad; 4, Foot Pad or Frog; 5, Side Cleft; 6, Bar; 7, Middle Cleft of Foot; 8, Heel; 9 and 10, Bulbs or Glomes; 11, Heel; 12, Side Cleft; 13, Bar.

and grey nervous matter. Behind these there are three smaller lobes known as the "cerebellar."

The upper surface of the brain is not smooth, but raised into numerous convolutions, with depressions between.

The lower surface gives origin to 12 pairs of nerves, upon which some of the most important functions of the body depend. All these nerves make their way to the various stations (organs, etc.) through minute openings, or along fine canals.

The spinal cord gives origin to about 22 pairs of nerves, and establishes a communication between the brain and every portion of the body.

Each nerve has several roots, and those arising from the upper surface are known as the superior roots. These convey the various sensations.

The inferior roots carry the movements (motion).

The eyes are placed at the sides of the face. The pupil is somewhat pear-shaped, and the colour of the eye brownish-black.

The eyelids are lined by mucous membrane, which, in health, is of a bright pink colour.

The main trunk of the blood-vessel system springs from the right lower compartment of the heart forming the common aorta, which then divides into two branches, one running forward (anterior aorta) and the other backward (posterior aorta).

From these nearly all the other arteries of the body arise, directly or indirectly. These vessels carry pure blood.

The artery supplying the lungs (pulmonary artery) conveys impure blood to the lungs, where it undergoes purification, being returned to the heart by the pulmonary veins as pure blood.

Aneurism.—By this we mean a bulging of the wall of a blood-vessel, less frequently the wall of the heart. The tumour-like swelling “pulsates,” *i.e.*, conveys the sensation of beating like the pulse when the fingers are placed upon it.

An aneurism is occasionally spoken of as being “true” and “false.” The former is meant to imply that the tumour is formed by the wall of the artery only; while the latter indicates that the aneurismal swelling is produced by condensation (gathering together) of the surrounding tissues with which the artery communicates.

In the horse a not uncommon seat of aneurism is in a branch of the posterior aorta (anterior mesenteric artery), produced by a worm (*Strongylus Armatus*).

The danger of an aneurism lies in its tendency towards sudden rupture, allowing the blood to gush out.

Treatment.—If the aneurismal swelling is external, the surgical treatment (veterinary operation) comprises the tying of a ligature above the swelling, *i.e.*, on the side nearest to the heart, then a second one immediately below the swelling.

There are other methods of procedure, but the layman is hardly likely to requisition them—in fact, the treatment of aneurism in any way calls for professional skill.

Angle-Berries, Removal of.—(*See* Warts.)

Anus, Protrusion of.—(*See* Rectum, Protrusion of.)

Anus, Fistula of.—Sometimes the horse suffers from the effects of a fistulous sore in connection with the

anus, or, it may be, the rectum. The method of dealing with such a sore comprises laying the fistula open and then treating it with the lotion used for ordinary wounds. White lotion is equally suitable. It is more a matter for having skilled advice, because the sore is rather intractable and perhaps difficult of access.

Anthrax.—This disease appears to have been known from the very earliest times under the titles of malignant blain, boil, etc.

In man the disease is known as “malignant pustule” (the latter implying a small boil) and “wool-sorters’ disease.” This last name is derived from the fact that the avocation of those persons engaged in sorting wool, alpaca, and mohair goods, renders them specially liable to suffer from the disease ; therefore the name is a convenient one.

The horse, ox, sheep, goat, guinea-pig, rabbit, etc., readily take inoculation with anthrax germs ; and in these animals the disease is, almost always, fatal.

Algerian sheep and fowls appear to resist inoculation.

Anthrax is widely distributed, being encountered in almost every land. In Russia it is known as Iaswa ; and the “horse sickness” of South Africa we believe is of the same, or very similar, nature. In Central Hindoostan it bears the name of Loodianah disease, and must be regarded as common in India ; while in Australia it is termed Cumberland disease.

In Scotland, anthrax, especially of the horse, is an uncommon disease when compared with its occurrence in the Fenlands of Lincolnshire and Norfolk. It is not uncommon in Ireland.

Amongst cattle the disease bears the name of "splenic apoplexy," while the ambiguous term "braxy," so often employed in connection with diseases of the sheep, we believe is, in many instances, anthrax.

Either of these animals could, by inoculation, accidentally or otherwise, transfer the disease to man, in him assuming the form of malignant pustule.

Nature of Anthrax.—It is now indisputably known that anthrax is caused by a minute germ. Each germ has the form of a tiny rod, with square or slightly concave ends. It is termed the "anthrax bacterium." These germs are usually found in the blood and various organs of the body of an affected animal—always being absent from one that is not affected.

If a drop of blood, drawn from the body of an anthrax-stricken patient (or carcase of such¹) be placed upon a glass slide and examined with a high power of the microscope, it will be found to show myriads of tiny glassy-like rods. By staining the germs with methyl blue they are brought more plainly into view.

The organisms multiply by dividing across when in the blood within the body, but if cultivated outside the body chain and spore-like forms are assumed; but the latter also within the body.

In all instances the germs are capable of multiplying with enormous rapidity—probably at the rate of millions per minute.

Temperature of 40° centigrade, above, and under 40° C., check the development of both rods and spores. A certain

¹ Unless the blood be examined immediately after death, the germs of putrefaction, etc., are liable to destroy the anthrax bacteria, and so render microscopic examination valueless.

degree of heat and moisture appear favourable to the multiplication of the germs. The blood-vessels of the spleen, kidneys, and heart, are thought to contain these latter in the greatest abundance.

How Anthrax is spread.—Extreme care is necessary when dealing with an anthrax-stricken animal or carcass. The danger to human and animal life cannot possibly be over-estimated.

No doubt cremation affords the most satisfactory method of destroying the power of infection.

Anthrax does not appear capable of propagation by the ingestion of infected flesh, at least when such is properly cooked.

We believe that the chief method of spread is through the medium of a wound or a slight abrasion, thus allowing the organisms a direct means of entering the blood stream. It is fair to assume that the introduction of a single germ is capable of leading to fatal effects.

For instance, a slight abrasion within or upon the mouth has been the means of allowing the germs an inlet into the system. In this way hay from abroad has caused the occurrence of anthrax (fodder anthrax).

Apparently the fodder has been infected with the anthrax organisms. Horses and other animals have been known to take the disease through grazing over an anthrax-stricken grave, even though such has been years and years closed. This shows the importance of enclosing such a grave. Earthworms may bring the germs to the surface, and flies may convey them. In this manner human life has been destroyed. Several instances have been recorded of an infected fly (apparently through feeding or settling upon an anthrax carcass) settling upon the face of the

human subject, in which the person had a slight abrasion upon the same, and there producing malignant pustule, with death, in some instances, within a few days.

Extreme care must be exercised when handling an anthrax cadaver or living animal, otherwise inoculation may take place. The most minute abrasion of the skin is quite sufficient to allow the germs an entrance.

The handling of cow hides (obviously from an anthrax carcase) has served as a medium for introducing the germs.

The same can be applied to beasts of burden used for conveying diseased carcasses or hides from the same. The so-called "braxied" sheep will, if the disease (braxy) be anthrax, be equally liable to produce the same results.

It follows from this that dogs ought never to be allowed to feed off the cadaver (dead body) of an animal, especially sheep, lying about in fields, otherwise there is considerable risk of the animal transferring the disease to the human subject, or other animals.

Again, turnips have been known to carry the germs, and thus reproduce anthrax. The same may be said of oats.

Inoculation with the cultivated germs, and excretions from the body, affords a ready means of provoking the disease in most animals.

Causes.—The anthrax germ. It is utterly impossible to have the disease without this or its spores.

We suppose this fact is now so thoroughly established that none, save the irrational and ignorant, will believe otherwise. Although the germs are the cause, it is known that it is their poisonous excretions which prove so deadly.

Symptoms.—In this country it is uncommon to find the horse suffering from an attack of acute anthrax as in the

horses of India and Africa. Cattle and sheep commonly die in this sudden manner, but this does not apply to horses in Great Britain.

In its apoplectic form, the animal begins trembling, sweating profusely, has great difficulty in breathing, pain in the belly, falling to the ground in an unconscious condition, and dying within a short time afterwards.

In other instances the animal may live several days.

Under these circumstances we find that the temperature gradually rises from 101° F. (normal) up to 106° or 108° F., while the pulse will likely be about 70 per minute and small. There is a blood-stained, straw-coloured discharge from the nose, with swelling about the throat, head, or it may be other parts. Colic, loss of control over movements, and unconsciousness, may come on. Concomitant with the appearance of these latter symptoms the temperature usually begins to fall, or, at any rate, just before death.

It often happens that microscopic examination of a droplet of blood fails to detect the organisms during the early part of the attack, though such can be readily seen a few hours before death.

In all instances the "absolute" diagnosis as to the presence of anthrax can only be positively asserted upon the discovery of the germs, "directly," or through the inoculation of another animal, "indirectly."

One manifestation of anthrax is chiefly in connection with the tongue and head (gloss anthrax), to some extent the throat as well.

Vesicles appear on the tongue, and bursting, leave unhealthy sores. The head assumes a most uncanny appearance, while the breathing becomes very difficult, chiefly owing to the swelling around the nostrils and throat.

After-Death Appearances.—The most significant after-death appearances are:—The rapid decomposition of the body and distension of the belly with gas. Very often there is the same condition beneath the skin.

Blood of a tarry consistence. The melt or spleen may be perfectly black, and greatly increased in size and weight. Its covering may be perhaps ruptured through the extreme engorgement of the organ with blood, of a tar-like consistence.

The bowels are often inflamed (especially the beginning of the small intestine), while the membrane attached to them is in the same condition.

The coverings of the kidneys, liver, and bladder lining, very often show varying-sized spots of blood marking.

Principles to be observed when dealing with Anthrax.—The Local Authority requires immediate notification in the event of an outbreak, or suspected outbreak, of this disease. Certification by the veterinary officer appointed by the said Authority will, in the event of the disease being, in his opinion, anthrax, be followed by isolation of the animal or animals affected, together with further powers in connection with those animals which have been in contact, herded, or folded along with the diseased.

Measures of prevention must not only be taken against infected animals, but also against infected places (graves, ponds, etc.).

When fields or other places become infected, it is necessary to move animals away from the plague-stricken pasturage.

It is a matter of the greatest importance to exercise special care in the disposal of anthrax-stricken carcasses,

because such appear capable of perpetuating the malady for an indefinite period.

This applies to horses, cattle, and sheep, and, for safety, to sheep dying from "braxy."

All anthrax carcases should be buried eight or nine feet deep, with an abundance of chloride of lime, or quicklime.

After an outbreak of anthrax it is an excellent plan to dress the pasturage with hot gas lime. See to the drainage. The water supply must be looked to.

Cremation is the best method of getting rid of the rapidly infected and infecting carcase. It would be much better if this was enforced.

All appliances used in conveying the dead body, and in making an after-death examination, must undergo a most rigid cleansing, and disinfection, or destruction. Powerful disinfectants ought to be used; but in the main the Local Authority will direct matters, to which the layman will be subordinate.

Apoplexy of Brain.—By this we mean the rupture of a blood-vessel in connection with the brain. It may be the rupture of a minute vessel running in the substance of the organ, or in the membranes enclosing the brain.

The causes of this may be an external injury, disease of the wall of the vessel ruptured, or changes within the substance of the brain.

Diseases of the heart, obliteration of the jugular vein, and a full habit of body, along with, or without, a certain conformation of the neck, may be regarded as predisposing factors towards "apoplectic stroke."

Symptoms.—Sudden loss of consciousness and motion.

The animal is levelled to the ground without the slightest warning.

The eyes are "glassy" and the breathing snoring (stertorous).

These are the main symptoms, but quite capable of variation, such depending upon the situation of the ruptured vessel.

Treatment.—Apply ice bags to the head, and bandages to the extremities.

Give a dose of purgative medicine, and make use of a tepid water clyster. If due to an injury, an operation may be required.

If the animal is young, fat, and vigorous, abstract three quarts of blood, provided that collapse is not at hand. Under these circumstances brandy, in frequent and small doses, is indicated.

Whatever may be done, it must be confessed that paralysis of the brain is almost always fatal in animals.

General Management.—Give the animal a deep bed of straw. Raise the head with the same material. Apply the ice bags constantly. Try and prevent the animal from injuring itself.

Apoplexy of Lungs.—(See Lungs, Congestion of.)

Arsenic Poisoning.—(See Poisons.)

Asphyxia, or Suffocation.—The causes of suffocation necessarily vary.

For instance, swelling in the region of the head or nose may lead up to it. The causes of this swelling are equally varied. A wound in the skin may produce it.

In acute glanders, anthrax of the tongue, the swollen condition about the head and throat frequently lead to danger of suffocation. The same can be said of the more severe cases of strangles. Here the swelling exercises its pressure upon the windpipe or larynx.

Again, suffocation may occur through fire.

In the case of a foal, such is not infrequently suffocated through delayed labour, or through the accumulation of matter within the nostrils. Drowning is another cause. Inflammation of the throat, through simple cold, may do likewise. In short, any disease, mechanical injury, or other impediment, to the respiratory passage, is capable of producing suffocation.

Treatment.—This must be entirely in accordance with the cause.

Tracheotomy (*see* this) is the operation for affording immediate relief.

In case of threatened suffocation through obnoxious fumes or gases, cold water should be poured over the head, the body hand-rubbed, and the nostrils placed in the direction of the most fresh air. Ammonia may be allowed as an inhalation, while small quantities of brandy are quietly given. The head must be lowered and the fore-limbs extended outwards, backwards, and forwards, taking care that the movement comes from the shoulder-joint. Smart hand- or straw-rubbing of the body surface can be resorted to.

Injuries to the vertebræ of the back, or bruises of the latter, causing the head to be held dependent for a time, occasionally give rise to swelling of the face and nostrils, thus interfering with the animal's breathing. Raise the head, and hand-rub freely. Keep it in this position.

Asthma.—This diseased condition is so closely allied to "broken wind" that it merely demands a brief and passing notice. Its most distinctive feature rests upon its spasmodic character and uncertainty of occurrence. Spasmodic attacks of difficult breathing and an occasional cough are usually observed. An aperient now and again, with careful attention to food, will help to divert the attacks.

Azoturia.—This is a diseased condition usually coming on very suddenly, and often fatal. Geldings appear to be the chief sufferers, and it is the rule for the attack to come on when the horse is taken out either for exercise or work, after having lain idle for a short or variable period.

Animals having a full nitrogenous diet (beans, peas, etc.) seem to be specially liable to the malady, the true nature of which is at present but ill-understood.

Symptoms.—The disease first shows itself in the hind quarters, and if the horse is away from home it may be difficult or impossible to get him to walk back. The muscles of the quarters feel exceedingly hard, and there is diminished sensation.

The colour of the urine is diagnostic of this complaint. It is quite brown, but when favourable conditions set in it gradually resumes its normal colour.

Muscular wasting of the quarter is often very marked when the affection has cleared away.

Treatment.—A physic ball may be given to start with, and the animal placed in slings.

The urine will need frequent withdrawal, and the body well clothed. A clyster will do no harm. If green food

can be had it will be suitable ; failing this, bran and corn mashes.

We should, however, advise that skilled assistance be had, owing to the frequent deaths from this malady.



B.

Birth, Premature.—The birth of a foal before the mare has gone her full time is not of uncommon occurrence. The terms “picked” or “slipped” foal are often used to indicate this. A distinction must be made between a premature birth and abortion; in the former case the animal frequently comes into the world alive, and may, with judicious treatment, continue to live. Delay in the delivery of a prematurely born foal, as well as those in which the mare has gone her full time, may produce a dead foal.

Roughly speaking it may be called a “premature birth” if it happens after six or seven months, while an “abortion” may be applied to any foal born before six months, in which case the foal will be dead, or expire very shortly after coming into the world.

Many mares “abort” about the ninth week, or at the fifth month of pregnancy, so that care ought to be taken to avoid severe strains, through drawing heavy loads or the use of physic; indeed this latter should not be given to “in-foal mares.” The causes of abortion and premature birth are very varied, and often exceedingly difficult to determine, but the principal ones are:—Exposure to cold, drinking iced water, excessive muscular exertion, especially if the mare has previously suffered miscarriage, ergotised grasses, or herbage otherwise altered by the growth of parasitic plants upon it, access to the male, the abuse of

purgatives, herbs such as rue, savin, hellebore, etc., etc., excitement, constitutional diseases, various external and internal injuries, as well as faulty formation of, or in connection with the foal. Infectious abortion is very uncommon amongst mares. It is said to be caused by a micro-organism (germ).

Symptoms.—As a rule the severity or otherwise of the symptoms depends upon the stage of pregnancy. According to the distinction herein made between an abortion and premature birth the occurrence of the former will give rise to less constitutional disturbance than the latter.

If an abortion has occurred during the night, then the only evidence of it may be the presence of the abortion lying upon the stable floor, or wherever the mare happens to be kept. As a rule, the mother shows complete disregard for the animal thus expelled. A slight secretion of milk may be found. The premature expulsion of the young animal is likely to be of a more serious nature, so far as the effects upon the mare are concerned. In such instances the mare becomes uneasy, and exhibits fugitive abdominal (belly) pains. The restlessness increases, the belly loses its roundness, while the vulva seems full, with some discharge coming from it. If this latter has an offensive odour, it points to a dead foal.

As soon as the labour-pains are thoroughly established, and Nature has opened up the passages, we may expect to see the "water-bag," which may rupture, and then the foal follow. It sometimes happens that these symptoms are gone through, or rather several of them, and yet the foal is not expelled, the mare settling down to herself again; but, in a few days' time, a dead foal is cast out, and this without any apparent inconvenience.

Again, in the case of twin foals, one may be dead, and then expelled, the other remaining until full time.

The cleansing (after-birth) is frequently retained after an abortion or birth before full time.

Treatment.—The preventative measures must be directed towards an avoidance of any of previously-mentioned causes. If the animal is delivered, and the “after-birth” has come away, there is no need to do anything more than keeping the mare quiet, and adding half an ounce of powdered nitre to her drinking water once daily.

But let us suppose that the owner has any reason, or reasons, for thinking that the mare leans towards “picking her foal,” he should place her in a quiet, darkened loose-box. In addition to this allow her one of the following powders twice daily, given in a small bran mash:—

R. Powdered Bromide of Potash,	-	-	6 ounces.
Powdered Opium,	-	-	6 drachms.
Powdered Gentian,	-	-	2½ ounces.

Mix and divide into one dozen powders.

Keep the bowels somewhat moist by the use of green food, or else adding a couple of tablespoonfuls of linseed oil to the bran mash one or twice daily.

When it is certain that an abortion must occur—indicated by rupture of the membranes (water-bag)—then the owner must not be too hasty to interfere. Give the mare time to try and expel the young animal, which she should do if it is coming properly and her labour-pains are strong enough. If the latter are too feeble, give her a teacupful of brandy, along with the same quantity of water.

Supposing that a reasonable time has been allowed, and

yet no foal, what are we to do? First of all, empty the rectum (back-rake), wash your hands and arms with a mixture of creolin and water (two teaspoonfuls to one quart), now insert the hand and arm into the female passage, and, if you can feel the foal, try and extract it, using common-sense and care. Don't be rough. Mares won't stand pulling about like cows. If the entrance to the womb—because the foal may as yet be altogether in here—is not sufficiently open to admit the fingers, grease these with belladonna ointment, and gradually insert the tips of them until the hand goes altogether through. Allow time for the belladonna to act.

The after-birth or cleansing should, in the mare, always be got away as soon as possible. Never allow it to remain in, or partially in, the womb longer than twelve hours in summer and twenty-four hours during winter. If the cleansing is allowed to remain any longer it is almost sure to decompose, under which circumstances its presence becomes a source of great danger to the mare, while its removal in this state is attended with considerable risk to the operator. By washing the womb out with warm water we can often get it expelled. It should never be torn away. Whatever separation it requires must be done with the finger-tips and thumb. If decomposition has set in, wash the womb out with a weak solution of Jeyes' fluid (1 part of the fluid to 80 of tepid water). Take care to wash your arm in the same liquid, dry it, and then grease it with carbolic glycerine, or, what is ever so much better, wash it with creolin solution, before going to work. While the after-birth is being removed, some help is needed to support the dragging membrane. After its removal, keep the mare quiet, and don't work her for some ten days or so.

Bladder, Inflammation of.—The bladder of the horse is occasionally inflamed. It is most unlikely that the non-professional would recognise such a diseased condition during life. We might expect that one cause of this disease would be stone within the bladder, and which may have originally come down from the kidney. If the stone or stones (calculi) are at all rough (though usually they are smooth), the irritation they cause may give rise to fungoid growths from the inner lining of the bladder. Sometimes stone increases so enormously in size that the whole cavity of the bladder gradually, but ultimately, becomes obliterated. In other instances a stone becomes surrounded by a capsule—*i.e.*, encapsuled.

It is said that such drugs as turpentine and Spanish fly will, under certain circumstances, be productive of bladder inflammation.

Symptoms.—Frequent attempts to urinate, and what urine is passed is small in amount. The animal tells one that there is some pain about the belly, though not of that acute nature found in colic (gripes). Mares have occasionally passed stone with the urine, but such is well-nigh out of the question as regards the male. If the bladder is pressed upon from within the rectum (lower end of gut), the animal shows evident pain. Sometimes there is a free flow of urine, and then it suddenly stops, the conjecture being that the stone has got blocked within the neck of the bladder.

Treatment.—Empty the rectum (back-raking), and then give a clyster composed of a quart of tepid water, or barley water, containing half an ounce of laudanum. Try and draw off the urine (in horse use catheter, which see). If bladder is examined through pressure upon the lower face

of rectum, care must be taken, because the organ may be in a very diseased state, consequently easily torn or burst. When due to "stone," it may be necessary for a veterinary surgeon to operate, but if there is no pain this should not be done, but whenever possible professional advice should be had,

Bladder, Irritation of.—Although rather a vague term, and one which is probably a mild form of the preceding disease, it appears somewhat expressive of a condition, from which the horse occasionally suffers, and to which it is impossible to assign any definite cause.

In addition to frequent urination, and the discharge of only a small amount of urine, there is a general unthriftiness about the animal. Perhaps the horse is a trifle uneasy when in the act of passing the urine, but it does not show signs of being pained to any great extent. I fear that it will be, though, that the symptoms above are just about as indefinite as the causes, which is in reality the truth, though the treatment towards this suspected condition will very likely solve the matter.

Internally, give the following draught every other day :—

R. Tincture of Buchu,	-	-	-	2 ounces.
Tincture of Hyocyamus,	}	of each drug, 6 drachms.		
Tincture of Belladonna,				
Bicarbonate of Potash,	-	-	-	$\frac{1}{2}$ an ounce.
Barley Water,	-	-	-	1 pint, added.
Mix, and give the whole draught at once, just as it is.				

Sanmetto, in 1 ounce doses, twice or thrice daily, appears

to be an invaluable remedy for this and other affections of the urinary apparatus.

Bladder, Stone within.—There may be one or several stones varying in their size. The composition of these stones varies a little, but they are chiefly composed of calcium (lime), carbonate and oxalate. When "stone" causes pain, it will require removal, so that professional aid would be needed. Stone within the bladder is detected by examining this organ through the lower face of the rectum, after having back-raked the animal.

Bleeding.—It is most convenient to bleed the horse from either of the two large veins running up the neck (jugular veins). The vein upon the left side is selected as a rule.

The instruments required are—a fleam and blood-stick. The horse is held by an assistant, and a cord placed tightly around the root of the neck, so as to raise the vein, which, if the hair is long, can be brought into better view by passing a damp sponge over it.

One of the heart-shaped blades of the fleam is now placed near to, but not quite touching, the vein, and given a very smart tap with the blood-stick. If it has penetrated the vein, the blood will of course flow out in a full stream. As a rule *three or four quarts* is quite enough to draw off. Now fasten the vein up by taking an ordinary pin, passing it through the lips of the vein—having sponged any blood away—and then twist a bit of tow or hair around the tip,

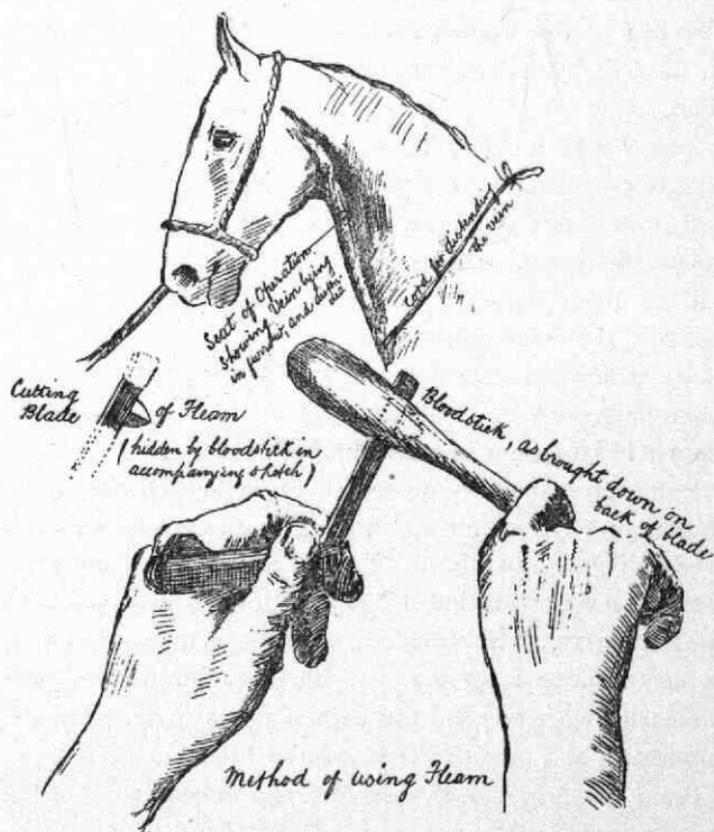


Fig. 23.—OPERATION OF BLOOD-LETTING.

in a figure of 8 fashion, not including the skin. This little drawing shows the method of doing this, the pin being represented by the arrow, and the lips of the wound, made in the vein, by the two parallel lines.

Never use a rusty fleam, receive the blood into a pail, and watch any "faintness" about the horse. Keep the pail or finger lightly pressed against the vein while the blood is flowing. Do not remove this pressure suddenly.

Do not bleed except in the following diseases:—

Pulmonary apoplexy or acute congestion of the lungs. If the horse is very fat and strong, be sure to take away a good half gallon of blood. Never hesitate one moment to bleed a sleek, "unwinded" hunter if it is attacked with lung apoplexy. Never bleed a horse in poor condition, or one weakened by disease. Bleed in gorged stomach (stomach staggers) when the animal shows that its brain is implicated, and provided that it has a full strong pulse.

Brain apoplexy, fever in the feet, and inflammation of the brain, especially the first and last of these, appear to be benefited through the shedding of blood. Bleeding from the toe, etc., has never been shown to do any good. When bleeding the horse, it is usual to take note of the pulse. In pulmonary apoplexy, the pulse will probably be 120 per per minute, small and oppressed, with very quick breathing. Bleed and you will find the pulse feels firmer, fuller, and

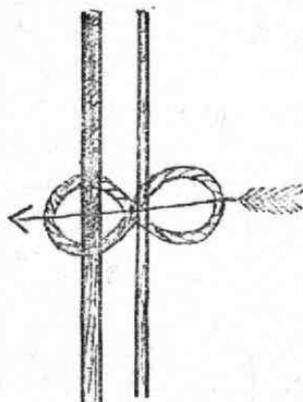


Fig. 24.—METHOD OF PINNING VEIN.

reduced from, perhaps, 120 per minute to half this number, consequently less oppressed.

It must be stated that the pin should be removed from the vein in three or four days' time.

Blemishes.—A blemish may occur upon any part of the body, but perhaps the commonest is that remaining after the horse has come down upon its knees.

Firing the hock, pastern, or flexor tendons, etc., etc., leaves a blemish. Although such marks may not point to unsoundness, it frequently happens that such is the case. Always look for evidence of scars about the head, shoulders, withers, saddle, knees, fetlocks, hocks, chest, along the course of the large veins in the neck, likewise look for scars above and behind the fetlock. Part the hair about these regions. In some instances a blemish may be of no importance.

Bone, Inflammation of.—Bones, excepting their articulating ends, are covered by a nourishing membrane, not only externally, but, in the case of long bones, such as those of the legs and arms, by a delicate one internally, *i.e.*, surrounding the marrow.

It is the membrane upon the outer surface of the bone which assists in the formation of the latter, because between these two—when the animal is quite young—are the bone-forming cells. When the animal becomes older these bone-making cells have very little work to do; but if the nourishing membrane upon the outside (periosteum) receives a blow, even a very slight one at times, it may inflame, and, if the inflammation goes on far enough, lead to that

part of bone lying immediately beneath the injured or inflamed portion, dying.

However, it commonly happens that the injury incites the membrane to activity, and results in the deposit of new bone, which is a very common cause of regret to the owner. It is in this way that we get splint, spavin, ringbone, and bony-stiffening of joints, etc.

Sore shins are due to the same membrane becoming inflamed.

The membrane surrounding the marrow (Endosteum) can only be inflamed through the bone becoming broken.

Treatment.—Rest, and the application of a cooling lotion.

Bot-Fly, and Bots in the Stomach.—

The horse bot-fly (*Gastrophilus Equi*) attacks animals whilst grazing, and generally between the months of June and October. The flies are about half to two-thirds of an inch in length, and the abdomen (belly) of the male is blunt; the female, pointed. The larvæ reside in the stomach of the horse. In colour the flies are yellowish-brown, having dark or black markings upon the wings and belly.

The pointed end of the abdomen in the female forms the so-called ovipositor or egg-laying appliance. The eggs are about $\frac{1}{12}$ of an inch in length.

When the fly is at rest the wings are close together, opaque, and striped with a brownish band, and two or three spots. The legs are smooth, long, and of a brownish-yellow colour.

The female deposits her eggs about the horse's mane, shoulders, inner side of the knees, etc., and here the eggs adhere by means of an adhesive substance. There is con-

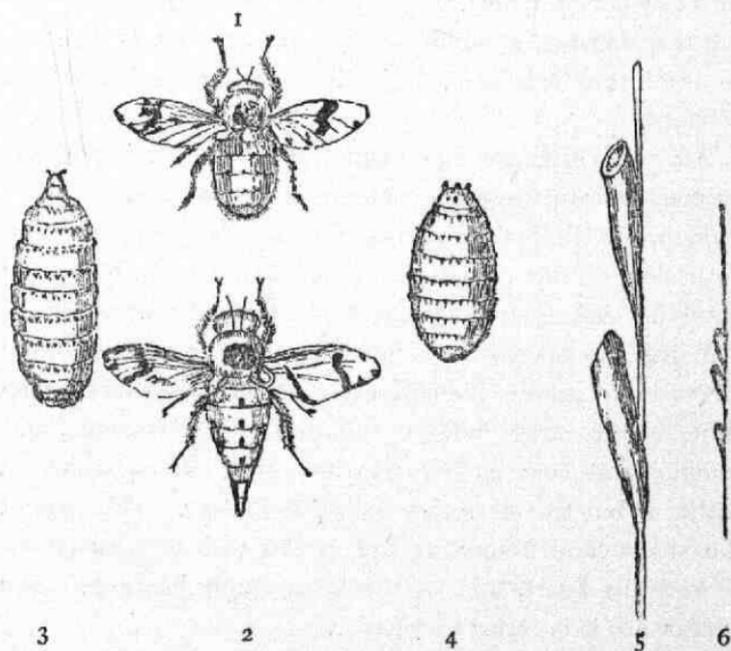


Fig. 25.—HORSE BOT-FLY. (*Natural Size.*)

1, Male fly ; 2, Female do. ; 3, Maggot ; 4, Chrysalis ; 5, two eggs attached to a single hair ; 6, three eggs (*natural size*).

siderable irritation induced, which the horse will, if possible, try to relieve by licking the part. Warmth and moisture appear to be favourable towards the hatching of the eggs, so that, in a period varying from 5 to 21 days, the "maggot" form is assumed. By some means or other the maggot gets into the horse's mouth, passing down the gullet, and entering the stomach, a situation which, it appears, is essential to its future existence. No doubt many perish in the attempt.

After the eggs are laid upon the hairy covering of the animal, their future predestination is somewhat speculative, though, "with luck," all may go well, so far as the perpetuation of the parasite is concerned, which latter the bot-fly is, during one phase at least of its existence.

When the maggots get into the stomach it is essential for them to attach themselves to something, which something is the inner lining membrane of the stomach, but commonly at that end where the gullet enters, which in reality is but the expanded part of the latter. This part of the stomach is known as the cardiac end because it lies nearest the heart, and as the inner lining has a skin-like appearance it is termed cuticular.

The reason why the larvæ (maggots) attach themselves here for preference is, probably, because they are not likely to be injured by the acid secretions of the stomach, there being no digestive changes at this end (cardiac end). Sometimes the maggots are near the "outlet," and, if numerous, may block this up, though in this situation the maggots are of a different species.

The maggots are flesh-coloured, later on yellowish, about three-quarters of an inch in length, and a third of an inch in width at their middle. Each attaches itself by a couple

of hooklets on each side of the mouth. They remain within the horse's stomach from 8 to 10 months, then loosen their hold, and are expelled along with the excrement, and thus get buried in the soil, from which they emerge—say in 6 or 7 weeks' time—as the fully-developed fly, which is again ready to carry on the perpetuation of the species.

The accompanying illustrations will give the reader a better idea of the fly and larvæ.

Treatment.—(*Externally.*)—Brush the eggs off and dress with :—

R. Creolin,	2 drachms.
dissolved in Water,	$\frac{1}{2}$ an ounce.
and added to Oil of Eucalyptus,	1 ounce.
Linseed Oil,	1 quart.
Mix, and apply.	This will keep the flies off.

Internally.—Give a draught every other week consisting of a pint of linseed oil, 20 drops of oil of peppermint, and terebene, 160 drops. Mix. Give the whole.

Another form, known as the “red” or fundamental bot, takes up its larval (maggot) stage in the lower end of the bowel, to which it is attached. It causes a good deal of irritation, very often making the horse kick. It can be removed with the hand, or a clyster of turpentine (3 ounces), and soap water (3 quarts) used.

Bowels, Inflammation and Injuries of.

—(*See Intestines.*)

Brain, Abnormal Growths and Abscesses in Connection with.

—Tumours and abscesses may form in connection with any portion of the

brain. Sometimes such tumours are composed of nervous matter, while others are filled with pus (matter). The abscesses are said to result from an injury, and they are occasionally the cause of a horse's death, after such has, to all appearances, recovered from an attack of strangles, or influenza. It is quite unlikely that such should be ascribed to a blow, etc., from without. In irregular strangles it is well enough known that collections of matter may begin anywhere about the body, either outside or inside. The writer does not deny that they are occasionally caused by external injuries. Growths may be attached to the coverings of the brain, or spring from the substance composing this latter. In many instances the horse thus affected has a distinct tendency to press its head against the wall (though it may do this in acute indigestion if the brain is implicated), while, one case which the author remembers, the animal (a mare with foal at side) kept her head "down," leaning towards the left side. This position was maintained for weeks, when she fell down and expired. An after-death examination of the brain showed a tumour about the size of a walnut attached to the right lobe (base) of the brain (cerebrum).

Bruises.—An animal may receive a bruise upon any part of the body, but the commonest situations are: the knees, fetlocks, points of the hocks, haunches, poll, etc. The elbow joint often suffers.

Treatment.—This will depend whether the injury be recent or of some standing.

Inflammation (heat, pain, swelling) must be subdued, if possible, through the application of a cooling lotion such as :

R. Tincture of Arnica, - - - -	1 ounce.
Goulard's Water, - - - -	$\frac{1}{2}$ an ounce.
Tincture of Belladonna, - - - -	1 ounce.
Water, - - - - -	1 pint.

Mix, and make lotion. Apply to the bruised part several times daily.

Capped hock and elbow, likewise an injury to poll, may require special treatment (*see* these diseases).

Brushing, Cutting, or Interfering.—The foregoing are different names given to indicate an injury of the fetlock, either of the fore or hind limb, but produced through striking the fetlock with the opposite foot.

Causes.—Shoes being too wide; clenches improperly fastened down; toes turned in; weakness and faulty action; leg weariness, etc. The part which brushes is the anterior portion of the quarter.

Treatment.—Try and find the cause. The striking part can be detected by applying a wet pipe-clay bandage, so that an imprint is left upon the former. A three-quarter shoe may do good. A leather boot is a useful preventative.

Brain, Inflammation of.—This can hardly be called an every-day ailment, or one which the amateur is likely to attempt the treatment of. It may come on as the result of an injury to the skull, or from disease of bone at this part.

In some instances it is due to special causes, such as that through the bite of a rabid animal.

The brain, its coverings, or both may be involved in the disease.

Symptoms.—The horse is restless and excited, moving about his box in a semi-conscious manner, though this latter is generally succeeding the stage of excitability. Eyes blood-shot and staring, perspiration, while the breathing is of a snoring nature. Perhaps there will be convulsions and muscular twitchings. Fever of course. The animal generally soon comes to the ground and struggles a good deal. This disease might be confounded with some other affections, such as some nervous affection, or even disorder of the stomach (stomach staggers). The cause should prevent any mistake being made.

Treatment.—Give a dose of physic, empty the rectum, and use a soap and warm water clyster. Keep the animal as quiet as possible. Apply cold water or powdered ice to the poll. Add a little salt to the ice, after powdering it, and place a flannel between the ice-bag and head. The ice can in this way be applied for a very long time. If any piece of broken bone is pressing upon the brain it must be raised (levered) up, so as to stay further pressure. If the bowels don't act, give a pint of linseed oil. Bleeding will, if the horse can stand it, do no harm. The horse must be kept perfectly quiet after these matters have been attended to.

Of course no treatment would be allowed if the horse is rabid (mad). Prevent the animal from injuring itself through the use of plenty of straw.

Brittle Hoof.—Some horses suffer from what may be termed a "shelly" condition of the hoof. It is due to a loss of water in the horny material, and this predisposes to sand-crack.

The use of the water in horn is to keep the foot elastic, and prevent it from becoming in the above condition.

The foot-pad or frog contains the most moisture (42 per cent.), and the wall the least.

Constant evaporation is taking place from the foot, but when the foot is allowed to go unrasped (*i.e.*, wall), this loss of water is checked by a natural protecting varnish known as the "Periople," which consists of horny material, and it forms the white line—so plainly seen after placing the foot in warm water, due to swelling of the horn-cells—around the upper border of the hoof. If this is rasped away, then we have a most powerful predisposing factor—towards brittle hoof—brought into play.

No horse-owner should permit the smith to do this, which is the best preventative against a brittle hoof.

As a substitute we may use the hoof ointment (*see* Introduction, section 2).

Bronchitis, Acute.—An acute inflammation of the bronchial or air tubes is of somewhat frequent occurrence in the horse, more especially during the colder months of the year, and when influenza is prevalent.

The air tubes vary in their size, so that we may have the large, middle, or smallest tubes affected. The disease is much more serious when these latter are chiefly involved, and is usually associated with inflammation of the lungs, more or less. The inflammation attacking the tubes and tubules causes the lining of these to throw out an excessive secretion of mucin, while the delicate cells upon the free surface of the lining are cast off. Acute bronchitis may end in complete recovery, but, and more frequently, it terminates in "chronic" bronchitis; likewise this latter may end in the former.

Causes.—1. The disease may be of a specific nature, *i.e.*, due to germs, as in the case of influenza.

2. Developed from an attack of the chronic form.

3. Through exposure to cold and wet.

4. Resulting through the inhalation of irritating vapours, such as might occur during a fire.

5. Produced through the careless administration of liquid medicine, especially if the animal has a sore throat.

6. Extension of inflammation from the lungs.

7. Disease of the valves of the heart.

Symptoms.—The ordinary signs of a cold will likely enough be present, though not necessarily so. There is always a cough and some degree of fever. The cough is at first hard and short, subsequently becoming soft, moist, and frequent, in fact each act of coughing brings no relief. The pulse is soft, and the animal is altogether out of sorts. If influenza is present there is great weakness. When a number of horses are stabled together and constantly coughing, the owner may be pretty well satisfied that such is of an influenzoid nature. When the larger tubes are the main seat of discovered activity, the cough is loud and harsh at first, then soft and full.

At the root of the neck and in front of the chest a bubbling sound will be heard, due to the passage of air through the mucin in the tubes. It is the so-called bronchial r le, and varies accordingly.

If the minute tubes become seriously affected, the breathing soon gets disturbed, being quickened, and painful to a certain extent.

Treatment.—Place the animal in a warm, well-lighted, and well-ventilated loose box or other apartment.

The grand principle of treating bronchitis consists in the

maintenance of an equable temperature. If possible have the place artificially warmed by means of a small oil or other stove.

The body should be well clothed, and bandages applied to the limbs.

The throat and front of the chest should also be clotted.

If there is a discharge from the nose, encourage this by frequent steaming. This can be done by pouring boiling water over bran or hay and surrounding the nasal openings and vessel with a piece of sack-cloth. Add about 20 grains of menthol to the inhalation each time. Internally, make use of the following electuary:—

R. Powdered Belladonna Leaves, - -	3 ounces.
Powdered Chlorate of Potash, -	2 ounces.
Powdered Ipecacuanha, - -	$\frac{1}{2}$ an ounce.
Powdered Liquorice, - - -	4 ounces.
Glycerine and Syrup of Squills, each	$1\frac{1}{2}$ ounces.
Treacle and Powdered Linseed, a sufficiency to make the mixture of the consistence of good jam.	

Directions.—Place a piece, about the size of a broad bean, inside the cheeks, three times daily, or half this quantity, if used oftener.

Continue this treatment for several days, or until the animal is fairly on the high road towards recovery, then give some of the tonic powders (*see* Tonics).

In addition to this, the throat and chest may be rubbed with white oil (*see* this in Introductory).

If a cough remains allow time, and if the weather is cold it is very likely that the cough will leave the animal as the warmer days set in. If not, try the cough powders,

or continue the electuary a little longer, only in very much smaller doses.

General Management.—Give warm food, linseed tea; scalded oats and bran will be found as good as aught else. A little green food will do good. Don't allow any physic, but no harm can come through the daily use of a couple of tablespoonfuls of linseed oil, along with a warm bran mash. See to the nostrils being frequently steamed, and use the menthol. If this cannot be had, try powdered camphor or a teaspoonful of terebene. Keep the house warm and the body well clothed. Avoid having any draughts beneath doors, or through ill-fitting or broken windows. Don't be in too great a hurry to get the animal at work again. When the weather is fit, allow walking exercise daily. If you have a thermometer place it in the stable on the wall, and try and keep the temperature between 60 and 70° Fahrenheit. Look to the stable being kept very dry and clean; use plenty of dry bedding. If the breathing gets worse, apply mustard paste to the sides and front of the chest.

About a quarter of an ounce of powdered nitre can be safely added to the animal's drinking water every evening. Allow cold water to drink. The use of tepid water is all rubbish. Lastly, give the horse or horses every little attention which common sense prompts you to do.

Bronchitis, Chronic.—This is sometimes termed "thick wind" because of the difficult breathing and wheezy character shown when the horse is put to severe exertion.

It may have been the termination of an acute bronchial attack, or it may have come on more gradually.

During damp and cold weather it is most noticeable, and

often enough passes into an attack of the acute form. It is less amenable to treatment than this latter—in fact, it is rather doubtful whether it is ever permanently cured, even by a prolonged course of nursing. Chronic cough it is, and cough of a chronic nature truly may it remain. The cough and difficult breathing are the leading symptoms.

It is needless to say that it constitutes “unsoundness.” If any treatment is going to be tried, use drachm doses of terebene (one teaspoonful) every day, given mixed with sufficient, say eight teaspoonfuls of, linseed oil. Less (one half) can be used for a time being, and then the larger doses given.

Attend to the general health.

The following powders have been recommended:—

R. Powdered Aconite Leaves,	- - -	4 drachms.
Powdered Foxglove Leaves,	- - -	2 drachms.
White Arsenic Powder,	- - -	12 grains.
Powdered Liquorice,	- - -	3 ounces.

Mix, and divide into six powders.

Directions :—Give one every night in the food, but don't use above half a dozen or so at any one period. A few weeks should elapse, as the drugs have a very depressing effect upon the system.

C.

Cape Horse Sickness.—From early times the horses of Cape Colony, the Transvaal, and Orange Free State have suffered from a very deadly complaint, which in some of its forms is not unlike anthrax. The months of February, March, and April find the disease at its worst, especially if the season be hot and moist, though it is a complaint which also occurs during dry seasons.

Frost and snow retard the development of the veins, of whatever nature this be.

When the Cape Horse Sickness season arrives, the Dutch farmers keep their horses in until the dew has been evaporated off with the sun. The dewy grass seems to be the medium for the introduction of the virulent material into the system. The highlands are comparatively free from the disease.

Following infection there is an incubative virus of about one week.

Horses which are supposed to have recovered from Cape Horse Sickness are spoken of as "salted," *i.e.*, preserved against severe attacks of the same malady. These animals are poor-looking subjects, and ultimately succumb to the complaint, so that it is somewhat of a fable to regard their possession in the light of a pearl.

Symptoms.—Shivering fits, increase of internal tempera-

ture, a frothy nasal discharge, deep redness of the mucous membrane lining the nose and eyelids. Sometimes the head and neck swell, with signs of lung disease.

In other instances the tongue, lips, etc., are the seats of intense congestion. The tongue becomes blue (blue tongue), the swelling (venous engorgement) causing the organ to protrude from the mouth.

Treatment.—This must be based on present-day lines. Avoid feeding on infected or dewy grass. Dry fodder.

Catarrh, Nasal.—(Cold in the head.) This affection is characterised by a watery or opaque discharge from the nostrils, and frequently accompanied by a sore throat and cough, and perhaps a slight degree of fever. It is an inflammation of the mucous membrane lining the nasal passage, and structures in contiguity to this.

Causes.—Exposure to cold.

Symptoms.—At the very beginning the membrane within the nostril will be found dry and very red, and this inflammation extends from the nose to the membranes lining the eyelids, which assume a deep red and full condition. Very shortly both eyes and nose have a watery discharge issuing from them, ultimately the discharge becomes opaque or yellowish, gradually diminishing. In influenza and strangles the discharge is of this nature. The concurrent constitutional disturbance is indicated by a want of usual energy, diminished appetite, etc.

Treatment.—Very little is necessary. Keep the animal warm. Allow a few days' rest. Steam the head with boiling water, to which a little turpentine may be added. Allow half an ounce of chlorate of potash in the drinking water night and morning.

Scalded oats and bran, with the addition of some boiled linseed, is as good as aught else in the way of food. Clothing to body, bandages to limbs, and a warm, well-ventilated stable will be the mainstay of a successful issue. Neglect may end in a troublesome chronic discharge from the nose.

Catarrh, Chronic Nasal, or Nasal Gleet.—

A continuous or intermittent discharge from one or both nostrils is frequently observed in the horse. It may be the result of an ordinary cold in the head, especially if such has been allowed to be somewhat neglected or otherwise improperly treated, but we believe it is more frequently the outcome of some other diseased condition in the nostrils or compartments in connection with these, hence it is quite possible that it may be associated with glanders (in which case the discharge is commonly from the left nostril); disease of the upper molars, or bone carrying these, through irritation produced by growth of a lower molar; morbid growths in the passage; collections of matter in the pouches, or within the air sinuses (compartments), injuries and disease of other bones in this region.

Symptoms.—In most instances there is a discharge from one nostril, varying in character according to the duration of the disease and nature of the malady. When of a simple catarrhal nature it has often a starch-like consistence, with flakes of pus mingled with it. If of a glanderous nature, the discharge has a pasty appearance, and tends to adhere around the margin of the nostril, while the glands under the jaw are hard and fixed as it were. Ulceration within the nostril may be seen. (See Glanders for fuller information.)

Diagnosis.—If the discharge has remained after recovery from an acute attack of cold, or followed upon influenza, or strangles, then there need be little doubt but that it results from a continuance of the inflammation either confined to the nose, or air compartments in communication with the nostrils, which perhaps a little simple treatment and time will remove. The discharge will likely be somewhat offensive. When due to disease of the teeth, the abominable stench will soon make itself known when the fingers come near the diseased tooth, a condition which can be ascertained by withdrawing the tongue as in “balling.”

As the disease continues, matter accumulates in the sinuses (air spaces) of the head, frequently causing the bone to “bulge” at one point.

By tapping this “bulging” with the tip of the second finger, or with the knuckle of the same finger,¹ it will be found to give out a dull or dead sound, quite unlike that emitted at a corresponding point of the sinus on the opposite side.

As the sinuses communicate with one another and with the nostrils, it is quite likely that we may have matter in more than one compartment at the same time. As a rule, bulging of bone takes place in the direction of the least resistance, and where the bone is thinnest.

Treatment.—If it is thought that the gleet is purely the result of a continued inflammation of the membrane lining the nostrils, subsequent to a previous attack of an acute cold in the head, then it is advisable to try the effects of compound iodoform powder.

This powder is readily brought into contact with most of the surface of the membrane lining the nasal passage by

¹ A small hammer or key is sometimes used for this purpose.

means of a simple contrivance known as a "diffuser" or insufflator, of which two simple forms are shown in the accompanying illustration. The insufflator made by Hoish, London, is an excellent one.

Both these appliances have an india-rubber ball for diffusing the powder, which is pressed after the nozzle has been introduced into the nostril. About a quarter of an ounce of the powder should be used daily in this manner. The animal's head must be steadied.



Fig. 26.—AN IODOFORM DIFFUSER.

Fig. 27.—ANOTHER FORM (Allman).

In addition to the use of the foregoing the stable floor may be frequently sprinkled with Sanitas powder, while a course of Fowler's solution of arsenic will help to improve the constitution. This liquid can be given in tablespoonful doses, in the food or water, night and morning. For a pony a dessertspoonful will suffice twice daily.

If the discharge does not cease after a few weeks' trial of this treatment, it is fair to assume that its continuance is dependent upon other causes, such as we have already indicated.

Of course it would be simply waste of time to pursue the above treatment if there is a decayed tooth, injured or diseased bone, etc. Treat accordingly.

Ulceration of the nostril points to glanders, the existence, or suspected existence, of which require immediate notification to the nearest Local Authority.

Collections of matter within the air sinuses (spaces) require a veterinary operation known as "trephining," *i.e.*, removing a circular portion of bone, in order to allow the matter free exit, and at the same time to enable the closer application of remedial agents, and, in some instances, to facilitate the removal of a decayed tooth, or to assist the leverage of a depressed or diseased piece of bone. Tumours in the nostril may necessitate the operation. The sinuses commonly opened are known as the "frontal" and "superior maxillary." The instrument is known as a "trephine" (a circular saw), but as the performance of the operation requires skill and anatomical knowledge, it would be quite out of place to enter into details regarding the methods of operating.

When simpler treatment fails, the owner will do well to consult a veterinary surgeon as to the advisability of this operation.

Catheter, How to pass.—If a stallion or gelding, the operator stands on the left side of the animal's belly, and draws the penis out of its sheath. Previous to this the catheter must be cleansed in creolin lotion, and then

smearred with belladonna ointment from the point a few inches downward.

The penis is grasped firmly with the right hand, while the left introduces the point of the catheter into the opening of the organ. It is now allowed to glide slowly up the passage. No force must be employed. If an assistant is at hand he should guide the point of the instrument around the arch of the pelvic bone, because the catheter may not glide so easily around this bend.

It is quite easy to feel it passing along from without. As soon as the instrument has passed the curve, the stilette must be withdrawn, and the point allowed to slowly pass through the neck and into the bladder. The urine will now begin to flow out, samples of which it may be necessary to keep.

As soon as the bladder has been emptied, the catheter is slowly withdrawn.

When the organ is inflamed or irritable it can be washed out with barley water, to which a little laudanum has been added. Warm (tepid) water will do.

The catheter is introduced in the manner indicated, and the open end of a human enema syringe is applied against the mouth of the catheter, and then the liquid is pumped slowly in through the latter until about a quart has been introduced, or until—in case of requiring to wash the bladder only—the water comes out clear. If the liquid has to be retained the catheter must be withdrawn at once. For the mare a very short tube (catheter) is used, but the index finger will do quite well.

By introducing this along the floor of the passage a valve will be felt. Raise this gently with the finger (*see Paralysis, treatment of*).

Cataract.—INTRODUCTION.—The crystalline lens is a bi-convex elliptical transparent body, with a transparent covering, and is situated immediately behind the circular opening known as the "pupil." Hanging in front of this lens is a muscular curtain (the iris or diaphragm), the adjustment of which regulates the flow of light through the pupillary opening on to the crystalline lens, which directs the rays on to the inner layer (retina) of the eye, and this in turn transmits the impulse to the brain, by means of the nerves of sight (optic nerves).

The use of the crystalline lens is to assist in refracting the rays.

As its name implies, the lens in health is as clear as a crystal, but when affected with "cataract" it, or its covering, becomes opaque, the extent of the opacity depending upon the duration and cause of the disease. In this way its refracting powers are interfered with or completely destroyed.

To the layman it is of no importance to know whether the disease begins in the lens, its capsule (covering), or both; in fact, the writer is not aware that any veterinary surgeon could possibly make such a distinction, practically.

Causes.—A blow, such as that with the end of a whip, may cause a cataract. The same can be said of neglected inflammation of the eye.

A disease known as "periodic ophthalmia" or "moon-blindness" appears to have been a very common cause in days gone by.

One or both eyes may be affected, usually the former. The time occupied in the development of a cataract is important, such having been the cause of litigation. When cataract proceeds from old age, inflammation, etc., we believe that its formation is a slow process, probably ex-

tending over months, or it may be years; but we see no valid argument against the theory as to this being caused immediately after the reception of a blow upon the eyeball.

During good light some cataracts do not produce blindness.

The eye may appear healthy, and yet the animal be quite blind. Blindness may be congenital, *i.e.*, the animal is born in this condition.

How to detect Cataract.—Take the animal into a dark place, light a candle, and move the flame slowly before the eye or eyes.

Three images are reflected in a "healthy eye." Two of these images are "erect," and move in the same direction in which you move the candle.

The third image is small, turned upside down (inverted), and always moves in the opposite direction to the other two. Now, if the horse has a cataract the third candle image is "awanting."

Before making this examination it is an advantage to dilate (widen) the pupil through the application of a solution of atropine (4 grains to an ounce of water). A few drops may be allowed upon the eye. Another simple, but not reliable test, is to turn the horse's head away from strong light, and shade the eye with a black hat. White or other bright wearing apparel must be obscured.

Castration.—The months of April and May are usually selected as being the most suitable for the purpose. If the season is at all a cold one, it is better to defer it a little.

The age is commonly one or two years, but the operation is frequently performed upon stallions; in the same way it

would be applicable to the foal about the age of six months. However this may be, custom has established the fact that both these—especially the latter—are disadvantageous. Before operating, the scrotum (bag) should be felt in order to make sure that both testicles are “down.” The operation can be performed either with the animal standing up (*see* illustration, p. 116) or after having cast it (*see* Throwing Colt in Introductory).

With a little practice the first is the most expedient method, and perhaps a trifle safer as regards the animal.

If the colt is going to be thrown for the operation, it should not have food the evening before, while a small allowance of corn may be given with advantage a few weeks previous to castration.

A. CASTRATION IN THE STANDING POSITION.—The animal is placed in the position indicated in the illustration, viz., against a wall on the off-side, with another wall behind, so that the hind quarters can be kept against this. A rope is passed around the neck and fastened to a ring in the wall. An assistant holds the halter and twitch, while another presses the animal close against the wall. To prevent kicking, a cord should be hitched around the hind fetlocks, fastening at the neck.

The operator must stand on the near side of the animal, patting the quarter and inner side of the thighs before grasping the testicles with the left hand. The bag or scrotum is tensed (made tight). A rapid cut is now made through the scrotum into the body of each testicle (a cut of course for each testicle to escape through the scrotum), each cut being made from before backwards.

The dexterity required in making these incisions is the secret of the whole business. It certainly has a calamitous

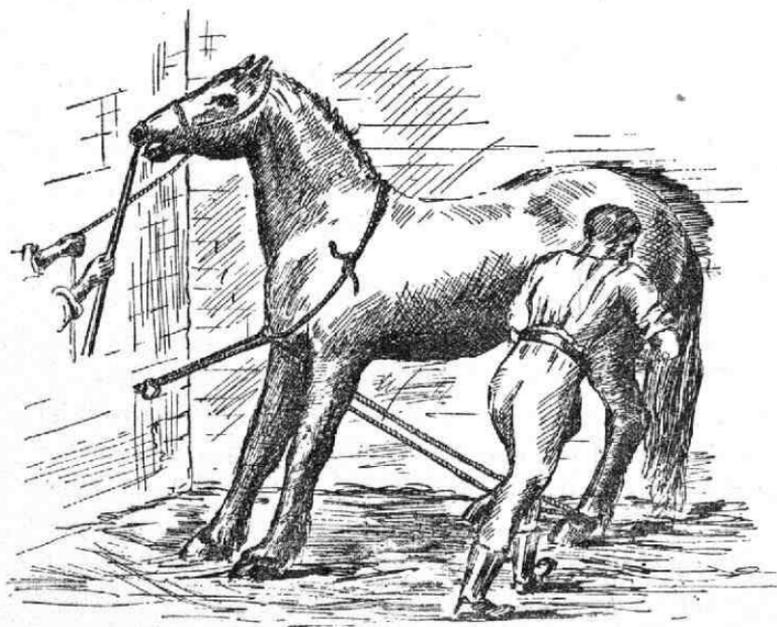


Fig. 28.—METHOD OF SECURING A COLT FOR CASTRATION IN THE
STANDING ATTITUDE.

effect upon the animal, in fact it is almost afraid to move after this. Some operators don't fasten the colt at all.

The testicles are now hanging outside the bag, so that a wooden clam is immediately fixed on the right cord, and screwed tightly upon it, and the testicle is cut off.

The left is treated in the same way. This completes the job. Various forms of clams are used, but it is an advantage for the clam to have a ridge upon one half, fitting into a corresponding groove on the other half, when the clam is closed. This ridge seems to exercise more severe pressure upon the cord than in the case of a smooth, broad surface. The so-called "caustic" clams are commonly used, as shown in the accompanying illustration. The groove is filled with corrosive sublimate paste, it being thought that this prevents any inflection, or if the testicles are not cut off it facilitates their sloughing, or is believed to do so. But it is a far better plan to remove the testicles then and there; in fact we suspect the operation is seldom done otherwise.

On the following day the clams are removed, and the divided ends of the cord are returned through the openings into the bag. If any of the parts are adhering, these must be quietly separated with the tip of the finger.

If the weather is warm and dry, it is a very good plan to turn the colt out for a few hours. This prevents a swelling to some extent. The animal must not be allowed to get wetted under any circumstances.

In the course of a few days we may anticipate all being pretty much as before the operation.

Instead of removing the testicles with a knife, many operators sever them by means of an instrument known as the "Ecraseur."

Our experience leads us to the conclusion that this plan

is neither so expeditious or satisfactory as the last. We have seen the two methods tried side by side—a fairly good operator using the ecraseur—certainly not so dexterous as the one with the knife—but, making due allowance for this, we believe it to be utterly impossible for any one to use the ecraseur to castrate an animal, no matter whether the animal is standing or recumbent, as speedily as with the knife and clams. The construction of the former instrument forbids rapidity.

Our judgment is entirely impartial; but, as a castrating instrument, we are bound to say that we regard the ecraseur as a very inferior one, whether used for horses or cattle.

CASTRATION IN THE RECUMBENT POSITION.—The animal, having been kept without food the previous evening, is cast upon a soft bed of litter, using the ropes for casting (*see* Introduction). The fore feet may or may not be included in the ropes, but it is safer to include one of these. The animal can be laid on its back or side, but we think the former gives more freedom to work.

The scrotum is grasped with the left hand, and an incision made lengthwise over the tensed skin covering the testicle, which then pops out of the aperture, the wound must be a little larger than the long axis of the testicle. Three inches will be sufficient. Instead of using the hand to “tense up” the testicle, some operators pass a steel clam around the scrotum before cutting through the skin of the latter.

Numerous veterinary surgeons sear the scrotum through with the firing iron, believing that there is less bleeding.

We believe this to be attended with more pain than the knife, and the bleeding caused by cutting with the castrating knife is a matter of no importance.

The removal of the testicles is performed in a variety of

ways, each one having its own advocates, extolling its superiority over other methods.

The most important of these are:—Removal by torsion; the hot iron; by the ecraseur; ligature; by clams, and by the "Reliance" castrator, etc., etc.

1. TORSION.—A very good and safe method. Is well recommended. Very simple, and moderately expeditious.

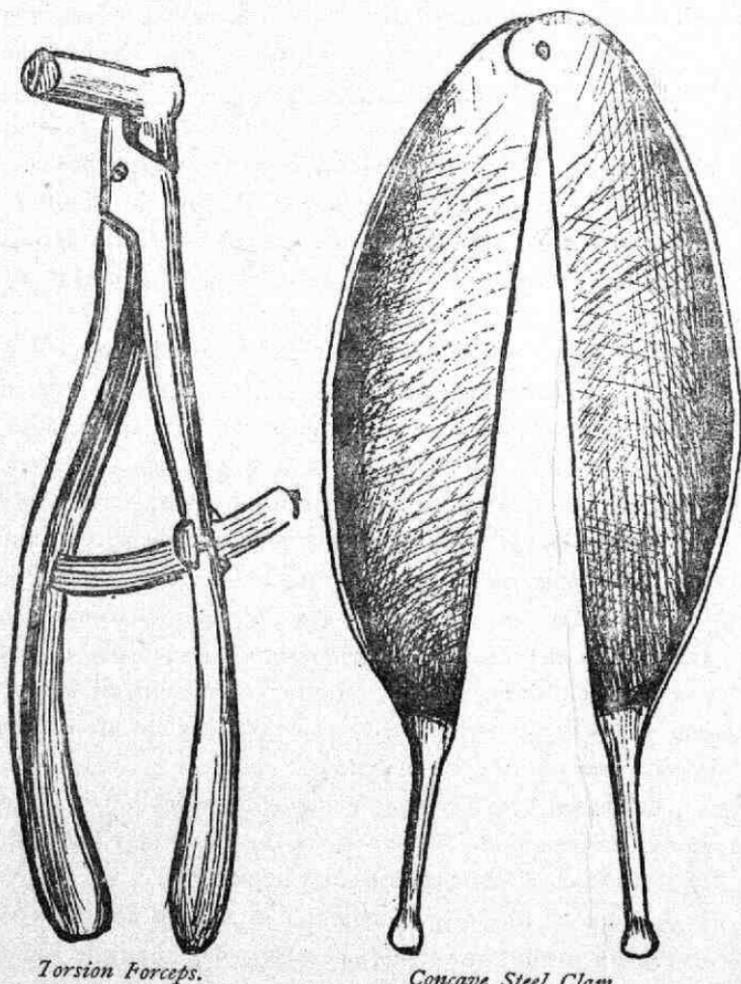
A smooth clam is usually passed around the scrotum, and the testicle tensed beneath the skin of the latter, which is cut with the knife (preferably), or with the hot iron.

This clam is taken off at once, the testicle now being outside the scrotum, and the cord is embraced with a flat steel clam, having serrated margins on its inner sides, capable of fastening by means of a sliding piece of steel. The testicle, or rather its cord, is firmly grasped by these clams, so that the operator must divide all that part of the cord appearing free from blood-vessels, as close as possible to the surface of the clam. This is done by running a sharp knife flat against the clam, but be sure not to cut any part containing blood. In other words, cut all excepting the blood-vessel, which is severed by means of the special forceps—torsion forceps.

As soon as these forceps are applied—which must be as closely as possible to the surface of the clam, they are made to grip the cord (artery) as tightly as possible.

Now cut off the testicle about an inch from the forceps, and begin turning the forceps slowly, using the right hand, while steadying the clams with the left.

Continue this twisting process until the artery (blood vessel) appears to be drawn out into the form of a delicate spiral filament—this being the barrier to bleeding. It may



Torsion Forceps.

Concave Steel Clam.

Fig. 29.—STEEL CASTRATING CLAM AND CASTRATING TORSION FORCEPS.

be necessary to re-apply the forceps a little closer to the clam after having taken a few twists. Repeat this operation on the companion testicle.

Take care to watch for evidence of bleeding from the divided end of the cord, before letting it slip back into the scrotum, but don't touch it with the fingers.

The only objections to this method are—that it is somewhat difficult to manipulate the forceps with the right hand only—in fact we have usually had to use both. This may be because we are not skilled in the use of this instrument; but it would appear as though jerking and irregular turns must result when only one hand is entirely used.

2. THE HOT IRON (*Actual Caутery*).—Probably one of the oldest plans, but still capable of holding its own against others of more recent invention.

The cord is severed with a hot firing iron. The bleeding is then "sealed" with the same iron, the cord not being allowed to escape from the steel clam until the operator has made sure that all is right. Relax the grip of the clam handle and you'll soon be able to tell whether you have completely sealed the blood-vessel; if not, touch with another hot iron.

3. THE ECRASEUR.—We have already alluded to this instrument when speaking of "castration" in the standing attitude.

In our opinion it is even slower than torsion.

It is a useful instrument for certain purposes (removal of tumours, etc.); but for castration under all ordinary circumstances, it appeals to us as being very inferior to other methods. A simple form of ecraseur consists of a steel chain or wire working on a rackwork adjustment. We have used the ecraseur for this purpose, and been compelled

to throw it on one side, finishing the job with the hot iron. Perhaps this was for want of skilful manipulation; but its principle of adjustment and cutting (tearing) militates against celerity of action. Bleeding is often severe. However, many operators use it, so that it is fair to assume that it gives them good results.

4. BY LIGATURE.—This way is but rarely used for the horse. It is an old-fashioned method, not giving good results. Practically speaking, it must be strongly condemned. The cord is tied by means of a piece of silk thread or carbolised catgut, and the testicle cut off or allowed to slough away.

5. THE CLAMS.—A simple method applicable in both standing and lying positions.

The scrotum is cut through with the knife.

If the clams contain a groove filled with mercury, etc., it is spoken of as castration by means of "caustic clams." We believe these latter to be quite useless; certainly no possible good can result through the use of the caustic.

If the clam has a central ridge on the one half and a corresponding groove on the other, there is no necessity for the use of caustic. The pressure from the clam soon destroys the vitality of the structures and excites adhesion, thus preventing bleeding.

Good and useful clams can be made by almost anyone.

Instead of fastening with a screw as shown in the drawing, a notch may be cut near each end, and fastened together with string after being placed on each testicle cord.

As soon as the clam is fixed on the cord the testicle must be cut off close against the clam.



Open Clam.



Clam Closed.



Flat Steel Clam.

Fig. 30.—WOODEN AND FLAT STEEL CLAMS,

Some operators allow the testicles to slough off. We fail to see the advantage of this if the clams have been fastened well against the cord, otherwise bleeding is the result.

Remove the clams in from 36 to 48 hours, taking care to notice that the cord slides back into the scrotum, otherwise bad results will likely happen. If any parts are adhering, break these down with the finger. The opening must not be allowed to close before the cord is returned to the scrotum. Green food should be allowed after castration, when possible.

Instruments of recent introduction, known as the Reliance and Huish Blake, appears to afford an easy means of castrating animals.

The various methods having been discussed, it now remains for us to mention one or two other matters in connection with castration.

Swelling of the Scrotum after Castration.

A certain amount of swelling always follows the operation. It is a good sign. The same applies to the discharge of a little healthy pus, but it is quite as well without the latter.

Sometimes the swelling extends to the breast, which looks formidable, more so than it really may be. A puncture or two will usually drain away the liquid causing the swelling.

If there has been much bleeding during the operation, and the scrotum has been plugged with tow, this latter must be removed within 24 hours.

The hands must be very clean before doing this ; in fact they should be washed in creolin lotion, or Jeyes' fluid, in solution.

Evil Results of Castration.

The most important of these are :—

Scirrhus, or thickened cord.

Lockjaw.

Mortification of the scrotum.

Septic Peritonitis.

Rupture.

Hæmorrhage, or after-bleeding.

In comparison with the number of animals castrated every year the percentage of deaths is small. In casting animals accidents occasionally happen — an advantage claimed for the standing operation.

It is a very good plan to insure a colt or stallion (when it is proposed to geld the latter) against castration risk.

Rigs.

When the horse has only one testicle down in the scrotum it is known as a "Monorchid." If both are absent from here as a "Cryptorchid."

Horses having apparently only one testicle are capable of stock getting.

Sometimes the testicles have not appeared in the scrotum until the animal has arrived at three years.

However, a colt may be considered a "rig" if both testicles are not "down" by the time the animal arrives at the age of a couple of years.

It is often thought that a colt, whose sire has been a rig, is liable to inherit the same tendency (hereditary cryptorchidism).

If the testicles remain in the belly any length of time, the animal becomes sterile, but when one is in the scrotum, as previously stated, reproduction can take place.

Retained testicles gradually degenerate.

Many rigs are very difficult to manage, particularly in the spring of the year.

When a colt is being castrated, the owner should always see that both testicles are removed, because instances have been recorded in which only one testicle has been taken away, and yet the owner supposes both have been removed. In this way one may wonder why the animal continues to be so vicious and unmanageable at times.

Although both scars may be found on the scrotum, this does not afford positive evidence of the removal of both testicles. In most cases the castration of a "rig" will repay the owner, as far as the removal of vice, etc., goes.

The Miles' operation has not yet been surpassed, and is usually successful. A skilful veterinary surgeon is required to perform it, some of which make a speciality of rig castration.

Charbon.—(See Anthrax.)

Choking.—This is nothing like so frequent as in cattle, chiefly on account of the different nature of the food supplied to these animals. The pharynx may be the seat of obstruction, but it is usually in the gullet.

A piece of carrot, potato, or an accumulation of hay are the chief obstructing agents, more rarely an egg.

Symptoms.—If the hand is passed over the course of the gullet, it may be that the obstruction will be detected. In a complete stoppage of the gullet attempts to swallow liquid are followed by the discharge of the latter through the nose. Arching of the neck and difficult breathing have been noted.

Treatment.—Unless the urgency of the symptoms demands operative interference, it is advisable not to interfere too hastily.

The back part of the mouth should be thoroughly explored with the hand, keeping hold of the tongue with the left hand meanwhile.

If a balling gag is at hand, this will facilitate the examination.

Failing relief within reasonable time, professional aid should be obtained.

Chorea, or St. Vitus' Dance.—Horses affected with this disease are commonly known as "shiverers," and it is a very frequent complaint, rendering the animal "unsound." It is often difficult to detect, owing to the uncertainty as to the time when it may be observed.

Some horses are marked shiverers, and the disease can almost be seen at any time, whereas others may escape showing it for weeks or even months. This is where the difficulty comes in, and many a horse having chorea is sold and passed as sound. The obscurity of the malady, in some cases at least, necessarily covers an error of judgment.

Various methods are adopted for the purpose of bringing to light this slumbering defect, though these do not always fail to attain the object.

By backing the animal, or turning it sharply around, a

"quivering" or elevated position of the tail will probably be noted.

A very good place to see this is in the stable, also at the forge. Again, it is often seen immediately after drinking, especially if at a pond.

The foregoing and other plans are employed for the detection of a shiverer, but it often requires an extended time before one may be sure of the animal having the complaint.

In every case the horse should be kept as much at his work as convenient, at the same time well under observation, bearing in mind that the muscles in the regions of the shoulder, thighs, and tail, are the usual places to see the spasmodic twitching.

Cleansing, Removal of.—(See Birth, Premature.)

Cold.—(See Catarrh.)

Collar-Galls.—(See Erythema.)

Colic, or Belly-Ache.—This complaint is the commonest of all equine maladies, and it receives various names, such as "gripes," "fret," "gravel," "bats," etc.

It is a disorder depending upon many causes, attended by pain, the latter often very acute.

In some cases the pain is of a suppressed character, lasting several days. In these instances it will usually be found that the bowels are constipated, the pain disappearing when this condition has been relieved. Perhaps just before the attack the animal was apparently all right in its bowels, the dung being as usual.

Amongst a variety of causes operative in the production of colic, mention must be made of:—Defective grinding action of the molar teeth—very common in old horses; the prolonged use of dry and indigestible food; excess of green food; boiled food (in excess); drinking too much cold water when the body is overheated through work, etc.; concretions in the bowels—the wanderings of which are a fairly frequent cause of recurrent attacks of belly-ache; worms; severe purgation, as may happen through an excessive dose of aloes, etc.; lead poisoning; strangulation of a ruptured part; urinary disorders, etc.

Symptoms.—As a rule the pain in the belly comes on quite suddenly. If not well marked at the outset, the animal will be noticed looking towards its flanks, and it may be lying down. When the pain is sharp it paws the ground, rising and lying alternately, rolling on its back when down, perhaps groaning from the pain.

If in a loose-box the animal walks round and round it, no position apparently affording it any degree of ease.

If of the *flatulent*, *hoven*, or *tympanitic* form, the sides of the belly may bulge, and give a drum-like sound when struck, though this is a sign indicative of the gravest importance, and demands speedy relief, otherwise death is almost a certainty.

On the other hand many horses have an attack of colic, even severe for the duration of the complaint, yet soon get over it without any treatment.

The surface temperature is unequally distributed, though the pulse may not be much altered.

Cold sweating is a bad sign, and may be indicative of an internal injury or inflammation, in which case the pulse will be quick, very small, and weak.

In most—though not in all—cases of colic, there are intervals of ease, whereas—unless under the influence of narcotic drugs—internal lesions are indicated by continued pain.

The amateur, with care, ought to be able to read signs of impending dissolution, which are: Anxious and pinched facial expression, cold sweats, threadypulse, continued pain—disappearing with internal mortification—and general lowering of all the vital functions.

Treatment.—Before resorting to the use of medicinal agents, it is of prime importance to consider the causation. Having done so, select such drugs as are specially suitable to the case.

Colic arising from superpurgation should be treated by feeding on dry bran, wheaten flour, gruel, etc., along with the internal administration of six drachm doses of chlorodyne (B.P.) every eight hours in half a pint of cold arrow-root or starch gruel.

Colic produced by drinking too much cold water when overheated may be treated by giving the following draught:—

R̄. Sulphuric Æther, - - - -	2 ounces.
Tincture of Belladonna, - - -	1 ounce.
Chlorodyne (B.P.), - - - -	$\frac{1}{2}$ ounce.
Tincture of Ginger, - - - -	3 drachms.
Water added to make - - - -	1 pint.

Mix, and give the whole just as it is, repeating in two hours' time if the pain has not abated.

Colic, accompanied by distension of the belly with gas (hoven, blown, etc.), as previously stated, needs very ener-

getic measures to relieve the internal gaseous tension
Administer the draught below :—

. Terebene, - - - - -	1 ounce.
Linseed Oil, - - - - -	5 ounces.
And mix with :—	
Sal Volatile, - - - - -	2 ounces.
Powdered Barbadoes Aloes, - -	6 drachms.
Linseed Oil, - - - - -	20 ounces.

Mix. Give the whole to a medium-sized horse, and two-thirds to a cob or pony.

If the animal's life is in immediate danger, it is advisable to puncture the bowel, a long and slender trocar and cannula being used specially for the horse. The accompanying illustration will give the reader a better idea of what the instrument is like.

The place to puncture the bowel is that part which emits the most drum-like sound when struck with the hand, frequently on the left side.

The instrument is taken in the right hand, the skin drawn a little forwards, and the point thrust steadily into the bowel to the depth of four or five inches, the stilette now being withdrawn, whilst the cannula is kept in position with the left hand.

It is a wise precautionary measure to clip off the hair round the seat of puncture, and wash the skin here with some disinfectant (antiseptic) solution, such as creolin, carbolic acid, chinosol, Sanitas, Izal, Condy's fluid, etc.

The cannula should not be removed until all the gas has been extracted, and until such time as there is no likelihood of the condition recurring.

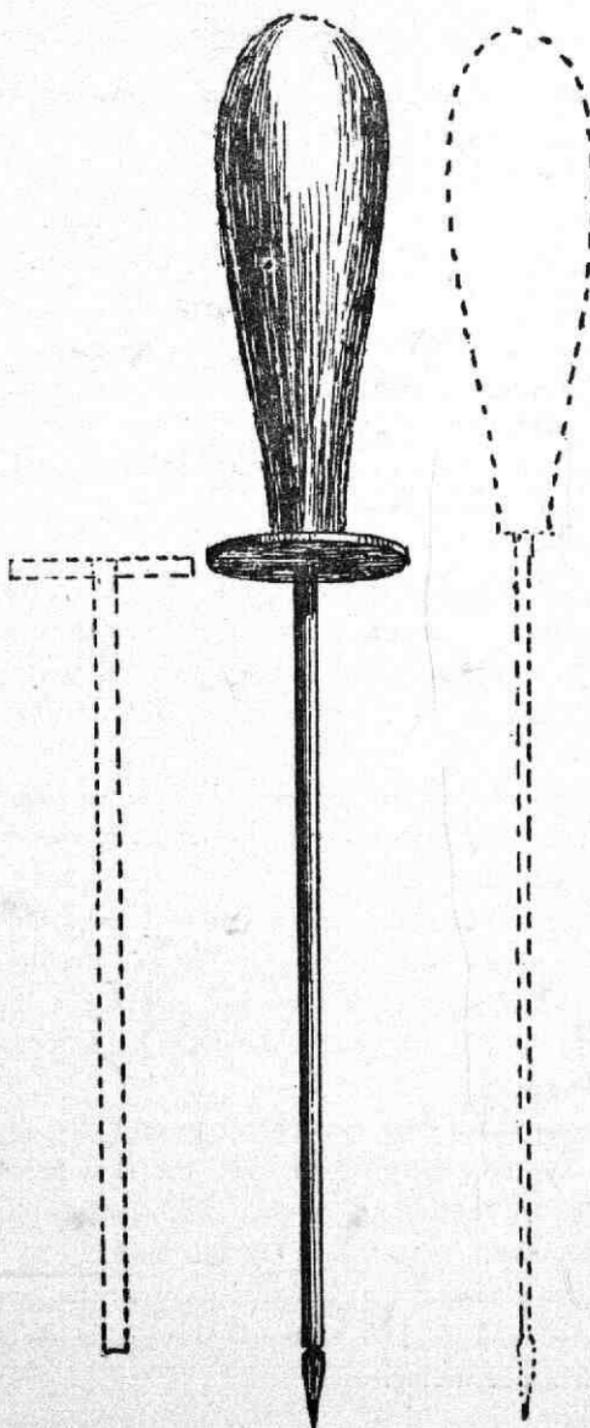


Fig. 31.—TROCAR AND CANNULA FOR PUNCTURING HORSE SUFFERING FROM FLATULENT COLIC (*Acute Tympanites*).
1, Trocar and Cannula; 2, Trocar, from which 3, the Cannula has been removed.

Colic from constipation and indigestion should be treated by a full dose of physic. For a cart-horse give an eight-drachm aloes ball. Cobs and ponies will require five or six drachms of aloes. A warm water clyster will help matters. The teeth should be carefully examined.

Colic as a symptom of lead poisoning requires special treatment.

Exercise is of service in some cases of colic, but if the pain is very severe, it is better to give the horse a loose-box and a deep straw, moss litter, or sawdust bed.

Fasten on a rug, and, if needful, rub the belly with straw. As a rule, during an attack of colic, the horse is unable to pass his water (urinate); but this need cause no alarm, as abatement of spasms is followed by the free flow of urine.

In the so-called "stomach staggers" (acute indigestion), physic should be given, and warm soft food, such as linseed, bran, hashed corn, etc. No straw or hay for several days.

Concretions.—These are abnormal accumulations in either the stomach or bowels.

They vary in shape, size, and external appearances, being either rough or smooth, round or angular. The larger ones are even less likely to cause disturbance than the small concretions, the peristaltic movements of the bowels enabling the latter to wander more freely. As stated under the heading of "colic," they are an occasional cause of this complaint.

Our illustration represents a few forms of concretions drawn from specimens in a museum.

Consumption.—(See Tuberculosis.)

Contracted Feet.—(See Feet, Contracted.)

Contracted Tendons.—(See Tendons, Contracted.)

Constipation.—The prolonged use of dry food, or fodder of an astringent (binding) nature, defective grinding power of the molar teeth, and a torpid liver, are amongst other causes of a confined condition of the bowels, thus predisposing the animal to an attack of colic.

Want of work is also a predisposing factor.

Treatment accordingly.

Cord, Scirrhus.—It is not often that the cords of the testicles (spermatic cord) become the seat of an inflammation apart from castration, but after this operation has been performed, scirrhus (hardening) cord is not in the least degree uncommon.

It is one of the unfathomable and, we suppose, unavoidable results of castration, though not the most serious. Either the right or the left cord may be affected—occasionally both. Sometimes the stump of the cord is the size of a football, but we believe it is oftener like the shape of a boy's arm, and of similar thickness.

In many instances it is due to the entrance of a parasite known as the "ray-fungus" (see Actinomycosis).

Symptoms.—The swelling and discharge after castration commonly continue longer than naturally, or a fistulous opening may remain for some time. It is needless to say that it is an unsoundness. Later on the scrotum increases in size, and the animal appears stiff in the groin.

Treatment.—Removal of the diseased part by a veterinary surgeon.

Unless the disease is very extensive the operation will effect a complete cure.

Corns.—A corn is a bruise upon the sole and tissues below, usually situated upon the inner quarter of the fore feet, and in rare instances upon the hind feet. It constitutes unsoundness, hence the necessity of having the fore-feet shoes removed, and the feet pared before concluding to purchase a horse.

There is a difference in the appearances presented by an old-standing corn and a recent one.

The former is yellowish black or brown, whereas the latter appears as a red spot.

Lameness is frequent, especially in suppurating corn. In all cases of obscure lameness we advise the owner to go personally to the forge and see the fore feet pared with a view to disclosing a bruise, *i.e.*, a corn.

Treatment and Management.—Remove the shoe or shoes, and have the pressure taken off the corn.

The horse can now be shod with a leather sole or pneumatic pad. Suppurating corn requires antiseptic treatment and poultices. Dress the part with iodoform powder, and then put on a hot bran and linseed poultice.

Cough, Chronic.—(*See* Bronchitis, Chronic.)

Crib-biting.—This is a very disagreeable vice, and often accompanied by wind-sucking. Prolonged crib-biting causes the front edges of the incisor teeth to wear away.

Wooden fittings are often eaten away, but we have found

smearing the part with bitter aloes an excellent means of checking this.

Idleness is a predisposing cause of crib-biting.

Iron fittings, collapsible mangers, and the muzzle are all used as preventatives ; others feed off the floor with the same object in view.

Various devices are employed, so that we should advise the reader to consult the catalogues of those firms who deal in stable fittings.

Curb.—This is a common disease, denoted by the appearance of a small swelling about three inches below the point of the hock, and in the same straight line with the latter. Lameness may or may not be present, this depending upon circumstances.

Any variety of horse, age or size, are liable to curb, but two predisposing conditions are :—

A. Defective hock conformation.

B. Youth.

A. This defect is marked by "narrowness" at the head of the shank bone, constituting the so-called "tied-in" hock, likewise over-bent hocks, the legs being brought too far under the belly, thus increasing the leverage at the point of the heel (hock).

It is usual to speak of this class of hock as being "sickle-shaped."

B. It is a well-known fact that the young are particularly liable to contract certain forms of disease, but curb is an "accident" to which colts and fillies are specially likely to develop whilst at play in grass parks, etc., or if put to work too soon, or to work on uneven ground with even moderate draught.

The chief exciting causes of curb are—slipping on the haunches, jumping, backing, especially with a heavy load; external violence in the form of a kick, etc., and extension of inflammatory processes from adjacent parts. The best method of detecting curb is to look at the seat of curb in profile.

Viewed in this way, very slight curbs will readily be seen. During the time a curb is forming there will be an abnormal degree of heat in the part, some swelling, and usually lameness. It is about one month as a rule before the active stage passes away, leaving the curb as a legacy.

Curb constitutes unsoundness, and the purchase of an animal having this, or hocks of conformation predisposing them to it, ought to be followed by a reduction in the price, say from £5 to £10.

Treatment.—In the early stage cooling applications are indicated.

Cold water, or a lotion of saltpetre and sal ammoniac, $2\frac{1}{2}$ ounces of each to every quart of cold water, will suit most cases.

Tight bandaging will do good.

After a week or so, rub the part with iodine ointment for ten minutes once a day.

Rest, of course, is necessary.

If the curb is a large one, it can subsequently be fired, which will “reduce” it.

Cuts.—(See Wounds.)

D.

Delirium.—Delirium in the horse is occasionally manifested during an attack of certain specific diseases, injuries to the skull, and acute digestive derangement—stomach staggers. This condition is indicated by wild and blood-shot eyes, sweating, and general violent behaviour. The animal may be unapproachable on this account.

Diabetes.—This disorder is indicated by two prominent symptoms, viz., excessive urination and thirst, whilst the appetite is markedly depraved.

It is a frequent complaint, often attacking the whole of the horses in a stable—not that it is infective, but the outcome of feeding upon some damaged fodder.

Many horsekeepers and farmers are in the habit of giving once a week or so small doses of saltpetre, or it may be diuretic balls. This is a practice absolutely pernicious, keeping the animals back in condition, and causing injury to the kidneys.

Heated grain or hay, and musty fodder, are the principal causes of diabetes in the horse, the urine of which in this simple form is pale and free from sugar.

It is essentially the outcome of malassimilation.

Symptoms.—In addition to those already alluded to, there is a gradual wasting of flesh, paleness of the mucous

membranes of the eyes and mouth, with combined general weakness.

Treatment.—This is two-fold, viz.—(a) Preventative and (b) Curative. The former consists of withholding all damaged forage, and the latter in the administration of iodine, either as the element or in the form of its salts.

The iodine should be given in the form of balls, half a drachm being put into each ball. The balls should be made up with a little soft soap and half an ounce of powdered cascarilla bark. Give one night and morning, a few hours after feeding. These balls can be obtained from the chemist. Sixty-grain doses of iodide of potash, along with 6 drachms of Fowler's solution of arsenic, night and morning, is an alternative treatment.

As to food, give little in the way of fluids, but bran, corn (bruised), and linseed mashes, to which some extract of malt has been added—if this latter can be conveniently obtained—will be suitable.

Diarrhœa and Scour.—This is very often but a sign of some other mischief, and can only be successfully combated when an effort is made to find the cause.

If the food is suddenly changed—for instance, when an animal is first turned out to graze after indoor feeding, diarrhœa often starts. Exposure to cold, an overdose of physic, and the shedding of the temporary molars, are frequent causes.

Many colts suffer from severe diarrhœa, and it is very necessary to pay particular attention to the dung in order to ascertain whether there are any small red worms in it, which constitute a frequent cause. This parasite is known

as the four-spined strongyle, and its habits are those of a true blood-sucker. In colour it is bright red, and passes the larval phase of its existence underneath the mucous membrane of the large bowel, *i.e.*, the cæcum and colon.

Necessarily this is a very injurious situation to the host, more especially because the parasites are liable to perforate the wall of the gut.

Very often they exist in large numbers, though of course they are much less harmful when free in the bowel.

Gradual wasting and diarrhœa in a colt or filly should lead us to look for these parasites in the ejecta.

Treatment.—If the worms previously alluded to are the cause, a tonic treatment is the best until the animals get sufficient strength to be treated with proper anti-worm medicine.

To each colt give 1 drachm of powdered sulphate of iron and 2 drachms of powdered calumba root night and morning in food.

Give the very best of food, and plenty of it. Linseed and carrots are excellent for such purposes.

When the colts are strong again, treat for worms by giving 10 grains of thymol, mixed with 1 ounce of spirit of wine, 2 drachms of Barbadoes aloes, and 1 pint of infusion of linseed (linseed tea). Repeat once a week.

When diarrhœa comes on during an attack of influenza it is not *always* advisable to check it, as much effete material is by this channel got out of the system (*see* Influenza).

Diarrhœa from a chill is best treated by a careful system of dietary, warm clothing, and a dry lodging, along with the daily administration of the following draught:—

R̄. Spirits of Camphor, -	-	-	6 drachms.
Laudanum, -	-	-	1 ounce.
Aromatic Powder, -	-	-	$\frac{1}{2}$ an ounce.
Peppermint Water, -	-	-	$\frac{1}{2}$ a pint.

Mix, and give in the same quantity of starch gruel.

When the teeth are the cause, the only thing that can be done is to feed on soft dry food, strictly avoiding straw and hay.

Starch and wheaten flour make excellent gruels, and are of service in most cases of diarrhœa.

Scour.

Many foals suffer from diarrhœa or scour, and numbers die annually through it.

The colour of the excretions varies, but frequently they resemble the yolk of egg.

One cause of scour in the foal is that of taking the mare to work and allowing her to get over-heated, which together with, it may be, a long fast for the foal, is followed by the latter drinking in excess, and of milk altered in its constitution through the preceding conditions.

If the mare is not kept away more than a couple of hours at any one time, this is not likely to happen.

Whatever be the cause, it is safe to give a dose of laxative medicine to start with.

Four tablespoonfuls of castor oil and $1\frac{1}{2}$ drachms of chlorodyne is suitable for such purposes.

If the foal is weak, administer four tablespoonfuls of brandy, beaten up with four eggs, say every three hours.

To check the scour, use the following powders as directed below :—

℞. Carbonate of Bismuth,	- - -	1 ounce.
Light Carbonate of Magnesia,	- - -	1½ ounces.
Grey Powder,	- - -	1 ounce.

Mix and divide into 1 dozen powders, giving one powder every eight hours, placed in its dry state on the back of the tongue.

In addition to the foregoing lines of treatment, it is advisable to give the dam a dose of laxative medicine, such as half a pint of linseed and one and a half ounces of bicarbonate of potash, dissolved in a cupful of warm water and then added to the oil, shaking together.

Distemper.—(See Influenza.)

Dislocation or Luxation of the Knee-Cap or Patella.—INTRODUCTORY.—The stifle-joint of the horse corresponds to the knee-joint of man, and like this, three bones enter into its formation. These bones are called the femur or thigh, the tibia or shank, and the patella or knee-cap, the latter occupying the front of the joint. The articulating surfaces of the bones are covered by cartilage or gristle, lubricated by the joint fluid, and maintained in their correct position by means of ligaments belonging to the joint, which in reality is a double one.

The accompanying illustration is drawn from a dissection.

From this the reader will observe that the knee-cap acts as a lever of the stifle-joint, so that if any of the muscles or ligaments, inserted into the knee-pan, be either strained or even ruptured, the movements executed by the joint, viz.,



Fig. 33.—STIFLE (KNEE-JOINT IN MAN) JOINT OF THE OFF HIND LEG.

1, Lower end of shaft of Thigh Bone (femur); 2, Shin Bone; 3, Knee-Cap (patella); 4, Inner Articulating Lip of the Thigh Bone; 5, Internal Lateral Ligament of Patella, said to be one cause, when relaxed, of slipped Stifle; 6, 7, and 8, Three Straight Patellar Ligaments; 9, Inner Thigh Ligament; 10, Inner Articulating Face of Thigh Bone, resting on the Anti-Concussive Pad, 11, which, in its turn, rests upon, and is attached to, the upper head of the Shin Bone.

flexion and extension, will be interfered with. It will be seen that the knee-cap glides up and down on the front of the joint, and it is kept in its proper position by various muscles and ligaments.

It is frequently stated that dislocations of the knee-pan are due to rupture or sprain of the inner ligament, passing between the sides of the knee-cap and inner lower end of the thigh bone (condyles of femur). This is true enough so far, but be it known that it is by no means the only cause.

Any injury, such as may occur through over-exertion, or a paralysis, to one or more of the four muscles (crural muscles) attached to the upper part of the patella (knee-cap), may allow displacement of the bone. The chief action of these muscles is to extend the leg, hence it is quite easy to understand why the animal is unable to bring the leg forwards. Probably dislocation of the knee-cap, through this cause, is most frequent in aged or old horses, in which animals the muscles have become soft and relaxed, thereby enfeebling their restraining power, so that, with the slightest provocation, the bone slips out of its place.

Again, fracture of the thigh, hip-bone, or knee-cap itself may allow the bone to slip out of its place.

Peculiarity in the conformation of the stifle-joint appears to be favourable towards its production, as evidenced by its frequent occurrence in Belgian stallions.

Colts and fillies grazing upon hilly lands, especially such as are somewhat slack in physique, are very liable to slipped knee-cap. It is in this latter class of animal that we may expect the most good to result from treatment, which must, primarily, consist of the removal of the animal from the hilly pasturage to one fairly level. But it is better to

house the colt, and have a shoe put on with a good toe-piece. The slipped bone is easily returned into its correct articulating grooves by fastening a cord around the fetlock, drawing the limb forwards, while, at the same time, the hand is pressed firmly upon the bone (knee-cap), the pressure being exercised from within to without, when the bone will be heard returning into its place. Having done so, keep the limb "extended" by fastening the rope (previously hitched around the fetlock) around the neck. Blister the stifle-joint and keep the animal quiet for two or three months, so as to give time for repair or invigoration to the relaxed joint.

Very little good need be anticipated from the treatment of old horses. Fractures require special measures (*see* Fractures).

Predisposition, in connection with stifle-conformation, can to some extent be modified through the use of a toe-piece.

It is important to remember that "stifle-bone slip" may occur without any previous warning, so that an animal might, at the time of sale, be quite "sound," yet, in going to its new home, become "unsound." The author is of opinion that the purchaser can have no redress under these circumstances, neither could the slightest blame be attached to any veterinary surgeon for having passed such an animal as sound, unless it could be proved that the veterinarian had not exercised ordinary skill in the execution of his duty.

Diuresis.—(*See* Diabetes.)

Docking.—The objections to this practice, in the minds of some persons, are very strong, and based upon the

assumption of unnecessary pain—cruelty; therefore we find that the operation is, in England at least, tabulated as a criminal offence. The horses in the English Army are not docked. It is well enough known that a horse, having an uncut tail, has the advantage of being able to use it against flies, etc., while out grazing in summer.

It is equally true that docking does, to a very great extent, improve the appearances of hacks, cobs, hunters, etc.

The simple method of removing the long hairs close to the tip of the tail is deemed all that we are warranted in doing. There is little doubt as to the fact of docking being largely carried on in all parts of the country, while the prosecutions by the R.S.P.C.A. for the performance of this operation must surely be very few as compared with the number of horses docked yearly. While the author regards docking as a decided improvement to some animals, he believes that few, if any, men could justly proclaim it as being indispensable or even necessary. This does not of course imply the mere removal of hair from the tail. The author considers that the docking and castration of colts simultaneously is a dangerous and cruel operation, and no matter whoever performs such, whether he be veterinarian or not, ought to receive severe condemnation and punishment.

The docking of a horse should be carried out in the most expeditious manner by those who are determined upon carrying it out. Many Horse Societies now forbid it.

The hind limbs should be "shackled" around the neck by means of a short stout rope, a very sharp docking knife used, and a single cut should sever the "dock." Bleeding can be stopped with "searing iron," or by previously tying with string. It must be understood that the usual plan is to

place the horse against the partition of a stall after having fastened the hair of the tail back. Standing on the opposite side of a closed gate is resorted to by some people, thereby lessening the danger of personal injury. Before loosing your hold of the tail, see that the bleeding has stopped, and always remember that it is a very dangerous practice to touch it again for this latter purpose, because the animal is exceedingly liable to kick on anticipation of further pain being inflicted.

In the course of a few days the end of the tail may be examined, using the usual self-precautions.

Dropsy.—By this we mean the outpouring of liquid material from the blood into the tissues, or within a closed cavity. The liquid varies somewhat in colour and chemical composition, according to the nature of the disease from which it has arisen. In the horse a common situation to find dropsical accumulation is beneath the skin, but in such diseases as pleurisy and inflammation of the belly lining we frequently find it in the chest and abdomen respectively.

Dropsy of the Belly.—The accumulation of fluid within the cavity of the belly (abdominal cavity) is not of common occurrence in the horse.

Mares having done a great deal of foal-bearing appear rather prone to suffer from this condition.

The amount of liquid within the cavity of the belly is sometimes enormous, and of a straw or greenish yellow colour.

The causes of this symptom, dropsy, are various, but the chief ones are :—Diseases of the heart, liver, or kidneys ;

inflammation in connection with bowels, and obstructions in general to the veins, causing an impediment to flow of blood.

Symptoms.—These come on gradually. When any of the organs mentioned are the causes, then it follows that we may expect to have heart, liver, kidney or bowel symptoms, and in accordance with the intensity and nature of the disease.

Perhaps such may be of slow development, and in this way the primary disease may be overlooked, until a time comes when the belly becomes pendulous, and a joggling of liquid be heard when the abdomen is manipulated.

In addition to this there will, very likely, be dropsical (watery) swellings in connection with the limbs and breast.

Treatment.—This must be directed, if possible, towards the disease upon which the dropsy depends.

When the liver is thought to be enlarged (though wasted), or at fault, then act upon this with a mild purgative, such as aloes and calomel, say four or five drachms of the former to half a drachm of the latter, in the form of a ball. Repeat occasionally. Kidney and heart affections must be treated accordingly (*see* these). Dropsy from any cause, either in adult horses or colts, will to some extent be benefited by the use of the powders as below :

℞. Powdered Iodide of Potash, - - -	1½ ounces.
Powdered Foxglove, - - -	4 drachms.
Powdered Calumba, - - -	6½ ounces.

Mix, and divide into 1 dozen powders.

Directions.—One powder night and morning given in the food.

If the fluid accumulates to any great extent inside the

abdomen it will be necessary to tap the abdomen, so as to allow the dropsical liquid to escape, although the benefit may not be permanent—indeed, as a rule it is not.

The belly is punctured a little (about half an inch) behind the naval scar, and a small surgical instrument—known as a trocar and cannula—is used for this purpose. The skin must be drawn a little to one side, so that the puncture made by the stilette will be covered by the skin when the cannula is withdrawn, which it is at the end of the operation. It is better not to remove all the liquid at once. The operation can be repeated when it becomes urgent to do so.

General Management.—Give good food and moderate exercise. Keep the bowels in a soft condition. Allow green forage.

Dropsy of the Chest.—(See Pleurisy.)

Dropsy of the Heart-Bag.—This does occur at times. The amateur cannot tell the condition during life. It may be the result of a wound, such as a shaft produces through penetrating into the chest, thereby setting up inflammation of the heart-bag (pericardium), directly or indirectly, in this latter instance, following upon pleurisy.

In the rheumatic form of influenza it is not uncommon. From one to several gallons of liquid may be discovered in the heart-bag after death, while the fluid will be either opaque or greenish yellow, and offensive, with perhaps flakes of white material (lymph) floating in it and adhering to the heart, the bag being thickened through a similar cause.

Dropsy of the Skin.—Very commonly the appearance of watery swellings about the skin is but the external manifestation of disease within the body, in fact such indications are very common amongst animals labouring under heart, liver, and kidney complaints. In diabetes such swellings may come on, disappearing with the subsidence of this disorder. Again, we commonly find extensive dropsical swellings about the body when a colt has been passing through a severe attack of strangles, more especially if the animal has been somewhat neglected.

Although these dropsical swellings are usually indicative of internal disease or disorder, it must be understood that the "so-called" "serous abscess" is but an accumulation of fluid beneath the skin, the result of an external injury.

The treatment is unimportant, unless in serous abscess, in which it is necessary to make a cut through the skin, at the most dependent part of the swelling. Subsequently wash the cavity out with a little Jeyes' fluid and water, then insert a piece of tow to prevent the wound healing up too quickly. Sometimes large quantities of blood-stained dropsical fluid are removed from beneath the skin in this way.

Dyspepsia.—(*See* Indigestion and Colic.)

Dysentery.—This is a disease affecting in particular the lower end of the bowel. It is denoted by the presence of blood in the watery fæces, and, unless speedily checked, ends fatally. The disease is of a specific nature, but linked with defective sanitary arrangements. Both adult and young animals are liable to suffer from it, and once it does

become established it is a most difficult complaint to battle with, so that skilled aid is advisable. Failing this, give from one to three drachms of Dover's powder night and morning in a pint of starch gruel. Chlorodyne given in water or gruel in six-drachm doses sometimes does good. Injections of laudanum and starch are useful. For this purpose add two ounces of the former to a quart of the latter, and inject night and morning. The animal must be kept in a clean and dry place, and the body well clothed.



E.

Eczema is a tolerably common complaint amongst horses. It is an inflammation involving the superficial, and, perhaps, the deeper layers of the skin.

The disease is characterised by an eruption over various parts of the neck, trunk, and quarters. The congestion of the skin is succeeded by small elevations, which ultimately become little blisters (vesicles), and in due course these burst, giving the skin a moist appearance. When the discharge dries it forms scabs or crusts, the removal of which may show a small amount of matter material.

The vesicle stage is somewhat difficult to see in the horse, on account of the long hair, but with care it can be made out. According to the part attacked, it is usual to speak of eczema in terms agreeing with such. For instance, we speak of "eczema of the lips," face, mammary gland (*i.e.*, the udder), back, neck, etc. Likewise, eczema may be acute or chronic.

Causes.—These may be of a constitutional nature, or the outcome of some external irritation.

Certain horses seem to be predisposed to this skin affection, probably through some inherited weakness, and when any exciting cause comes into play, the disease is liable to make its appearance. Congestion of the liver, disease of the spleen, and disturbance of the nerves governing the nutri-

tion of the skin, are believed to be intimately associated—if not the cause—with the production of eczema in many instances. Chemical and mechanical irritants are external causes of eczema.

Parasites, living upon or burrowing into the skin, also produce an eczematous eruption.

Symptoms.—When eczema attacks the flexor surfaces of the knee and hock joints, it is of a dry and scurfy nature, being popularly known amongst stablemen as “Mallenders” and “Sallenders” respectively. In medical nosology it is termed “Psoriasis.”

There is generally considerable irritation, which the animal tries to relieve by rubbing itself against posts, the manger, etc.

If the hand is passed along the skin it will be found to have little scurfy elevations upon it, causing a slight rising of the hair. Sometimes this scurfy condition is distributed over a large part of the neck, sides, and back.

It is very common to see the hair rubbed off in patches, which will be seen as—in the later stage—dry, irregular areas, covered by a brownish yellow crust.

Eczema attacking the hollow of the heels and fetlocks is dealt with separately under “Thrush” and “Grease.”

If it is thought that there is any irritation about the udder or reproductive organs, care must be taken to examine these very carefully, in order to try and find any redness, vesicles, or moisture.

White parts of the skin, especially about the lower parts of the limbs, are very subject to irritation from furze, thistles, and wet clover.

Treatment.—If of a constitutional nature, it is absolutely essential to try and remove or modify the disease, through a course of medicine given internally, assisted by outward applications. A great deal will, of course, depend upon the stage of the affection, such as whether the skin be dry and scurvy, or moist and acutely inflamed. Further, if it arises from irritation outside the animal's body, removal of the cause will, very likely, suffice to effect a cure, or at any rate prevent further mischief. Constitutional eczema is a sign of under nutrition, although an animal may be fat and strong as far as external appearances go. Give food of an unstimulating nature.

Green fodder may be given, when such can be had. It will assist in keeping the bowels in a nice soft condition. The occasional use of a diuretic ball can, with advantage, be resorted to. As a rule it is advisable to give a mild dose of purgative medicine (not physic), using some drug capable of exerting special effects upon the liver, for which purpose the following ball can be used :—

R̄. Calomel, - - - - -	40 grains.
Powdered Barbadoes Aloes, -	2 drachms.
Ext. Belladonna, - - - -	$\frac{1}{2}$ a drachm.
Powdered Ginger, - - - -	2 drachms.
Powdered Carbonate of Potash, -	2 drachms.
Treacle sufficient to form one ball.	

Mix, and give after a bran mash, in the evening. Make use of such a ball about every five or six weeks, so long as there is any signs of the disease. Follow the action of the ball up with these powders :—

R \ddot{y} . Powdered Arsenic,	- -	24 grains.
Powdered Nux Vomica,	-	$\frac{1}{2}$ an ounce.
Powdered Gentian Root,	-	6 ounces.

Mix thoroughly, and then divide the whole into 1 dozen powders.

Directions.—Give one powder night and morning along with the food, and continue the powders for three weeks or a month, and then give a ball as above. Now start again with the powders, and so on until the disease is permanently cured.

Cod-liver oil, or linseed oil, in the food will do good.

Externally, we can use a liniment of oxide of zinc, made by adding lime-water to a sufficiency of the zinc, so as to make it of a cream-like consistence. Just dab it on to any red or moist places, say twice or thrice each day.

A very good application, for the wet and irritable stage of eczema, is either the black, white, or yellow lotion.

The first is made by adding 30 grains of calomel to 10 ounces of lime-water (for the white lotion, *see* Lotions); the yellow lotion is composed of 36 grains of corrosive sublimate to a pint of lime-water. The lotions are applied by wetting the irritable place occasionally.

For the so-called "mallenders" and "sallenders," the internal treatment is identically the same as that already laid down for constitutional eczema, only a different external application is more beneficial.

The scurfy parts should be well washed with soft soap and warm water, using a scrubbing brush. As soon as you have done this, each day, rub the scurfy places for about twenty minutes with an ointment as follows:—

R̄. Chrysophanic Acid, - - -	40 grains.
Vaseline, - - - - -	1 ounce.

Mix, and use as directed. It will be advisable to get three times this quantity made up at the chemist's at one time. Sometimes weeks and months elapse before effecting a cure. Very obstinate cases will ultimately yield to this combined treatment.

Elbow, Capped, or Capulet.—Sometimes we hear this spoken of as “shoe-boil,” an expressive but antiquated term. By capped-elbow we mean a swelling of variable size at the point of the elbow.

It is very frequently caused by the heel of the shoe, or tip of this, pressing upon the skin of the elbow when the horse is laid down. Sometimes horses without shoes coming up from grass are affected. The first effect of such pressure is the formation of a watery (serous) abscess. If the disease be taken in hand at this stage, which it is usually not, it is quite unlikely that there would be any capping about the elbow. In reality, it is neglect which leads up to this disease. The effects of this intermittent pressure upon the skin and tissues, lying immediately about the seat of injury, leads to the growth of the fibrous-like tissue, ultimately ending in the formation of a fibrous tumour, with the skin intimately adherent to it. Though the tumour may be small at first, it rapidly grows, sometimes attaining the size of a child's head. If the skin covering the swelling gets broken, a nasty suppurating sore is established.

Treatment—1. *Preventative.*—An improved form of an india-rubber pad is shown in the accompanying illustration.

It is a certain preventative against capped elbow, and to some extent a cure. The pads are sold in five different sizes, varying in prices from seven-and-six to ten-and-six. They can be had of Messrs. Arnold, 31 West Smithfield, London.

Shoeing with a "three-quarter shoe" is another means of preventing capped-elbow.

2. *Medicinal or surgical treatment.*—In the earliest stage, *i.e.*, when an abscess is forming, apply hot water to the injury, and open the abscess when ready; wash the cavity out with white lotion (*see* Lotions). A blister may be used instead of hot water. If a tumour has formed, then the best treatment is the insertion of a seton over the swelling. The tape of this must only go skin deep, and not into the substance of the swelling. Dress the seton every day with turpentine ointment or Venice turpentine (*see* Setons). Very large swellings can be got rid of in a few weeks' time by these means, and the operation is quite simple and harmless. The seton can be placed a little to one side of the swelling, and on the outer side of the elbow.

It is quite unnecessary to have the tumour cut out.

Iodine ointment is rubbed into the swelling by some, and it will do right enough if the swelling is not very large. If the sore is suppurating, protect it with a pad of some sort. Another method of dealing with capped elbow is to make a number of small cuts into the swelling, and then insert



Fig. 34.—HEATH'S PATENT CAPPED ELBOW PREVENTER, APPLIED.

powdered corrosive sublimate, by rolling it up as little points, formed out of this and tissue paper. Three or four may be inserted into the tumour. This treatment causes "sloughing," which must be continued until the mass disappears.

Another plan consists in putting a tight piece of round elastic (catapult elastic) around the root of the swelling, and keeping the dead and dying part clean with wound lotion.

Elbow, Wounds of.—For the treatment of these the reader is referred to Wounds, but it must be mentioned that there is a special tendency for a wound about this part to suck in air, if the horse is allowed to go on working, and the wound unheeded. The reason of this is because the skin hangs loosely about here, readily affording a favourite entry for air, while the movements of the limb afford a suction-like action. From here the air may be diffused beneath the skin to other and distant parts, giving the animal a very uncanny and bloated appearance. In such, we would require to snip the skin at various points so as to give the air egress.

Hunters are occasionally affected.

Endocarditis.—(See Heart, Inflammation of Valves.)

Enteritis.—(See Intestines, Inflammation of.)

Epilepsy.—This should hardly find a place amongst every-day ailments of the horse, because such it is not in this animal. As it may occur, however, a word or two regarding it may not be amiss.

When a fit is about to come on, the muscles of the face begin to quiver, and this soon extends to a quivering and

twitching over the body, ending in spasms of the muscles, both of the body and limbs. There is a degree of unconsciousness, and a pressing of the forehead against the wall. A fit usually passes off within half an hour. The animal may foam at the mouth, but does not usually fall to the ground. Cold water to the head gives instant relief. The after-treatment would be to keep the bowels from being confined, and the use of bromide of potash and ammonia, of each 2 drachms, added to the drinking water, or food, daily.

Erysipelas.—(“St. Anthony’s fire,” or “rose” in man.)

This is regarded as a specific disease, *i.e.*, due to germs. It is a spreading inflammation of the skin (sometimes beneath this as well), without apparent redness, but causing swelling and a great deal of pain in the part affected.

It not uncommonly follows upon an injury or wound about the lower part of the limbs, but it may occur quite independently of such. Horses, weakened by disease or overwork, under-feeding, or feeding upon food of an inferior quality, seem to be predisposed to erysipelas, and, if it comes to that, other diseases as well.

In the horse, this disease does not seem to be contagious.

Symptoms.—If it follows an injury (wound, etc.), the part will be found swollen, hot, and tender (ordinary signs of any external inflammation), and of course painful. If the finger is pressed upon the swelling, it makes a sort of “pit,” which is lost as soon as the pressure is taken away. This latter sign may be absent if the disease has been going on a little while. Little blisters (vesicles) commonly

appear upon the swelling, and these burst, giving a moist appearance to the part. Sometimes matter is formed, and the discharge is tinged with blood, so that the disease might be mistaken for farcy. If the disease is attacking a joint, it might lead to the destruction of this, or even open joint, through sloughing.

In addition to the foregoing symptoms, the animal is fevered, lame, and altogether thoroughly "out of sorts." Several weeks are likely to elapse before the horse—if ever—is fit for work again.

It often happens that the animal dies from sheer exhaustion.

Treatment.—Give a mild dose of physic (*see* Antibilious Ball in Miscellaneous Recipes) and then have the swelling fomented with warm water for about a couple of hours each time. After this has been done, apply some lotion, such as half an ounce each of Goulard's lotion and tincture of belladonna, to every pint of water. If the skin has begun to slough, dress the part with a solution of creolin (2 drachms to a pint of water). To reduce the fever and tendency towards collapse, give the following draught every six hours:—

R̄. Sulphate of Quinine,	- - -	1 drachm.
Tincture of Aconite, B.P.,	- - -	25 drops.
Tincture of Steel,	- - -	$\frac{1}{2}$ an ounce.
Sulphuric Ether,	- - -	1 ounce.
Water,	- - -	12 ounces.

Mix and make draught. Give the whole at once, just as it is.

General Management.—Keep the patient in a very clean stable or loose-box. Put on a rug. See that there are

no draughts, but sufficient ventilation. Mind and foment the swelling for the length of time stated. It is no good doing things by halves. Better leave them alone altogether than bring dissatisfaction to all concerned. Give plenty of warm bran and linseed mashes. You cannot give anything better than mashed carrots. Warm oatmeal, gruel, and half a dozen eggs beaten up will be beneficial. Scalded hay and oats for a change. Use the lotion frequently.

If the horse is getting better, stop the draughts, but give tonic powders (which see).

Exercise must be gradually brought about. When the animal is extremely weak, give a teacupful of brandy, in water, every four hours.

Erythema and Mud-Rash.—(Mud fever.)

By these terms we mean an inflammatory state of the superficial layers of the skin. It may be of an acute or chronic nature. Sometimes there is a slight degree of fever, hence the term "mud fever," the prefix "mud" implying that the skin has been irritated through such clinging to the hair, and irritating the former, especially upon the limbs.

Redness of the skin will only be seen about the white parts of the fetlocks, etc.

"Saddle galls" and "sore shoulders" are varieties of erythema resulting from the pressure of an ill-fitting collar, saddle, etc. "Cracked heels" must be included.

The skin between the thighs is sometimes affected, but the limbs, shoulders, back, and belly are commonly the seat of eruption. Wet weather is the most productive of mud fever.

Regarding the causes there is, no doubt, a diversity of

opinion. Some people think that clipping the legs predisposes to it; others that it is the results of leaving the hair on. No doubt the long hair about the limbs affords protection against the irritation of particles of sand, etc. Leaving the legs improperly dried is a certain cause. Damp and filthy bedding will produce it.

Constitutional predisposition towards sore shoulders does exist in some horses, which an ill-fitting collar, saddle, etc., soon brings to the surface. In addition to these causes, chemical agents and parasites, etc., may be included at times.

Treatment.—If the animal has a tendency towards “sore shoulders,” use a breast band in place of the collar.

Remove the hair off all parts of the body when clipping, but leave it partly upon the limbs till dry weather sets in.

Begin the medicinal treatment by giving a mild dose of physic. Follow this up with two-grain doses of powdered arsenic, along with half an ounce of powdered gentian, given twice daily in the food. Continue the treatment for several weeks, and use a diuretic ball once a month until the animal is better—cured.

As lameness is often present through stiffness of the skin sores, we should give the horse a few days' rest to aid treatment.

Any sore places upon the limbs or body can be cured by touching them with the following liniment:—

Rx. Goulard's Lotion, -	-	-	-	10 ounces.
Oil of Eucalyptus,	-	-	-	2 ounces.
Glycerine, -	-	-	-	5 ounces.
Almond or Olive Oil,	-	-	-	5 ounces.

Mix and apply daily to the sores.

Label:—Lotion for sore backs, sore shoulders, saddle galls, cracked heels, etc. Another very useful lotion is the white lotion (*see* Lotions).

Eight parts of glycerine, two parts of Goulard's lotion, and eight parts of water is a most excellent lotion for sore shoulders and saddle galls. These lotions must be freely applied to all affected parts. In every instance the cause must not be disregarded.

Eyelids, Injuries of.—Sometimes the eyelids are torn. They must be sewn up, taking great care to bring the edges of the tear very accurately together, and using fine silver wire for the stitches. A curved needle is necessary. The stitches must be put in fairly close together, but not drawn too tightly. If the eyelid is painted with a five per cent. solution of cocaine (12 grains to $\frac{1}{2}$ an ounce of water) at intervals of two or three minutes—say for ten minutes—the wound can be sewn up without the horse feeling any pain.

Eye, Inflammation of.—INTRODUCTORY.—The membrane lining the eyelids is known as the conjunctiva, and it is reflected over the globes of the eyes.

It is frequently referred to by the veterinary surgeon, partly because it is in a convenient situation, and also because it is a fairly good indicator of constitutional disturbances.

In health it is of a bright red colour. During disease it may be pale (indicating weakness); during low forms of fever, dark red, perhaps slightly blueish and spotted; tinged

with yellow in biliousness; while in the so-called "pink eye" it is bright scarlet, and swollen.

The membrane then may be heightened in colour, and yet we cannot quite regard it as being inflamed, but if it begins to be at all watery we do so.

This inflammation is commonly brought on through cold; a specific disease (influenza); a blow; foreign body lodging upon it; chemical irritants, wounds to the eyelid, etc. In exceptional instances through turning "in" or "out" of the eyelid or lids.

Symptoms.—Weeping and intolerance to light are the most significant. If the eyelids be turned up the membrane will be found very red, swollen, and watery, perhaps little granular specks upon it. The discharge soon excoriates the skin about the eyelid, and the transparent part of the eyeball (cornea) may become clouded.

If it has been caused by a blow there might be a mark upon the lid to indicate this; but if not, turn the eyelid up a little to see if you can see a dark spot of blood upon it, because a blow may leave its mark in this way.

Treatment.—Supposing that it is due to a hay-seed, etc., getting in upon the eyelids, then the first thing to do must be to try and remove it. This must be done quickly, otherwise the "winking membrane" will prevent one from doing so, and would have to be transfixed by passing a thread through it. A camel's hair brush and a little mucilage can be used for this purpose.

Having removed the foreign body, the inflammation will soon go away, or the eye can be bathed with white lotion (see this). When the inflammation arises from other causes, use the following lotion frequently:—

R̄. Hydrochlorate of Cocaine,	-	-	2 grains.
Corrosive Sublimate,	-	-	$\frac{1}{4}$ grain.
Sulphate of Atropine,	-	-	2 grains.
Distilled Water,	-	-	1 ounce.

Mix, and make eye lotion.

Directions.—A few drops (20) to be placed inside the eyelids thrice daily.

Keep the animal in a darkened stable and give a mild dose of physic, or else allow plenty of green food.

Continue this treatment until all signs of inflammation have gone. If a small milky spot remains, still use the eye-drops. Bleeding from the vein of the eye (angular vein) is seldom required, and it is questionable whether it does much good. Half a dozen leeches would answer the same purpose.

Eyelids Turned "In" and Turned "Out."—The latter condition is rarely met with, therefore requires no further mention here. When the eyelids are turned "inwards" the eyelashes cause severe irritation to the globe of the eye. One or both eyelids may be affected. The veterinarian affects a cure by removing an elliptical piece of the relaxed eyelid, and then sewing up the wound, so as to try and get it to heal without any further treatment.

F.

Farcy.—(*See* Glanders.)

Feet, Inflammation of.—This disease—also known as founder and laminitis—is an inflammation affecting the sensitive structures resident within the hoof, and is of frequent occurrence in the horse.

The surfaces (articular excepted) of the pedal bone are covered with leaf-like structures called sensitive laminae, and these are fitted into corresponding horny depressions on the inner surfaces of the horny hoof (insensitive laminae).

The sensitive structures are well supplied by pure or arterial blood, consequently congestion—when it does occur—is as severe as the same process in other parts of the body, with the additional disadvantage of being attended with a greater degree of pain, owing to the structures being bound up in the hoof.

A characteristic feature of all forms of congestion is the escape of fluid material (liquor sanguinis) from the small blood-vessels (capillaries), and it is this liquid which assists in the separation of the sensitive and insensitive laminae and consequent downfall of the pedal bone, so frequent after an attack of inflamed feet, resulting in either a flat sole, or else the bone making its exit through the horny sole, in this way rendering the animal useless.

Causes.—The most general causes of foot-founder are: over-driving, concussion, and a previous attack or attacks. The last named as predisposing causes.

Other causes are:—Counter pressure; feeding on new wheat or barley; change of inflammatory action (metastasis), such as from the lungs or bowels; excess of cold water when overheated. In some instances it comes on after foaling, especially if the animal is too fat.

Symptoms.—It should not be difficult for the amateur to tell a horse having this complaint, which is usually sudden in its onset. The diagnosis may, perhaps, baffle the amateur whilst the animal is in its stall, but directly it is brought out, the observer's attention is at once directed to its feet.

If the animal is set back a pace, he will be seen to throw his weight off the front portions of the feet, the fore limbs being extended as much as possible, and the hind ones brought under the belly.

The fore, hind, or all four feet may be affected, but we are inclined to think that the fore feet are more often affected than the hind.

In addition to this, the hoofs feel much warmer than in health, cause the animal to evince pain when rapped with a hammer, and the artery (metacarpal) above the hoof will be felt to be beating very strongly.

The pulse is full, strong, and quick, and the breathing increased, especially when the animal is made to move; in fact, if the disease has become thoroughly established, the animal "blows" and "groans" when doing so.

Staling is difficult, owing to the difficulty in placing the hind feet in the attitude for this purpose. The internal temperature is increased, thirst, together with constipation.

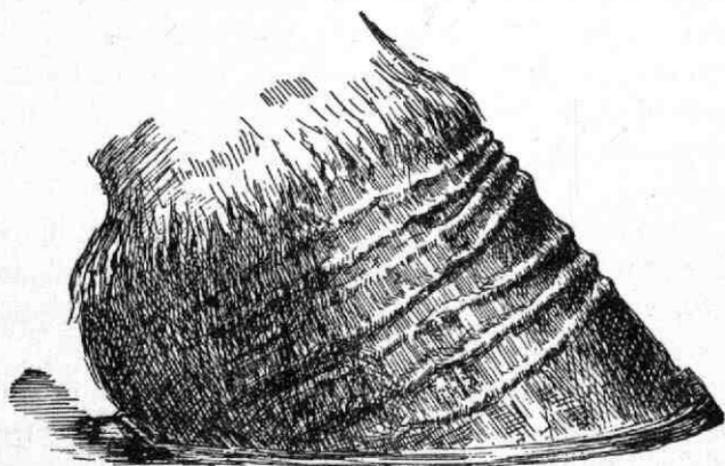


Fig. 35.—THE IRREGULAR RINGS ARE THE RESULT OF PREVIOUS
ATTACKS OF FOOT FOUNDER.

In some cases the eyelids and membranes lining these are very much swollen, perhaps completely closing the ocular openings.

When the animal is laid down, the pulse, breathing, temperature, and pain are diminished ; on this account, lying is favourable, at least in our opinion. In cases when the hind feet are alone the seat of the disease, all the limbs are drawn close together under the body. Repeated attacks of laminitis usually lead to the formation of irregular rings upon the wall of the hoof, as seen in the illustration.

Treatment.—A simple form of treatment, advocated by some authorities, comprises (1) in giving a full dose of aloes (physic ball) ; (2) by compelling the horse to take exercise on soft wet ground after putting on bar shoes. This plan is attended with a great deal of pain owing to the enforced exercise.

As soon as ever this disease is suspected, get the blacksmith to remove the shoes, pare the soles thin, and put on bran poultices, either hot or cold.

The correct plan is to apply cold poultices for the first forty-eight hours, and then warm.

The chief difficulty, in many instances at least, is that of keeping up the hot poultices, so that we usually recommend cold ones throughout, and generally with good results. A deep sawdust or moss litter bed is preferable to straw, and if possible keep the animal in a loose-box.

This being done, attention must now be given to the medicinal part of the treatment.

It is necessary to get the bowels opened, but purgation should be strictly avoided.

To each draught as below add one drachm of powdered Barbadoes aloes until the fæces are in a soft condition ;

after which it is advisable to keep up this state with small doses of linseed oil, linseed, and bran mashes; two to six tablespoonfuls of oil in the mash once or twice a day accordingly, will accomplish this end in most cases.

The Draught.

R̄. Tincture of Aconite B.P.,	-	30 drops.
Bicarbonate of Potash,	-	} of each 3 drachms.
Chlorate of Potash,	-	
Sweet Spirit of Nitre,	-	1½ ounces.
Water,	- - -	added 20 ounces.

Mix, and give every eight hours in accordance with foregoing directions.

Continue this treatment until improvement takes place. Allow soft or green food and "cold" water to drink. The shoes can then be put on; but it is better to keep the animal without them for a time, working it—in the case of a farm horse—in the plough, etc., or allowing grazing on damp land, blistering the coronet, and at the end of the summer the best results—so far as this malady is concerned—may be anticipated.

Fetlock-Joint, Sprain of.—The ligaments at the sides of the joint are liable to become sprained through slipping sideways, etc.

This injury is indicated by evidence of pain when the joint is flexed.

Sprained fetlock demands rest, the application of cooling lotion, or cold water and a flannel bandage.

If lameness persists, blister the front and sides only.

Fever, Simple.—Apart from its association with various other diseases, the horse occasionally suffers from a simple febrile disturbance, probably the result of exposure to cold.

There is little difficulty in marking the three stages, viz.:—The attack, development, and decline. The first is sometimes spoken of as the cold stage and the second the hot.

Shivering fits and coldness of the body mark the first, to be succeeded by increased heat, thirst, constipation, loss of appetite, redness of the membranes lining the nose and eyes, and elevation of internal temperature as indicated by the clinical thermometer. The discharge of urine is lessened, and in colour it is heightened.

The third phase (decline) is denoted by diminished thirst, free flow of urine, equal distribution of body warmth, and movement of the bowels. Appetite gradually returns; dulness and weariness disappear. Temperature assumes its normal standard.

Treatment.—Clothe body, and bandages to limbs. Keep in a warm loose-box. A little linseed oil in food. Bran mashes. Half an ounce of chlorate of potash in drinking water night and morning. Rest for a few days.

Flatulent Colic.—(*See Colic.*)

Foal, Management of.—The little creature should be allowed to suck as soon as possible after birth. It is a great mistake to separate the dam from her offspring even for a few minutes, as we have known them sometimes take a thorough spite to their foal on this account.

If any misfortune should befall the mother after labour, the foal will need hand-feeding about every two hours.

A special teat should be got for this purpose. Such can be obtained from dealers in surgical instruments, occasionally elsewhere, *e.g.*, chemist.

These teats are about the size of a small thumb, and can easily be fixed on to a tin vessel having a spout.

Warm cow's milk, sugar and water, mixed together, form the best substitute for mare's milk.

Later on malted food may be added.

If warm and dry, the foal will be better running about in a grass park.

Foot, Contracted.—A contracted foot or feet constitutes unsoundness. The hoof either shrinks at the heels or else from the coronet downwards.

Absence of frog-pressure is one of the most potent factors in the production of contraction of the feet.

Lameness from any cause does not exist for very long without the foot becoming narrowed (contracted).

If only one foot is affected, comparison with its fellow readily discloses this abnormality; but when both are narrowed, the amateur will find more trouble in forming an opinion.

If the contraction is the result of bad shoeing, leave off the shoe for a time, and give instructions that the frog must not be touched.

Foot, Pumiced.—This condition is denoted by an alteration in the form of the hoof, the wall of which recedes and elongates, giving the hoof a sunken and flattened appearance.

It is chiefly the result of one or more attacks of founder.

Foot, Punctured.—This is a pretty frequent accident, either as the result of stepping upon some sharp object (nail picked up, etc.), or through a falsely driven nail during shoeing.

All injuries of this class in the horse are of a serious nature, and unless skilfully handled are liable to end fatally.

A prick to the foot through a rusty nail, etc., is even much worse than one inflicted by the smith, the nail being cleaner.

Disease of the pedal bone, navicular bone, quitter, tetanus, and blood-poisoning are the chief evil consequences to be feared. The seat and direction of the puncture does to some extent assist one in determining which structures will have been injured within the hoof.

Treatment.—Rest and a dose of physic. Apply hot linseed and bran poultices, after taking off the shoe. Soak the foot in hot water, with a little carbolic acid added, once a day, but previous to this the sole should be thinned and the diseased part pared so as to let out matter, if there be any. Now, dust the sore with iodoform powder, cover with tow and a bandage before putting into the poultice. For further treatment the reader is referred to the section dealing with wounds.

Foot, Canker of.—Canker of the feet is a nasty, troublesome complaint, chiefly attacking heavy-bodied horses.

As a rule it does not cause lameness, only doing so when the foot becomes extensively disorganised. Under ordinary circumstances the disease attacks the frog and sole only,

which are covered with spongy, greasy, horny growths, from which an abominable odour arises.

Treatment.—Remove shoe and keep foot specially clean. Internally give one ounce of Fowler's solution in food night and morning for several weeks together. At the end of the third week give a dose of physic, and the following week start the arsenical solution again.

Dress the foot with a solution of Formalin night and morning.

Founder of the Feet.—(See Feet, Inflammation of.)

Fractures.—The term "simple" fracture is applied when a bone is simply broken across, "comminuted" if it is broken into fragments, and "compound" when there is an external wound communicating with the fracture.

The second and last forms are the worst, particularly the latter, owing to the risk of infection from without.

FRACTURE OF THE BONES OF THE FACE.—Any of the bones of the face may be broken through external violence.

Signs.—If the bones over the nose are broken there may be some alteration in the breathing, or bleeding from the nostril. Perhaps the bone will be depressed, or there is swelling. When the bone carrying the upper molars is broken, there is defective mastication and a dribbling of saliva from the mouth.

Treatment.—If a bone over the nose is broken, and not displaced, it will unite of itself. If depressed, it must be levered up and kept in position. Restricted food in the other case.

FRACTURE OF THE LOWER JAW.—The causes are some form of external violence, *e.g.*, a fall.

Signs.—When the body of the bone is broken the chin and lower incisors are pendulous. The horse may be unable to take any food.

Treatment.—If the fracture is confined to one side, soft food only will suffice to bring about a cure. When double-sided, professional aid must be sought.

FRACTURE OF THE NECK BONES OR CERVICAL VERTEBRÆ.—“Broken Neck” is, fortunately, not an every-day accident. It is most liable to happen to a hunter, but falling backward can produce it. Death is almost certain to be instantaneous.

FRACTURE OF THE BONES OF THE BACK.—The dorsal or lumbar vertebræ are occasionally found broken. The body of the bone or its projecting processes may be the seat of the breakage.

The former is the more dangerous.

Disease of the spinal column is a predisposing factor. I have seen a fracture of the loins from this cause.

When casting the horse for operation, there is a certain amount of risk towards the production of broken back, particularly in old horses with stiff backs.

Signs.—Sudden paralysis, the hind limbs being quite powerless. It is only in very rare cases that the animal can keep the standing posture. There is no response to the prick of a pin behind the seat of injury.

This injury necessitates slaughter, but the layman must be very careful not to make a mistake, because it is quite easy for azoturia to be brought on as suddenly.

FRACTURE OF THE PELVIC BONES.—Almost any part of the pelvic bones may be broken, but the commonest of these

is the so-called "hip down," or "fracture of the angle of the haunch."

This is usually the result of a fall, or by striking the part against a doorway.

The broken-off piece of bone is drawn downwards and forwards by the muscles (oblique abdominal and tensor vaginæ) so that if we put the animal's hind quarters on level ground, and stand behind, a "flatness" of the quarter will be evident.

Treatment.—Keep the horse off work. If it cannot bear weight on the affected side, it must be put in the slings. This must be allowed for several weeks. A cure generally results. Take care, when buying a horse, to look for this flatness of quarter.

Fractures in the Bones of the Fore Limb.

FRACTURE OF THE SHOULDER BLADE OR SCAPULA.—This is not an every-day accident; still, the possibility of its occurrence renders it deserving of slight notice. Any portion of the bone can be broken.

Signs.—Severe swelling, but very likely no displacement of the broken ends of the bone. Lameness, shown both during standing and movement.

Treatment.—Fracture through the articular surface of the bone renders the animal, we believe, quite useless, so that destruction is indicated under these circumstances. In other instances, the fracture requires setting in position and, if possible, keeping thus. The slings can be tried.

FRACTURE OF THE ARM BONE OR HUMERUS.—The signs of a broken arm are: Complete inability to place weight on the

foot. When manipulated, the broken ends of the bone may be found "crepitating" (*i.e.*, rubbing together with a crackling noise).

When the shaft of the bone is broken, treatment is not likely to be satisfactory. In other instances recovery (repair) must be left to Nature.

FRACTURE OF THE ULNA OR POINT OF THE ELBOW BONE.—The point of the elbow bone is occasionally broken off. It may be the result of a fall.

Signs.—If the bone is broken completely off, displacement will be readily detected by manipulating part.

We believe that recovery from this fracture is exceedingly uncommon. It is the pull of the muscles (triceps) which prevents union taking place.

FRACTURE OF THE FORE-ARM OR RADIUS.—This may be broken across. It is easily detected by manipulating the fore-arm. Recovery is doubtful.

FRACTURE OF THE BONES OF THE KNEE (wrist in man).—I have seen this occur through a fall on hard ground, complicated with a severe wound (broken knee).

In my opinion, union of broken bones is not uncommon, though frequently attended with permanent stiffening of the joint (Anchylolysis).

Rest in the slings and attention to the wound are recommended.

FRACTURE OF THE CANNON AND SPLINT BONES.—A kick or other injury has been known to cause fracture of these bones. Usually the whole three are broken.

The great thickness of the bone prevents such an accident being common, otherwise its position is suitable for easy breakage.

In the case of a valuable horse, the animal should be put

into the slings, and, the bone being "set," an iron-padded splint applied.

This splint must extend from the ground to above the knee, and be so shaped as to be easy of application to the back part of the limb. A plaster of Paris bandage may be tried, this being put on before the splint is affixed. If the joint is involved, I believe that there is little hope of success; in fact in the horse it is useless to attempt treatment unless the fracture is of the simplest kind.

SPLIT PASTERN, OR FRACTURE OF THE PASTERN BONE.—This is not an uncommon form of fracture. Sometimes the split extends (commonly) in an oblique direction, at others through the bone lengthwise. In other instances it is broken across, and in some cases into a number of fragments.

Causes.—Jumping, sudden turns, galloping upon frosty roads, etc., etc.

Signs.—Sudden lameness. By carefully manipulating the pastern bone and joints above and below (fetlock and pastern joints), displacement may or may not be found. I have known split pastern being mistaken for rheumatism, and treated accordingly, with useless results of course.

Treatment.—A simple fracture yields satisfactorily to treatment, as a rule. The horse must be supported in the slings and kept here for about three months. Take a dry bandage and place it evenly and moderately tight around the broken bone, beginning the bandaging just above the coronet, and continuing it to a little above the fetlock. Having done this, take another bandage (linen), about a couple of inches in width, lay it upon the table, and spread over its length (one side only) a thin layer of dry powdered plaster of Paris;

subsequently roll the bandage. Now soak it thoroughly in a basin of cold water, and apply it over the dry bandage, taking particular care to have the "turns" regular and even. A simple flannel bandage can then be put loosely on. Don't have the bandage too tight, but just nicely.

Starch or white of egg bandages occasionally supplant the foregoing; but we think the first is as good as any other. It is essential that a displaced bone be "set" before being bandaged.

FRACTURE OF THE CORONET BONE, COFFIN BONE, AND NAVICULAR BONE.—Fracture of the first is unfavourable, less so than a split in the coffin bone. First, inflammation may come on to the other limb through constant rest of the injured one. The last is an uncommon fracture, and we believe hopeless.

Fractures of the Bones of the Hind Limb.

FRACTURE OF THE THIGH OR FEMUR.—This is not a frequent accident in the horse; and, when it does happen, the principal cause is falling, and struggling to rise under a heavy draught.

Although a fractured thigh is a serious accident in man, it is usually amenable to surgical skill; but in animals—especially the horse—no surgical means can be employed, owing to the anatomical position, and form of this region.

The only thing that can be done is to allow several months' rest in well-adjusted slings; and even if we do this, the ultimate results are purely speculative.

The neck, shaft, or external prominence of the bone may be broken.

Sudden and severe lameness and shortening of the limb are indicative of a broken shaft or neck of the thigh bone.

FRACTURE OF THE KNEE-CAP.—An uncommon accident in animals, but capable of production through slipping, or a blow in some other way over the stifle joint, the knee-cap here corresponding with the same part in the human subject.

FRACTURE OF THE SHIN-BONE (Tibia).—Of broken bones in the hind limb of the horse, this is the one most frequent to suffer.

A kick from another horse is one of the principal causes ; but it may be produced in a variety of ways.

If from a kick, there will most likely be a wound in addition, with it may be the broken ends of the bone projecting through.

Sometimes the bone is broken, but there is no displacement, rendering the fracture more difficult of diagnosis, but much more amenable to surgical treatment.

On this account it is very important not to shift a horse about, otherwise a fracture with an absence of displacement may become a displaced one, so rendering the animal useless.

Treatment.—Place the animal in the slings as speedily as possible after the accident, a simple form of which can be made out of some stout sackcloth (or old sacks) for the belly and chest support, fixed on to short, stout poles on either side, the free ends of which serve to attach the beam ropes to.

An ordinary breeching and breast band can be used for the other parts of the slings.

The wound should be cleaned with some antiseptic solution.

FRACTURE OF THE BONES OF THE HOCK-JOINT.—This is an uncommon accident, and we shall do nothing more than mention the possibility of its occurrence.

Fracture of the Ribs.

A fractured rib or ribs is a fairly common accident, especially as the result of collision with another vehicle, the rib or ribs being as a rule broken across. Bullet wounds are common in this region.

The gravity of the injury will depend upon (1) the number of ribs broken; (2) the extent of displacement, and (3) whether there be an external wound—if so, to what extent the tissues are injured, also if the lung be wounded.

As a rule the simple fracture of a couple of ribs is not a very serious matter, more especially in a young animal.

When the "first" ribs are broken, there is difficulty in breathing, and if rubbing together of the broken ends of the bones be heard, it is a positive sign of fractured rib. In some instances the fracture can be plainly felt.

Treatment.—Rest. Keep animal as still as possible. If a wound, keep it clean.

Complications (pleurisy, etc.) require special treatment. Fistula sometimes remains as a legacy of a wound in this region.

Fracture of the Breast-Bone (Sternum).

The position of this bone renders it liable to injury through shaft wounds, etc.

Signs.—A painful swelling between the fore limbs. If

the fracture has been in existence some time, there will probably be one or more fistulous sores.

Treatment.—This is an injury demanding professional assistance, and the sooner this is had the better the results to be expected.



G.

Gastritis.—(*See Stomach, Inflammation of.*)

Girth-Galls.—(*See Saddle-Galls.*)

Glanders and Farcy.—The latter is nothing but a modification of the former.

“Glanders” chiefly attacks the lungs, throat, glands, and the nasal passages, while “Farcy” shows itself in connection with the skin and certain vessels (lymphatic vessels) beneath this.

It is quite common to find an animal showing both classes of symptoms at the same time; equally so to see the symptoms of the latter followed by the former, or the converse.

Although the disease is common enough in certain stables in the present day, it is nothing like so frequently met with as in times gone by. This is accounted for upon the ground of improved legislature, and an advance in all matters connected with the welfare of the horse. It was in the year 1869 that the first systematic Contagious Diseases (Animals) Act was produced, and it included provisions for “glanders,” but not “farcy,” consequently the law was practically useless in its war against glanders, when identically the same disease (farcy) was allowed to be manufacturing glanders.

It is only within this last few years that "farcy" has been included within the Act. Now, we may anticipate outbreaks of glanders or farcy, or both, becoming less and less. Probably the reason why farcy was not scheduled along with its other manifestation—glanders—was on account of its supposed curability. "Apparent curability," or a "patched up storehouse for spreading glanders," is a more acceptable view.

It is now well enough known that glanders-farcy is an incurable disease, readily "inoculable" to man, the horse, ass, and numerous other animals, and that it can only be caused (produced) through the entrance of a living germ (or its spores), termed the "*Bacillus Malleus*" (pl. *Mallei*), into the system.

If some of the discharge be taken from the nostrils of a glandered or farcied animal, and cultivated upon a suitable medium, such as the cut surface of a potato, the germs rapidly multiply and form a chocolate colouration upon the same. Now, by taking a cultivation of the germs thus obtained, and injecting these into the system of a healthy horse, ass, rabbit, guinea-pig, etc., the disease is reproduced. The discharge from the nostrils will, of course, provoke glanders or farcy without cultivation of the germs, provided the material comes from an animal thus affected, either of the same or of a different species, and this because such contains the germs of glanders.

Many able veterinarians of the present and past are and were of the opinion that the disease "begins" in the lungs, consequently remains hidden for a time. It was on this account that "occult" (*i.e.*, hidden) glanders came to be spoken of.

Causes.—There is only “one” cause, and this is the living germ or its spores.

Dark, damp, ill-lighted, ill-ventilated, badly-drained, and over-crowded stables are most certainly powerful *predisposing* causes in calling forth this disease, but if the *germ*, in some phase of its life-history, be not present, then it is *utterly impossible to have glanders, farcy, or a combination of the two.*

The author has often enough heard and read that glanders may arise *spontaneously*—a word whose meaning the author confesses ignorance of. Quite likely, those who persist in the usage of this word believe in the spontaneity of their own origin—a belief which I would fain contradict them of.

No matter however strong an argument antagonistic to the “germ theory of disease” may at first sight appear, it can always be brought to readily yield itself to the more tenable and correct explanation.

The “germ theory” does not assert that it is the organisms themselves which destroy life or produce the various symptoms of certain diseases, but the excretion by these of poisonous or pernicious products. This is the case with glanders, etc.

It may be asked, “How does the disease spread from one animal to another, and through what channels?”

The answer to this is found by stating that the germs are transferred directly or indirectly through the following paths :—

1. **INGESTION.**—Which means that a horse swallows the virus, either along with its drinking water or food. Stable-pails, feeding-troughs, private and public watering troughs may all be the medium of the transference of the germs in this way.

There is no surer method of spreading this disease than that of allowing healthy horses to drink out of a pail from which a glandered horse has previously drank.

2. INOCULATION.—The disease is readily transferred in this way to man, the horse, and other animals.

It has been shown that the dried discharge from the nostril and farcy sores is capable of retaining its vitality for weeks, months, or perhaps years. "Dormant" germs, like seeds, are capable of springing into activity when implanted upon a suitable soil. It is on this account that some individuals are apt to overlook, or ignore, the specific (germ) nature of glanders. Any glanderous matter, be it recent or old, is almost certain to reproduce the disease, provided that it comes in contact with an abraded surface: a mucous membrane (nostrils, eyelids, etc.), or is swallowed (ingestion).

The discharge may hang about stall-posts, brushes, sponges, harness, feeding-troughs, etc., etc.

3. BY INHALATION.—Whether the disease can or cannot be spread in this way does not appear to us, as yet, to be thoroughly established. The writer does not believe that it is the generally acknowledged view of spreading the disease. By some, the virus is regarded as being "fixed," *i.e.*, contained in the discharge from the nose and sores; others think that it is likewise "volatile," that is to say, that the germs can be carried about in the air, consequently taken in during breathing.

Having pointed out the various channels through which the germs may enter the economy, it now remains for us to give a brief account of the symptoms of both the acute and chronic forms; afterwards referring to the most important after-death appearances of a glandered or farcied horse;

subsequently, the course of conduct to be pursued in the event of an outbreak of the disease.

Symptoms of ACUTE GLANDERS.—Acute glanders may come on as the termination of the chronic form, or through the medium of some other glandered or farcied animal. When resulting from direct inoculation, the average “incubating” period of the disease is from four to seven days. When following the other method or methods it may be weeks, or even months, before characteristic symptoms are observable. The internal temperature, as indicated by using the thermometer (*see* Introductory), may be 107° or 108° F. Swelling on one or both sides of the lower jaw. This swelling is soft, but quite unlike that of strangles. Although one may think that it will burst and suppurate, each day will disappoint us in this respect.

There is a discharge from one or both nostrils, the material being of a gummy consistence, and of a straw colour.

The breathing is of a snuffling character, and in the course of a few days the face, throat, and head may swell up to such an extent as to threaten suffocation. If the interior of the nostril or nostrils be carefully looked at, little nodules, about the size of a hemp seed, or even smaller, will most likely be seen. These nodules have a bright red zone around them. In the course of a few days they begin to soften, leaving an irregular angry-looking ulcer. Sometimes large sores will be seen, and this because the ulcers are fused or fusing together. The membrane lining the nasal passage has a saffron colour, or perhaps violet, this latter especially marked if there is great difficulty in breathing. All these symptoms go on increasing in severity until the animal dies, which usually happens within three weeks from

the onset of the fever. Lung complications may bring on a speedier death.

CHRONIC GLANDERS.—This is by far the commonest form of the disease, therefore the one most likely to be met with. The owner may notice that the horse has not been thriving of late, and that he is easily knocked up; that he has a sticky or greenish discharge from the nose—perhaps from the left nostril, or from both.

If the discharge is coming from the left nostril, the gland on the same side of the lower jaw will be found swollen, somewhat hard, and as though it were fixed to the jaw.

In some cases there is no discharge from the nostril, or such may escape observation. (Occult Glanders.)

If the interior of the nostril be carefully looked at, it is quite likely that nodules and ulcers, or ulcerous sores will be seen. The ulcers are formed through the bursting or softening of the nodules, these latter giving the ulcer the so-called "punched-out" appearance. This, when present, is very characteristic of glanders.

Some observers have stated that the membrane lining the nasal passage has a slate or greyish colour about it. This is nonsense, so far as the diagnosis of glanders is concerned, knowing that the same condition exists in any disease, when the purification (oxidation) of the blood is improperly carried out.

In addition to the ulcers, nodules, etc., there may be, within the nostril, superficial erosions. The ulcers may eat into the cartilage (gristle) separating the right and left nostrils—or even bone. If this happens, it is quite likely the discharge from the nostrils will be tinged with blood. If abscesses form in connection with the skin and absorbent

vessels, the disease is called "farcy," which may partake of an acute or chronic character.

In ACUTE FARCY there is a sudden swelling of a limb, either above the knee or hock joints, and this appears to be very painful and tender when touched. In addition to the fever and swollen state of the limb, numerous cord-like tracts appear, and in the course of a few days abscesses—the so-called "farcy buttons" form along the course of these vessels. The abscesses soften at their centres, burst and discharge an oily-yellow matter, tinged with blood perhaps. This brings about the formation of numerous groups of angry-looking ulcers with a jagged margin. These "farcy ulcers" show no disposition to heal, but continue to spread, so that two or more ulcers may join and form a very large sore. Acute farcy is often followed by the appearance of the ulcers within the nostril, swollen glands and throat, etc., in other words the symptoms of what we have described as acute glanders.

CHRONIC FARCY is a very common manifestation of the disease, either alone, or rather apparently so, or in combination with the symptoms in connection with the nose, swollen gland or glands, and which we have alluded to under the term chronic glanders. A horse, affected with this form of glanders, usually has a lingering malaise, unless abruptly cut down through the development of acute fever.

It was—and perhaps is still to some extent—the "patching" up of horses affected in this way that provided a means of disseminating glanders over the country.

As in the acute form, abscesses appear, but chiefly along the sides of the neck, over the face, under the fore-arms, inside the thighs, flanks, and about the throat; in short, wherever the skin is thin. These burst and leave a spreading ulcer.

The absorbent vessels have a "cordy" look, and commonly small buds (abscesses) form along the course of these, subsequently bursting, and leaving ulcerous sinuses or "farcy pipes."

In addition to these symptoms, "farcy tumours" may appear. These are about the size of an egg or large orange, and generally show themselves about the shoulder, sides, haunches, or parts most exposed to injury.

At first they are hard, but later on burst and discharge the characteristic yellow oily matter, but they have no inclination towards ulceration, or at least anything like the buds or buttons have towards this.

Such, then, are the chief symptoms of the varied manifestations of this disease.

In order to prevent the reader from confounding this with certain other diseased states, it is necessary to mention the several diseases to which glanders and farcy bear some resemblance. These diseases are :—

- (a) Simple Chronic Nasal Catarrh, or Nasal Gleet.
- (b) Disease of the Fangs of the Grinding Teeth, with or without an accumulation of matter within the Air Compartments (Sinuses) of the Head.
- (c) Irregular Forms of Strangles.
- (d) Abscess in the back part of the Mouth.
- (e) Weed, or Lymphangitis.

The reader is referred to the diseases in question for a fuller account, but the following may help to prevent one from falling into any error :—

(a) SIMPLE CHRONIC NASAL CATARRH, OR NASAL GLEET.—
In this disease there is no ulceration within the nasal

passage, never any of the farcy buds or buttons, ulcers, etc., in connection with the skin. Entire absence of fever, no cough, and never any blood-tinged discharge from the nostrils, which in glanders there generally is, and then often from one nostril only—the left.

(b) DISEASE OF THE FANGS OF THE GRINDING TEETH.—The offensive and putrid odour of the discharge, and the same may be said when the mouth is opened to examine these teeth.

(c) IRREGULAR FORMS OF STRANGLES.—In this disease there is never any ulceration within the nostril; sometimes large and well-developed abscesses are formed at the point of the shoulder. Dropsical swellings and severe internal pain are fairly common in irregular strangles. No changes in connection with the skin of an ulcerative nature.

(d) ABSCESS IN THE BACK PART OF THE MOUTH.—(See this.)

(e) WEED, OR LYMPHANGITIS.—It is not at all an unlikely matter to confound this disease with acute farcy. By waiting a few days it is quite easy to settle the matter, because farcy buds will appear, then soften and burst, making an irregular ulcer or ulcers. If it is weed, a few days' treatment may perhaps clear this away. Here it may not be out of place to mention that old horses with chronic thickening of a limb will, if inoculated with the glanders virus, most probably develop farcy buds upon the previously diseased limbs.

After-Death Appearances.—If the ulcers have not been in sight during life it is quite likely that they may be found when the nostril is slit open to its full extent.

The entrance to the windpipe (larynx) and the lining of this tube may show numerous, or few, shining, bleeding

sores. In some instances the cartilages of the air-passages may be eaten away through ulceration.

The lungs will probably be scattered throughout their substance with minute nodules, giving a "shotty" sensation when the finger is passed over the surface of the lung. Evidence of disease may be present elsewhere, but the foregoing is sufficient proof of the presence of glanders.

General Management.—Whenever this disease is suspected—indeed, in all cases attended with a discharge from the nose—the owner should have the horse thrown off work, and kept entirely by itself, if possible in a loose-box. The attendant, and all appliances in connection with the grooming, feeding, and watering of this animal, must be kept free from animals of every description.

The interior of the nasal passage should be very carefully examined, in a strong light, using a pair of old kid gloves for the purpose. If any sign of ulceration is seen, then the first thing to do is, of course, to report the case to the nearest Local Authority, which, in rural districts, may be the policeman. Glandered or farcied animals must not be removed—under pain of penalty or imprisonment—excepting through the orders of the aforesaid Authority, certified by its veterinary inspector.

Subsequent orders as to disinfection, etc., will come from this source. Inspection of apparently healthy animals may be carried out by the same. As the disease is transmissible to man, it is necessary to use every precaution when dealing with suspected animals. In doubtful cases the ass is inoculated so as to confirm the diagnosis.

The most recent method of diagnosing glanders or farcy is through the use of a substance known as *mallein*, which affords a most valuable means of recognising the disease in

its earliest stages. It is herein stated that the earliest changes in a glandered or farcied horse are in connection with lungs, a fact which was demonstrated previous to the introduction of mallein, and one which the usage of this agent has confirmed. Horses, having the merest trace of glanders in their lungs (though so far as external appearances go are in the picture of health), can, through the injection of "mallein," be immediately detected. In exceptional cases it is possible that failure might occur.

Mallein not only informs one that the glanders germ is at work within the animal, but it has, to some extent at least, the power of retarding (arresting?) the development of the same.

The reader may ask, What is the nature of this substance?

It will be sufficient for us to know that "mallein" is an attenuated (weakened) form of the glanders virus, obtained through a series of intricate cultivations of the germs.

The method of testing animals for glanders requires extreme care. If the horses are working during the week, then Saturday night is the best time to begin with the test. First of all take their temperatures, and a good time to do this is at 6 P.M. If any of their temperatures exceed 102° Fahrenheit, such an animal must not be tested, otherwise a mistake may occur. As soon as its temperature becomes more natural it can be tested. Having done this, take the syringe—a special one with the necessary markings upon it being sold for the purpose—and inject 20 millimetres of mallein beneath the skin.

The side of the neck, about its middle, or the shoulder, is a suitable place for injecting the material. Either the right or left side of the horse may be chosen.

After each injection don't forget to cleanse (disinfect) the needle and syringe. Use a strong solution of carbolic acid, or what is better, corrosive sublimate in the same way. Now, the next thing to do must be to take each horse's temperature very carefully, beginning five hours after the injection, so that we must note the temperatures at the fifth, tenth, thirteenth, and sixteenth hours. Be particular about recording the results, which can be done by writing upon the wall at the head of each stall.

Supposing that we find one or more horses having a temperature of 104° Fahrenheit, what are we to conclude? That such an animal is most certainly glandered.

In addition to "rise" of temperature there will be seen a hard, painful swelling at the seat of the punctured skin, *i.e.*, where we injected the mallein; and, moreover, the horse will, of course, be out of sorts for the time being.

It will be found that the glandered horses will show the highest temperature about the thirteenth and sixteenth hours after the injection, gradually coming back to the natural temperature, which it will probably attain within forty hours or so. All the "healthy" animals will show no reaction whatever. Their temperatures remain as they were—or, at any rate, don't rise more than one degree. There is no swelling at the seat of inoculation, and the horse remains in its usual health.

The after-death appearances¹ always confirm the test, thus proving the unquestionable value of this agent.

Gleet.—(*See* Chronic Nasal Catarrh.)

¹ Sometimes these are so slight that extreme care must be used to prevent the minute tubercles escaping observation. These latter may be no larger than a rice seed.

Grass Staggers.—(*See Staggers.*)

Grease.—This is a very common skin affection, attacking the heels and fetlocks, especially the hind ones.

In many instances it appears to be of a constitutional nature, and then it only yields to treatment directed to improving the constitution in general. Commonly enough it is the outcome of filthy irritation, the result of neglect; consequently it is most frequently seen amongst horses belonging to the idle, or neglectful man, though the writer does not imply blame in every instance.

Irritating discharges, such as urine, watery dung, etc., etc., are the immediately "exciting" causes operating in its production, though secondary to constitutional tendency.

It is a fact that grease affects especially horses of a soft, sluggish temperament, with a superabundance of hair upon the fetlocks. Well-bred horses, on the other hand, without much hair on the fetlock, are also attacked.

Old age predisposes to the disease.

Want of exercise is a contributor to its occurrence.

The reason why the hinder face of the fetlock is more severely affected than the front part of it appears to be owing to the thinness of the skin, along with the situation being favourable to the accumulation of the irritating discharge.

Symptoms.—The skin is moist, the hairs glued together, and there may be some swelling, but at all events there is a very characteristic odour about the leg, and in some cases this can be (like thrush of the foot) smelt within the stable. Sometimes the swelling and greasy material extends up to the hock, or knee joint. Frequently suppurating sores are

present; if so, the matter has a healthy creamy appearance, quite unlike the blood-tinged matter from a "farcy" sore. Stiffness, or even lameness, is often enough present. In neglected cases, it is quite common to find the so-called "grapey" outgrowths. These are stalked structures from the size of a pea to that of a walnut, and they may form an irregular grape-like bunch, giving the limb a most unsightly appearance. They are outgrowths from the skin. The connective tissue of the skin may undergo such enormous growth that the fetlock joint assumes huge dimensions. This condition is permanent.

Treatment—1. *Preventative*.—Avoid breeding from horses with a tendency towards this disease, because it does appear to be hereditary. Never allow the limbs to stand in decomposing excreta. The fetlocks should be thoroughly dried after washing.

In winter, when it is thawing, rub the hair and skin about the fetlock joint with hog's lard, goose or hen's grease, etc. After the horse comes in from work, wash it off and thoroughly dry the parts. This is an excellent preventative in winter.

2. *Medicinal*.—First of all it is necessary to thoroughly cleanse the diseased part, for which purpose about one tablespoonful of bleaching powder may be added to a pailful of tepid water. Jeyes' fluid can be used in the same way. It is generally necessary to repeat this bath several times before the greasy and offensive matter is entirely got rid of. Having done this, we may now apply a dressing. Get some wood-wool wadding (which has remarkable powers of absorbing discharge) and then saturate a pad of tow with the following liniment:—

R̄. Creosote,	- - - - -	1 ounce.
Methylated Spirit of Wine,	- - - - -	6 ounces.
Mix.		

Apply the pad of tow thus saturated, cover the whole with a layer of the wood-wool wadding, and fasten on with a moderately tight bandage.

If there is any suppurating sores, and the part offensive, it is advisable to clap on a good big hot linseed poultice, dusting the surface of this latter with a layer of very finely powdered charcoal. Such a poultice will generally improve matters. Afterwards dress the sores with a lotion composed of one part of zinc chloride (butter of zinc), one part of spirits of wine, and nine parts of water. Apply with a pad of tow and a bandage. Continue with this until an improvement takes place. In simple cases of grease, the following powder will be found to answer all ordinary purposes :—

R̄. Powdered Sugar of Lead,	- - - - -	1 drachm.
Powdered Boracic Acid,	- - - - -	2 drachms.
Kaolin Powder,	- - - - -	4 ounces.

Mix, and dust over the moist parts of the leg, twice daily, after cleansing in the bath previously mentioned.

Another remedy, and a very cheap and effectual one, is the white lotion (*see* Lotions).

A saturated solution of blue-stone (sulphate of copper) is a fairly good application for indolent grease.

The internal treatment for constitutional grease must not be neglected ; in fact it is of greater importance than the application of external agents,

Give the horse one tablespoonful of Fowler's solution of arsenic, mixed with his food or water, night and morning. Continue this regularly for a month, and then give half a physic ball and half a diuretic (staling) ball combined. In three or four days begin with the Fowler's solution of arsenic again, leaving off as before, and returning to it again and again until the disease is cured.

In summer give green food, but it is a mistake to purge horses for grease. It does no permanent good.

If there are only a few grape-like growths, then clip these off with a pair of sharp scissors, keeping the horse under control with the twitch.

Cauliflower-like growths are best removed with a small flat iron spade and red hot iron. The flat spade is kept pressed against the skin, so as to prevent it from being too much burned, while the hot iron "sears" the excrescences off.

Nothing can be done when the limb is permanently enlarged.

Gripes.—(See Colic.)

Grunting.—This is an expiratory effort, *i.e.*, produced during the time air is being expelled from the chest. It may or may not be a sign of "unsoundness," though it is very commonly associated with "roaring."

If a horse grunts when a feint is made to strike it, struck, or turned sharply around, then the would-be purchaser must exercise care when testing the animal's wind.

Horses kept in straw yards and having full bellies will often enough grunt, though perfectly sound as regards their wind.

Grunting may be a purely nervous sign, be indicative of a "roarer," or the result of disease in connection with the chest. Looking at it in this way it follows that a "grunting" horse may be sound, "permanently" or "temporarily" unsound, according to the circumstances.

Gullet, Inflammation of.—Inflammation of the gullet (food tube) is not of common occurrence. It may occur through causes operating from within or without. Irritating or corrosive agents, and the lodgement of some sharp foreign body, as well as an extension of inflammation, are the chief of the former, while an external injury to the gullet may be cited as an example of the latter.

Symptoms.—Difficulty and pain when swallowing, or attempting to do this, along with considerable fever.

Treatment.—Give liquid food only, such as linseed-tea, barley water, gruel, etc. Add half an ounce of chlorate of potash to the liquid food twice daily. Any external injury must be looked to. Externally fomentations can be tried.

In severe cases stricture (nipping in) may be dreaded.

Gullet, Stoppage of. — (*See Choking and Stricture.*)

Gullet, Stricture (CONSTRICION) of.—This may be the result of disease from within or without the tube.

At all times it is a very serious condition, knowing that a continuance of it must result in death through starvation. The constriction may follow upon an external wound over the gullet, or be due to tumours pressing from without, or to such blocking the lumen of the tube from within.

Symptoms.—These come on gradually, especially if the

occlusion is progressive in its nature, when arising from the cause last named.

Some difficulty in swallowing solids at first, which may gradually extend to complete inability.

Accumulated food will perhaps be felt distending the gullet, which very soon widens above the point of stoppage, or even "pouches." Sometimes food is ejected through the nose. Pain, when trying to swallow, is most marked.

Treatment.—So much will depend upon its causation, or probabilities of this, that skilful aid becomes essential.

The daily use of the belladonna electuary (*see* Introductory) may afford some degree of relief. Nourishment may have to be given as "nutrient enemata." In any case, recovery is somewhat doubtful.



H.**Heart-Bag, Dropsy of.**—(*See Dropsy.*)

Heart, Fatty Degeneration of.—Old and under-fed horses are occasionally affected with this disease of the heart. It is not possible to ascertain this change during the animal's life, though such may be suspected.

After death the heart is found pale, flabby, and greasy. If carefully looked at, one or more patches of fat will be seen upon the fleshy part (the heart being a hollow, muscular organ), frequently upon the right side. This disease predisposes to sudden death, owing to rupture (giving way) of the fatty patch. The muscular fibres of the organ have been replaced by fatty material, which is incapable of carrying out the functions demanded of muscle.

It is a sign of "under"-nutrition.

Heart, Fatty Infiltration of.—Animals leading easy lives and receiving plenty of provender are the most likely subjects of this change. It is not a diseased state, being a sign of "over" not "under"-nutrition. Globules of fat are simply poured in between the minute fibres composing the heart, but do not replace these latter as in the last disease. The heart may be completely embedded in fat. This same deposit of fatty material commonly happens around the

kidneys, liver, stomach, and beneath the skin. It only does harm when it begins to be so excessive as to interfere with the movements of the heart.

Heart-Valves, Inflammation of.—(Endocarditis.) INTRODUCTION.—The heart is suspended in about the middle of the chest, and enclosed in a bag known as the pericardium. It has the form of a cone, the base of which gives attachment to the blood-vessels, and serving to keep the organ in its proper place. The apex is turned towards the left side, and looks downwards and backwards. The area covering the heart lies between (about) the third and sixth ribs. The average weight of the heart in the horse is about six and a half pounds. In colour it should be bright scarlet, feel firm to the touch, and have a sparing amount of fat about it, but not greasy or flabby. Its use is to act as a force pump for driving the blood throughout the system and back again to the heart. In this it is assisted by the various movements executed by the body. In the interior of the organ there are four compartments, viz., a right and left above, and a right and left below. The former are known as the "auricles" (from their supposed resemblance in shape to a mouse's ear); the latter as the "ventricles." Each auricle is separated from its fellow by a fleshy wall, and so are the ventricles; but each upper compartment is during life separated from its corresponding lower one by *valves*, composed of a fibrous material, which in health work in a perfectly harmonious manner. The valve on the right side has three flaps, that on the left two (tri- and bi-cuspid valves). The right side of the heart contains "impure" blood, and the left "pure" blood. The left side is by far the thickest, because it has to drive the blood throughout

the body and back again to the right auricle, whereas the right lower compartment has only to send it into the lungs for purification, and return it into the left auricle as purified blood. It is quite easy to tell the right side of the heart by pinching it between the fingers, when a cavity inside is rendered at once evident. You cannot do this with the left side. Now, when a horse is affected with rheumatism, the valves already alluded to are very liable to become attacked with inflammation, perhaps ending in the growth of one or more cauliflower-like excrescences upon them and their cords of attachment, which the reader will easily understand must sooner or later interfere with the working of these valves. Just as the valve of a cistern fails to shut off the water supply—though it may be only to the extent of a dropping—so may the valves of the heart fail to shut off the blood, either between the upper and lower compartments, or that passing into the large blood-vessels. The blood is as it were “dammed back,” and this is the reason why some horses are seen to have the large veins at the root of the neck beating (pulsating). Although the valves thus affected may not be wholly incompetent to carry on their work, there is always an additional danger inasmuch as any of the wart-like growths may ulcerate at their roots and get detached, and thus swept along with the blood until some blood-vessel gets blocked. The importance of such a blockage may end in sudden death, or the death of a part supplied by the vessel thus occluded.

The symptoms of disease of the heart-valves are not likely to be made out so easily, especially by the layman. If rheumatism is present, and the heart is heard to be beating irregularly and violently, along with a shivering of the muscles about the shoulder and a feeble pulse, I think the

owner will have reasonable grounds for suspecting the presence of this disease, if not, at any rate a heart affection closely bordering upon it. If dropsical swellings appear under the skin, especially about the chest, the opinion will be strengthened as to the correctness of the view entertained. In addition to these symptoms, fever is present, along with other signs of a general nature, *i.e.*, loss of appetite, anxious expression, thirst, difficult breathing, and unwillingness to move about, etc.

Treatment.—Keep the animal in a very dry stall or loose-box. Avoid any undue excitement, and let the horse be kept as quiet as possible. Clothe the body and use bandages, treating any swollen and painful joints according to the treatment laid down under rheumatism (which see). Add half an ounce of bicarbonate of potash to the animal's drinking water, using it twice daily. If influenza is present, small and frequently-repeated doses of brandy ought to be given. A wineglassful of brandy and half a glass of sulphuric ether, given in half a tumblerful of water every four hours, will meet this want.

To relieve pain and allay the irritability of the heart, the following draught can be given every evening, in addition to the foregoing:—

℞. Tincture of Colchicum,	- - -	6 drachms.
Tincture of Aconite,	- - -	30 drops.
Iodide of Potash,	- - -	1 drachm.
Salicylate of Soda,	- - -	2 drachms.
Water,	- - -	1 pint.

Mix, and make a draught.

Directions.—To be given just as it is.

General Management.—Allow warm food, gruel, etc. Keep on with the treatment until horse is better. Avoid draught. Allow a thick bed of dry straw. (*See Rheumatism.*)

Heart, Rupture of.—In every instance this must cause sudden death, though the latter is not necessarily caused by this. Fatty degeneration (*see this*) is a most powerful “predisposing” cause, but violent exertion may be the “exciting” one. Sometimes it occurs apart from either of these causes.

Heels, Cracked.—Horses are very frequent sufferers from this troublesome and somewhat painful complaint. The fissures in the skin heal partially up after the animal has had a rest, but open out directly it comes out of the stable. It is this which causes stiffness or actual lameness. We are well enough aware of the pain which results when oneself suffers in a similar manner, *e.g.*, chapping of the back of the hands in winter. The chief cause is neglect in the matter of improper after-drying of the heels.

Wet and dirt set up congestion in the hollow of the heel, which is at first indicated by redness, then moisture and cracking—fissuring.

Treatment—1. *Preventative.*—Always dry the heels after the animal has been washed or at work in the wet. They must be properly dried.

2. *Medicinal.*—Dress with pure glycerine every night. If this fails, smear on the ointment of balsam of Peru (1 part of the latter to 8 parts of vaseline).

The white lotion (*see this*) is also an excellent remedy. Rest.

Herniæ, or Ruptures are fairly common amongst horses and foals, less frequently mares.

Used in its broadest sense, a rupture means either the passage of a portion of the intestines, its coverings, or an organ, through a natural, or artificial, opening in the wall of the belly, but remaining beneath the skin, usually indicated by a variously-sized swelling. If the rupture (hernia) can be returned into its place, it is termed "reducible," if not, "irreducible."

The chief danger attendant upon a rupture rests upon the fact that it may become strangulated (strangulated rupture), although some ruptures have but little tendency towards this; but immediately strangulation takes place, it becomes of grave importance, as death may be brought about very quickly (24 hours) through mortification of the bowel. Sometimes a rupture is present when the animal is born (congenital), though commonly it occurs during any age. According to the situation of the rupture various terms are employed to indicate such. Some ruptures require skilled surgical interference, but the layman can treat the simpler kinds; in fact, those in young animals disappear without any treatment, while some animals may have a large rupture and yet continue to do their work regularly. The writer has seen horses working daily, which have had ruptures extending almost down to the ground. Such are unsightly, and attended with danger; therefore, if the animal is worthy of its hire, surely it would only be doing justice to try and have the same removed.

Causes.—As already stated, the rupture may be present at birth, or occur shortly afterwards. Supposing that the ring—through which the testicles have to pass in order to get down into the scrotum—remains too wide, then a

portion of the bowel (small intestine) easily slips into it, and readily becomes strangulated through the pressure of the ring. This constitutes what is known as strangulated scrotal hernia.

Again, if the ring at the navel—through which the cord of the same name passes—remains open or relaxed, it readily allows the bowel, or a fold of membrane, to slip through it, and appear as a soft swelling about the navel. In reality these are “predisposing causes,” the “exciting” ones being straining, coughing, distension of the belly with gas.

A rupture in the wall of the belly may be brought about when a mare is giving birth to a foal. In rare instances the womb comes down through this opening. Severe exertion, or the kick from another horse, are amongst other causes.

A. Symptoms of a Rupture, not Strangulated.—1. There is a soft elastic swelling, larger after feeding, decreasing in size between these intervals.

2. If the hand is placed upon the swelling, and then the animal be made to cough, a sensation of movement will be felt at the swelling.

3. Perhaps the swelling (especially if at the navel of a foal) will go away when the fingers press upon it, but return directly this pressure is removed.

B. Symptoms when a Rupture is Strangulated.—Violent pain within the belly, in fact, like a horse with colic (gripes), but differing from this (in its simplest form), inasmuch as there is never freedom from pain, *i.e.*, the pain is continuous.

Sweating, rolling, and straining are prominent symptoms. When the hernia (rupture) can be seen externally, it will be

found to have increased in size, be rather hard and somewhat painful.

If a horse is ruptured, and suffers from colic, the first thing should be to ascertain whether the rupture has become strangulated.

The immediate cause of this latter appears to be through the opening having been filled up by bowel, etc., and causing the margin of the former to act as a sort of ligature or constricting ring. At one time it was thought that it was the ring which narrowed upon the bowel, just as an india-rubber one would do upon the finger. In both cases the blood supply is cut off.

If relief is not afforded, the horse soon dies. It is only very exceptional for a cure to be brought about without surgical skill.

Treatment.—The treatment of a strangulated rupture should be left to the care of the veterinarian, because considerable anatomical knowledge is required, especially if the knife has to be used.

The simplest form of treatment which the owner could adopt under these circumstances, would be to try and return the bowel by manipulation while standing, or throw the horse, fasten it securely, and then raise (elevate) the back or loins, so as to be favourable towards the contents of the rupture passing back into the belly by their own weight. If the swelling can be returned through the opening, by manipulation with the hands, by all means do this, and then apply a broad-webbed bandage.

In *strangulated rupture of the belly* (ventral hernia), *hernia of the scrotum*, or *canal leading from this*, an operation is necessary, therefore the services of a skilful veterinary surgeon should be sought.

Umbilical or Navel Rupture.

This is a common form of rupture amongst foals and colts, and frequently noticed a few weeks after birth.

It appears as a swelling, of a soft and elastic nature, quite free from any pain or inflammation.

If you thrust your fingers into the centre of the swelling and press up towards the belly, a ring (umbilical ring) can be felt, into which one or more of your fingers may pass. It cannot very well be mistaken for an abscess, because there is neither heat, pain, or matter present.

Causes.—Due to the large size of the navel-ring.

Treatment.—Don't be in any hurry to adopt this. Wait a few months and see whether Nature does not work her own cure. Very often this happens.

If not, keep the animal short of food, and then cast it (throw it). Now manipulate the swelling (having the horse on its back), and take care that its contents pass back into the belly. Take the skin (not the flesh) and pinch it between the fingers, drawing it well away from the belly. This skin is now embraced by a plain wooden clam, not too tightly at first, but tighten it a little each day. The object of enclosing the skin between the clam is to kill the former, ultimately allowing it to slough off. But the sloughing must not be too hurried, otherwise adhesive inflammation will not be complete. The clam must be allowed to drop off, not removed. Usually this effects a complete cure. To prevent the clam falling off, it is a good plan to insert a couple of horse-shoe nails through the skin hanging out of the clam. The ends of the nails must be curled up after insertion, so as to prevent injury to the

animal. The clam is fixed on its length in the direction of the long axis of the body, and not crosswise.

Sometimes a rubber or other ligature is used instead of the clam. Always be sure that there is nothing but skin included in the constricted part.

Herpes.—This disease is characterised by irregular circular spots, and then a crop of vesicles (blisters) appears.

The upper lip of the horse is a common seat of the eruption. On white parts of the skin redness will be seen.

Treatment.—Give a mild dose of physic, and dress the sore spots with zinc ointment or white lotion twice daily. Use some of the tonic powders for a few days.

Hide Bound is applied to those horses having their skin, as it were, firmly adherent to the muscles below. It is but a common symptom of weakness and unthriftiness. Horses with narrow chests and tucked-up bellies have little spare room for fattening beneath the skin.

Treatment.—Try and improve the system generally, and give plenty of linseed, (whole) carrots, and bran mashes. Try and sharpen up the appetite with the use of tonic powders. Cod-liver oil will do good.

High-Blowers.—This term is applied to horses making a loud, respiratory sound during progression. It may be due to flapping of the nostrils, or disease in connection with the respiratory apparatus. Treatment accordingly.

Hock, Capped.—When the point of the hock (or hocks) has received a blow—such as the bruising resulting from kicking during a railway journey, etc.—it is very liable to become the seat of acute inflammation, indicated by the presence of heat and pain, thus distinguishing “recent” capped hock from an old standing swelling at this part.

When purchasing a horse don't neglect to look at the points of the hocks, which, if they give evidence of capping, should be regarded as suspicious, until proof “positive” (never unless) has been obtained that the cause is other than that of a “kicker in harness.”

Situated between the tendon and the skin at the point of the hock there is a lubricating membrane, also between the bone and tendon there is what is known to the veterinarian as a synovial bursa, *i.e.*, a small pocket containing a lubricating semi-fluid.

It is these structures that are chiefly concerned in the production of capped hock.

It is somewhat difficult for the amateur to distinguish the several forms of capped hock, but there should be little trouble in telling the difference between mere thickening of the skin and subjacent tissues from a watery feel beneath the latter (dropsy).

Other forms of this disease are “dropsy” of the bursa and disease of the bone, tendon, etc.

Disease of the bursa, bone, etc., necessarily renders a horse having a capped hock or hocks, from the implication of these structures, unsound.

Disease of the tendon gives the point of the hock a hard feeling, whereas manipulation of the tendon at the point of the hock will probably render it evident that the swelling

is between the bone and tendon ; if so, it indicates disease in connection with the synovial bursa.

Lameness is only present when there is severe inflammation, so that the eye and manipulation are the usual methods of detecting capped hock.

Treatment.—If inflamed, apply ice-cold water, made by adding two and a half ounces each of powdered nitre and sal ammoniac to every quart.

Horses kicking in their stalls, especially at night (night kickers), ought to have the stall posts padded. When the disease has been in existence some time, very little can be done, at least to be of permanent service.

Painting the part with tincture of iodine once a day may be tried. A blister will do no harm.

Tight bandaging is of utility.

Failing to derive any benefit from the foregoing, the ointment as per the following prescription can be rubbed on every other day :—

R̄. Iodine Ointment, - - -	2 ounces.
Strong Mercurial Ointment, - -	$\frac{1}{2}$ an ounce.
Powdered Camphor, - - -	$\frac{1}{2}$ an ounce.
Benzoated Lard, - - -	1 ounce.

Mix, and use as directed above.

Hock, Inflammation of.—The hock joint may be the seat of either an “acute” or “chronic” inflammation.

Acute rheumatism, a blow, or a wound, are frequent causes of the former, whilst bone-spavin is a common example of the latter.

When the joint has been opened there will, in addition to

the swelling, etc., be a discharge of synovia, or the "so-called" joint-oil. If the animal is down, it may be unable to rise through the swelling.

Treatment.—In the early stages cooling applications should be used. Cold water fomentations are suitable, and can be applied in the form of irrigation, or as saturated bandages, very frequently renewed.

The horse ought to be placed in the slings.

If an acute rheumatic inflammation, salicylic acid may be given internally. (*See Rheumatism.*)

Open-joint is often treated by applying some blistering ointment around the seat—not upon—of the wound, though we should recommend professional aid as soon as possible, as the constitutional disturbance is frequently pretty severe.

Hoof, Horny Tumour of.—Sometimes a tumour forms upon the inner surface of the hoof, and it is composed of a like structure. It is technically known as a keratoma, *i.e.*, horn tumour.

It may be productive of lameness.

A bulging of the sole sometimes arises from this cause.

Horse Distemper.—(*See Influenza.*)

I.

Indigestion, Acute.—This disorder—commonly called “Stomach Staggers”—is a frequent complaint in the horse. It arises through an excess of bulky or indigestible food in the stomach.

A predisposing cause is want of tone in the wall of the stomach, probably brought on through a prolonged fast.

The symptoms are those of restlessness, colic pains, the latter of a more continuous character than those observed in colic from other causes. In some instances—though not in all—there is a staggering gait, and the animal seems stupid, perhaps pressing its head against the wall. The pulse, though “full,” is slow, and, it may be, the breathing of a snoring character. Unless relief be afforded, these symptoms become aggravated.

Treatment.—Avoid long fasts and excess of boiled, bulky, or food otherwise of an indigestible nature. As to medicinal agents, the following draught should be given :—

R̄.	Powdered Barbadoes Aloes,	-	-	7 drachms.
	Sal Volatile,	-	-	1 ounce.
	Tincture of Capsicums,	-	-	2 drachms.
	Tincture of Belladonna,	-	-	1 ounce.
	Peppermint Water,	-	-	20 ounces.

Mix, and give the whole to a medium-sized horse, Two-

thirds will be sufficient for a pony. In the case of a cart horse add one drachm more of aloes.

When brain symptoms are very marked, apply ice-cold water to the poll, and give exercise. The food should consist of bran and linseed mashes, or green meat.

Another form of indigestion is that spoken of as "Chronic," arising through a variety of causes, and really more symptomatic of some other affection. Diseases of the teeth, worms, irregular feeding, disease of the stomach, heart, bowels, or liver, are causes productive of symptoms of chronic dyspepsia.

Wind sucking, irregularity of the bowels, an appearance of general unthriftiness, are chief amongst the signs of this complaint.

Treatment.—An effort must be made to ascertain the cause, otherwise it is impossible to carry out correct measures to alleviate the symptoms.

If the liver is suspected—indicated by yellowness about the eyes and a scurvy condition of the skin—give a ball composed of forty grains of calomel, two drachms of aloes, and three drachms of carbonate of soda, every other day for four days.

For worms, treat according to the lines prescribed for those parasites. (*See Worms.*)

General unthriftiness can often be overcome by giving six drachms of Fowler's solution of arsenic in food twice a day for several weeks. At the end of this time give a dose of aloes (physic ball), and recommence with the arsenic in a week's time.

For food, linseed, bran, and bruised oats. Carrots, if these can be had.

A most excellent preparation for adding to the food under

these circumstances is Macadam's horse malt, either in the semi-fluid or dessicated forms.

Inflammation.—Any organ, portion of an organ, or tissue, situated internally or externally, joint, etc., may be the seat of a morbid change, spoken of under the popular name "Inflammation."

To the lay mind I am afraid that the "term" is better known than the changes through which this condition is brought about. I think there are but few of us who do not understand its popular meaning, viz., a burning sensation, though such is, probably, more "apparent" than "real."

The first visible step in the process of inflammation consists of a narrowing of the smallest blood-vessels, with a temporary increase in the rapidity of the flow of blood through them. In the second stage the vessels widen, and the current of blood becomes slower. Thirdly, the flow begins to be tardy and irregular. Fourthly, a more advanced stage of the last, consequently the blood-vessels get blocked, and the white cells in the blood pass through the blood-vessel wall into the surrounding tissues. The passage of these cells through the blood-vessel wall is partly due to a special power which they possess. Liquid (serum) is, about the same time, poured out through the vessel wall, and forms the chief cause of the swelling, so common to an inflamed part.

Irritation, or injury, are the causes of these changes, while the cardinal symptoms (signs) of an inflamed area are:—*Heat, pain, redness, and swelling.*

In the horse one or more of these may be absent; in fact, redness is only visible upon white parts of the body,

e.g., the white upon the nose and heels, etc., of some horses. Increased redness can, of course, be seen upon the membrane lining the eyelids, vulva, etc., likewise (when present) after death in connection with the bowels, though such may be found without any inflammation being present. (After death staining.) Redness is not a constant sign of inflammation. It appears to be chiefly due to engorgement with blood.

The pain may be set down as due to pressure upon the nerve-endings by the liquid which is poured out into the surrounding area. Like redness, pain is inconstant.

The firmer and more unyielding the surrounding textures are, the greater the degree of pain, this being the reason why an inflamed coronet, or inflamed feet, cause such excruciating pain. The terminations of inflammation are varied.

Return to health, permanent swelling, suppuration, or death of the part, are the usual winding-up methods.

Treatment.—It is impossible to lay down any rules for guidance, so that the reader must refer to the various diseases. As to the course to be pursued in any individual instance, the main principles are:—

1. To try and subdue the pain.
2. To relieve the congested condition of the part.
3. To endeavour to prevent the inflammation extending.
4. To assist the system, when depressed, to tide over the crisis of the disease.
5. To watch for unfavourable complications.
6. To promote the healthy activities of the body through the use of good food, ventilation, good drainage, grooming, and other channels, which assist in invigorating the constitution.

Influenza, or Horse Distemper.—This disease appears to have received notice as early as the fourteenth century, from which time (or before) it has continued to exist, appearing in different countries and different localities at the same time, or at varying periods, and with varying degrees of severity.

Atmospherical influences and sanitary surroundings appear to have an important bearing upon this latter. While it is reasonable to assume that the germs and spores of influenza are constantly present amongst the horses of our own and other countries, a remarkable feature about such is the periodical occurrence of the disease amongst a number of horses in different localities at one or different times, with a decided preference for the fever to assume, at each outbreak, some particularly characteristic feature. This is the reason why the term "pink eye" came to be applied to one manifestation of influenza, in which the lining membrane of the eyelids assumed a bright pink colour, accompanied by a turgid condition of the same.

Nature of Influenza.—There can be no doubt that this is a specific (*i.e.*, due to causes, special) disease, closely allied, and corresponding to, the same disease in man, and distemper of the canine race. It attacks horses of all ages, making its appearance where good, bad, and indifferent sanitary conditions prevail, though it can, with perfect truth, be said that the worst forms of the disease are met with amongst horses housed where little or no regard is paid to ventilation, drainage, and the like, together with exhaustion of the animal system through over-work, etc.

To sum up, we may say that any debilitating, degrading, or impoverishing influences acting upon the animal economy,

are most powerful "predisposing" factors towards the appearance and severity of the malady.

Influenza is essentially a febrile affection, showing itself in connection with the upper or lower air passages (lining of sinuses of the head and nose, throat, lungs, and their coverings, etc.), the digestive organs (liver, intestines, etc.), and joints of the limbs, attended with extreme prostration and rapid loss of flesh.

Causes.—Viewed in the light of modern knowledge, the only tenable explanation as to the cause of influenza is based upon the germ theory.

Although it may not be possible to state the precise nature of the organism causing the affection, still I think that we are fairly justified in ascribing the malady to a living organism, whose habitat is found in the various fluids and tissues of the body. For convenience we may term it the "Influenza Germ."

The author's opinion is that the germs and spores which excrete the poisonous material are contained in the discharges from the body (*e.g.*, nose mucus, etc.), likewise present in the atmosphere. On this account the virus of disease is frequently spoken of as "fixed" and "volatile."

Influenza is most prevalent during late spring and autumn, both seasons of the year when the air is moist and warm, and probably these are essentials in connection with the growth and multiplicity of the organisms.

Further, the animal body is particularly liable, at these periods of the year, to be readily acted upon by adverse agents. The wide distribution of the disease, together with the rapidity of its spread from the centre of origin to other and healthy horses, but so far, we can believe, not to animals of another species, are insurmountable arguments

that it is "infectious," consequently that it must be caused by living matter, be this of whatever nature it may.

If the germs are not present, the author believes—and urges all reasonable and rational men to cast aside any other belief—that it is as impossible for man, or an animal, to become affected with influenza, as it would be to create living from non-living matter.

It may be queried, "How is horse distemper spread?"

In the author's opinion the disease germs are taken in during breathing, and (though to a lesser extent) by direct or indirect contact (inoculation) with the nasal discharge.

One attack, though no absolute safeguard against another, does, I believe, render the same animal less liable to a second, or, at any rate, to a modified form of the same disease. Personal experiences strengthen the view of this statement.

Symptoms—A. General.—Under this heading it is proposed to describe such symptoms as are invariably present in the horse when suffering from distemper, leaving particular manifestations for special consideration.

To begin with, the animal is dull, not feeding as well as he ought to, and, if at work, is wanting in his usual energy.

The impression conveyed to the mind of the observer is that the animal is suffering from general weariness and languor.

Very likely the horse will be found laid down, full stretch, though the position appears to afford his aching bones no great amount of ease. The nose membrane is reddened more than usual, dry at first, but subsequently moist, with a thin discharge, the latter getting more mattery-like as the disease advances.

There is a short and dry sort of cough, but this soon gets soft and very troublesome ; in fact, when there are a number of horses down with distemper in the same stable, the animals are continuously on the cough. Thirst, soreness of the throat, and constipation (or the opposite) are constantly present. If the layman has a clinical thermometer (*see this*) by him, he will, likely enough, find that the animal's temperature comes within 104° and 107° F. The pulse about 70 or 80 beats per minute and *always* feeble. Exhaustion becomes more and more marked daily.

The symptoms may run on for about a week, and then, if all goes well, a gradual recovery begins, being completed in two or three weeks.

However, it is not always that distemper can be persuaded to run its course in this simple fashion.

Complications are very apt to spring into existence, and so hinder recovery, or even carry the animal off.

B. Special Symptoms.—As a rule, the symptoms already enumerated are present in most instances of horse distemper, but perhaps in the least degree when the disease is chiefly in connection with the bowels.

In the so-called "pink eye," we have, in addition to the clear pink colour and swollen state of the membrane lining the eyelids, swelling and stiffness of the limbs, causing the animal pain and difficulty in movement.

The pulse will range from 60 to 100 beats in the minute, with the body heat somewhere about 105° Fahrenheit.

In some instances, very sudden and unexpected deaths occurred when this particular variety of influenza was specially prevalent.

When the *lungs and their coverings*, or the *bronchial*

tubes (large, small, or both), become involved, the *danger* of the malady is *proportionately* increased.

The degree of fever is *higher*, the *breathing* becomes *difficult* or *painful*, and the *cough* *short* and *suppressed*, when *pleurisy* is present. In this latter disease, the horse will appear as though he were afraid to make an effort to cough. The pulse is very hard and fast (80 per minute) during the early part of pleurisy, while the breathing gives rise to friction sounds (rubbing). These can be heard to the greatest advantage immediately behind the shoulders. Another important symptom which the observant layman might notice is a "furrow" running along the side of the belly and chest, taking an oblique direction. The animal stands in the direction of the most fresh air, the nostrils being widely opened to use them with the greatest advantage, while their interior will be seen to have a blueish tint.

The chief danger attendant upon pleurisy rests upon the liability towards the outpouring of watery-like fluid within the chest, thus rendering the horse in danger of suffocation, through the liquid pressing upon the heart and lungs.

If this happens to any great extent the pulse gets fluttering, feeble, and quick—100 per minute or thereabouts.

The breathing is extremely painful. It is wonderful what a large amount of liquid may be contained in the chest cavity.

It is not at all uncommon to tap the chest for dropsy, and draw off several gallons of fluid, say, to-day, and find that there is a second accumulation of a similar amount on the following morning. As much as fifteen or twenty

gallons have been withdrawn within a fortnight. Recovery under these circumstances is exceptional. A small amount of liquid is commonly present in most instances, but this is generally absorbed as the inflammation subsides.

Dropsical (watery) swellings about the limbs, chest, and belly are frequent in pleurisy, pointing to liquid being inside the chest, though of course not a positive sign.

When the bowels are the main seat of the disorder, the animal has a bilious look about it, hence this form is frequently spoken of as "Bilious Fever." It is readily noticed by the yellowness about the eyes, mouth, and tongue. In grey or white horses there is a saffron colouration of the skin. Pain in the belly (slight colic), temperature about 103° or 104° F., prostration, and in some instances violent purging, are the chief symptoms. Rheumatism not uncommonly comes on after the simplest manifestation of the disease. The joints "crackle," become swollen and painful. The most remarkable peculiarity about these swellings is their sudden tendency to disappear from one joint, reappearing just as suddenly in another one. For instance the fetlock joint may be attacked this morning, but in the evening we may find the swelling and pain has changed to the knee. Such then is a brief sketch of the more important symptoms of horse distemper.

It may be asked how is one to know when a horse has got distemper, and what serves to distinguish it from an ordinary cold, bronchitis, etc.

Briefly the distinction rests upon :—

Six distinctive
features of
Horse Distemper.

1. The marked prostration.
2. The high degree of fever.
3. Its infectious nature.
4. The feeble and quick pulse beats.
5. The occurrence of distemper in the same or other localities.
6. The tendency to chest, bowel, or joint complications.

Treatment.—By far the most important part of this will be found under general management.

Being a fever it is impossible to cure it. It must run a certain course. We can, however, to some extent assist or guide it towards a successful termination. It is hardly necessary to say that bleeding and purging are to be strongly condemned.

There is no surer method of making a distemper-stricken patient bite the dust. A very opposite course to this must be pursued.

We must increase and fortify the vital powers, not decrease them.

Half a dessertspoonful of chlorate of potash can be put in the animal's drinking water night and morning. In very mild attacks this, along with good nursing, will likely be all that is needed.

The bowels are best regulated with (if such can be had) a small amount of green food. Linseed oil is a substitute. Add three or four tablespoonfuls to the food (small bran mash, etc.), night and morning, until the desired effect is produced.

Frequent steaming of the nasal openings will increase the

discharge from them, and thus favour a more healthful issue.

Soreness of the throat forbids the administration of liquids, so that it is much better to make use of powders, or, better still, to use an electuary such as :—

℞. Powdered Capsicums, - - -	6 drachms.
Powdered Iodide of Potash, - -	4 drachms.
Powdered Belladonna Leaves, - -	2 ounces.
Powdered Myrrh, - - - -	3 ounces.
Linseed Meal, - - - - -	3 ounces.
Pure Glycerine and Syrup of Squills, of each 4 ounces.	
Treacle, a sufficiency to make the whole of the consistence of good jam. Honey can be used instead.	

Directions.—Take a piece about the size of a broad bean and insert it with the finger inside the cheek. Repeat this three or four times daily.

This electuary will be found suitable for all ordinary cases of influenza, so that the amateur should have a supply within reach. For bronchitis, pleurisy, etc., it will answer as well as aught else, avoiding annoying the horse with a drench. In addition to this the throat and chest should be well rubbed with white oil, or camphorated oil. If this latter is used it ought to be mixed with one part of turpentine.

A very useful liniment for application to either throat or chest is as follows :—

℞. Liniment of Turpentine, - -	1½ ounces.
Liniment of Capsicums, - -	1½ ounces.
Strong Liquid Ammonia, - -	1 ounce.
Camphorated Oil, - - - -	4 ounces.

Mix, and shake before using.

Directions.—Apply a little (say a fourth part) to the throat and chest twice daily, with friction.

If the owner thinks that the animal has a “slight touch of pleurisy,” as the saying goes, I think that more good will be derived through the application of mustard paste to the sides of the chest. Apply the paste to the skin by rubbing it in, and then wash off with warm water in about half an hour’s time. Care must be taken to dry the part thoroughly afterwards, and it is an advantage to rub the same with arnica liniment for a few minutes. The mustard paste can be repeated after a little of the soreness passes off.

Setoning the chest is sometimes resorted to, and appears to be beneficial.

Knowing that pleurisy is always attended with great danger, it is the duty of the author to recommend that professional aid be sought. This is all the more necessary when we consider that the chest may require tapping in order to relieve the urgency of symptoms.

The dispersion or absorption of this dropsical condition is hastened by the administration, twice daily, of a draught containing one drachm of iodide of potash, tincture of foxglove 1 drachm, sal-volatile $\frac{1}{2}$ an ounce, water $\frac{1}{2}$ a pint.

In the bilious form (bilious fever), begin the treatment by giving the following ball:—

R \bar{y} .	Calomel,	-	-	-	-	30 grains.
	Extract of Belladonna,	-	-	-	-	30 grains.
	Powdered Podophyllin,	-	-	-	-	20 grains.
	Powdered Opium,	-	-	-	-	15 grains.
	Powdered Carbonate of Ammonia,	-	-	-	-	2 drachms.
	Treacle,	-	-	-	-	A sufficiency to make a ball.

Mix, and give as above.

If colicky symptoms are present, give half an ounce each of tincture of belladonna and hyoscyamus. Repeat in three hours, if needed, but not unless. Apply warm water cloths to the belly. In addition to the foregoing treatment—which may consist of the ball only being given—the daily use of some medicine is called for. This draught will be found suitable :—

R̄. Quinine,	- - - - -	30 grains.
Dilute Nitro Muriatic Acid,	- - - - -	1½ drachms.
Infusion of Quassia, ¹	- - - - -	½ a pint.
	Mix.	

Directions.—Give twice daily until symptoms of biliousness disappear, and the animal gains strength.

Allow small doses (two tablespoonfuls) of linseed oil in the food. Rheumatic symptoms must be treated just as in ordinary rheumatism. (*See* this disease.)

Pink eye requires the same as that spoken of at the commencement, viz., use of electuary, potash in water, and stimulants, such as brandy and ammonia. About 6 ounces of the former, along with two drachms of stone ammonia dissolved in a pint of water, and given twice daily. When recovery has begun, make use of tonic powders.

General Management.—Upon this the whole success depends. If the groom or other person in charge does not carry this out to the best of his abilities, then he must not be disappointed if things go wrong.

The three essential factors in the management of a horse whilst labouring under distemper are :—

¹ Made by pouring boiling water over quassia chips.

Perfect cleanliness.

Pure air.

Good nursing.

The first and second are matters of common understanding, therefore require little explanation. They of course imply good and clean bedding, frequent washing of the floor, flushing and disinfecting the drains. A free supply of fresh and pure water, and the admittance of pure air without draught.

The body should be groomed twice daily, the clothing taken off, shaken in the open air, and replaced. Sponge the body with warm water. Bandages to the limbs. Food often, and in small quantities. Never leave this before the horse. Don't allow water to stand in the same stable. Give cold water. Allow a little green food twice or thrice a day. If possible take the temperature of the body twice daily. Bran mashes, scalded oats, and particularly linseed gruel, must be given. From two to four tablespoonfuls of linseed oil may be added once or twice daily. The bowels must not be allowed to remain constipated, but then there must be no purging. Steam the head, or rather nostrils, twice or three times daily. Milk, if the animal will take it, can be given. Boiled crushed carrots are exceedingly beneficial. If the horse seems very weak, give a teacupful of brandy, beaten up with eight eggs, and a half a pint of linseed tea every three or four hours. This will help the system a great deal, provided the owner "sees" that the animal (not the attendant) gets it.

Give the medicine regularly, and use the liniment as directed.

The electuary must be used frequently.

If the horse won't take any nourishment, it must be made to do so.

Allow the animal all the quietude possible.

As soon as ever the horse is able, give a little walking exercise morning and evening.

Avoid over-heating of the stable, but keep it sufficiently warm, because this is the surest way of guarding against chest complications.

To prevent the disease spreading to other horses, it is necessary to have a separate attendant upon the sick, taking care that the person selected is one upon whom implicit confidence can be rested.

After Management.—Disinfect the stable with chlorine gas (see Disinfectants). Wash clothing and fittings with a solution of some disinfectant, such as Jeyes' fluid, etc.

All feeding utensils must be treated in a similar way.

Boiling water is an excellent disinfectant.

Lime whitening of the walls, with subsequent exposure of the interior of the building to air, will complete the job.

When either roaring, whistling, chronic cough, rheumatic swellings of tendons or joints remain as "after affects," the reader will do well to turn to the several pages relating to these affections.

Intestines, Inflamed and Injured.—

Through a variety of causes the bowels of the horse are frequently the seat of inflammation and injury.

At the outset we may say, that once inflammation starts in the bowels of this animal that it always proves fatal.

Probably the most frequent cause is worms, especially those of a true blood-sucking variety. The ingestion of

poisonous materials, either mineral or vegetable, is usually followed by an acute inflammation of the stomach and bowels.

Specific diseases such as anthrax, influenza, etc., are often accompanied by bowel inflammation; strangulation of the gut, or telescoping of a portion of it are not uncommon, and produce fatal enteric inflammation.

The same may be said of concretions and external violence, etc.

Symptoms.—These begin with pains of a continuous character.

The animal is constantly on the move, up and down, rolling, no position seeming to afford the slightest relief.

Pulse quick, small, and wiry, but breathing not appreciably altered.

The body has a cold and clammy feel, and after a time the expression on the face becomes changed.

When the pain is exceptionally severe we have seen the animal attempt to climb the wall or sit up on its haunches.

Some horses constantly press their hind-quarters against the wall, if in a loose-box. This sign we have observed in those instances where an after-death examination has revealed a telescopic condition of the bowel.

In true enteric inflammation, these symptoms gradually increase in severity, but when mortification sets in, the pain ceases, to be soon, however, followed by death.

Treatment.—We advise that professional assistance be summoned at once. In the meantime hot water rugs may be applied to the belly. Put on thick clothing, bandage limbs, and give a deep short straw bed in a roomy loose-box or shed improvised for the occasion.

One ounce of chlorodyne B.P. can now be given in a pint

of warm gruel, to which three wineglassfuls of whisky has been added. If aid is not forthcoming, repeat the draught in four hours, and continue the fomentation as long as possible.

If hot water cannot be applied, owing to the restlessness of the animal, rub the surface of the belly with mustard paste.

Irritant Poisons.—(*See* Poisons.)



J.

Jaundice.—This is, in popular phraseology, known as the “yellows.”

It is a condition arising through the entrance of bile pigments into the circulation.

When it makes its appearance whilst a horse is suffering from influenza, it is commonly spoken of as “bilious fever” —a condition very frequently observed by the veterinarian.

Congestion of the liver is indicated by a saffron tint of the white portions of the eye-ball, yellowness of the mucous membranes (mouth, eyes, tongue, etc.), a slow pulse, clay-coloured excrement, and deep yellow coloured urine.

Some horses are lame upon the off (right) fore limb.

Treatment.—The following ball may be given every second day:—

℞. Extract of Belladonna,	- -	30 grains.
Calomel,	- - - -	30 grains.
Powdered Nitre,	- - - -	2 drachms.
Sal Ammoniac,	- - - -	2 drachms.
Powdered Barbadoes Aloes,	- -	1 drachm.
Gentian Powder,	- - - -	2 drachms.
Treacle,	- - - -	A sufficiency.

In addition to this three drachms of sulphate of soda can be added to the food or water daily, or twice daily.

Diluted nitric acid is sometimes useful for this complaint. Two or three drachms should be given with the food twice a day, or it may be administered in half a pint of cold water.

Jaw, Fracture of.—(See Fractures.)

Joint, Open.—(See Hock, Inflammation of.)

Joints, Stiffness of.—Many horses suffer from stiff joints, and it is a defect which necessarily interferes with their utility.

It may be either “temporary” or “permanent.”

Slight stiffness is indicated by a want of mobility (flexion, extension, or both).

As a temporary condition it is common during injuries to the knee, fetlock, hock, etc., the swelling alone interfering with movement.

Ringbone and spavin are often causes of permanent stiffness.

A stiff knee-joint (Anchylolysis) renders a horse of very little value.

Rheumatism of the muscles, joints, or both, is denoted by stiffness, temporary or permanent. Stiff back is frequently observed in hunters, cart horses, etc., and they are always condemned for this serious defect.

K.

Kidneys, Elementary Anatomy of.—The function of the kidneys is to secrete the urine, a fluid containing the waste products which have been formed during the various complex changes going on within the animal body. Each kidney is made up of numerous minute urine-tubes, blood-vessels, etc., and has a sort of transparent or semi-transparent covering over it, which in health does not adhere to the fleshy part of the organ. This is important, because in disease it may do so.

The kidneys are of a chocolate colour, and situated beneath the loins. The "right" kidney weighs about twenty-seven ounces, has the shape of a heart, and its exact situation is immediately behind and beneath the last pair of ribs. The "left" kidney is a couple of inches further back. Its weight is twenty-five ounces. There is a tube (the ureter) leaving each kidney, serving to carry the urine from it to the reservoir (the bladder), from which it is ultimately expelled through another tube (the urethra).

Kidney, Abscess of.—It is hardly likely that this diseased state will be recognised during the animal's life. Examination of the kidneys after death may reveal an abscess. Although an abscess may form within the kidney quite independently of any other disease, it is gener-

ally found that such is secondary to some other affection, such as blood-poisoning, inflammation of the bladder, etc.

As regards the symptoms specially indicative of this disease, I am not aware of any whereby it may be distinguished from some other kidney affections. Matter (pus) may be present in the urine, but it can likewise be absent, and yet the kidney, after death, may show an abscess in it.

The treatment would be much the same as in the succeeding diseases of these organs.

After death the kidney may be found larger than it should be, and the covering over it thickened. When this latter is stripped off a number of small abscesses appear, containing greenish-yellow matter.

Kidney, Inflammation of.—Inflammation of the kidney, either of an acute or chronic character, is not of common occurrence in the horse. The inflammation may attack the minute urine tubes (which it was previously stated the kidney was chiefly composed of), or it may begin in the delicate thread-like fibres between these tubes, so that it is convenient to speak of it as "Tubular" and "Intertubular," the prefix "inter" meaning, of course, "between."

The first variety of inflammation occasionally follows upon influenza fever, strangles, etc., and is attended with dropsy, along with albumen (white of egg) in the urine, the presence of albumen in the urine of the human subject being popularly known as Bright's disease, and is of much graver importance than in the case of the horse.

Its occurrence towards the close, or during the course of various febrile disturbances, may be the results of the extra strain thrown upon the urine tubules, together with the irritating nature of the liquid (urine) after it has been separated

from the blood within the kidney. This liquid causes a shedding of the delicate lining of these minute tubes, and a renewal of this means the animal's recovery.

The Symptoms indicative of this disease are not quite like those of other kidney affections, pain over the loins being absent, but present when the horse urinates. Previous to this the urine may have been passed freely enough. In a work of this description it is hardly correct to mention the chemical test for albumen, and the microscopic one for "tube casts" or impressions of the urine tubules, though the presence of these is significant of this disease.

The Treatment.—This consists of keeping the horse in comfortable quarters, placing a rug over the loins, allowing green food in moderation only. Give linseed gruel, but as little liquid as possible, because the kidneys must have all the rest they can.

Scalded oats and bran are suitable foods.

Two or three tablespoonfuls of linseed oil may be mixed daily with a small bran mash, the latter being moderately dry. As a medicine, the animal may have a couple of tablespoonfuls of sulphuric ether, along with half a wine-glassful of brandy, twice daily, given in a gill of water. Continue this until the horse seems better, and then give gentle exercise and a course of tonics. (*See Tonic Powders.*)

The other manifestation of kidney inflammation is denoted by symptoms of a well-marked character. Pain over the loins; straining when passing or attempting to pass urine; colicky (gripping) pains; fever (absent in gripes); quick and hard pulse (not altered in colic, unless during pain). Sometimes small quantities of blood are strained away during the act of straining to pass water, and there is stiffness and

probably a smell of urine given off from the skin. If the secretion of urine is totally suppressed, it will not—unless relief comes on—be very long before the horse dies through urine poisoning.

The Causes of this inflammation may be such as : a blow or heavy weight falling upon the loins ; cold ; the abuse of diuretics (staling balls) ; stone or gravel within the kidney, etc.

When a horse has died from the effects of this disease, the kidney will be found tough, cutting like leather, and its covering cannot be torn off without lacerating (tearing) the surface.

Treatment.—Place the horse in a warm loose-box or stable ; clothe the loins ; apply bandages (when applicable) to the limbs. Having done this, get the bowels to act by the use of this draught :—

R̄. Barbadoes Aloes, - - - -	5 drachms.
Tincture of Foxglove, - - -	2 drachms.
Tincture of Hyoscyamus, - -	1½ ounces.
Tincture of Ginger, - - - -	4 drachms.
Sweet Spirit of Nitre, - - -	1 ounce.
Water to make - - - - -	1 pint.

About five ounces of the water must be hot, so that the powdered aloes may be dissolved in it, before adding any of the other drugs ; these are now added, and then the remainder of the water. Now give the whole of the draught just as it is.

If the pain in the belly gets no better—say, within one hour or so—give the horse from one to two ounces of lauda-

num in half a pint of water. When the animal shows any signs of freedom from pain after the first draught has been given, we must repeat this every six hours, but without the aloes and ginger.

Mustard paste must be applied to the loins at frequent intervals, because it should be washed off after being allowed to act for half an hour. Use warm water to wash it off, and before it is reapplied rub in some opodeldoc, to which half an ounce of tincture of foxglove has been added. Use four ounces of opodeldoc.

In addition to clothing the loins, it is advisable to clothe the horse all over with stout woollen rugs.

As to diet, give warm linseed tea, scalded oats, hot bran mashes, and water to drink if the horse will take it. If the animal gets any better—indicated by freedom from pain and free flow of urine—care must be exercised to prevent the animal catching cold.

The after-treatment must be of a common-sense nature.

Kidney, Increase in size of.—After death, these organs are occasionally found greatly increased in size. In one instance it has been recorded that the left kidney of a mare weighed twenty-two pounds.

Kidney, Stone or Gravel within.—Sometimes a stone about the size of a partridge's egg is found within the kidney, *i.e.*, within the hollow portion of it. Carbonate and oxalate of lime form the bulk of these calculi.

The cause of this state is unknown. The mineral salts, instead of being carried off by the urine, accumulates here.

The stone may block up the kidney outlet, and give rise

to the symptoms indicated in the last disease, or dropsy of the kidney may result. Repeated straining might drive it into the bladder, and it is possible that it might even pass out with the urine, as sometimes happens in the mare.

Knees, Broken.—(*See Wounds.*)

Knuckling Over in Foals.—(*See Tendons, Contraction of.*)

Knuckling Over in Adult Horses.—(*See Tendons, Sprain of.*)



L.

Labour, Mare in.—When the mare is about to foal she becomes restless, and, if feeding, halts every now and again. Restlessness gets more and more marked, not unlike a horse suffering from an attack of colic.

Anxiety and uneasiness are always present.

The pains in the womb gradually increase in severity and duration, and it is during this time that the mouth (os) of the womb becomes opened out in order to allow the foal to make its exit. Each pain lasts about one or two minutes, and the intervals between the pains occupy about a quarter of an hour, at least during the early stage of labour.

As the labour pains become stronger, the membranes covering the foal separate (*see Birth, Premature*) themselves from the inner surface of the womb, pass through the mouth of the latter, ultimately appearing externally as the "water bag." Meanwhile the head and fore parts of the foal enter the mouth of the womb, so forming a direct canal from within to without. The "contractions" of the womb are now aided by the midriff, muscles of the belly, etc.

Each contraction causes the "water bag" to protrude more and more, so that it appears to increase in volume. A large "water bag" is said to be a good sign. The mare may be standing or lying down when in the act of foaling. More frequently she stands, which gives her advantages over the recumbent position.

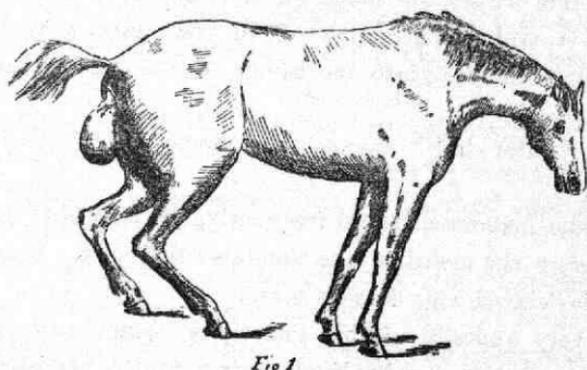
*Fig 1**Fig 2*

Fig. 36.—MARE IN LABOUR.

1, Illustrates Mare foaling in standing position, which is the most common ; 2, Illustrates Mare foaling in reclining position.

In both, the "Water-bag" is shown extruded.

When she stands she arches her back by bringing her limbs well under her body, then takes a deep inspiration, retains this within the lungs for a moment or two, and now by a strong contraction of all the muscles of the body forces the foal into the cavity of the pelvis (basin bone).

The "water-bag" bursts, and some of the liquid escapes.

In some instances, indeed frequently, the water-bag ruptures before the mouth of the womb is fully open. Unless labour is delayed, this does no harm.

The very opposite of this sometimes occurs, requiring puncture of the "water-bag," owing to its persistence outside the vulva, sometimes within the passage.

The labour pains are now very energetic, and, forcing out small quantities of liquid from the ruptured water-bag, they keep the passage in a moist condition, so favouring the gliding outwards of the foal.

A series of vigorous contractions forces the fore-feet and muzzle of the foal into the vulva, the lips of which they part, to be quickly succeeded by the appearance of the head, after which there is a short pause.

The fore quarters then pass through the "inlet" of the pelvis, and very powerful contractions are required to hand this part of the foal to the "outlet," subsequently through the vulva.

If the mare is standing, the young animal glides down her semi-flexed hocks, reaching the ground without any harm. Under ordinary circumstances the whole affair is accomplished within five or ten minutes. Sometimes it extends for a much longer period than that mentioned.

The *navel cord ruptures itself* when the mare stands to

foal, and the same thing is brought about when lying to the act, because she usually rises suddenly.

As a rule there is no necessity to touch the cord, bleeding from it being of no very great importance, and generally ceasing itself.

As soon as ever the foal has been expelled, the womb again contracts (after pains), certain muscles do the same, and together are instrumental in expelling the "after-birth" or "cleansing."

With the mare, it is necessary that the after-birth be cast off straight away, or, at any rate, within 24 hours.

Sometimes the foal comes into the world surrounded by these membranes. An effort must be made to have them removed as soon as possible, particularly in warm weather. (*See Birth, Premature.*)

It has been stated that retention of the after-birth or cleansing is exceedingly rare in the mare—a statement which does not coincide with the author's experience, either at "full time" or "prematurely."

In exceptional cases the mare has been known to devour the after-birth (like the bitch, etc.) (*See Foaling, Preparations for.*)

Lameness.—The first thing to determine when examining a lame horse is that of the limb upon which the animal shows lameness.

A horse, lame on the near fore limb, if trotted away from those behind, will appear as though the lameness arose from the off hind leg (right leg), but let the animal confront the observer in the trot, it will then be seen that the lameness is in the fore limb.

Lameness may be present in all the limbs; both fore,

both hind, fore and hind on opposite, or on the same side of the body.

There is greater difficulty in detecting some forms of lameness than in others. Some lamenesses are detected when the horse is at rest ; others immediately after resting.

Again, lameness may be periodical, *i.e.*, a horse will be going apparently sound for a few weeks, and then become lame again. This is often the case with sprain.

Some forms of lameness disappear when the animal has got warmed to his work, while others are increased, especially if the horse is trotted on hard ground.

As a rule all lamenesses are better shown upon the latter, indeed soft ground may cause the animal no discomfiture, thus enabling it to go "apparently" sound.

The so-called "bridle-lameness" is only "apparent," and ceases when the horse is trotted with a slack rein.

Lameness in both fore limbs causes the horse to go with a short, "cat-like" action.

The process of "beaning"—resorted to by unprincipled men—consists of making a horse, previously lame in one limb only, suffer a corresponding lameness, so endeavouring to divert attention. Pain, swelling, or increased heat, are "positive" signs that the fault lies here, provided that injuries don't exist elsewhere. It is quite easy to conceive an animal being lame from several co-existent causes.

The layman should always be on his guard when about to purchase a horse with regard to any slight lameness being ascribed by the vendor to some trivial injury usually inflicted to mark a serious defect of some kind or another.

The seat of the lameness may be at once obvious by the presence of an injury, swelling, etc.

By flexing or extending the various joints, pain or lameness may be made manifest.

Stiffness, or swelling upon soft parts, will occasionally cause a horse to be lame, but the causes of lameness are innumerable. Injuries in the regions of the shoulder-joint, fetlock, and foot are the most general causes of lameness in the fore limb, whilst hock and stifle lameness are commonest in the hind leg. Lameness may be present without pain, and pain without lameness. However, it is fairly accurate to say that the correct interpretation of "lameness" is pain, less frequently "inconvenience." In the following summary the reader will be able to glean a fair idea of the chief signs of lameness in connection with the joints of the limbs, starting at the shoulder.

A. Fore Limb.

When a horse is suffering from lameness in the fore limb, he *raises* his head and fore part of the body from "lame side," and allows them to "drop" on the "sound side."

1. SHOULDER LAMENESS.—The limb is brought forward with a kind of sweep, and the toe may be dragged along the ground in certain instances. When the limb is advanced it is turned somewhat "outwards."

Lameness is probably the most marked when the animal is trotted on soft ground. Extension, or flexion, does not by any means always give positive results.

This lameness may arise from such diseases as rheumatism; rupture of the shoulder muscles; disease of the cartilages covering the surfaces of the opposed bones; disease of the shoulder-blade, or that of the upper part of the arm;

injuries to the shoulder-joint; plugging of blood-vessels; nerve paralysis; muscular sprains, etc.

Treatment.—Necessarily this will depend upon the cause. In all instances rest the animal for two or three weeks. Apply a high-heeled shoe. Cold water and massage, *i.e.*, rubbing the muscles for half an hour with the hands, are likely to be serviceable.

Rheumatism and injuries must be treated accordingly (*see* these).

In liver disease (causing lameness on the off-side only) treatment must be directed towards this organ.

(a) "SHOULDER SLIP," or *paralysis of the nerve supplying the muscles on the outer part of the shoulder-blade with movement.*—In this disease the shoulder appears as though it were out of joint, the slipping outward occurring with each step the animal takes. It may affect one or both shoulders, more frequently the former, also any class of horse.

The outward movement of the shoulder is due to suspended functional power of the shoulder muscles, which also act as ligaments in this region.

Running against objects will produce it, so that it is possible to have this condition in any class of horse.

It is the nerve supplying the muscles (*spinati*) on the outer face of the shoulder-blade which becomes paralysed, then the muscles begin to waste away—a characteristic feature of advanced "shoulder slip."

Symptoms.—Shoulder lameness (*see* this). In the early stage there is heat and swelling. This is seldom noticed; in fact, the disease is usually not noticed until the muscles are wasted, or lameness is present.

A distinct depression is seen on the outer surface of the

shoulder-blade, while the spine, running up the middle, is brought very prominently into view.

The layman should stand in front of the horse; he will then see this plainer. It is seldom that both shoulders, when affected, are equally wasted. A horse in this condition is "unsound," although not unfitted for work.

Treatment.—Give a long rest. Try massage and cold water twice daily. Use a high-heeled shoe. Avoid working young horses in the plough too severely. Mild blisters can be tried.

(b) SPRAIN OF THE FLEXOR OF THE ARM (Flexor Brachii).—INTRODUCTORY.—This is a stout cylindrical muscle, extending from the lower end of the shoulder-blade, over the front of the arm, down to the head of the fore-arm, to which it becomes fixed. The chief use of this muscle is to flex (bend) the fore-arm upon the shoulder,

When this muscle is sprained it will be seen to be swollen and painful. Shoulder lameness is, of course, present. The animal is unable to flex the fore-arm,

There is swelling immediately in front of the shoulder-joint.

Treatment.—Rest, high-heeled shoe to be put on, and the use of cold water to the part for about 48 hours.

2. ELBOW LAMENESS.—The most important indications of being lame in this situation are: bending of the limb when at rest, and very marked dropping of the fore parts when the animal is put to the trot.

The causes of the lameness are various, but disease of the joint, rheumatism, sprain of the ligaments or muscles about it, and fracture of the ulnar bone, are amongst the chief causes.

3. KNEE-JOINT LAMENESS.—There may be partial or

complete inability to flex the joint. Permanent stiffness is often due to fusion of the bones (Anchylosis), or alterations in the ligaments, etc. Rheumatism and inflammation, in connection with the tendons, will induce this condition.

The knees may be broken and stiff from this cause. Heat and swelling will likely be present.

Treatment.—Accordingly.

4. FETLOCK-JOINT LAMENESS.—When the joint is flexed (bent) it causes pain. Absence of injury elsewhere is some guide. Sometimes there is considerable heat and swelling around the joint. Split pastern will cause very sudden lameness in this region, but usually little swelling. Rheumatism has a particular liking to settle in the neighbourhood of this joint, and is a fairly common cause of lameness here.

Sprain of the lateral ligaments is productive of similar results.

Inflammation at the back of the fetlock is another cause, especially, it is said, in hunters.

5. NAVICULAR LAMENESS.—(*See* this disease.)

6. FOOT LAMENESS.—It is impossible to lay down anything approaching a guide whereby the layman will be enabled to distinguish, or separate, lameness in this region from such arising in other parts, unless there be obvious external indications.

For instance, there may be disease within the hoof, *e.g.*, navicular disease, without any apparent guide externally, so far as ordinary foot lamenesses are concerned.

Sandcrack, corns, quitter, inflamed coronet, inflammation of one or more feet, punctures, thrush, canker, etc., etc., are common enough causes of foot lameness, all of which afford external evidence (*see* these diseases).

B. Hind Limb Lameness.

When the animal is in motion the "lame" quarter is "elevated," with a corresponding "decline" on the "sound" side.

7. HIP-JOINT OR ROUND BONE LAMENESS.—The signs of hip-joint lameness bear a close relationship to the distinctive causes. However, the general signs of such lameness are: difficulty in bringing the limb forward, shortening of the forward stride, with perhaps a little dragging of the toe.

Backing and turning seem to bring the lameness out the best.

When there is disease of the hip-joint, the pain is severe and aggravated by pressure over the joint. Under these circumstances, the horse tries to rest the hip in every way possible.

In course of time the muscles of the quarter begin to waste away.

The layman will find it difficult to tell this form of lameness; in fact, the most experienced have often to make a speculative opinion.

Amongst the more important causes of hip lameness are those resulting from bruises to the muscles of the hip, and sprains of these. Injuries to the joint through falling or slipping.

Fractures of the pelvis, in the neighbourhood of the joint (*see* Skeleton), of the head of the femur (thigh bone), or its projecting processes, will cause lameness in this region.

Inflammation may thus be set up, and extend afterwards into and about the joint. Rheumatism is another cause,

Disease of the cord (spermatic) going to the testicle causes a stiffness simulating hip lameness, but there should be no difficulty over this, because there is usually the external swelling. A rupture in this region may cause the horse the same inconvenience.

Treatment.—Disease of the joint is incurable. If thought to be rheumatic, treat in accordance with the rules laid down under the heading of Chronic Rheumatism.

If there is heat and pain about the joint apply cold water frequently. Put on a high-heeled shoe and allow a long rest.

A fly blister can be tried when there is nothing but mere suspicion of the lameness being about the hip. (*See plate showing position of joint.*)

STIFLE-JOINT LAMENESS.—(Also see Dislocation (slipped) of knee-cap.)

Under the heading of Dislocation of the Patella the reader will find an illustration therewith, showing the anatomy of the joint. From this it will be seen that there is one joint between the lower and front face of the thigh bone (femur) and kneepan, and another formed by the articular surfaces of the femur (thigh) and head of the shank (tibia) bone, with two half-moon shaped pieces of interposed cartilage. These latter act as "buffers" to the two bones.

Stifle-joint lameness is of common occurrence.

Disease of the articular surfaces is the commonest in old and worn-out horses, whilst "slipped stifle" is most frequent in the young.

The symptoms of stifle lameness are not, as a rule, difficult to tell.

In accordance with the cause the signs may be of gradual, or of sudden occurrence,

One or both joints (usually the former) can be affected.

In chronic inflammation of the stifle-joint the disease comes on slowly, though progressive. In this way it often lasts several years. Slight lameness at first, and when the animal is standing the limb is favoured (flexed to some extent).

Alternate resting of the legs points to disease in both joints. When the animal is made to walk or trot the limb is seen to make a short step, and the toe drags.

By turning the horse sharply the seat of lameness is better marked. When the disease is advanced, and the animal is watched while standing in the stall, it will be seen that the limb is caught up suddenly at intervals of a few minutes, gradually eased to the ground again, to be as suddenly repeated. It is obvious there is extreme pain. Under these circumstances destruction is the most humane.

The stifle-joint may suffer from an acute attack of inflammation, the result of a stab, kick, or other violent injury.

In addition to the injury there is severe lameness, swelling, heat, and, it may be, inability to rise. Fever is considerable.

Treatment must be directed to the injury (*see* Wounds), and the fever kept in moderation through the use of febrifuges.

Fracture of the kneepan (patella) is an uncommon cause of stifle lameness (*see* fracture of this bone).

HOCK LAMENESS.—The common causes of lameness arising from this joint, or in the region of the hock, are such as spavin, curb, inflammation of the hock—this latter either through injury or rheumatism.

The distinguishing features of these diseases will be found on reference to the several affections.

Fracture of the bones composing the hock is an uncommon injury.

Special Lameness.

RUPTURE OF THE FLEXOR METATARSI OR FLEXOR OF THE HOCK.—Though not an accident of every-day occurrence, the possibility of such happening at any time is the excuse offered for mentioning this accident.

This muscle forms the hock and stifle joints, so that when one joint moves the other does so at the same time. The muscle springs from a pit or depression at the front of the lower end of the thigh bone, becoming attached to the hock and front of the cannon bone.

Causes.—Violent kicking or struggling might cause it. The same may be said when the foot gets fixed, *e.g.*, in railway points.

Symptoms.—It is a very easy matter to tell this injury. The hock is extended, and the stifle-joint flexed. The animal can still bear weight on the limb, which it would not if a bone or bones were broken. The tendon at the back of the leg is thrown into folds when the animal is compelled to move.

Treatment.—Give a couple of months' rest. A recovery is not uncommon.

Laminitis.—(*See Feet, Inflammation of.*)

Lampas.—By this we mean a swollen condition of the palate bars, immediately behind the upper incisors.

The congestion of this part often causes it to rise to nearly the same level as the free edge of the teeth, consequently causing the horse difficulty in masticating or taking his food.

The old practice of burning is a criminal offence. Little or no treatment is necessary.

Rub on a little dry burnt alum, and give the horse a dose of laxative medicine. If anything more is required, allow the animal half an ounce of bicarbonate of potash in his drinking water twice daily.

Laryngitis, or Inflammation of the Larynx.—(See Sore Throat.)

Lice, or Lousiness.—The horse is liable to be attacked with lice. One species (*Hæmatopinus Equi*) is a true blood-sucking parasite, and its presence occasions the animal a good deal of annoyance.

Another species (*Trichodectes Equi*) lives on the skin, and derives its food supply from the secretions of the latter.

The poultry louse (*Gonioctes Burnettii*) will flourish upon the horse, causing loss of hair, etc.

Neglect in grooming and general cleanliness is a predisposing cause of lousiness.

Careful examination will reveal the lice amongst the hairs or beneath them.

Loss of condition, or unthriftiness, are the usual accompaniments.

Treatment.—Thorough cleansing of every nook and corner. Whitewash all fittings with hot lime containing some Jeyes' fluid, carbolic acid, etc.

Clothing, harness of every description, must be cleansed, and the eggs of the vermin destroyed by boiling water.

Brushes and other grooming appliances should be scalded in boiling water, to which a little carbolic acid has been

added. Remove poultry, or destroy lice affecting same. After having done this, dress the horse with :—

℞: Stavesacre Seeds, - - - -	2 ounces.
Boiling Water, - - - -	1 quart.

Allow the liquid to stand by the fire for several hours, then strain, and apply it with the hands, rubbing well in.

It may be necessary to dress the horse all over.

A decoction of tobacco (same amount) answers the purpose equally well. An infusion of quassia is also excellent.

Lime and sulphur lotion (*see* Mange) destroys lice very quickly, and like the foregoing is inexpensive.

Ligaments, Sprain of.—(*See* S.).

Lightning Stroke.—The horse, like some other animals, is liable to injury through lightning.

The situation of the animal may predispose it to lightning stroke, *e.g.*, sheltering under a tree during the storm.

More animals are killed under these circumstances than those stabled or in the open.

The animal may be killed outright, or merely suffer the effects of the shock. Paralysis and lockjaw have been produced in this way. There may be no external (or even internal) evidence to show that a horse has been killed by lightning. In some instances the after-death appearances are not unlike those found in anthrax.

The author remembers an instance when a horse was struck whilst in the stable, yet no external signs were obvious.

If the animal is not killed outright, recovery is generally

rapid. Wounds, broken bones, singeing of the hair, or charring of the flesh are sometimes present, and of course their occurrence concomitant with a lightning storm is good positive evidence. Their absence is certainly not negative, unless supported by confirmatory evidence of death through other causes. If in the open, the body may not be found at the place where it was struck. Surrounding objects will often afford a clue towards a correct opinion. Unconsciousness is a sign, in many cases, of shock through lightning.

Liver, Congestion of.—(See Jaundice and Horse Distemper.)

Liver, Cirrhosis of (Scirrhus liver).—By this we mean that the minute fibres between the cells composing the liver have greatly increased in size and number.

The organ takes on a coarse leathery look, cutting with a toughish feel. Touched with the tip of the finger, it is nearly as resistant as india-rubber.

The natural weight of the horse's liver is 7 or 8 lbs., but when this disease begins the increase in weight may be enormous. If so, the enlarged liver might be detected, as a swelling, on the right side.

Liver, Fatty.—This is not a disease. It is a sign of "over" and not "under" nutrition.

The organ is partly surrounded by fat. It must be understood that the above term is used to indicate an inpouring (infiltration) of fatty material.

Liver, Fatty Degeneration of.—The substance of the liver is gradually destroyed and "replaced"

by fatty substance. It is a sign of a badly-nourished body. The organ becomes pale, greasy, and flabby. Like the last condition, it is only discoverable after death.

Liver, Waxy.—During certain diseases such as tuberculosis, etc., the liver occasionally takes on a waxlike change, causing the organ to become tougher than usual. It may follow influenza or other exhausting diseases.

Although the organ may be greatly enlarged, it is extremely wasted. (Atrophy.)

Other organs may or may not be attacked at the same time.

Lockjaw, or Tetanus.—This is by no means an uncommon affection in the horse. It would appear to be more prevalent in certain counties; in fact its presence is uncommon in some parts of this country.

It has been clearly shown that lockjaw is due to germs, and that these minute living particles occur in the soil of certain lands; hence its prevalence in some parts and absence in others.

The germs appear to confine their movements—but certainly not their effects—to the sphere of the wound, here excreting their poisonous products, which is then absorbed, producing its terrible effects, particularly upon the nervous system, and through this, upon the muscles over certain parts of the body.

Causes.—In our experience lockjaw has mostly been the outcome of a wound inflicted accidentally or purposely.

In one instance we remember six colts being castrated, some of them “docked” at the same time. The animals in

question were situate upon different farms. All these colts became affected with lockjaw, and died in consequence.

To all outward appearances the operations were carried out as on previous and subsequent occasions.

We incline to the belief that it is a mistake to castrate and dock an animal at the same time, though we do not attribute any connection between the occurrence of the disease and the operation, because those animals which were not docked suffered equally.

Trivial wounds, such as saddle galls, etc., are every now and then followed up by the appearance of lockjaw; in fact, oftener than when a large wound has been inflicted. It may be that the germs present in a suppurating wound are capable of destroying or neutralising the poison excreted by the germs of "Tetanus."

It is said that lockjaw can happen without any injury.

The clipping of a horse has been known to be succeeded by lockjaw, but we think it is quite reasonable to assume the infliction of a trivial wound.

Symptoms.—Amongst the earliest of these is grinding of the teeth and stiffness about the back part of the neck, and, perhaps, a little difficulty in swallowing.

When the animal is approached the muscles of the face begin to twitch, while the "winking" membrane is projected in front of the eye. This latter is characteristic of lockjaw. At the same time the eye is retracted in the socket. Striking the animal lightly under the chin brings it readily about. The jaw will be found partially or completely locked. There is a "woody" stiffness about the animal, and the approach of footsteps frequently causes the most distressing paroxysms.

Poking of the nose, quivering of the muscles, panting-like breathing, constipation, rapid and small pulse-beats, along with the woody feel of the muscles, and squinting, are amongst the most prominent symptoms. The temperature of the body offers very little guide in this disease. Sweating is a marked feature.

Later on the animal falls to the ground, and struggles violently. It is seldom that recovery takes place under these circumstances.

Treatment—1. *Preventative*.—It has been recommended by an eminent and skilful French veterinary surgeon to inject, beneath the skin, ten cubic centimetres of a substance bearing the name of "Anti-Tetanic (Anti-Lockjaw) Serum" as soon as possible after the infliction of a wound. The injection is repeated in twelve or fifteen days. The skin covering the neck or shoulder is a suitable place to inject the liquid. A special form of syringe is used.

The injection should be made "before" castration, docking, etc.

2. *Medicinal*.—To the animal's drinking water add one ounce of sulphate of soda twice daily until the bowels begin to act freely. If the animal will not take this, make the following electuary, and use it three times daily:—

R̄. Powdered Barbadoes Aloes,	- - -	1 ounce.
Extract of Belladonna,	- - -	1 ounce.
Glycerine,	- - -	$\frac{1}{2}$ ounce.

Melt in a jar surrounded by hot water.

If the mixture is too soft add a little powdered linseed. The above should last nearly two days, so that a piece

about the size of a broad bean ought to be smeared on the inner side of the cheek each time it is used.

It is no use to attempt to administer a ball in this disease; even supposing that it were possible, such merely agitates the animal—a matter to be rigidly avoided.

Linseed oil mixed with very sloppy food will help to move the bowels, and assist in maintaining them in this condition throughout the attack. Better a little too soft than hard.

If the bowels are acting, continue the electuary but omit the aloes, *i.e.*, use the belladonna and glycerine only, adding 40 drops of dilute prussic acid to the drinking water night and morning. Continue this treatment until the animal is better.

As a rule these various drugs are in no way superior to those already recommended. The serum treatment is now frequently employed.

General Management.—By far the most important part of the treatment is “absolute” quietude. The slightest noise, even that of opening the door, aggravates the complaint.

The owner cannot be too stringent over this matter.

The urine will require drawing off—a very simple matter in the mare (*see* Catheter and its use). Sloppy food ought to be given at regular intervals. Gruel, linseed mucilage, etc., is suitable.

If there is a wound it must be dressed twice daily. Creolin lotion (2 drachms to a pint of water) will do for this purpose. When the symptoms do not increase in severity after the end of six or seven days, hopes of recovery are strengthened.

Relaxation of the muscles of the jaw, etc., is a favourable sign. Several weeks may elapse before the acute symptoms

subside. A relapse may occur at any time, so that we must not be too sanguine.

Lastly, it must be mentioned that lockjaw is generally a fatal malady, but recoveries are by no means rare.

Loins, Strain of.—(See Muscles, Sprain of.) The muscles beneath the loins (psosa muscles), and the largest muscle running along the back (longissimus dorsi) are liable to suffer from strain. The symptoms and treatment will be found on reference to Muscles, Sprained.

Lungs, Gangrene of.—(See Mortification.)

Lungs, Injuries of.—(See Wounds.)

Lungs, Congestion of (Pulmonary Apoplexy).—Owing to the apoplectic suddenness with which the horse is at times struck down from lung congestion, this disease is frequently spoken of under the appropriate term of "pulmonary apoplexy" (lung apoplexy). There is an indefinable difference between this form of congestion of the lungs and the same named affection occurring during an attack of influenza, or through exposure to cold.

We believe that we are justified in speaking of the former as being of the nature of a "passive" congestion—a pure and sudden engorgement of the lungs with blood.

The relief which commonly follows immediate and full bleeding supports this view.

Causes.—Is said to be the most frequent amongst unconditioned (unwinded) hunters.

In the writer's opinion, it is liable to occur in any breed

of horse, provided the constitution and causes are suitable for its appearance.

A "full habit of body" is the usual "predisposing" influence, but disease of a valve on the left side of the heart (mitral valve) acts in the same manner.

The "exciting" cause varies. Violent exertion may produce it. The same can be said of a foul, damp, and over-heated atmosphere in stable. We have seen it occur through eating large quantities of wheat, followed by subsequent localisation of inflammation in the feet (fever in the feet).

Sometimes poisonous agents cause a sudden lung congestion.

Symptoms.—The suddenness of attack is a very marked feature of this form of lung congestion. The rapidity with which it may prove fatal is equally remarkable. A vigorous horse may succumb in less than one hour. The breathing is extremely quick, the animal standing with its fore legs outstretched and nostrils widely opened (dilated), in order to utilise every part to the best possible advantage. The pulse is very quick and small. It may be that it is beating at the rate of 120 per minute.

The rapid breathing, with beating of the flanks, fore legs wide apart, quick and small pulse, and coldness of the body, are such striking symptoms that few laymen can mistake their significance. Further, the suddenness of attack—perhaps in the hunting-field or while the animal is at work, or immediately on return from this latter—is an important guide in forming an opinion. Death occurs very suddenly, the animal falling to the ground and expiring immediately. After death the lungs are found red and gorged with blood, otherwise little apparent alteration.

Treatment. — Bleed the horse without a moment's delay.

No other treatment should be tolerated; if so, it will almost certainly turn out unsatisfactory.

A fat or vigorous animal should not have less than a gallon of blood withdrawn.

As a rule a marked improvement follows the outflow of blood.

The pulse, being quick and small, soon becomes rounder, fuller, and reduced about one-half in number of beats.

It is a pulse indicative of a high degree of tension within the blood-vessels, which bleeding alone can combat.

It is simply trifling with the animal's life to adopt any other method of treatment. If the disease begins in the hunting-field the rider will of course dismount, ungirth, and turn the horse's head to face the wind.

A whole flask full of brandy or whisky can be given in half a pint of water. This should be done whether the animal is, or is not, bled.

When it is found convenient to have any medicine prepared, the following draught will prove useful:—

Ry. Carbonate of Ammonia,	- - -	$\frac{1}{2}$ an ounce.
Concentrated Acetate of Ammonia,	- - -	2 drachms.
Sweet Spirit of Nitre, - - -	- - -	$1\frac{1}{2}$ ounces.
Rectified Spirit of Wine, - - -	- - -	2 ounces.
Tincture of Aconite B.P., - - -	- - -	60 drops.
Water, - - - - -	- - -	1 pint.

Mix, and make draught.

Directions.—Give the whole at once, repeating every six hours until a more favourable condition ensues.

Afterwards leave off the draught, allowing half an ounce of chlorate of potash in the drinking water, twice daily.

A course of tonic, and mild exercise, may then be allowed.

General Management.—If the animal has been got into the stable, apply hot woollen rugs to the chest.

For this purpose, blankets wrung out from boiling water will be the most adequate.

Plenty of cool pure air must be admitted into the stable.

When bandages are applicable they ought to be used. Clothe the body.

If the congestion settles in the feet the treatment must then be directed in accordance with this complaint. (*See Inflammation of the Feet.*)

Lungs, Inflammation of.—Inflammation of the lungs and structures in connection therewith is of somewhat common occurrence in the horse. This is particularly the case when an epidemic of horse distemper is over-running the country.

Bronchitis and pleurisy, or both, are frequent accompaniments under these circumstances. (*See Influenza or Horse Distemper.*)

Congestion of the lungs, as an independent affection, has already been referred to. (*See Lungs, Congestion of.*)

The inflammation may affect one or both lungs—if both, the gravity of the malady is considerably increased.

The extent of lung substance affected by the inflammation varies.

Unlike the human subject, there is great difficulty in marking, with any pretence to accuracy, the area of lung diseased.

In the "first stage" (congestion), the lung (or lungs) is engorged with blood, but if a piece is cut out of the lung, after death, and thrown on to water, it will be found to float.

This indicates that the portion of lung has not yet become consolidated, or passed into the "second stage" (red hepatization), denoted by the lung sinking in water, being of the consistence of liver, and dark red in colour,

It is in this stage that the minute air spaces of the lungs become filled with a mixture of blood, fibrine, and other material.

When the "third stage" (grey hepatization) arrives—which is, perhaps, very slow in coming on after the second, in the horse—the lung assumes a grey aspect, and is easily broken down with the fingers.

In some instances, mortification of the lungs now comes on. The most frequent termination is a gradual restoration of the part to its normal state.

In addition to the preceding form (croupous) of lung inflammation there is another, known as "bronchial" or "catarrhal," which frequently succeeds an attack of bronchitis.

A third variety (interstitial) begins in the tissues between the minute air-vesicles.

Causes.—A variety of agents are capable of inducing inflammation of the lungs; but we believe the commonest to be associated with such diseases as influenza, bronchitis, extension of inflammation from contiguous parts, *e.g.*, pleurisy, etc. Again, in glanders, inflammation of the lungs may supervene.

External injuries, such as a penetrating wound of

chest and broken ribs, may produce lung inflammation, directly or indirectly.

Exposure to cold, and other adverse atmospherical influences, are equally liable to bring on the disease.

Symptoms.—When arising through cold, the disease is ushered in by shivering fits and an irregular distribution of body heat. The internal temperature is seldom under 103° F., though rarely beyond 105° F. Pulse, commonly beating at the rate of 70 or 80 per minute. Breathing quick, laboured, and the belly muscles are used more than those of the chest for this purpose, so that the horse appears to be breathing from its belly as it were.

A cough and nasal discharge are occasionally present. The latter may be tinged with blood.

A very characteristic symptom of lung consolidation in the horse is an elevation of the spine.

Pleurisy may complicate matters, in fact commonly does when the influenza germs have been the cause. Dropsical swellings are likely to appear. When a large portion of the lung or lungs becomes consolidated, the breathing necessarily becomes "shallow."

Later on the pulse becomes very weak, the extremities cold, while the breath may be utterly unbearable (mortification of the lungs).

Occasionally diarrhoea sets in, and quickly hurries on death.

Treatment.—If the animal is strong, and the disease not associated with influenza (*see this*), then the best thing to do at once is to draw away about four quarts of blood from the jugular vein. This must be done at the very outset of attack, otherwise it is quite useless.

Apply mustard paste to the sides of the chest, taking due care to come well up towards the top of the ribs.

For safety, the layman may apply this to both lungs.

Repeat if necessary. Having done this, give the following draught every six hours:—

R̄. Sweet Spirit of Nitre,	- - -	1 ounce.
Brandy,	- - -	4 ounces.
Conc. Liquid Acetate of Ammonia,	-	$\frac{1}{4}$ of an ounce.
Tincture of Aconite,	- - -	30 drops.
Iodide of Potash,	- - -	40 grains.
Water,	- - -	added to make a pint.
Mix. Give as directed.		

Continue this treatment until an improvement is evident.

General Management.—Clothing to body and bandages to limbs. Plenty of pure air. A little green food. Linseed gruel, or eggs and milk should be given three times a day.

Wash the mustard off in about half or one hour's time, and then dry the chest afterwards.

During recovery care will have to be exercised in order to guard against a relapse.

Lymphangitis, or Weed.—This malady is often spoken of as "Monday morning disease," owing to its common occurrence after rest extending from the previous Saturday.

Swelling of the limb, the result of an injury (puncture) to the foot, beginning below and extending upwards, has been spoken of by some authorities as weed, but we think that it is better to limit the meaning of the term "lymphangitis" to that affection beginning in the glands under the fore arm or thigh, extending as a swelling down the limbs.

The disease seems to be the result of congestion of the absorbent glands under the fore arm or thigh. During a continuance of labour the lymph, secreted by the glands, is driven through the absorbent vessels, chiefly by the muscular movements, so that directly these cease, stagnation in the vessels occurs, ending in the production of the swelling.

Symptoms.—The swelling comes on very suddenly as a rule. It may be a fore or hind limb that is attacked.

In our experience the hind limb is the most frequently affected, but it is not at all uncommon in the fore.

Occasionally both hind limbs participate in the disease. The swelling begins on the inner and upper part of the thigh, or under the arm. Pitting on pressure with the finger is not always present. When the swelling is firm and tense we believe there is a greater degree of pain. The former may extend down below the knee or hock, though it is mostly seen above these parts. Colic is not an uncommon accompaniment, along with other minor symptoms of the animal being out of sorts.

Treatment—1. *Preventative.*—Allow half an hour's exercise on Sunday morning. Give (when in season) a little extra green food upon this day.

2. *Medicinal and Surgical.*—In our opinion the most rational method of dealing with lymphangitis is that of giving the animal exercise. Have the horse walked about at frequent intervals.

A purgative will do good, provided the bowels are not loose already. If green food has been given the purgatives must be withheld.

To the swelling use warm water, applied several times daily.

Repeated attacks of lymphangitis (inflamed lymphatics) lead to permanent enlargement of the limb, which nothing will restore to its normal size.

This is known as "chronic" weed.



M.

Madness.—(*See Rabies.*)

Mallenders.—(*See Eczema.*)

Mange.—This is an affection of the skin, caused through the presence of a parasite, of which three distinct varieties are known.

One parasite (*Dermatodectes Equi*) has a preference for attacking the head, neck, and trunk.

Another (*Symbiotes Equi*) lives chiefly upon the limbs, does not burrow into the skin, and lives in colonies.

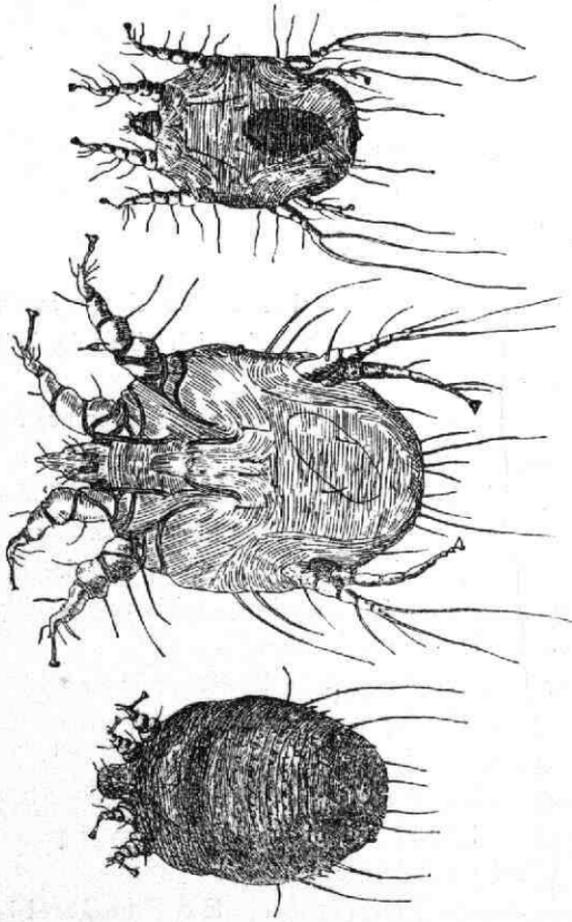
The third (*Sarcoptes Equi*) is uncommon, attacks the limbs, especially the hind fetlock joints, and is very readily transferred from one horse to another.

This latter variety of mange is known as "sarcoptic," and, in the Shetland Isle, it is legislated, *i.e.*, under the Contagious Diseases (Animals) Act.

All these parasites are of minute size, but are easily enough detected with the aid of a good three-fold pocket lens, or simple form of microscope.

By far the commonest form of mange is that produced by the parasite first mentioned, therefore the head, neck, and body are most often the seat of eruption and loss of hair.

Causes.—The parasite, or its eggs. Without the presence



FEMALE PARASITE
(*Sarcoptes Equi*), attacks
limbs, especially hind fet-
locks. Is uncommon.

FEMALE PARASITE (*Dermatodectes Equi*), the common-
est cause of Mange.

MALE PARASITE (*Sym-
biotus Equi*), living chiefly
upon limbs.

Fig. 37.—MANGE PARASITES OF HORSE. (After Gerlach.)

of these, in some phase of their life-history, it is impossible for a horse to become affected with mange.

A pregnant female parasite will very soon form a colony, consequently it won't take her very long before she leaves a progeny capable of attacking a large area of the skin from head to tail. If these vermin are allowed to go on with their work unopposed, they flourish like the proverbial green bay tree.

Defective constitutional stamina, under-feeding, improper housing, etc., are favourable predisposing factors towards the reception, and subsequent multiplication of, the parasitical invasion.

Of course, be it understood that all the foregoing varieties of mange are contagious, capable of communication from one horse to another, "directly" or "indirectly."

By "direct" communication we mean actual contact of a mangy horse with a previously healthy one.

"Indirect" transmission means the transference of the parasite, parasites, or the eggs of these, through the medium of clothing, harness, stall posts, gates, straw, feeding, and all other appliances capable of carrying the mange mite or its ova.

The writer's experience teaches him that mange is more frequent during winter, a fact which appears to be on account of the horse's hairy covering being favourable towards the life and multiplication of the parasite at this period of the year.

Symptoms.—The diagnostic symptoms are based upon the finding of the parasite. The identification of the species hardly comes within the domain of the present work.

The skin is very irritable, as evidenced through the

animal endeavouring to rub itself against any object with which it may be brought in contact.

There is a loss of hair about the face, head, neck, mane, back, tail, etc. Small vesicles (blisters) form, and subsequently burst, the dried fluid of which forms a scab or crust upon the surface.

When a number of colts are congregated together, either in the straw-yard or at pasture, the disease will soon make itself known amongst them, perhaps spreading throughout the whole drove. The best way of finding the parasite is by picking off a few of the dried scabs, and examining their under-surfaces with the pocket lens previously indicated.

The so-called "symbiotic" mange appears inclined to attack coarse-bred horses, having a large amount of hair about their limbs. The sarcoptic variety is capable of being conveyed to man—itch. In severe cases the skin becomes thickened and corrugated (in wrinkles), together with a bran-like appearance.

If the disease is allowed to go on unchecked, the animal's body may be completely denuded of its hairy covering.

Treatment.—If there is only one or two animals affected, it is a very easy matter to put an end to the disease; but where forty or fifty are attacked at the same time somewhat extensive treatment is required.

Supposing that the animals are out grazing, then the first thing to do is the collecting of them together in a straw-yard. Each one is then subdued with the "twitch" upon its nose, held by an assistant, and the hair clipped closely off upon and around the irritable places. Don't clip the hair off the loins; with this exception the hair may be removed all over the neck, head, sides, etc. The hair over the rump and root of tail must be taken off.

If the disease is attacking the limbs, it then becomes necessary to remove the long hairs from here.

The removal of hair facilitates the application and penetration of the dressing.

Having done this, the body is then well washed with soft soap and hot water, to each pailful of the latter we may add a couple of tablespoonfuls of creolin or Jeyes' fluid.

Take care to wash every nook and corner likely to harbour the vermin, otherwise the treatment may prove futile.

After having done this, dress the animal with the lotion as follows :—

R \bar{y} . Slaked Lime, - - -	2 pounds.
Flowers of Sulphur, - -	2 pounds.
Water, - - - -	7 quarts.

Mix, and boil together until the liquid measures one gallon.

Filter it, and dress all the diseased parts, rubbing it into the hair with the hands. The animal may be dressed from head to foot without the slightest harm. Ten times the above quantity of lotion may be made at once. It cures mange in half an hour, and destroys parasite and eggs. It is equally destructive to other vermin upon the skin of horse, ox, dog, etc. Each animal is dressed in the same way, and as soon as ever it is finished, it is then turned into another yard, and not allowed to mix with the undressed.

If the diseased animals have been in this straw-yard, it must be previously lime-whitened—that is to say, all posts, troughs, walls, etc., ought to receive a thorough scouring with hot-lime wash. This is very important. Neglect in this respect may fail to produce a cure.

The same process is applicable when there is only one or two animals affected. Wash them, dress them, disinfect stable posts, etc. Repeat the dressing and washing in a week's time.

Two or three applications will usually settle all matters, but don't forget the lime-whitening of gates, posts, etc., with which the animal or animals may have come in contact.

If the lime and sulphur lotion is thought objectionable—possibly on account of its rotten-egg-like odour—either of the following applications will be found satisfactory :—

Mange Liniment.

R̄. Oil of Tar,	-	-	-	-	-	2 ounces.
Flowers of Sulphur,	-	-	-	-	-	2 ounces.
Linseed or Rape Oil,	-	-	-	-	-	1 pint.

Mix, and rub well into the skin.

Mange Lotion.

R̄. Common Roll Tobacco,	-	-	-	-	-	1 ounce.
Water added,	-	-	-	-	-	6 ounces.

And then allow the tobacco to macerate in this, nearly at boiling, for about twelve hours. Strain, add a pint of water and four ounces of glycerine. Dress the bare places every third or fourth day. Wash with warm water and soft soap, or a little ammonia instead.

Megrims.—(See Vertigo.)

Melanosis.—(See Tumours.)

Mud Fever.—(*See Erythema.*)

Muscles, Sprain of.—A muscle or muscles in almost any part of the animal's body or limbs may receive a sprain or strain, which means that the minute fibres of which the muscle (flesh) is composed have been overstretched and perhaps ruptured. As a rule, muscles have a fleshy portion known as the belly, and a tendinous (sometimes very long) part, the latter serving to fix (insert) the muscle on to the bone or bones. The fleshy fibres of a muscle more readily give way than the tougher tendinous ones. (*See Rupture of the Diaphragm.*)

A muscular sprain is usually indicated by *lameness, heat, swelling, and pain* (for the causes of which, *see Inflammation*).

The muscles, or their tendons, which are most commonly sprained, will be found to be those situated below the knee and hock, in front of the shoulder and arm, along the back, loins, and beneath this latter. It is only necessary to make a brief allusion to a few of the most important sprains.

1. **SPRAIN OF THE MUSCLES BENEATH THE LOINS (Psoas Muscles.)**—It is said that this is most frequently met with amongst hunters during the hunting season. It may, however, occur in any horse, especially so if the animal's legs sink deeply into mud, along with a heavy load and sunken wheels. Another cause is slipping of the hind limbs on an embankment. Various other causes might be enumerated, but they all resolve themselves into "any sudden and powerful strain" upon the very delicate fibres composing the muscle or muscles, especially the former (*psoas magnus*), on the inner (under) side of the loins.

Symptoms.—This injury may quite easily be mistaken for an injury to the spine or kidney disease.

In hunters it will probably be seen on the morning following the meet. The animal is evidently "out of sorts," has a straddling gait, and drags his toes when made to move. There is a great difficulty experienced in getting the horse to turn around, a movement which gives pretty good evidence as to where the animal's "wrong." Pain is shown when the loins are pressed upon, likewise when the horse attempts to place itself in position to urinate.

Perhaps the most positive sign is afforded by passing the hand and arm into the rectum (bowel), and pressing the former gently upwards towards the loins. If the defect is here, pain, and perhaps swelling, will be found.

Sometimes this disease ends in an abscess (boil) or wasting of the muscles.

Treatment.—The horse will require a good long rest. Give a mild dose of physic. To a hunter a five-drachm ball. A clyster of warm water, to which one ounce of laudanum has been added, will assist to afford ease and reduce inflammation. This can be repeated the next day. A sheepskin can be put over the loins, after giving the latter a good rubbing with belladonna liniment. Repeat the liniment night and morning until the horse seems better. The urine requires drawing off. (*See* passing the Catheter.) Internally, give the horse one of the following balls twice daily:—

R̄.	Powdered Aloes, - - - -	3 drachms.
	Powdered Opium, - - - -	1 drachm.
	Extract of Belladonna,	} of each 2 drachms.
	Extract of Hyoseyamus,	
	Powdered Nitre, - - - -	1½ ounces.
	Linseed Meal, - - - -	2½ ounces.
	Treacle, a sufficiency to make the above into a proper consistence.	

Mix thoroughly, and divide into six balls, and give as above.

Continue the treatment until the horse seems better. Sometimes it is necessary to sling the animal.

General Management.—Try and keep the bowels in a soft (not loose) condition. Give a little green food, bran mashes, linseed gruel, etc.

Don't move the horse about in his stall. Perfect rest is desirable, and this is why the slings are so useful.

Keep the loins well covered, and use the liniment regularly. Avoid exciting the horse when giving the ball. Some time will be required to get the horse all right again, but time and patience will generally work wonders.

SPRAIN OF THE LARGEST MUSCLE ON THE BACK AND LOINS (Longissimus Dorsi).—This is a very large and powerful muscle situated upon the back and loins. When it is acting with its fellow (muscles are paired), it raises the fore or hind limbs, as in rearing or kicking. One or both muscles may be sprained. It may be brought on through the horse falling backwards, or rather being pulled over when rearing. The symptoms are: tenderness over the back and loins, with subsequent wasting of one or both muscles.

As to treatment, a blister might be tried.

SPRAIN OF THE FLEXOR MUSCLES ABOVE THE KNEE.—These muscles are situated behind the limb, and the muscles are generally strained a little bit above the knee. Hunters are common sufferers. Heat, swelling, and lameness, are the chief symptoms.

The treatment consists of raising the heels, and then—when the inflammation goes down—put on a toe-piece, perhaps, blister, and turn the horse out, if this latter is convenient.

SPRAIN OF THE TENDONS BELOW THE KNEE AND HOCK.—

The signs of sprain in this region are commonly those of heat, pain, swelling (thickening), and lameness.

The treatment consists of endeavouring to subdue the inflammation with some cooling lotion, such as:—

R̄. Sal Ammoniac,	-	-	-	-	1 ounce.
Nitrate of Potash,	-	-	-	-	1 ounce.
Spirits of Lime,	-	-	-	-	4 ounces.
Water,	-	-	-	-	1 pint.

Mix and make lotion.

Directions.—Saturate a linen bandage and piece of tow, covering the whole with a dry tight flannel bandage.

After the inflammation has abated, a blister will be of service. A high-heeled shoe is useful for conferring rest when the flexor tendons are sprained, or low heels and a toe-piece if the extensors (those in front of the leg in the fore limb) are affected. A good rest is necessary in any case. (*See sprain of the flexor of the hock under the heading of Lameness.*)

Mortification, or Death of a Part.—Any portion of the body, either externally or internally, may die if its blood supply is cut off.

A blow upon the surface of a bone may destroy the vitality of the nourishing membrane covering the same, resulting in that portion of the bone immediately subjacent to the injured or inflamed covering dying and coming away, it may be, as a slough (sequestrum). The vitality of a horse's limb can be destroyed by putting a tight cord round it. All the parts below the cord (ligature) die. Cold water will, if applied long enough, bring about the same thing.

It acts by narrowing the blood-vessels, ultimately causing the complete cessation of the blood stream to the part. The intestines, or any portion of them, may mortify, which accounts for the absence of pain just before death, when an animal has any inflammation or strangulation about its bowels, and which has been suffering from acute pain in this region.

Sometimes the lungs mortify, especially when a bad constitutioned animal has an attack of horse distemper (influenza) in connection with its lungs. Frost-bite may end in mortification. Mortification, then, means that a dead part or limb, still attached to the body, undergoes putrefaction, generally giving off offensive gases. A horse with mortified lungs soon makes itself known inside a stable.

When a limb, for instance, is dying, it must be understood that its component structures do not all die at the same time; in short we have dead, dying, and living structures in it. The plugging of a blood-vessel with a clot of blood can cause death of a part. A mortifying part is cold, sodden, bluish-red at first and then green. It can be either dry or moist. If the latter, the odour is abominable.

N.

Nail-bound.—Sometimes the smith nails the shoe on too tightly, causing "indirect" pressure upon the sensitive structures, consequently lameness. If this condition is suspected, remove the shoe and replace it again.

Nasal Gleet.—This condition is indicated by a discharge from one or both nasal openings.

It is symptomatic of such diseases as acute and chronic catarrh, pus in the sinuses of the head, and of glanders, either in its acute or chronic forms. Diseases of the teeth, strangles, influenza, etc., are generally accompanied by a specific nasal gleet.

Treatment accordingly.

Navicular Disease.—This is a very common disease amongst the lighter breeds of horses, and one which renders the animal of but little pecuniary value. Owing to the cat-like action observed in the horse having this malady, such animals are, in vulgar parlance, spoken of as "grogs," and their action as "groggy."

Navicular disease is entirely confined to certain structures resident in the hoof, and these are: the navicular bone and its encrusting cartilage, which becomes roughened and ulcerated, whilst in bad cases the bone itself becomes diseased. The upper surface of the navicular bone articu-

lates with the pedal and coronet bones, but over its lower face a tendon (flexor perforans) glides, and here forms what is called the navicular sheath, lubricated by a fluid contained in two finger-like projections, thus enabling the tendon mentioned, to run smoothly over its surface.

Now, in navicular disease this part is also the seat of morbid activity. The bone and tendon are roughened, with, it may be, adhesion between the two. The surface of the tendon shows brownish spots, and some of the fibres (tendon fibres) will perhaps be torn asunder.

The tendon sheath will be inflamed in many instances.

These destructive processes are generally steadily progressive, the lameness increasing proportionately. For the relief of the pain and removal of the lameness—also (in some instances) for the purposes of deception—an operation, known as “unnerving” or “neurectomy,” is frequently performed, at the owner’s request, by the veterinarian.

In this operation a small portion of the nerve is cut out, such being done in the hollow of the fetlock either in one or both of the fore feet.

Practically speaking, it is the only means whereby one can pleurably use a horse, having this disease, for a few years longer.

The chief *predisposing* factors operative in the production of this abnormal condition are principally as follows:—Upright or boxy feet, paring the frog away too much, long pasterns, standing over on the fore feet, rheumatic inflammation, counter pressure through lameness in the other fore foot, low heels, etc.

The *exciting* cause is external violence (concussion, compression, etc.) favoured by high stepping on hard and rough stony ground.

Signs of Navicular Disease.—Lameness. After rest, such lameness frequently disappearing when the horse has been driven or exercised; therefore when negotiating for a horse it is not a wise policy to acquaint the vendor when you will call and see the animal.

Of course a knave, having a horse of this description to sell, would, under these circumstances, take the precaution to exercise the animal as much as possible every day. But the would-be buyer could see the animal "out" twice or three times a day if at all suspicious, which is confirmed by wearing of the shoes at the toe, and pointing of the foot or feet, when in action. If both feet are diseased, the step is short and cat-like. If in one foot, comparison will show that the diseased one is smaller, boxy, and the pastern "upright," whilst the frog will likely be shrunken. When the animal is trotting—especially on hard ground—the chest and shoulders seem stiff, giving one the impression that there is something wrong in this region. The heels are generally contracted. Sometimes pawing in the stable.

Palliative Measures.—The toe should be kept short and heels somewhat long. Don't allow the "frog" (foot-pad) to be pared down.

Nettle-Rash.—The horse is frequently affected with this skin eruption, appearing in him very suddenly, disappearing with almost equal rapidity.

It appears to be associated with disturbance of the digestive organs, and perhaps the nervous system in connection with, and governing, the healthy activities of the skin.

Symptoms.—In a mild attack we find numerous little elevations upon the skin not unlike the wheals upon the

the skin of the human subject in the same disease, or in some people through the biting of a flea.

The patches vary in size from that of a shilling to that of a half-crown piece. The neck, back, shoulders, and sides are the principal places of the eruption, though it is sometimes more or less over the whole body.

Treatment.—Nettle-rash is exceedingly simple to treat. Give the following ball:—

R̄. Powdered Barbadoes Aloes,	-	4 drachms.
Calomel,	- - - - -	1 drachm.
Extract of Belladonna,	- -	$\frac{1}{2}$ a drachm.
Powdered Ginger,	- - -	$1\frac{1}{2}$ drachms.

Treacle, with a little linseed added, to make one ball. Mix.

Apply white lotion to the irritable places upon the skin twice or thrice daily. As a rule, directly the physic acts the eruption disappears, but if it does not, allow half an ounce of bicarbonate of soda in the drinking water, night and morning. The same quantity of bicarbonate or acetate of potash will do just as well. If the animal won't take it in this way, mix it with a small bran mash. When the white lotion fails to allay the itching, either add an ounce of laudanum to it or try the following lotion:—

R̄. Liquor Soda,	- - - - -	2 drachms.
Prussic Acid B.P.,	- - - - -	1 drachm.
Water,	- - - - -	1 quart.

Mix and label: Lotion—*Poison.*

General Management.—Give green food after the ball has ceased to act. Allow a bran mash or two. No beans.

Nose, Bleeding from.—The nostrils of the horse are richly supplied with minute blood-vessels, consequently it is not uncommon to find blood issuing from the nose of the animal. It may be caused by external injuries, such as a broken bone at this part; further bleeding from the nostril occurs in glanders and a disease called Purpura. Great exertion will sometimes produce it, likewise dusty fodder. Tumours undergoing ulceration are another cause.

Treatment.—The cause must be ascertained and removed, if possible. Wash the nostril out with cold water and apply cold swabs over the face. Add a tablespoonful of tincture of iron to the water used for irrigating the nasal passage.

In Purpura the bleeding ceases if recovery takes place.

As to glanders, destruction is necessary and compulsory.

When the bleeding comes from the lower part of the nose, blow some powdered alum up the nostril. (*See Nasal Catarrh*, for the method of doing this.)

Keep the animal perfectly quiet and raise the head to a slight extent.

Fatal bleeding has occasionally occurred.

O.

Œsophagus, Diseases of.—(See Gullet.)

Œstrum. — The popular terms “use,” “heat,” “season,” etc., are applied to mares and fillies when desirous of sexual intercourse. Early spring is the time usually selected for putting them to the stallion, because of the advantages which summer weather offers to both mare and foal. In exceptional cases mares foal in January. The occurrence of œstrum is concomitant with the escape of an egg from the ovary—in exceptional or very exceptional instances two or three—into the womb, where, if sexual connection occurs, it may become fertilised.

Non-pregnant mares come in season about every three weeks during the spring and summer.

If pregnancy is going to take place, or, as it is often said, the mare “holds,” then, of course, the animal does not come in use again until the following breeding season.

The signs of œstrum are : Frequent lifting of the tail and passing a small quantity of liquid from the vulva, together with other indications of sexual excitement. It is a very good plan to have the mare served about the tenth or eleventh day after foaling.

Open or Punctured Joint.—The joints most frequently punctured are the knee and hock, though of course it may happen to any joint.

When a joint has been opened, the so-called "joint oil" will be seen issuing from it, the discharge being like, and the nature of, raw white of egg. If the joint be flexed, the lubricating fluid will ooze slowly out.

An open joint is at all times of serious moment, and very often exceedingly difficult to cure.

An opening into the capsule of the joint may be brought about "directly" through some sharp body penetrating into it, or "indirectly" through the sloughing of contiguous parts. When a horse falls and makes a deep wound upon its knee or knees, extreme care must be exercised to see whether there is any glairy fluid issuing from the wound.

The Symptoms consist of the continuous outpouring of this white-of-egg-like material (synovia), the presence of a wound or puncture, and, very shortly, considerable swelling of the parts around the joint. Sometimes the animal is unable to "rise" owing to the impediment through such; consequently one occasionally comes across a horse which has been "down," through this disease, for weeks.

Treatment.—If the wound has just been inflicted, and synovia is seen oozing from it, then the joint should be fomented for about half an hour with tepid water. Having done this, dress the wound with the following lotion:—

R̄. Bichromate of Potash,	-	-	-	24 grains.
Sulphate of Copper,	-	-	-	12 grains.
Corrosive Sublimate,	-	-	-	12 grains.
Water,	-	-	-	3 ounces.

Mix, and soak a piece of wood-wool wadding or cotton-wool with this lotion. Apply closely to wound with a covering of oil-silk or gutta-percha tissue, surrounding the whole with a broad flannel bandage.

Don't dress the wound any oftener than is necessary, and be very careful not to tear the wool rudely off, because any adhering portion of it is of assistance in stopping the discharge of liquid from the joint. In fact any adhering wool had better be left untouched.

Don't use any water to the wound, but you may cleanse round about it.

Supposing that such a wound has just been inflicted, and it is situated upon the knee or hock, then the horse should be prevented from lying down for a few days. This can be done by tying him "short."

When a horse has been suffering from an open joint any length of time, the joint being stiff, swollen, and the edges of the wound thick, but free from much heat, and perhaps the horse unable to rise, then the best plan is to sling the animal (*see* Slinging), and afterwards apply a good fly blister to the swollen joint, for which purpose the cantharides (Spanish fly or Indian blister beetle) ointment is as good as aught else. This ointment must be rubbed well in, and you must go very close to the edges of the wound. The blister acts by exciting the processes of repair, and thus closes the wound, when of course the discharge ceases, and the swelling and irritation subside.

The application of a high-heeled shoe, a mild dose of physic, and a softish sort of diet, will assist matters.

This treatment affords a ready and simple means of curing open-joint; and without this plan of campaign many horses will, and have been, cast away for slaughter.

Another simple dressing for mild cases of open-joint is oil of cloves. It is applied upon cotton wool to the place from which the discharge is issuing.

Ophthalmia.—(See Eye, Inflammation of.)

Ossified Lateral Cartilages.—(See Side-Bones.)

Over-Reach (Tread). This is an injury to the coronet (*i.e.*, the band running around the top of the hoof), caused by the shoe of the hind foot striking against it, or, though less frequently, standing with one foot over the other.

Horses with long fetlocks are predisposed to it.

Such an injury may cause sloughing of the coronet.

It is an "unsoundness," and as such it might be overlooked if the roads are dirty and wet, unless the feet be washed previous to the examination.

Signs and Symptoms.—The horse seems to go upon his heels. If the coronet is felt it will be found hot, rather full, and painful. Later on the bruised part may die and slough, the lameness being very marked.

Treatment.—First of all have the smith to remove the shoe, and then put the foot in warm water, keeping it here for about a couple of hours. The red congested part should be bled, which can be done by making a few little cuts with a sharp penknife. The twitch will require to be put on, and someone to hold the foot. The bleeding will be encouraged by the warm water, ceasing on its removal.

Afterwards put on a good big bran poultice, dressing the wound with some antiseptic, *e.g.*, carbolic glycerine.

A tread sometimes ends in quittor or even ring-bone.

As a preventative in the future, the horse may wear a leather pad around the coronet.

Ozœna.—(See Chronic Nasal Catarrh.)

P.

Paralysis, in its various manifestations, is of frequent occurrence in the horse.

Correctly speaking it is but the outward sign of disease in some part of the body.

It is distinguished as "partial" and "general." In the former some organs or portion of the body is in the paralytic state, whereas the latter term implies apparent loss of power over the whole animal body.

Pressure upon the brain or spinal cord is liable to bring about the condition last named.

Local forms of paralysis are exemplified by such diseases as glass eye (amaurosis), paralytic tongue, face, etc.

Sometimes, after an attack of strangles, young horses become paralytic—due to the formation of matter (pus) in connection with the spine—such being in our mind always fatal.

Rheumatism, azoturia, disease of the kidneys, and fractures, are liable to render the animal paralysed. The sudden fracture of one of the bones of the spinal column has been known by us to happen whilst the animal was in harness, the portion of the body behind the seat of fracture being completely paralytic.

Old and worn horses often lose the power of their limbs, destruction being the most humane and economical.

The causes of paralysis being many, it follows that no special lines of treatment can be laid down, but we have endeavoured to place before the reader some special forms of palsy and their treatment accordingly.

Special Paralysis.

PARALYSIS OF THE NERVE OF THE FACE is rather frequent in the horse. It may effect one or both sides, but usually we find that it is confined to the one side, and to the nerve twigs of the upper lip.

Causes.—External injury is, we believe, the commonest of these. The buckle or cheek straps of the head collar may injure the nerve when the animal is laid down at rest. It is probably always due to pressure upon the nerve, though such may come from "within" as well as without. In the former case the symptoms differ.

Symptoms.—When one side only is affected it makes very little interference with feeding, but when "double," the lips hang in a flaccid or pendulous manner, and food has to be grasped with the incisor teeth instead of between the lips. When confined to one side only one nostril "falls in," if "double" both nostrils do the same. There is loss of flesh. In this way difficult breathing may be caused.

In "one-sided" paralysis food accumulates in the cheek, and the tongue sometimes hangs out of the mouth.

When the injury is above the point where the nerve winds around the lower jaw, the muscles of the ears and eyes participate.

Treatment.—Give soft food. Rub the margin of the lower jaw daily with iodine ointment.

When the ears and eyes are affected cure is almost out of the question. Food must be removed from the mouth after each meal.

PARALYSIS OF THE TONGUE.—Paralysis of this organ depends upon injury or disease of the nerve which supplies the muscles of the tongue with movement.

Symptoms.—One side or both sides may be affected. The animal is unable to withdraw the tongue into the mouth. There is difficulty in masticating food and swallowing. In some instances the organ is inflamed through the injury.

PARALYSIS OF THE PENIS.—When the penis is the seat of paralysis, the horse is unable to withdraw it into its sheath, consequently the organ hangs out of the latter, giving the animal the most unsightly appearance.

This paralysis may be due to disease of the nerve supplying the retractor muscle of the penis.

An injury to the spinal cord, in the region of the loins, might be productive of this condition.

Treatment.—The only cure is amputation of the penis.

PARALYSIS OF THE BLADDER.—The bladder may become paralysed, consequently the expulsion of urine is prevented.

Causes.—A calculus, gravel, etc., will produce it when such occlude its outlet, or, through size or number, these begin to exercise pressure upon its walls.

Fracture of the vertebræ, disease of the brain or spinal cord, are amongst other causes.

Distension of the organ with urine is capable of producing it, though this is usually the result of some other disease. In azoturia the urine is retained, while in colic the neck of the bladder participates in the muscular spasms.

Disease of the wall of the organ is another cause.

Treatment.—Try and ascertain the cause and treat accordingly. In all instances the urine must be drawn off about three times daily by means of an instrument called the catheter. (*See* how to pass this under Catheter.) In the mare the urine can be drawn off by a short (12 inches in length) piece of thin lead gaspipe, pointed at one end and having holes at the point. It is now inserted gently along the floor of the female passage, while the little valve within the latter is raised with the finger, and the tube allowed to glide through the opening, and the urine will flow out of the open end of the tube. The catheter should not be more than a quarter of an inch in diameter.

General Management in Complete Paralysis from any Cause.—Give the animal a very soft and dry bed, frequently turning to prevent the formation of sores (bed-sores).

Empty the bladder and rectum twice or thrice daily.

Allow easily-digested food.

Dress any sores upon the skin with equal parts of oxide of zinc, powdered boracic acid and starch.

The bowels should be kept in a moist condition.

In conclusion, it must be confessed that complete—and in very many instances incomplete—paralysis is not a very hopeful condition, no matter through whatever cause it has been brought about.

Unlike man, expense and utility are important matters for consideration in the treatment of animals, as a rule.

Parasites.—(*See* Mange, Worms, Lice, etc.)

Parrot Mouth.—(*See* Teeth, Diseases of.)

Parturition.—(*See Labour.*)

Penis, Paralysis of.—(*See Paralysis, Special Forms of.*)

Pericarditis, or Inflammation of the Heart-Bag.—The bag enclosing the heart is sometimes the seat of inflammation. The substance of the heart and its valves may participate in the diseased process.

The inflamed membrane may cause a honey-comb deposit of yellowish-white material over the surface of the heart, while the bag will, perhaps, contain a variable quantity of liquid. The liquid may be blood-stained and offensive.

Causes.—Penetrating wounds, blood-poisoning, rheumatic fever, extension of inflammation from adjacent parts, *e.g.*, pleurisy, irregular forms of strangles, etc. In the latter case it is the bursting of the abscess in connection with the heart-bag which irritates and excites the inflammation.

Symptoms.—It is difficult to diagnose this disease, therefore it is hardly likely that the layman will recognise it. Perhaps the most significant are:—Coldness of the limbs; difficult or distressed breathing under the slightest exertion; swelling of the vein (jugular) in the neck; fever; and we may expect to have the additional symptoms of some preceding disease, if such exists. Dropsical swellings are likely to show themselves about the breast or limbs. (*See Dropsy.*)

Treatment.—We believe that, with very few exceptions, this disease is a fatal one.

Perfect quietude is essential. Keep the bowels open with mild doses (4 tablespoonsful in food) of linseed oil, or else give green fodder.

Cantharides liniment may be applied to the chest. Failing this, hot water can be used to the same place. To steady the heart, half an ounce of tincture of digitalis (fox-glove) may be given in half a pint of water daily.

Drachm doses of potassium iodide should be added twice daily to the animal's drinking water.

The correct treatment can only be based upon a knowledge of the disease, or injury, from which the inflammation has sprung.

Peritonitis, or Inflammation of the Membrane Covering the Bowels and Lining the Belly.—The symptoms and treatment of this disease are so closely allied to those of inflammation of the bowels that a consideration of such, apart from the latter, would be quite useless.

The chief causes of this inflammation are: Wounds or bruises over the region of the belly, extension of inflammation from the bowels or female generative organs, participation of the membrane in some specific fever, etc. We believe that it is very exceptional for either this membrane or the bowels to inflame as the result of exposure to cold or dampness.

Pharynx, Fistula of.—A fistulous sore at the entrance to the gullet may arise from an injury to this region, as, for instance, through the rough usage of the balling gun, or piece of sharp-pointed stick introduced for delivering the ball.

Foreign bodies sometimes lodge in the back part of the mouth, then set up inflammation of the mucous (lining) membrane with, it may be, the formation of abscesses,

which may break externally, ending in a fistulous sore if sufficient care be not exercised to allow free exit of matter.

Perforation close behind the pharynx is the commonest seat of the fistula, so that such is really more correctly called gullet (œsophageal) fistula.

The same thing is occasionally found to happen after an attack of strangles.

Food, but chiefly water or other liquid, commonly issues from the opening, and while drinking it spurts out in the form of a jet, increased at each gulp (swallow).

Treatment—1. *Preventative*.—Avoid rough usage of appliances for the administration of balls.

When an abscess forms in the region of the throat it is the best plan to open it, using care. A free exit must be allowed for the escaping matter. A very good plan is that of inserting a pledget of tow each day so as to keep the wound from healing too quickly.

2. *Medicinal*.—Moisten a fine piece of thread with a strong solution of corrosive sublimate, and pass it through the fistula. The thread has not to be left in, but merely "in" and "out" again. If this fails, try the effects of a hot piece of wire, such as a fine knitting needle, to the mouth and passage of the opening. The object of this is to try and convert the fistula into a wound, capable of healing.

Pink-Eye.—(See Influenza or Horse Distemper.)

Pleurisy:—The horse is rather a frequent sufferer from inflammation of the coverings of the lungs. The covering of the right, left, or both lungs, may become affected. In its pure uncomplicated form pleurisy is uncommon in the horse, hence we find that bronchitis or

lung congestion is usually associated with it. In health the lung coverings are pale, smooth, and bedewed with a sufficiency of moisture; but when diseased they are at first dry, then excessively moist, red, and glistening. Sometimes the membrane becomes bound to the midriff and ribs, drawing the lung with it.

Causes.—During an attack of influenza pleurisy often sets in, or may have been the leading symptom from the outset.

Wounds of the chest, exposure to cold, extension of inflammation from contiguous parts, and irritation through morbid growths, or matter discharged from an abscess, as sometimes happens in irregular forms of strangles and certain other blood contaminations.

Symptoms.—At the beginning shivering fits may be observed, followed by careful breathing.

There is a short, hard, dry, suppressed cough, the act of coughing being performed very carefully, and this on account of the pain which it causes.

The internal temperature will probably register 104° or 105° F. Pulse hard, quick, and small, perhaps numbering 80 beats per minute.

By carefully looking towards the floor of the belly and chest, a distinct ridge can often be seen. This is very characteristic of inflamed pleura.

By placing the ear against the side (right, left, or both) of the chest, "friction" or rubbing sounds can be heard. If these sounds are given out during each act of breathing, we may rest assured of pleurisy being present, but in the more advanced stages of the disease, these "friction" sounds are absent; this is because there is now liquid in the chest cavity, which, if excessive, renders recovery more than doubtful.

A small amount appears to be easily absorbed, particularly if the animal's constitution is good and strong.

We regard "sighing" and dropsical swellings as the best outward signs of chest dropsy. Lifting of the flanks is another sign.

For additional symptoms the reader is referred to Influenza, Strangles, etc.

Treatment.—In the drinking water allow two drachms of iodide of potash, twice daily. In addition to this administer the following draught every six hours:—

R̄. Tincture of Aconite,	- - -	20 drops.
Conc. Liquid Acetate of Ammonia,	-	3 drachms.
Sweet Spirit of Nitre,	- - -	$\frac{1}{2}$ an ounce.
Sulphuric Æther,	- - -	1 ounce.
Rectified Spirit of Wine,	- - -	2 ounces.
Bicarbonate of Potash,	- - -	$\frac{1}{2}$ an ounce.
Water,	- - - - -	$\frac{1}{2}$ a pint.

Keep the bowels open by the occasional use of a laxative (not purgative) ball, small doses of linseed oil or green food. If pain very severe, give one drachm of Dover's powder in the form of a ball with linseed meal and treacle.

Apply a liniment of cantharides to both sides of the chest. If this is not at hand, use mustard paste instead, taking care to wash the same off again in about half an hour, then rub the chest dry, finally giving it a smart rubbing with camphorated or white oil, if the latter is not too strong. The mustard can be repeated several times in this way.

If dropsical swellings or sighing comes on, increase the iodide of potash to the extent of $\frac{1}{2}$ a drachm twice daily.

Tapping the chest so as to withdraw the liquid may be necessary, therefore professional assistance is advisable.

General Management.—The animal must be kept in a dry, well-lighted, and well-ventilated loose-box or stable. Clothe the body, particularly the chest and neck. Bandages to the limbs. The best of food and plenty of it, though in small quantities and often. Give teacupful doses of brandy, beaten up with six eggs and a pint of milk, every four hours.

Allow the draught regularly until an improvement sets in.

Later on, give gentle exercise and tonic powders.

Pneumonia.—(See Lungs, Inflammation of.)

Poll-Evil.—INTRODUCTION.—In the neck of the horse there is a large elastic ligament composed of sheet-like and cord-like parts.

This latter forms on the top of the second vertebra (axis), a sort of lubricating pouch (mucous bursa) covered on both sides by muscles (flesh).

Now, in "poll-evil" this bursa or pouch becomes the seat of inflammation, consequently we find that a soft, fluctuating, roundish or oval swelling appears over the region of the first two bones of the neck, *i.e.*, near the poll or summit of the head.

At the beginning the swelling is hot and very painful, causing the animal to hold its head extended. A certain amount of constitutional disturbance is usually intercurrent with the swelling.

Causes.—The usual cause is an external injury, either

through striking the poll against the lintel of the door, cross-beam, etc., within the stable, or through a blow with the handle of a whip.

A fall upon this part of the head or pressure (continued) through the head collar are other causes, while it has been said that an abscess during strangles may form in this part.

Treatment.—In the early stages, *i.e.*, when there is a swelling, heat, and pain (without the discharge of matter, of course), cold applications must be used.

For this purpose a piece of soft material should be steeped in the white lotion (*see this*) and kept constantly wetted with this liquid.

This cooling pad ought to be fastened tightly on so as to exercise some degree of pressure upon the swelling, a fact of considerable importance during this stage of treatment. The animal must now be placed in a loose-box, free from further injury.

A cure may be anticipated. If a loose-box cannot be had, a neck-strap should supplant the head collar.

When the heat and pain have subsided, the following ointment should be applied to the diseased area :—

R̄. Corrosive Sublimate, - - -	40 grains.
Lanoline, - - - - -	$\frac{1}{2}$ an ounce.
Vaseline, - - - - -	$\frac{1}{2}$ an ounce.

Mix thoroughly.

Directions.—Apply, with friction, repeating in about a week's time, if necessary. Only a small quantity is required each time. This ointment should cause a degree of inflammation, hastening, in this way, a healthy process of repair.

Supposing that an abscess containing pus (matter) has formed, or even burst, then different lines of treatment must be adopted.

If the abscess has not yet burst but has "pointed," then it ought to be opened at once so as to give free exit to the matter, otherwise this latter will burrow amongst the muscles—the chief obstacle to healing. Having made a free outlet, wash the wound out with creolin lotion or Jeyes' fluid in solution (1 to 40 of water), and afterwards insert a pledget of tow so as to keep the wound open.

Any accumulated discharge about the head and neck ought to be washed away daily, afterwards smeared with vaseline, or, what is better, dusted with boracic acid powder and starch—one of the former to ten of the latter.

The reader must understand that we are now dealing with a fistulous sore, and that our object must be to try and get the same converted into a healthy wound, healing from the bottom.

As previously stated it is absolutely essential to give free exit to the matter, otherwise treatment is quite hopeless.

After the abscess has been opened it is a very good plan to try and separate the muscles a little with the finger or handle of the knife, but care must be taken not to wound the artery (occipital) or its branches supplying this region.

Sometimes the ligament becomes diseased, and it is then quite impossible to effect a cure until the diseased piece of material has been got rid of by removal.

Several months are often required before a cure can be effected.

General Management.—Keep the wound clean when such has become established,

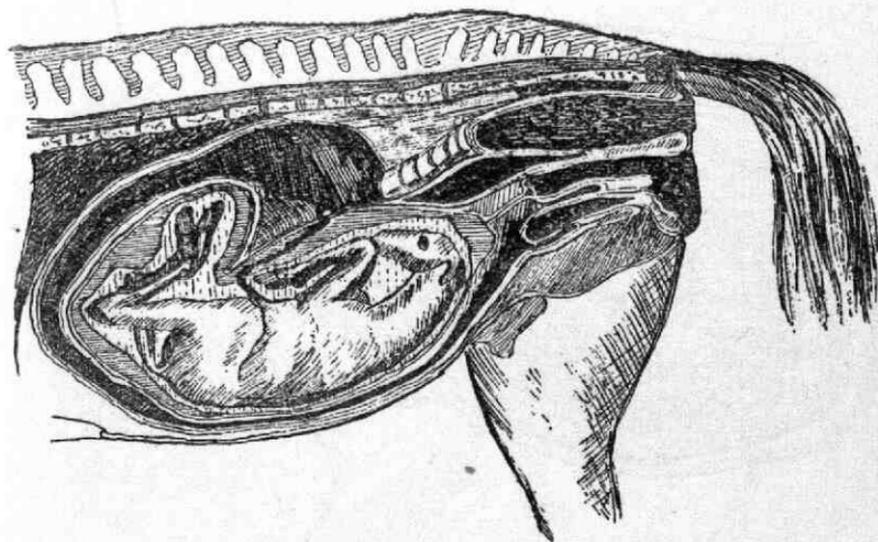


Fig. 38.—NORMAL POSITION OF FÆTUS DURING ONE PHASE OF PREGNANCY IS UPON ITS BACK.

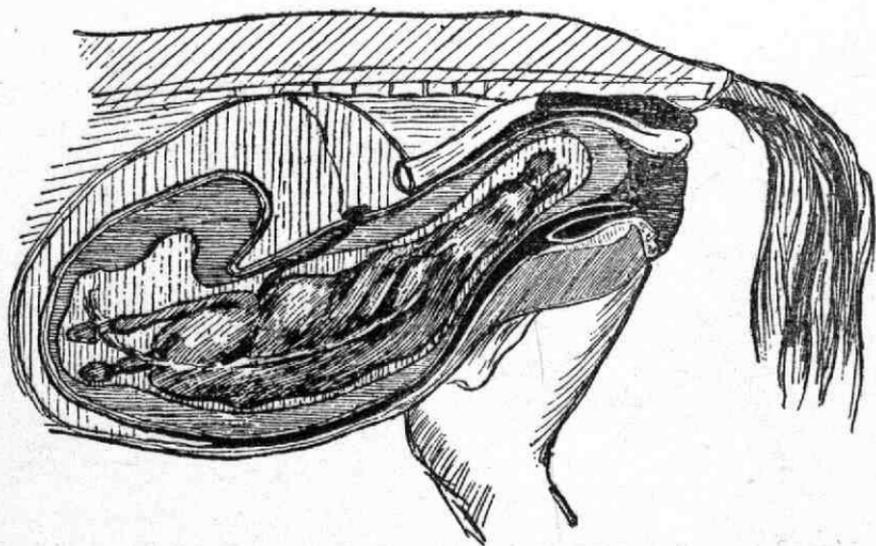


Fig. 39.—HERE THE FETUS HAS ASSUMED A LATERAL POSITION, ALSO NORMAL.

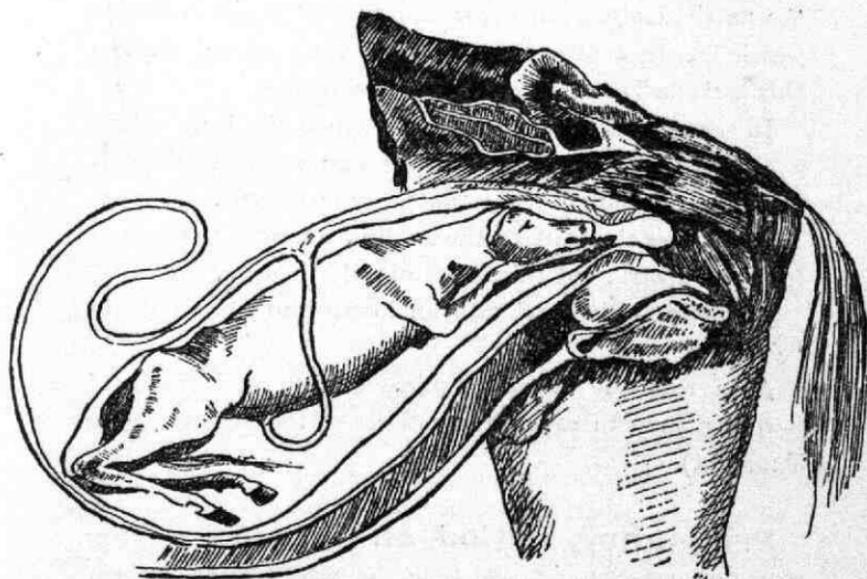


Fig. 40.—FÆTUS READY FOR EXPULSION.

Previous to this, use the cooling lotion very frequently; in fact, the part must be kept constantly wetted with it.

Poisoned Wounds.—(See Wounds.)

Polypus, Nasal, etc.—Tumours of varying size not unfrequently grow from the mucous membrane lining the nasal passages, causing an impediment to the breathing, which increases with the growth of the tumour. In fact, this is “one” cause of roaring and whistling.

In some instances the morbid growth is of a bony nature, a circumstance which renders its removal more difficult. In this case the root of the tumour is upon bone.

Sometimes the stalk of the swelling allows it to protrude from the nostril, but this is not usually the case.

Treatment.—Removal with an instrument known as the “*écraseur*.”

As a rule the animal requires casting, and the head lowering, so as to expose the interior of the passage. (See Tumours.)

Pregnancy, Period of.—The period of pregnancy or gestation, *i.e.*, the time the mare carries her foal, occupies eleven months (11 months), and sometimes twelve months. Expulsion of the foal a short time before or after these periods is of common enough occurrence, and cannot be regarded as abnormal.

The alterations in the position of the foetus (foal) will be seen on reference to the illustration. (See L.)

Poisons and their Antidotes.—

A. Mineral Poisons.

The horse, like man and other animals, is liable to be poisoned either accidentally or through the wilful administration of some poisonous drug.

The commonest poisons of this class are :—

Arsenic,
Antimony,
and Lead.

ARSENIC.—This is sold in the form of a cheap white powder, known as white arsenic or arsenious acid. The average dose for the horse is 3 grains. Some horsekeepers have acquired the bad habit of giving this drug to the horses under their charge every evening, mixed with the animal's food.

The object of this is that of conferring a glossy and healthy appearance upon the coat and skin.

That it has this effect there cannot be any dispute, but used in this way it becomes a drug of extreme danger. We have known and read of horsekeepers giving at one time as much arsenic as would lie upon a shilling (approximately, 60 grains). The use of such doses must soon end disastrously.

When giving the drug in medicinal doses, a certain amount of discretion must be observed, because arsenic tends to accumulate in the liver, so that if the accumulated product is suddenly swept into the system arsenic poisoning may supervene.

But by giving the drug in its proper doses, and allowing intervals (say once a month) of a few days, it is as safe as any drug that can be used ; but it won't stand abusing.

Sometimes the arsenic is mixed with other drugs such as antimony, mercury, sulphur, nitre, etc.

The so-called "Alterative Condition Powders" of the shops are often of this nature. Horse-owners will do well to avoid these dangerous compounds.

Symptoms.—Violent pain in the belly; purging or dysentery.

Thirst; quick, feeble, or imperceptible pulse; sweating and rolling; short and shallow breathing; deep redness of the membrane of the eyes; with subsequent falling to the ground.

The Diagnosis.—Positive evidence must be based upon finding the drug before or after death.

Some grooms are unwilling to admit having the drug in their possession, so that the owner may have to rely upon presumptive evidence.

In case of death it is advisable to have an analysis made of the contents of the stomach.

The organ and a portion of the liver should be carefully removed and packed in a "sealed" jar. Take care to tie both the inlet and outlet of the stomach, including about 6 inches of the small bowel before removing, otherwise the contents will escape.

An excellent method of detecting the poison is by means of a special test known as Marsh's, but considerable skill and care is required in using it. This test will be found upon reference to any good text-book of elementary chemistry.

Treatment.—The correct antidote to arsenic poisoning is moist peroxide of iron. The drug may be given in ounce doses, every two hours, in a quart of cold milk. Continue until about six doses have been given.

In all instances it is desirable to give a good big dose, say a pint and a half, of linseed oil.

The pain can be alleviated by the application of hot water to the belly, externally and continuously, while internally three drachms of tincture of belladonna, along with half an ounce of carbonate of bismuth, given in half a pint of water every four hours, will be found serviceable. It is an advantage to add 10 drops of oil of peppermint to each draught.

If the animal is fortunate enough to recover—recovery always being somewhat slow—a tonic treatment (*see* Tonic Powders) can then be followed.

ANTIMONY.—The so-called “liver of antimony” is a very common constituent of alterative powders, conferring upon the mixture its dark colour.

In this form it is largely used.

We believe that its use is attended with no very good results—sometimes very bad—and that as a drug for veterinary purposes it is time that its usage were a thing of the past.

Another very soluble form of antimony is tartar emetic, used as a febrifuge and for the treatment of worms in the horse. This is a fine white powder, and an exceedingly potent poison to man, dog, cat, etc., causing in these animals, even in minute doses, vomiting, to produce which it is frequently used.

In the horse, however, it has no such effect.

Drachm doses do no harm to the horse, but, like arsenic, it may accumulate in the liver and be the cause of poisoning.

The symptoms, treatment, and diagnosis are similar to those spoken of under arsenic. Powdered catechu is the correct antidote, so that this may be substituted for the

iron. An ounce of the powder can be given in a quart of warm milk, and repeated in half these doses every six hours.

LEAD.—This metal may find an entrance into the economy by means of the drinking water, being in a dissolved condition in the latter. It may be contaminated with the metal at its seat of storage, or during its passage through leaden pipes.

Lead poisoning has been induced through allowing boiled food to stand in leaden-lined receptacles. Paint and red lead are sometimes productive of lead poisoning.

In certain parts of the country, *e.g.*, Derbyshire, where lead smelting works exist, horses grazing in the neighbourhood of these are frequently attacked with lead poisoning, the lead being disseminated into the surrounding pasturage as finely-divided particles.

Symptoms.—“Acute” and “chronic” lead poisoning is often spoken of.

In the former there is no premonitory signs of failing health, so common in the latter.

The *acute* form is denoted by the limbs being drawn together under the belly; twitching or spasms of the muscles; quick breathing; variable state of pulse; sometimes epileptic seizures. On the other hand, chronic lead poisoning is denoted by a blue line around the gums. This is due to the lead being precipitated (deposited) as the black sulphide, through a gas liberated from decomposing food materials. Frequent attacks of belly-ache are very common symptoms of lead poisoning.

In the horse “roaring” is an early symptom. Twitching of the muscles, drawing of the limbs under the body, or knuckling over at the fetlocks, irregular bowels, and other

minor signs of ill-health are the chief indications of the slower form of poisoning by this metal.

Treatment.—In chronic lead poisoning add one drachm of iodide of potash to the drinking water night and morning, or the same drug can be given in a small bran mash; if so, then allow one ounce of Glauber's salt daily in the water. Continue this treatment until matters improve. Supposing that the animal shows signs of belly-ache, then we must try and subdue the pain. This can be done by giving half an ounce of tincture of belladonna, one ounce of chloric æther, two drachms of chlorodyne, and the same quantity of tincture of ginger, in half a pint of water. If necessary repeat in two hours' time.

Acute lead poisoning demands somewhat more active treatment.

Dilute sulphuric acid and Epsom salts form the best antidotes. About four ounces of Epsom salts, along with three drachms of dilute sulphuric acid, should be given at once, with subsequent ounce doses of the salt in the drinking water daily, while three drachms of the dilute acid may be given in half a pint of cold water night and morning. If there is any pain in the belly give the draught referred to under the chronic form.

Mustard can be applied to the belly under these circumstances. It must not be forgotten that "prevention is better than cure," therefore remove (whenever possible) from the source of contamination.

The water supply, feeding utensils, etc., should be examined for lead.

General Management.—Sloppy diet, unless the state of the bowels contra-indicates this.

B. Vegetable Poisons.

The yew, deadly nightshade, foxglove, aconite, opium, and hemlock, have at times been the cause of a horse's death, though we feel justified that such is likely to be of more frequent occurrence amongst cattle, particularly during the summer and autumn.

YEW POISONING.—(Natural order, Coniferæ = fir tree family.) The yew is a perennial shrub or small tree used for ornamental purposes, but frequently found interspersed amongst the foliage of garden hedgerows, especially such surrounding villas. It is a plant bearing small, dark, lancet-shaped leaves, much lighter on their under surface. The leaves are arranged in alternating rows upon the front sides and backs of the branches, the latter spreading out in a horizontal direction.

From experiments conducted at the London Veterinary College it appears that the plant does not always act as a poison to animals¹—a fact which has led to the supposition that the poisonous material, of whatever nature that be, is unequally distributed throughout the plant.

Symptoms.—Death may occur so rapidly that there is little time to make any accurate observation of the symptoms.

Pain in the belly, coldness of body and limbs, with a running-down pulse, are amongst the most important symptoms observed.

Evidence of the animal having partaken of the plant is proof positive of the cause of the illness.

¹ It is well enough known that cattle will often feed off the yew *ad libitum*, but no bad effects follow. In other instances many deaths occur.

Treatment.—Very little can be done. A powerful stimulant such as half a pint of brandy may be given, along with a pint and a half of linseed oil, and half this quantity of castor-oil. Emetics are inapplicable to the horse.

THE DEADLY NIGHTSHADE.—(Natural order, Solanaceæ = potato family.) Very little need be said with reference to this, because it is uncommon to hear of the horse being poisoned with this plant, so that it hardly comes within the scope of this work.

The nightshade belongs to the same family as the potato, yielding extract of belladonna, and an extremely powerful active principle known as "atropine."

The plant bears tubular, drooping, dusky brown flowers, with small black berries (at first green) as the fruit. Flowers about August.

The symptoms are: dilated (widened) pupils, relaxation of the anus, slowness of the pulse, and coldness of the body surface.

Treatment.—A stimulant and purgative as in yew poisoning.

THE FOXGLOVE.—(Natural order, Scrophulariæ = foxglove family.) This is a very common plant, growing on bank-sides, walls, hedgerows, and woods. Its leaves are very poisonous. The flowers are almost familiar to everyone, while the leaves are mostly borne close to the ground. They are soft, and much lighter upon their under surface.

When eaten they produce excessive urination and slowing of the pulse.

Treatment.—Either removal of plants, or the animal from the pasturage where such grows.

The medicinal treatment comprises the use of an oily purgative, soft food, followed by small doses of carbonate of

ammonia ($\frac{1}{2}$ ounce doses) every three hours, given in half a pint of tepid water.

ACONITE, MONKSHOOD, AND WOLFSBANE.—(Natural order, Ranunculacæ = buttercup family.) This plant is common in cottage and villa gardens. It bears long groups of blue-hooded flowers. The leaves are very much cut up. It is exceedingly poisonous. Slowness of the pulse, and gulping-like movements of the throat have been observed. Stimulants must be given.

OPIUM.—An overdose of this drug (laudanum) might possibly be given to the horse by mistake. The same would apply to an animal feeding upon the white garden or opium poppy.

Symptoms.—Stupor, contracted pupils, and wandering about in a stupid manner.

Treatment.—Keep the animal constantly moving about. Apply cold water to the poll. Give a quart of very strong coffee every two hours, along with a couple of wineglassfuls of brandy.

THE HEMLOCKS.—(Natural order, Umbelliferæ = carrot family.) The water hemlock and dropwort, spotted hemlock and fool's parsley, are the poisonous plants in this family.

The leaf stalks have a sheath at their bases.

The flowers are arranged in a radiate manner (compound umbels), the outer flowers being the largest.

The water dropwort is very common in dykes. Its stem is grooved. The spotted hemlock is equally common. Its stem is spotted (maculate), growing several feet in height; it is hollow, and has a mouse-like odour.

Symptoms.—Swelling of the head, saliva from the mouth, very high temperature of body—probably 107° F., either

diarrhoea or constipation, breathing with difficulty, staggering and coming to the ground.

After death the carcase emits a most abominable odour.

Treatment.—A quart of linseed oil and half a pint of brandy may be given to a vigorous animal. Foment belly. Oatmeal gruel, etc. Repeat brandy in half doses every two hours.

Purpura Hæmorrhagica.—We regret having to make the amateur acquainted with a term so strictly technical. However, by “purpura” is meant a disease characterised by the advent of swellings about the face, throat, head, neck, etc.

At first the swellings are hot and painful, perhaps producing difficulty in breathing.

Very shortly little blisters (vesicles) appear upon them, and the bursting of these allows the escape of a blood-stained fluid. One swelling may fuse with another, and it often happens that nasty sloughing sores are produced.

Although not a very common disease, it is far from being uncommon. Usually it follows upon some exhausting disease, such as horse distemper (influenza), but it may occur apart from this.

The subjects most liable to be attacked are those debilitated (weakened) by overwork and unhealthy surroundings, hence we see the necessity of attention to cleanliness, more especially during an attack of influenza or strangles.

The swellings and the subsequent discharge of blood-stained liquid is in all probability due to changes in the quality of the blood, along with an alteration in the walls of the minute blood-vessels. It is undoubtedly a deteriorated condition of the blood.

Symptoms.—Sudden swelling of the extremities. If the hind limb is attacked the swelling begins at the hock, or the knee (wrist) in the fore limb. In other instances the malady appears along the floor of the belly—on the head and face. This latter is characteristic of purpura. The swellings are distinctly marked off from the surrounding healthy skin.

The membranes of the nose and eyes are dark red or brick-coloured, bearing small blood spots, always indicative of a vitiated or degraded condition of the blood.

Constipation or diarrhœa, but not much elevation of body temperature.

Treatment.—It is impossible to over-estimate the importance of attention to cleanliness.

The drains should be flushed and disinfected (*see* Disinfectants), the floor cleansed with warm water and Jeyes' fluid, and any decaying or otherwise offending material removed entirely away from the building containing the patient.

Plenty of pure air must be admitted, but no draughts. Attention to these matters is the *sine quâ non* in the treatment of purpura.

Having given attention to the preceding, the swellings should be bathed in cold water, to which a little dilute acetic acid has been added.

The cold water must be used several times throughout each day, and continued for some time.

This being done, give the following draught :—

R̄. Tincture of Perchloride of Iron,	-	-	1 ounce.
Linseed Oil,	-	-	4 ounces.
With Turpentine added,	-	-	1 ounce.
The yolks of	-	-	6 eggs (beaten).

Mix. Shake well before using.

Directions.—Give the draught as above night and morning. To the drinking water add a full teaspoonful each of hyposulphite of soda and iodide of potash.

If there is danger of suffocation, tracheotomy must be performed. (*See Tracheotomy.*)

Sloughing portions of the skin ought to be kept clean, through the use of the wound lotion.

Continue this plan of campaign against the disease. Recoveries are frequent.

General Management.—The chief portion of this has been placed under the heading of "treatment," and we believe correctly so.

Clothe body. Bandages to the limbs. These latter will restrain the swelling when in this region.

Gruel, linseed tea, scalded hay, bran, etc., are to be allowed. Carrots. Use the cold water regularly, and attend to the directions laid down in the preceding pages.

During convalescence, exercise and common-sense treatment.

Q.

Quarter, False.—A false quarter is denoted by an indentation running down on the inner or outer side of the hoof.

It constitutes unsoundness chiefly because there is a loss of horn substance, in this way rendering the animal very liable to spring a sanderack.

False quarter is the outcome of a defective secretion of horny material, probably through an injury (tread, etc.) to the coronet.

The pressure can be taken off indentation by making a V-shaped cutting at the junction of the sole and the wall, or the shoe can be hollowed out a bit at this part.

Quitter, or Fistula of the Foot.—Fistulous sores about the coronet are pretty frequent in the horse.

As a rule it is the outcome of a punctured sole, probably done whilst the animal was being shod, in this way escaping the owner's notice until perhaps it shows itself at the coronet as "quitter."

One or more small suppurating wounds will then be seen at the quarters as a rule.

Once these sores are formed, cure is difficult unless a veterinary operation be performed, which of course calls for professional aid.

All injuries to the sole should be treated at once ; in this way quitter can usually be prevented.

The sole ought to be thinned, and the area of the horn over the festering part cut away, so as to let the matter run out.

Having done this, put the foot into a pailful of nice hot water, to which a few tablespoonfuls of Jeyes' fluid or Izal has been added. It is then put in a hot linseed poultice, the latter being frequently renewed, and each time the sore can be dusted with powdered iodoform.

If quitter has become established, we have already recommended the best course to be pursued ; but if such skill cannot be had and the fistulous sores are not numerous, a red hot wire (actual cautery) may be inserted into the channels.

The object of this is that of converting a non-healing wound into one capable of healing, through the destruction of diseased tissue.

Chemical agents, such as lunar caustic and corrosive sublimate, are used for the same purposes, and their application is attended with less pain, which is a great consideration.

These agents are wrapped in small pieces of paper and then inserted into the channels at intervals of two or three days.

R.

Rabies.—In accordance with the title of the present work, it is hardly right that rabies should find a place herein, because rabid madness is seldom observed in the horse, though, be it understood, that it may occur at any time, provided the animal receives inoculation through the bite of another rabid animal—usually that of a dog.

There is not the least doubt that rabies is a germ disease, the bite of a rabid animal being the sole and “only” cause of hydrophobia in man. Doubtless a “nervous temperament” in any individual is a powerful “predisposing” factor in the production of this horrible malady, but apart from inoculation by a rabid animal, the occurrence of this disease is absolutely impossible.

The time which elapses between the bite and the exhibition of rabid symptoms varies, but we think that such may be said to occur within twenty to forty days.

Slight abrasions are as productive of fertile results as in the case of a deeper wound.

Symptoms.—A very important symptom is that of biting and rubbing the seat of inoculation. The animal may even tear the flesh off here. Biting any objects within reach, open mouth, staring eyes, and the highest degree of fury are usual accompaniments. Later on paralysis and death set in.

General Management.—When an animal has been bitten by a stray dog without any history of its ownership, always remember to watch the former in regard to any peculiarity of manners. The possession of this knowledge should lead the owner to report the matter at once to the Local Authority.

In the event of an animal being recently bitten by a strange dog or a known rabid animal, the wound should be seared with a red-hot iron, taking particular care to go to the very depth of the same. It is useless without.

Strong nitric or hydrochloric (aqua fortis and spirit of salt respectively) acids are as useful as anything. A few drops must be placed "in" (not outside) the wound.

Ranula consists of a long, roundish swelling under and towards the point of the tongue. The swelling varies in size from that of a pigeon's to a hen's egg.

The presence of this tumour interferes with the mastication of the food, and gives rise to a frequent flow of saliva from the mouth.

Treatment.—Withdraw the tongue from the mouth as far as convenient, using the left hand. Now paint the swelling (ranula) with compound tincture of iodine, repeating the process daily.

Veterinarians sometimes remove a portion of the cyst with a sharp pair of scissors. This will be required if the foregoing treatment proves unsuccessful.

Rearing and Kicking.—Either of these may or may not be a vice. The causes giving rise to such are innumerable. Injury to the points of the hocks frequently results through the animal kicking while in the stable.

Habitual kicking while in harness is a vice of the worst description, being attended with liability of the most serious consequences. The writer, unfortunately, remembers a mare who made a point of having periodic outbursts of kicking without any apparent cause. This animal politely reduced several machines to almost complete wrecks. In some instances the pin worm and red bot are causes of kicking, this latter ceasing when these are removed. In rearing, the hind limbs are made to act as a fixed point, but in kicking the fore. Some horses have an abominable habit of kicking while being shod. Ill-fitting harness, the bruising of injured parts, nervousness, etc., are common enough causes. In every instance an effort should be made to try and ascertain the cause. A timid groom, or a vicious horsekeeper, may be the means of making a horse contract evil habits.

Rectum, Protrusion of.—Protrusion of either the anus or rectum may be brought about through severe straining, as a consequence of constipation, diarrhoea, parturition, etc. Protrusion of the anus is not at all uncommon amongst horses grazing in pasturage where the herbage is inclined to produce constipation. Old animals are somewhat predisposed, because the constricting muscle of the anus has a tendency to become soft and relaxed during advanced life.

If the membrane lining the lower end of the bowel is the only part protruding through the anus, then it is known as "protrusion of the anus" (prolapsus ani); but when the whole wall of the gut in this region is protruding out it is called "protrusion of the rectum" (prolapsus recti).

Symptoms of Protrusion of the Anus.—There is a

bright red protrusion through the anus, and in the centre of it a shallow depression. If the protrusion has existed for some time it will likely enough be found swollen, or even undergoing decay.

Treatment.—Cleanse the protruded part by washing it with a little tepid water, to which a few drops of carbolic acid or Jeyes' fluid have been added. Now return it back into its place by using steady pressure with the fingers.

If it is swollen this may be found impossible, so that it is necessary to bathe the part with the following lotion:—

℞. Powdered Alum,	-	-	-	6 drachms.
Tannic Acid,	-	-	-	40 grains.
Water,	-	-	-	8 ounces.

Mix, and make lotion.

Directions.—Bathe the swelling frequently, and as soon as ever possible replace the protrusion.

A fourth part of this lotion can be injected (using a small glass syringe) into the bowel after having done this latter. Straining must be prevented, otherwise the protrusion will constantly recur. If the bowels are confined, keep them in a nice moist condition through the use of bran mashes and a little linseed oil, green food, etc. When the herbage is suspected, change this.

Colic or diarrhœa must be overcome before a permanent cure can result.

Symptoms of Protrusion of the Rectum. — A large hard swelling protrudes through the anal opening. Like the last condition, the protrusion has an opening in its centre, through which dung is passed. The finger cannot be passed inwards at the margin of the protrusion, but if the

case is more complicated the whole hand can be inserted inwards along the side of the prolapsed part.

The amateur must take notice of this, because in the event of the latter condition it will be necessary to consult a veterinary surgeon. Sometimes the bowel may be protruding through the anal aperture to the extent of a yard in length.

Treatment.—The same treatment can be adopted as that recommended for protrusion of the anus.

Don't forget to return the part as soon as possible. The longer the protrusion is allowed exposure to the air, the less the chances of doing good.

The daily injection of a tumblerful of cold water has a beneficial effect, strengthening the bowel.

Straining must be avoided. Half an ounce of chlorodyne, along with half a pint of water, will help to do away with it.

Rectum, Rupture of. — INTRODUCTION. — The rectum or straight gut of the horse is about three feet in length, and begins at the termination of one part of the large bowel, known as the "single" or "floating" (*i.e.*, free) colon, ending at the anus, in the form of a constricting muscle (sphincter).

The anterior portion of it lies within the belly (abdomen), and here it is covered with the same membrane, externally, as that which is reflected over other parts of the intestine, likewise lining the cavity of the belly. This same covering forms a double fold, thus serving to sling the straight gut to the roof of the belly cavity.

Its posterior part lies within the pelvic or basin bone, and

the last eight to twelve inches of it is without the external covering previously alluded to.

It is very important to know this, because it tells us that an injury (wound) at this latter part is not half as serious as one inflicted further forward, or in the position covered by the membrane (peritoneum).

The muscles on the inner side of the loins bound the upper wall of the tube, while its lower face has the bladder, part of the urine passages, along with a portion of the reproductive organs, beneath it.

In the mare the vulva and vagina lie immediately beneath the posterior portion of the rectum.

As these are the two organs more immediately concerned when a mare is being "served," it becomes a matter of the utmost importance to remember this, because injuries, during service, are not uncommon, and frequently end in litigation.

Rupture of the rectum has occurred over and over again in the mare while being put to the horse.

The writer remembers two mares being served, accidentally, in the rectum. In the one instance no harm resulted, but in the other the animal died within twenty-four hours. Literature upon the subject points to similar experience gained by others.

There can be no doubt that one mare may be served per anus into the rectum, and the latter be ruptured, while to another no harm may happen.

Weakening of the rectum or vagina, either through old age or disease, is, doubtless, a powerful predisposing factor towards the occurrence of such. The outer, middle, or inner coats may be torn, or the three.

Again, distension of the rectum with fæces (excrement),

along with a vigorous erection of the penis, are super-additions towards the production of the rupture.

It has been argued that the rectum may become ruptured during service in the ordinary way, *i.e.*, per vaginam.

The author believes this to be quite possible.

The knotty point in litigation appears to be : Can the rectum be ruptured through a proper service, though the vagina remains intact?

Without wishing to be at all egotistical, the writer would answer in the affirmative. Given the above conditions, *viz.*, attenuation of the wall of the rectum, fulness of the same, and vigorous coition, such a rupture is quite consistent with similar accidents in other parts of the body.

If the vagina is in its normal state, but the rectum wall weakened, the rupture will occur in the least resistant.

It must be the upper wall of the vagina through which the pressure is exercised, but it may be either the upper or lower wall of the rectum (perhaps more frequently the latter) in which the rupture happens.

Some veterinarians have stated that rupture of the rectum does not happen through false service, denying that service per anus ever takes place.

The absurdity of both these statements, is, I believe, too well known to need comment. Further, it has been stated that a tear in the rectum is impossible without perforation of the wall of the vagina.

Obvious service per anus, followed by death of the mare, should, in our opinion, be allowed to stand undisputed. Compensation can and has been obtained under these circumstances. Although the catastrophe may have occurred without any blame being laid down to the stud groom, it is quite likely that such was the result of unskilful

manipulation. In either case death through a "false" service implies liability, and calls for compensation.

The defendant's plea in an action of this nature would likely be based upon the ground that the service was performed naturally, and that the rupture occurred through the medium of the vagina, consequently there can be no liability on the part of the defender.

As the writer's opinion is given for the benefit of such as may be either plaintiff, defender, or a neutral party in any action, he offers for consideration the following points :

(a) The time elapsing between the service and the onset of disease, together with the nature of the symptoms (which see).

(b) The state of the bowels at the time of service. A mare coming up from grass could hardly have a bulging or tensed rectum through accumulated fæces.

(c) Age of both mare and stallion. In the former, advanced years predispose, increased by juvenility of the latter.

(d) Whether the mare has suffered from previous disease, *e.g.*, colic, constipation, dysentery, fistula, etc., etc.

(e) The nature, size, shape, situation, direction, and relationship of the injury to other organs.

Bruising of the upper wall of the vagina—indicated by a red or dark patch—(more rarely rupture here) along with rupture at a corresponding area on the lower face of the rectum is very strong evidence that the tear in the rectum has occurred through the vagina, and that the act of coition was through the natural orifice.

(f) Evidence of previous disease at the point of rupture.

(g) Expert microscopical examination of the contents of

the rectum. The discovery of the male fertilising element (spermatozoa) in this situation would, I opine, be proof positive.

In addition to the foregoing, other problems may be presented for solution, but the more important are the foregoing.

Rupture of the rectum, apart from its connection with coition, may occur from such causes as injury inflicted during labour, either by the foal, or through surgical manipulation.

The author remembers rupture of the rectum being produced through the introduction of the hand into the bowel, in which there was an abscess.

Rough usage of the clyster pipe is liable to tear the rectum.

Symptoms.—The layman should never make any attempt to examine the rectum of a mare showing signs of illness after being returned from “service,” otherwise he may be accused of having inflicted the injury. The sooner the services of a veterinarian be had the better.

Colic, straining, and a blood-stained discharge are the leading signs of this injury. The history of this latter is a good guide.

Sudden death, through shock to the system, has occurred.

Under ordinary circumstances a fatal issue is brought about through inflammation of the lining membrane of the belly, *i.e.*, the peritoneum, and the disease *Peritonitis*.

Continuous pain in the belly, a quick, small, and “wiry” pulse, cold sweats, and anxiety of facial expression, with subsequent “apparent” freedom from pain (mortification of bowels) are the usual features presented before death.

The inflammation of the peritoneum (belly lining) is due

to the escape of irritating material through the rupture into the belly cavity.

An injury towards the anal part of the rectum has been known to heal.

Treatment.—Almost always this is useless.

Fomentations to the belly and an ounce each of tincture of belladonna and chloric æther might be tried. Laudanum and sulphuric æther in the same doses every four hours. Both are given in half a pint of gruel, or water.

Abscesses sometimes follow an injury to the rectum and require separate treatment.

Remember, never to give clysters when the rectum is injured.

Rheumatism.—Though by no means an uncommon disease amongst horses, rheumatism is less frequently met amongst such than in the case of the human subject. Foals are fairly common sufferers, while in adult horses it is a frequent accompaniment of one form of influenza. The joints in these instances are the chief seats of attack.

Sometimes the whole muscular system is more or less involved. Various theories have been brought forward in connection with the precise causes of rheumatism, of which the following are the most important views:—

1. That it is a germ (specific) disease.
2. That it is due to acidity of the blood, this through the presence of acid known as "lactic" (*i.e.*, an acid present in sour milk). The latter is probably the excretion of the former.
3. That it is inherited, or that dampness, etc., will produce it. The writer is of opinion that it is a specific disease, that the acid is the outcome of fermentative changes

in the blood, brought about through the presence of germs in the same, and that dampness, etc., are the exciting causes. No doubt certain individuals and animals are pre-disposed to rheumatism.

Symptoms.—Sudden and severe lameness, while one or more joints will be found hot, tender, and swollen.

The stifle, fetlock, hock, and knee joints are commonly affected, particularly the two first named.

Crackling and stiffness of the joints are invariably present, though I think more so when the disease assumes a somewhat chronic nature.

A very characteristic feature of rheumatism is its tendency to shift from one joint to another, for instance let us suppose that both fetlocks are swollen to-day, we may to-morrow find that the swellings have entirely gone from here, though now located in the stifle.

The swellings are exceedingly painful, consequently there is a high degree of fever, 106° F., or thereabout.

Thirst and constipation are marked features, while the heart may be beating tumultuously. The chief danger of rheumatism rests upon the fact that this organ may become affected, causing death at this time, or damaging its valves permanently, so rendering the animal unsuitable for severe, or even moderate exertion.

Muscular rheumatism may be confined to the loins or shoulders, or the animal may be "stiff all over." In foals bronchitis is a frequent accompaniment.

Repeated attacks of rheumatism lead to permanent thickening of the tendons and joints.

Treatment.—To adult horses a mild dose of laxative medicine should be given.

This may consist of from half to one pint of linseed oil-

A very good plan of opening the bowels gradually, because purging must be avoided, is through adding small doses, say four to six tablespoonfuls, of linseed oil to a warm bran mash twice daily until the desired effect is produced.

To foals give fifteen grains of grey powder once a day. The powder can be dropped upon the animal's tongue.

In addition to the use of the opening medicine, adult horses should have one of the following powders twice or thrice daily :—

Powdered Iodide of Potash, - . .	1 ounce.
Powdered Bicarbonate of Potash, - . .	3 ounces.
Salicylate of Soda, - - -	2 ounces.

Mix and divide into six powders.

Directions.—Give one powder in half a pint of cold water two or three times daily, and as soon as the animal seems much better leave off the iodide of potash and salicylate of soda, but continue with half-ounce doses of bicarbonate of potash, allowing this in the animal's drinking water.

When the joints are hot, swollen, and painful, apply cooling lotion (*see* Lotions in Introductory) to them, using such in accordance with the directions laid down for applying this. For foals the same external treatment can be tried, while internally the following mixture will be found beneficial :—

R̄. Salicylate of Soda, - - - -	1 ounce.
Iodide of Potash, - - -	2 drachms + 40 grains.
Bromide of Ammonia, - - -	2 drachms.
Tincture of Colchicum, - - -	1 ounce.
Chloroform Water added, - - -	8 ounces.

Mix and make mixture.

Give two tablespoonfuls of this mixture in a wineglassful of water every four hours. Continue until an improvement is obvious.

If the joints continue swollen and painful, after giving the cooling lotion a fair trial, it will be advisable to make use of the following liniment:—

℞. Liniment of Aconite,	}	of each half an ounce.
Do. Chloroform,		
Do. Belladonna,		
Do. Capsicums,		
Opodeldoc, - - -		add 6 ounces.

Mix, and apply to the swollen and stiff parts, with friction, twice daily, subsequently swathing the joints in flannel bandages.

This same liniment will be found suitable for young and grown-up animals. As an inferior substitute, white oil, opodeldoc, or camphorated oil can be used.

When lameness remains after the acute signs have passed off, a little red blistering ointment can be used daily, so that we may avoid blistering the part severely.

Massage, or the manipulation of the joint with the hands and neats' foot oil, daily, for half an hour, should be tried.

General Management.—The most important matter is to place the animal in a thoroughly dry house, taking the utmost care to see that such is absolutely draught-proof. Mind and assure yourself that the bedding material is free from dampness. Of all diseases, rheumatism is the one most influenced by damp and cold.

Use the lotion freely, and when this fails to do good, replace it with the liniment recommended. Be sure and

give the parts a proper rubbing, otherwise better leave it alone. Give the medicine and powders regularly. Allow green food and bran mashes. If a foal is attacked while sucking, give the mare half an ounce of bicarbonate of potash in her drinking water, night and morning.

Don't use hot-water fomentations, because such are only likely to give the animal more cold.

For the reduction of permanent swelling, iodine ointment might be tried, though I am afraid it will prove of little use in the majority of instances.

For chronic rheumatism in aged horses give 1 drachm of powdered iodide of potash, daily, for three weeks at a time; and then begin with 3 grains of powdered arsenic, twice daily, for the succeeding three weeks. Both these can be given in the food. A smart fly-blister may be applied to the thickened joint and tendons.

Ring-Bone.—This means a deposit of bony material upon the upper or lower pastern bones, typically assuming a more or less complete ring around the pastern or the coffin joints. Its occurrence in the former situation gives it the designation of "high" ring-bone, when at the latter joint it is known as "low."

Likewise it is sometimes spoken of as "true" and "false"—an expression which is illogical. It must be or must not be a ring-bone.

A ring-bone is an unsoundness at all times, but veterinary surgeons differ a good deal as to whether some horses have a ring-bone, or whether it is natural conformation. Disputes upon the point frequently arise.

Causes.—Ring-bone is not a disease in reality, but the outcome of a reparative process arising through the previous

existence of disease, or, in other words, the bony deposit is the legacy of pre-existent disease, and the lameness precedes the appearance of the ring-like deposit.

Horses having long, weak, or upright pasterns are pre-disposed to become affected with ring-bone.

Perhaps this is just about as far as one is justified in going, when speaking of ring-bone being hereditary, *i.e.*, handed from sire, dam, or previous ancestors, to progeny. External injuries, such as sprain of the ligaments about this part, wounds, blows, treads, etc., are all liable to give rise to ring-bone. Young thoroughbred horses are very subject to suffer. Leaving one side of the foot-wall higher than the other may lead to sprain of the ligaments at the side of the joint.

Symptoms.—The size of the deposit is no criterion as regards the degree of lameness. This latter is always present when the ring-bone is forming.

In the early stages, heat, pain, swelling, and lameness may be detected.

Sometimes the bony deposit extends from the inner to the outer side in front of the joint; if so, its ring-like character is easily enough detected; besides, it is hard and painless.

A slight bony enlargement can only be detected by very careful comparison of the two limbs in this region. The swelling, or rather the deposit of bone, may take place upon the sides of the pastern, in other instances at the back.

Unprincipled vendors may try to hide a ring-bone by making a slight wound in the skin around the joint, causing thickening of the former, and so disguising the bony deposit, and at the same time persuading, or rather

endeavouring to persuade, the would-be purchaser that the lameness results from the wound, whereas it is due to the ring-bone.

HOW TO TELL A HORSE GOING LAME THROUGH RING-BONE.

—It is said that ring-bones in the hind feet are not so liable to cause lameness as when such affect the fore.

When the ring-bone is on the front face of the joint, in the fore limbs, the animal brings its "heel" to the ground first; if the bony deposit is situated upon the hind pastern and a "high" ring-bone behind, the toe is brought to the ground first.

Treatment—1. *Preventative*.—Avoid breeding from stock with long or upright pasterns (hereditary predisposition). In young animals take care to have equality in weight bearing upon the wall, by carefully paring the feet.

2. *Palliative*.—Some horses may show very large ring-bones and yet not go lame.

During the active state of the inflammation the horse must have rest, a mild dose of physic, and a cooling lotion applied to the part. Four to six weeks' idleness may be required.

A bar shoe can be applied, if the ring-bone is in the fore limbs. The same applies to ring-bone on the front of the hind limbs, but when situated at the back or sides of the latter, use a high-heeled shoe.

The most important point is to see that the foot or feet are properly pared, so that the pastern comes to lie parallel with the wall of the hoof.

Blistering and firing (deeply) are often enough tried. Division of the nerve has been tried, but is not recommended.

Ringworm.—This disease is caused by a vegetable parasite. Two distinct species attack the horse, each species giving rise to its own form of ringworm.

One parasite (*Tinea Tonsurans*) produces the circular or oval form of ringworm; the other (*Tinea Favosa*) gives rise to the yellow or honeycomb variety.

A. Circular Ringworm.

The parasitic fungus attacks the hairs, sheath of the hairs, and superficial covering of the skin. It consists of a number of jointed tubes running in groups throughout the root and shaft of the hair, producing spores.

It spreads superficially in gradually enlarging circles.

When the bare patch is carefully looked at, it is seen to be dry and scaly, while the hairs give it a stubbly aspect, though this may be partly concealed by the accumulation of scurf. There is considerable itching.

As the disease is contagious, it will readily spread (by direct or indirect contact) to other horses, and possibly to other animals, or even man.

B. Honeycomb Ringworm.

This is characterised by the formation of a honeycomb-like structure upon the skin. The cups have a yellowish tint, emitting a mouse-like odour.

Treatment.—Wash the affected part with warm water and soft soap, or what is better, water containing a little stone ammonia. It is advisable to use a scrubbing brush. Having done this, paint with the following liniment, twice daily:—

℞. Creolin and Spirit of Wine, of each,	$\frac{1}{2}$ an ounce.
Resublimed Iodine, - - -	2 drachms.
Potassium Iodide, - - -	30 grains.
Glycerine, - - - - -	$1\frac{1}{2}$ ounces.

Mix. Apply with a paint brush.

Ordinary tincture of iodine, iodine ointment, red blistering ointment, chrysophanic acid ointment, or Jeyes' fluid, will suffice to effect a cure in most instances.

General Management.—Cleanliness and good grooming. Wash and disinfect appliances and other utensils with which the animal has had contact.

Whatever be the remedy used, take care to continue using it for some little time, so as to make sure that all the spores of the parasite (fungus) have been destroyed.

Roaring.—This is a very common disease or rather symptom of disease, amongst horses.

The term "roaring" is expressive of the most significant symptom, viz., a whistling or roaring sound emitted when the animal is put to severe (in some cases slight) exertion.

As a rule this unnatural sound is produced during the "intake" of air (inspiration), though at times during the converse of this act (expiration), or it may be during both acts. It is an unsoundness in every sense of the word.

In the lighter breeds of horses, the sound often partakes of a "whistling" character, but amongst animals used for heavy draught, it is usually of a harsh, sonorous nature (roaring sound).

It is often thought that a "whistling" is a more advanced form of roaring, while others regard it as the converse.

The absolute truth of this statement is open to doubt. Horses have become whistlers without ever having shown evidence of roaring, while advanced "roarers" do not necessarily become "whistlers."

CAUSES OF ROARING.--By far the most frequent cause of roaring is disease in connection with the muscles of the larynx (organ of voice), which fail, or partially fail, to act in a proper manner, thus interfering with the inlet and outlet of air. In plain language the air supply is interfered with, no matter whether the impediment be in the larynx, nose, or other part of the respiratory (upper) apparatus.

The primary cause is either functional (interference with working powers) or organic disease of the motor (moving) nerve supplying the muscles on the outer surface of the larynx, resulting in fatty degeneration of the muscle fibres of a certain muscle or muscles on the outer surface of the larynx.

This statement must not be understood to mean that roaring or whistling has only this one cause, the exceptions being abnormal growths, or thickening, etc., in other parts of the respiratory passage.

However, as already stated, the first named is the commonest cause, the changes to the muscle or muscles being secondary to disease of the nerve. Hereditary predisposition is said to have something to do with it. In poisoning by lead roaring is often a symptom, while a peculiar form of the same thing has happened through the horse partaking of the Indian vetch (*Lathyrus Satious*). In this instance a number of horses died whilst at work owing to the severity and sudden appearance of the symptoms.

HOW TO DETECT ROARING.—(1) By making a feint to strike the animal in the ribs, causing it to grunt, though care is

required, because grunting is not a "positive" sign of roaring.

(2) In the case of a cart horse, causing it to draw a good load smartly up a slight hill, and if possible on rather soft ground. Now approach the nostrils so as to hear whether any unnatural sound is given forth. If the animal's wind is "moderately" effected, it very often happens that one can hear defective breathing while the horse is in the act of drawing the load, but the usual plan is to place the ear close to the nostril directly the animal comes to a standstill.

(3) Cart horses may be ridden (bare back, of course) smartly upon soft ground or up hill. If the animal is hustled a good bit this test answers fairly well under all ordinary circumstances.

(4) If a saddle horse, the best plan is for the examiner to give the horse a smart gallop.

In other lighter breeds the head should be kept "well in" whilst the animal is put to exertion. If possible try the animal in harness working at a quick pace.

In the case of "hunters" a good deal of care is necessary, because they frequently make a slight sound, rendering it very difficult to decide.

However, by giving the animal a good doing up in the saddle the question will be fairly settled. If the sound increases there is not much doubt about the matter.

VETERINARY RESPONSIBILITY.—Veterinary surgeons have occasionally been sued for wrongful warranty of a horse, in this instance, with regard to roaring.

In 1810, Lord Ellenborough said: "To prove a breach of warranty he must show not only the existence of roaring, but that the roaring is symptomatic of disease."

Fortunately since Lord Ellenborough's time veterinary

art has made considerable progress, so that I opine that the difficulty of dealing with his lordship's ruling should not offer much impediment.

In the case of *Mann v. Stephens*, it was held that a horse may become a roarer within a fortnight. I would go further than this by saying that the symptom "roaring" might make itself known at any moment. This is quite compatible with what we know of its variable causes. In every instance roaring is an "indication" of disease, no matter whether the sound arises from causes "temporary" or "permanent." If a veterinary surgeon believed it to be of the former nature, he would require to defer his examination according to his discretion.

Regarded upon the basis of "heredity," it is absurd to try and imply liability upon the assumption. Such a plea has fallen and must fall to the ground. It is impossible to substantiate it as being "absolute."

Treatment.—In every instance an effort must be made to ascertain the cause; without knowledge on this point no good can result, even when such is possible. If the disease upon which the "roaring" or "whistling" sound depends be of gradual onset, the chances are that changes of a degenerative nature are taking place in one or more muscles upon the outer surface of the larynx.

Under these circumstances an incurable disease has become established; but we do not wish to imply that the "roaring" or "whistling" has not in some instances been banished through the performance of certain operations, or, in other words, the "roaring" has been "cured," but not the disease, fatty degeneration of muscle being incurable. When temporary, for instance, such as may result during an attack of strangles or sore throat, etc.,

treatment will be in accordance with the nature of the malady.

Morbid growths, causing roaring, must, when possible, be removed.

Feeding on Indian vetch meal must never be allowed, as it may be attended with disastrous results.

The roaring of lead poisoning frequently disappears with the other symptoms.

Many horses, otherwise unworkable, are able to do years of useful work after having a tube inserted in the windpipe (tracheotomy). This is a very useful operation for the removal of the sound. There is another operation, bearing the technical name "Laryngotomy," occasionally resorted to, but its success cannot be regarded as established.

As far as medicinal agents go, if any are the slightest use, arsenic is the best, given in three grain doses daily.

S.

Saddle-Galls.—A saddle-gall is an injury produced through unequal pressure upon the saddle-bed—*i.e.*, the surface on which the saddle rests. Old horses are particularly liable to suffer.

Symptoms.—The best method of detecting a saddle-gall is by running the hand along the withers, spine, and saddle-bed, in order to find thickening or tenderness of the skin. This latter may be abraded through rubbing. In point of size saddle-galls range from that of a farthing to a crown piece, the elevated places or place being warm, hard, and painful. Perhaps the best time to discover a saddle-gall is about one hour after the saddle has been removed.

When the disease has been neglected, matter may form, or even the spines of the vertebra become diseased. Extensive burrowing of matter has been known to take place, but this is exceptional. A white patch of hair indicates previous galling.

Treatment.—If due to faulty construction of saddle, this must be remedied. The saddle must be neither too wide or too narrow. When the padding of the saddle is injured, have this renovated, or if there be any inequality of its bearing surface, get such removed.

Sweating or soaking of the skin will, in some horses, bring on a saddle-gall. The former can be remedied by

dusting the part with boracic acid powder and kaolin (half an ounce of the former to four ounces of the latter). Powdered starch could be substituted for the latter when it cannot be obtained.

Faulty saddling, loose girthing, bad riding, are causes capable of being easily rectified. After coming in from a ride, allow the saddle to remain on for about an hour or so. This is a most excellent preventative of saddle galls.

Supposing that the saddle-gall has just made its appearance, the best procedure is the application of the white lotion (*see* Lotions), at the same time giving the part a good rubbing (say for twenty minutes) with the fingers. If this fails to effect a cure within twenty-four hours, try warm water cloths. When the disease has been so far neglected that sloughing of the skin has begun, poultices are necessary.

The so-called "sitfast" consists of thickened half-dead skin, and it is best to cut it out, and so have done with it. After having poulticed it for a few hours, apply the twitch to the nose, and excise the dead portion of skin. Now touch the edges of the wound with lunar caustic, subsequently allow it to heal. A little boracic acid ointment, applied on lint daily, and fixed on with the surcingle, will assist matters. As a rule, a very slight scar remains.

If the "warble" stage—*i.e.*, the swellings in their early stages—be treated properly at the outset, "sitfasts" are not likely to occur. When there is an abscess, or abscesses, these will require cutting open as soon as they are fit. Warbles, due to the larva of the gad-fly, sometimes take up their abode beneath the skin, particularly in foreign countries. When ready, they should be squeezed out and

destroyed. Girth-galls are abrasions produced by the girth. Use a web girth, and treat as for saddle-galls.

Sallenders.—(*See Eczema.*)

Salivation.—The presence, or an extra discharge, from the mouth, of saliva is not infrequently observed in the horse. It may be due to a variety of causes, being but a symptom, as a rule, of some diseased condition.

Diseases of the teeth, affections of the throat and posterior part of the mouth, rabies, etc., etc., are accompanied by salivation. Try and ascertain cause, and treat accordingly.

Sandcrack.—By the term "sandcrack" we imply a split in the wall of the hoof, usually found at the quarters in the fore feet and toe of the hind ones. In exceptional instances this order is reversed. Horses having large flat brittle feet are predisposed to spring a sandcrack.

The crack is either due to a solution in the continuity of the horny tubes composing the wall of the hoof, or else through an imperfect horn secretion from the coronary band. It usually starts just below the latter, and may be either superficial or deep. If the last-named, it is liable to cause a very painful lameness, and to work an animal in this condition is cruelty.

A trifling sandcrack may not be seen unless the hair—if this is long—be parted around the coronet.

Treatment.—If the crack is deep, an excellent way of dealing with it is that of "clasping." Many blacksmiths (farriers) are capable of doing this simple operation.

Cut out a notch on either side of the sandcrack—which, if a very long one, will need two or three such notches—

and then drive a horse-shoe nail in at each notch, so that it shall make its point of exit at a corresponding notch on the opposite side of the crack.

Before inserting the nail flatten it at the point.

The pincers are now used to pull the nail, so as to bring the edges of crack closely together.

The nail must not pass into the sensitive structures of the foot, but penetrate horn only.

This method prevents pain and favours repair.

It is not a bad plan to apply a good blister to the coronet at the same time.

When blood is oozing from the crack, and the sensitive structures growing through it, it is necessary to bathe the foot in warm water, and destroy the outgrowth of flesh with lunar caustic, subsequently put on a poultice. As soon as these acute signs have disappeared, proceed as above, *i.e.*, clasp the crack.

Firing is also resorted to, and is simple.

As regards shoes, the position of the sandcrack will be the best guide.

For "toe split" use a thin-heeled shoe having side clips, and for quarter sandcrack a bar shoe ($\frac{3}{4}$).

Scrofula.—(*See Tuberculosis.*)

Seedy-Toe.—This is a diseased condition of the horn at the toe, also other areas around the sole and the wall. The precise cause does not appear to be very well understood, but there is a possibility of its being of parasitic origin. The toe-clip has been blamed for producing it, but this is not the cause in many instances. Equal parts of iodine, creosote, and caustic potash can be applied occasionally.

SHOES AND SHOEING

INTRODUCTION—ELEMENTARY ANATOMY OF THE FOOT.

1. *Bones, Joints, etc.*

At the lower end of the cannon or metacarpal bone, and articulating with it, we find the *long pastern*, which, if typically placed, has a graceful slant forwards.

At the back of the lower end of the cannon, and articulating with it, there are two small pyramid-shaped bones. These are called the *sesamoids*, and they greatly increase the joint area between the cannon and long pastern bones.

The lower end of the long pastern bone articulates with the *short pastern* or coronet bone, and this, in its turn, with the pedal or *coffin bone*, which is completely embedded within the hoof, and in form very similar to it. This bone is exceedingly hard, though perforated by numerous minute and several larger openings, thus enabling small blood-vessels to penetrate into it for nourishment.

In front, at the joint surface, the pedal bone ends in a toe-clip-like process, and it is this which serves for the attachment of the extensor pedis tendon, which is made wider by two branches forming it, and belonging to what is known as the suspensory ligament, whose origin is from the

lower row of bones at the knee or hock, as the case may be, running down the channel formed by the cannon and splint-bones, over the sesamoids, the thin branches becoming attached to these, and then a little lower down the branches come to the front, ending, as previously indicated, at the front of the pedal bone.

Returning to a description of the coffin or pedal bone, we find that the surface corresponding to the wall of the hoof is prolonged backwards. These are the *wings*, and they give attachment to a pair of plates composed of cartilage (white) or gristle, frequently (in heavy horses, at least) changed into bony-like material, and constituting *side bone*.

Between the lower border of each lateral cartilage and upper border of the wings of the pedal bone there is a notch which leads into a narrow channel, subsequently into a small opening known as the *Plantar Foramen*, serving for the passage of the *Plantar Artery*.

The lower or *plantar* surface is somewhat concave, bearing a roughened half-moon-shaped area behind. This is called the *semi-lunar* crest, and one of the flexor tendons (*perforans*) is attached to it.

There is a difference in the form of the pedal bones belonging to the fore and hind limbs.

The pedal bone belonging to the hind limbs is more pointed at the toe; it is narrower and more arched on the *plantar* surface. In foals the pedal bone exists in two parts, having what is known as two centres of ossification, *i.e.*, two distinct bone-forming points.

Another bone belonging to the foot, and completely hidden, is the *navicular bone*. It is a small boat-shaped bone articulating with the back of the short pastern and pedal bone, increasing the joint surface of the last-named,

whilst its under surface is quite smooth, and the perforans (flexor) tendon glides over it, a small sheath (navicular sheath) being interposed between the tendon and bone.

It is this bone, cartilage, tendon, etc., that are the seat of disease in many horses, constituting navicular arthritis, grogginess, or hot feet.

The pedal joint is the only one of the three that allows any movement from side to side. The principal motion of all these is, however, hinge-like (ginglimoid).

The pedal articulation has a capsular ligament surrounding it, serving to secrete lubricating material, and assisting in binding the three bones entering into the formation of the joint (*i.e.*, short pastern, navicular and pedal bones) together.

The additional ligaments are :—

1. The internal and external laterals, which are a pair of short, stout bands running from depressions (near the wings) upon the pedal bone, and becoming fixed on to each side of the short pastern.

2. A pair of suspensory ligaments belonging to the navicular bone, beginning at the ends and hinder edge of this bone, becoming blended with other ligaments at the sides of the coronet joint, *i.e.*, the joint above the pedal.

3. Lateral ligaments belonging to cartilages of same name, pedal, and navicular bones.

2. *Elastic Structures of the Foot.*

The most elastic parts of the foot are the lateral cartilages, and plantar cushion. In a smaller degree the coronet, hoof, laminae, and articular cartilage.

We have already briefly referred to the lateral cartilages, it being here sufficient to say that the plantar cushion and

perforans tendon lie between them, the former being attached to the inner surfaces of the cartilages by fibrous bands, which spring from a central non-elastic partition of the plantar cushion.

The plantar cushion—otherwise called the frog-pad, sensitive frog, etc.—is a triangular-shaped body composed of yellow and white elastic fibres, interspersed with a considerable quantity of fatty tissue—hence the term fatty frog. As already stated, the plantar cushion is bounded at the sides by the lateral cartilages, but it is sandwiched between the horny frog and the perforans tendon.

The apical portion of the triangular plantar cushion is fixed to the pedal (coffin) bone in front of the semi-lunar crest, the sides and base of it being in the form of bulbs, having a central depression, known as the middle lacuna (cleft), which serves to accommodate the “frog-stay” of the horny frog.

The functions of this pad are to diminish concussion and to assist in raising the foot from the ground during the uplifting of the limbs.

3. *Blood-Vessels and Nerves of the Foot.*

The arteries carry pure blood to the feet, the veins impure blood from them, returning it to the heart and lungs to undergo purification at the latter.

Very minute blood-vessels, known as capillaries, form a sort of breakwater system between the small arteries and veins, supplying the tissues with blood all over the body.

The arteries are elastic tubes, and have relatively thick walls, whereas the larger veins of the feet have valves, thinner walls, and on the front and lower surfaces of the

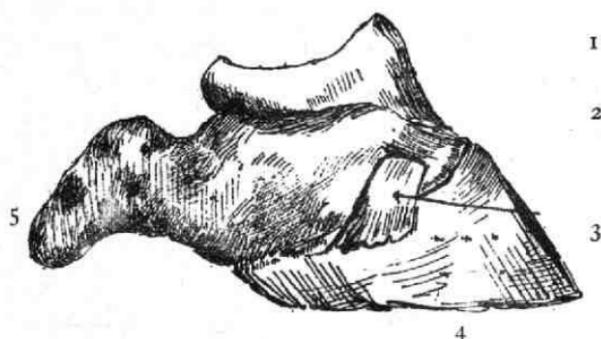


Fig. 41.—SHOWS STRUCTURES (IN PART) BURIED WITHIN THE HOOF.

(1) Coronet Bone. (2) Coffin Joint. (3) Lateral Ligament. (4) Coffin Bone. (5) Lateral Plate of Cartilage, the Seat of Side Bone.

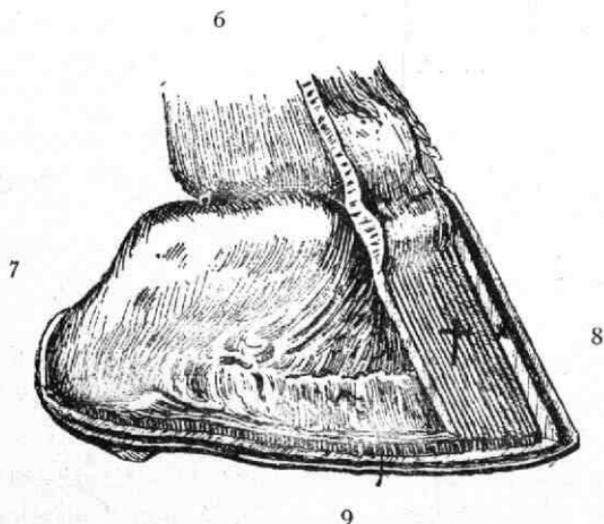


Fig. 42.—VERTICAL SECTION OF FOOT.

(6) Coronet Bone. (7) Lateral Cartilage. (8) Hoof Wall, on the inner side of which the small x indicates the horny or insensitive laminae (leaves) dovetailing into corresponding sensitive (fleshy) leaves on the front of the Coffin Bone, 9.

foot they unite to form complete networks (plexuses), thus enabling the healthy parts to still continue doing their work in the event of the circulation being impeded at any other part of the foot.

The chief venous networks of the foot are :—

- (a) The Plexus on the Sole.
- (b) „ „ Bulbs.
- (c) „ „ Wall (Podophyllous).
- (d) „ „ Coronet (Superficial).

It is by the union of these networks that the veins (digital) of the feet are formed.

The principal arteries supplying the foot with pure blood are :—

The two *digital arteries*, each of which lies on either side of the fetlock joint, giving off numerous branches, each having its own special name. Thus we have the *coronary artery*, supplying the band, etc., of the same name; *artery of the plantar cushion*, and *artery of the long pastern* (perpendicular artery).

The *end branches* of the *digital arteries* are called the *Preplantar and Plantar*.

As previously stated, the plantar artery enters the *plantar forearm*, passing into the pedal bone, uniting at what is called the *semi-lunar sinus*, with another band of the *opposite artery*, together forming a vascular arch called the *semi-lunar arch*. The digital nerves accompany the arteries.

4. *The Foot and its Protective Organs.*

The protective organs of the foot are the skin and hoof. The skin covering the whole of the body does not stop short

at the hoof, but passes into its interior, covering the pedal bone, and is known as the *foot-skin*, or in technical language the *Pododerm*, from which the hoof is formed.

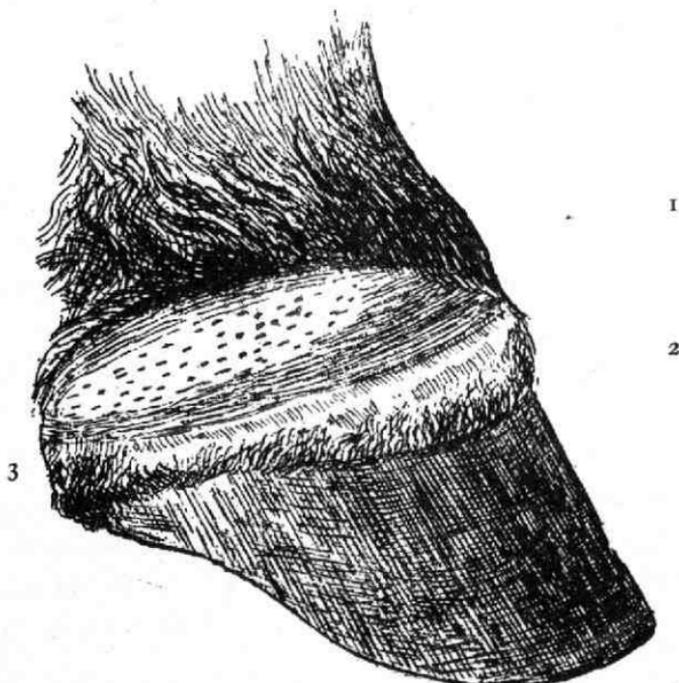


Fig. 43.—THE FOOT AND ITS PROTECTIVE ORGANS.

(1) Skin. (2) Coronary Cushion. (3) Perioplic Band.

The skin covering the body is composed of three distinct layers, known as follows :—

1. *The Epidermis* (of which the hoof is a modification) may be regarded as a protective tissue, composed of more or less flattened cells, the outermost layers of which are continuously being thrown off, constituting the *cuticle*. It is the deeper layers of cells which multiply.

2. *The Dermis*.—This is the principal layer of the skin.

It contains small blood-vessels, nerve endings, glands, white and yellow elastic fibres, etc.

The *Pododerm* or *foot-skin* is a *continuation* of the *Dermis*, though of different structure.

3. *The Inner Layer or Connecting Tissue*.—This serves to unite the hide to the muscles (flesh), etc. It is composed of fibre and connective tissue cells. The *Pododerm* (hoof skin) is vulgarly spoken of as the “quick.” It differs from the dermis of the skin elsewhere, inasmuch as it bears little projections called villi, and the pedal wall surface of it is arranged in the form of numerous leaves. These are the *sensitive laminae*.

The soft, velvety feel on the lower surface of the sensitive structures of the hoof is due to the presence of the villi. It is divided into the following parts:—

1. The Periopic Band.
2. The Coronary Band or Coronet.
3. The Sensitive Laminae.
- 4 and 5. The Velvety Tissue belonging to Sole and Frog (inner frog, of course).

1. *The Periopic Band*.—This is found as a narrow ridge between skin and coronet. In order to study these various structures properly, the reader should obtain a foot and soak it in water for a couple of weeks, so that the horny box can then be easily pulled off. The surface of the band is covered with villi, which form the *soft horn of the ring*, and the *periople* or bloom covering the horny hoof.

2. *The Coronary Band*.—This is a convex band running around the upper border of the foot, and lying between the periopic ring and sensitive laminae.

An examination of a corresponding portion of the hoof shows the *coronary groove*, the surface of which is studded

with numerous minute openings, into which the small projections upon the band fit in.

It is from these papillæ that the *horn tubes* of the wall are formed, also the inter-tubular matter.

The coronet covers part of the extensor pedis tendon, the sides of the short pastern, and part of the lateral cartilages.

From the brief description we have given, it will readily be understood that a sound coronary band is essential to the formation of a sound hoof-wall and bars. Any interference with its horn forming villi (projections we have called them heretofore) is liable to lead to defective horn secretion. In this way many sand-cracks and false quarters originate.

3. *The Sensitive Laminæ* (Podophyllous Tissue).—The front of the pedal bone and lower part of the outer surface of the lateral cartilages are covered by numerous closely-set fleshy bodies, not unlike a book edge before it has been cut by the binder.

These laminæ (leaves) are arranged in the direction of the long axis of the limb.

In a breed such as a hackney, there will be about 500 of such leaves, but they are variable in number.

Between the leaves deep furrows exist, and it is into these that the horny laminæ, situated upon the inner surface of the wall of the hoof, are dovetailed, thus giving a strong bond of union between sensitive and insensitive structures.

On the front of the pedal bone the leaves are the stoutest and strongest, also narrowest near to the coronet. The fleshy bars are formed of the same structures.

These leaf-like structures are called "primary," in contradistinction to other leaflets growing upon their sides, and known as "secondary."

At the lower border of the pedal bone the sensitive laminæ end in villi, exactly like those upon the sensitive sole.

It is from the fleshy leaves that the horny leaves (laminæ) are formed.

4 and 5.—*The Velvety Tissue of the Sole and Frog.*—The horny sole is formed from this, secreted by the villi scattered over its surface.

The velvety tissue does not cover the plantar cushion, the bar laminæ, nor yet the bar portion of the coronet.

The velvety tissue of the frog secretes the horny or insensitive frog, having fine villi over its surface for this purpose. It is this tissue that covers the lower face of the plantar cushion.

The Hoof and its Structure.

The hoof is divided into three parts, viz., wall, sole, and foot-pad or frog. (See Figure 22.)

The terms are sufficiently expressive.

Externally the wall should be smooth, and the size of each pair of hoofs equal.

In comparing the fore and hind feet, it will be seen that the former are much rounder at the toe, and much more sloping on the wall.

The outer border of the foot is more prominent than the inner border, so that it is possible to distinguish whether a hoof belongs to the "near" or "off" side.

The lower or *plantar border* is that to which the shoe is nailed.

The wall of the hoof is thickest at the toe in the fore feet, but in the hind ones there is not much difference between sides and toe.

The hoof wall is made up of three layers, as follows :—

1. *The Varnish or Periople.*—This is secreted by the periopic band previously alluded to. It covers the hoof whilst still unrasped, and its function appears to be that of preventing excessive loss of water from the hoof.

2. *The Hoof Wall Proper.*—This is formed from the coronary band.

3. The inner layer arranged in the form of leaves. It corresponds to the sensitive leaves on the pedal bone, from which it is formed by their horn-producing villi.

The outer border of the sole and wall unite at a part known as the “white line,” and the appearance of the latter is due to the horn leaves showing upon the plantar surface.

The white line extends from heel to heel, and is likewise seen between the bars and sole.

The horn of the frog, periople and white line, is designated “soft,” in contradistinction to that forming the wall and known as “hard.”

The first variety readily absorbs water, etc., and easily gives it off when drying.

The forms of hoofs exhibit striking differences, in accordance with the species of the animal. For instance, what is known as a “wide hoof” is almost circular, whereas the narrow one is “elliptical.”

The Growth and Wear of the Hoof.

From birth up to maturity the hoof increases in both height and width. Nominally this growth takes place in a uniform manner.

The growth of the front hoofs is slower than that of the hind ones. Shoeing diminishes the growth of the horn. It

has been estimated that the hoof grows at the rate of one-third of an inch per month.

The growth of horn is controlled by the nerve supply of the feet.

In colts—and sometimes in other horses as well—the hoof grows in an irregular manner, assuming a crooked appearance.

In shod horses it arises through one portion of the wall being left higher than the other.

Preparation of the Hoof of the Unshod Horse.

When desired to turn a horse out for a few weeks' grass—or it may be for some other reason—it is an advantage to pare the frog to nearly the same level as the wall, rounding the edge of the latter off with the rasp.

Frequent inspection of unshod feet of both colts and adult horses is necessary in order to maintain equal distribution of pressure.

Many young animals are much reduced in value through neglecting this precaution.

Horses driven with their hind feet unshod develop an exceptionally hard condition of hoof-horn; in fact, its enamel-like surface is a means of preventing it from damage upon hard and stony roads.

Removing Old Shoes.

The clinches should first be cut off with the clinch-cutter and hammer, the shoe then slightly raised with the pincers, and the nails removed singly.

The pincers can also be used to lever up the shoe, moving them in the direction of the sides of the shoe.

Preparation of the Foot for the Shoe.

Remove all loosely-attached pieces of horn, and cut down the wall so as to bring a small portion of the sole on a level with the bearing surface of the wall.

If the frog is very prominent it will require slight paring, but not unless.

If the pressure is taken off the frog through paring, contracted heels are almost sure to result.

The "bars" must be left as high as the wall at the quarters, whilst the buttresses will require shortening, their growth causing them to press too much upon the sides of the frog.

In short, all parts of the weight-bearing surface of the foot must be brought proportionate.

It is a bad practice to hide one defect by replacing it with another, as is frequently done by the shoeing smith.

The seat of corn, *i.e.*, the angle between the wall and bars, must not be allowed to come in touch with the shoe. This can be done by bringing it well below the level of the wall.

Weight of Shoes.

A heavy shoe is a bad one, lightness, compatible with suitability to purpose, being one of its merits.

The approximate weights of single shoes are as follows :

Heavy Draught Horses,	-	5 pounds.
Van and 'Bus Horses,	- -	3 pounds.
Roadsters,	- - - -	1 to 2 pounds.
Hunters and Saddle Horses,	-	About 1 pound.
Racers (plates),	- - -	3 ounces.
Ponies (12 hands or thereabouts),		About 10 ounces.

Some horses wear one part of the shoe more than at another. This must be corrected, not by thickening the shoe here, but by making it so that the over-worn parts will be less under wear.

Peculiarities, and Various Forms of Shoes.

Front shoes must, of course, be round at the toe; the hind ones pointed in this region.

The web of the shoe should be widest at the toe, and of sufficient thickness to bear ordinary wear for one month, though some horses wear their shoes longer than this; others, on the other hand, for a shorter period. The nature of the work to be performed, amount of such, the height of calkin, of roads, action, etc., are all related to the foregoing. The hoof-surface of the shoe should cover the wall, the white line, and about one-tenth of an inch of the outer edge of the sole.

Shoes for draught horses ought, in length, to reach the heel-bulbs. Heel and toe should be of equal thickness. In all form of hind shoes the hoof surface is flat.

On the other hand, all ordinary shoes for the fore-feet have a bevelled (seated) hoof surface bordering the sole, whilst the bearing border of the wall is flat. Reference to any fore shoe will readily disclose this condition.

The hoof surface at the heels should always be quite flat, so giving a correct bearing surface. The ground surface should be flat and bevelled, except at the toe.

Fullering makes the shoe lighter. The fuller or groove ought to be made sufficiently deep to enable the nail heads to be driven well home into the groove.

Clips.—These are triangular projections drawn out from

the outer border of the shoe, either at the toe or side. (Toe and side clips.)

A toe clip is an advantage, helping to keep the shoe in its position. The place where the clip has to rest should be rasped (not cut) flat.

Calkins.—Heel calks are made by turning the ends of the branches of a shoe down, whilst a toe calk consists of a piece of iron or steel welded on at the toe. Most hind shoes have the first-named. Their use is to give the animal a more secure grip of the ground.

On slippery ground, such as cement, asphalt, moist wood, etc., they are useless for the purpose for which they are designed.

The author's opinion is that whenever they can be done without, it is advisable to do so.

In horses which "cut," the removal of the calkins is sometimes a means of curing this objectionable injury.

If heel calkins are used, then the lower and squarer they are the better; they ought to be of equal height, and the shoe long. Both heel and toe calks necessarily keep the hoof well off the ground, consequently interfere with the normal elastic functions of the frog, etc., likewise diminish the area of basal support. Toe calks are spoken of as *sharp*, *half-sharp*, and *blunt*.

Special Forms of Shoes.

Heavy Draught Horse-shoes.—In the North of England, as well as in Scotland, cart horses are shod, as a rule, with both toe and heel calks on fore and hind.

For backing purposes, calkins—especially those at the heel—are, though an evil, a decided advantage.

Shoes for Van and 'Bus Horses.—For this class of horse, the shoes should be of moderate weight, the fore shoes plain and without calkins. The same may be said of those for application to the hind feet.

This class of shoe may be “fullered.”

Hunting Shoes.—The front shoes should be fullered and hollowed out on the ground surface, and have a toe clip. The points of the heels of the shoe ought to be sloped to an angle equal to that of the heels.

The hind shoes are also fullered, concave below, and it is an advantage to have a pair of toe clips.

Shoes for Racers.—The ground surface of racing plates is fullered and concave, and the material of construction steel. Sometimes one or two calks are used upon the hind shoes.

Hack and Roadster Shoes.—For the former the shoes should be of moderate strength, the fore ones being (preferably) grooved, and the hind ones fullered at the sides and square at the toe.

Rodway shoes are a very useful pattern for roadster or carriage horses.

The shoe has two grooves and three ridges on the ground surface, the nail holes being punched in the outermost groove.

The bars are sold to make these shoes, so that there need be no trouble as to their manufacture.

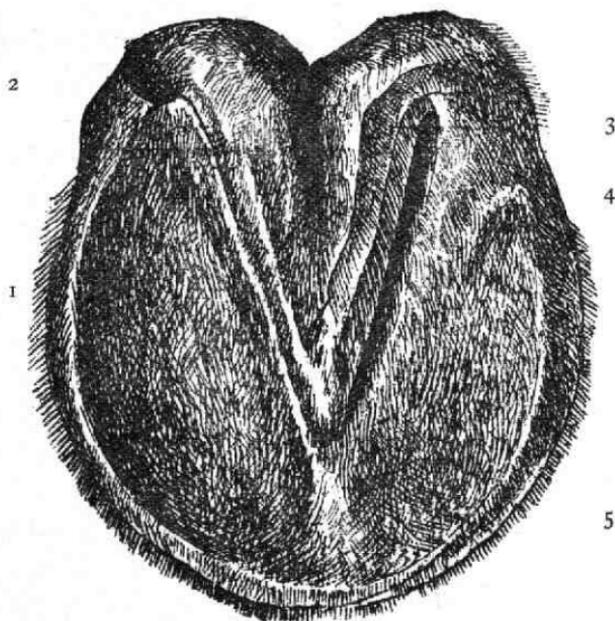


Fig. 49.—GROUND SURFACE OF FOOT AFTER REMOVAL OF HOOF.

(1) Middle Cleft of Fleshy Frog. (2) Bulbous Part of Perioplic Band. (3) Velvet Tissue of Frog. (4) Leaves of Bars. (5) Velvet Tissue of Sole.

Charlier Shoes (Preplantar Shoes).—This is a system of shoeing introduced by a Parisian veterinary surgeon named Charlier during the year 1865.

A special form of knife, rasp, and nails are the necessary appliances for fitting the shoes.

Neither sole, frog, nor bars are touched when adjusting a Charlier shoe.

The short Charlier shoe, *i.e.*, a tip round the front portion of the foot, is the modification now in use.

As the shoe is only the same width as the wall, it requires some skill in its application, the nailing demanding exceedingly skilful workmanship. For hunters, hacks, and

hackneys the short Charlier shoe, is a good deal used, especially in London.

When fitting a preplantar shoe it is essential to make the groove no wider than the shoe, to punch the nail-holes with a fine "round" pointed chisel, and to shape the nails accurately to the holes. It is best to fit the shoe "hot," taking care not to put it into water to cool.



Fig. 50.—SHORT CHARLIER SHOE APPLIED.

The Martin Shoe.—This is a patent grooved shoe, in which the inner groove is filled with india-rubber.

The shoes are obtainable from the manufacturers in this condition, therefore must be applied "cold."

They are made of wrought steel, and one of the chief advantages claimed for them is their use during the time of frost or upon slippery roads.

Our experience, though limited, enables us to speak favourably upon this point.

The shoes wear well, and the rubber in the fuller does not wear away excessively beyond that of the wearing of the shoe proper.

No shield or roughing is necessary.

The Fitzwygram Shoe.—This is a shoe recommended by General Fitzwygram, and has its ground surface hollowed out, with toe turned up.

The Bar Shoe.—This is a shoe fashioned so that the chief weight-bearing structures shall be the foot-pad or frog.

The branches of the shoe are joined at the heels by a transverse bar.

It is a form of shoe largely used, especially in such complaints as necessitate the bearing being taken off the heels.

Tips.—These protect the toe only from undue wear. Four nail holes are required.

In order to fit a tip properly, it is necessary to see that the unshod portion of the foot has a bearing surface perfectly level with that of the tip.

Sometimes the tip ends abruptly, but if the horn is insufficient, it is better to let the ends taper.

The Box-seated Shoe.—The foot surface of this shoe is strongly concave, and has heel calks. It is chiefly used for horses in which the sole is bulged—the “so-called” dropped or convex sole.

Nailless and Hinged Shoes.—Nailless shoes are not of much practical utility. There is no advantage in having a shoe without nails.

Considering the vast number of horses shod daily, it is worthy of note how few of this number are injured through the nailing-on process. It is not likely that even in the

distant future there will be any plan to supersede the use of nails for fixing on the shoe.

Clips or bands are adopted for the fixing on of nailless shoes. They are quite unreliable.

Hinged shoes have the hinge placed at the toe, so as to be shut up for the pocket. They are only of use in the event of a horse throwing a shoe on a journey.

Pads.—These are either made of leather or india-rubber. A leather sole is an extremely useful article when it is needful to protect the horny one from injury, etc., owing to its thinness, or bruises, etc., upon it.

The shoe is placed upon a stout piece of leather, and the latter then cut to shape.



Fig. 51.—DALE'S PATENT
PNEUMATIC PAD, WITH SHOE
IN PLACE.



Fig. 52.—FROG-PAD.

Sheather's patent pneumatic pads have the ground surface of the sole and frog projected, the projection filling the space occupied beneath by sole and frog.

The pads prevent slipping and "balling," and we have found them very useful in some cases of lameness arising through side-bone.

These pads, as already stated, cover up the whole under-surface of the foot, which is rather a disadvantage than

otherwise. They are sold in sizes to suit the various forms of feet.

“Bar”-pads are very useful to prevent slipping on frosty roads, or road-slipping from other causes.



Fig. 53.—BAR PAD.



Fig. 54.—SHEATHER'S PATENT PNEUMATIC PAD.

These bar-pads have a leather sole, excepting at the back portion, which is rubber. A short shoe only can be used with them.

Shoeing in Winter—During the time that the roads are slippery through frost, it is necessary to make some provision against this.

We have already alluded to pads and Martin's patent shoe, all of which are contrivances against slipping, or against both “slipping” and “balling” from snow.

By far the simplest method of sharpening is by using *ice or frost nails*. Frost nails are of various shapes and sizes.

Three or four nails are taken out of the shoe and replaced with steel frost nails.

The most general practice is that of simply driving the frost nail through the shoe only, bending the end over the shoe.

For this purpose holes must be put in the heel of the

shoe at the time of shoeing, so that one can at any time insert a couple of nails to prevent slipping. The shoe must of course be made a trifle under at the heels.

A general method of "roughing" is that of removing the shoes and then turning down the heels to form blade-like projections (sharps).

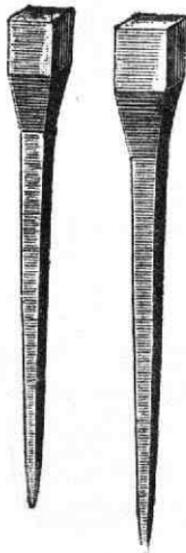


Fig. 55. — SQUARE-HEADED STEEL FROST NAILS.

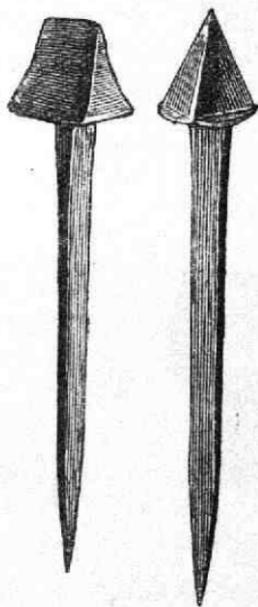


Fig. 56. — STEEL FROST NAILS.

The toe has also sometimes a sharp welded on to it, and it is necessary in the case of heavy draught horses. Repeated sharpening is bad for the feet, as the bearing surface may be spoiled. Steel frost cogs are largely employed.

The older pattern screw in, but the newer ones are self-fastening, and are as reliable as can be expected.

Mr. Dudley (Kingswindsford) is the manufacturer of these patent steel self-fastening frost cogs, from whose catalogue we reproduce several illustrations.

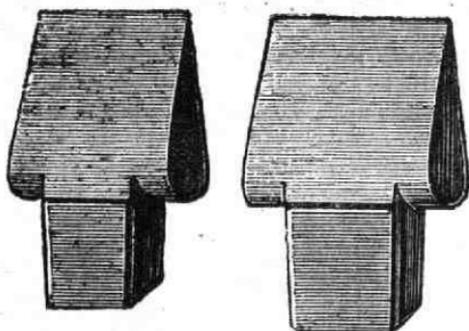


Fig. 57.—HIGH CHISEL SELF-FASTENING
STEEL COGS.

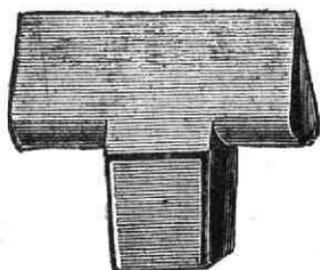


Fig. 58.—SHARP TOE COG.

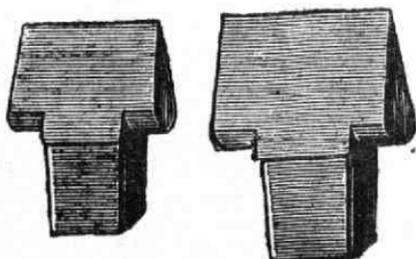


Fig. 59.—LOW CHISEL COGS.

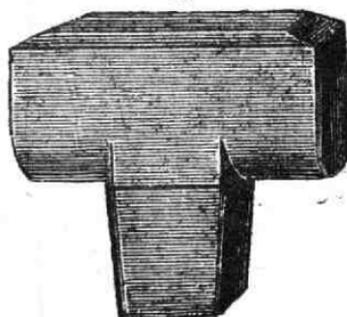


Fig. 60.—BLUNT TOE COG.

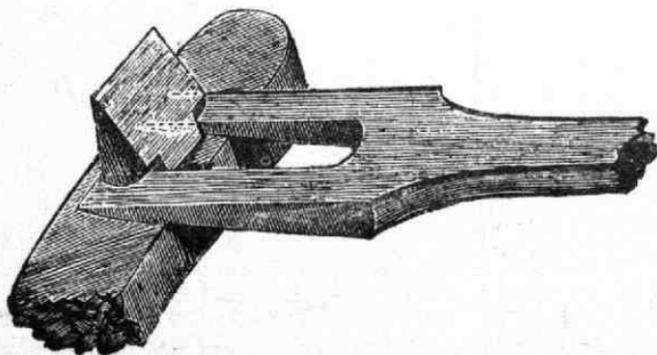


Fig. 61.—SHOWING METHOD OF EXTRACTING PATENT COG.

Most shoeing smiths stock the cogs, and would supply a tap for their removal.

When the horse is in the stable they should be taken out, or replaced by blunt cogs. When inserting a new cog the hole should be properly cleaned out, otherwise it will not allow of proper adjustment; in this way the cog will probably be lost.

Machine-made Shoes.—Many horse-shoes made by machinery are of excellent pattern, and have one advantage at least, and that is uniformity. Again, they are considerably cheaper to the farrier than those of his own manufacture.

Doubtless skilful farriers are able to make a better shoe than a machine, but a large number of these are quite incapable of producing anything approaching it.

Any proprietor having a number of horses constantly requiring new shoes, and being dissatisfied with the shoes made by his smith, would do well to provide himself with a stock of machine shoes suitable for his horses, and thus be saved annoyance.

Nail Holes and Nails.—The nail holes should be about one inch apart. Machine-made nails are now chiefly used, and have the advantage of being already pointed. From four to eight nail holes, according to size of horse, are usually required.

The nail holes in a shoe may be punched either "fine" or "coarse," according whether they be situated close to, or away from the edge of the shoe.

The right direction for the nail holes is "straight" absolutely, excepting it be at the toe, where the nail hole should incline inwards, though only to a slight extent.

Sore Back.—(See Saddle-Galls, Sitfasts, and Erythema.)

Sore Shoulders.—(See Erythema.)

Sore Throat.—Horses frequently suffer from soreness of the throat, either as a simple catarrhal affection (laryngitis), or, and perhaps more frequently, as an accompaniment of influenza or horse distemper. In this latter complaint it is almost constantly present, though it may not be severe. (See Influenza.)

As an independent affection, it is one which causes a good deal of constitutional disturbance. The inflammation is principally about the larynx (organ of voice).

Symptoms.—Difficulty or inability to swallow, the latter is seldom complete. The cough is at first hard and dry, subsequently soft and moist. A very light handling (not vulgar squeezing) over the upper part of the throat will cause the animal to cough. Liquids and solid food will often bring on a fit of coughing, and if watched for a moment or two the material may perhaps be seen coming down the nostrils.

The breathing is loud and very coarse. This is distinctly heard when the ear is placed close against the side, at the upper part of the windpipe. Commonly there is an influenzoid discharge from the nose, and the occurrence of this, apart from the former complaint, may be regarded as salutary, seeing that the fever, cough, etc., abate when it appears.

Treatment.—Use the electuary recommended for bronchitis or influenza. (See these diseases for the recipes.) Don't give any liquid medicine or balls.

Apply the following liniment to the throat twice daily, beginning under the jaw, and extending down the windpipe to the root of the neck.

℞. Liniment of Capsicums, Liniment of Belladonna, Spirit of Turpentine, Spirit of Camphor,	}	of each 2 ounces.
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Mix. Apply as directed above.

Failing the use of this liniment through any cause, camphorated oil, white oil, or other throat liniment can be used, but it is not the slightest use to apply any of the above without rubbing well in.

Mustard paste, or cantharides liniment are sometimes used, but the former ought to be washed off after being on for about three-quarters of an hour. The latter is excellent.

In addition to the use of the electuary and liniment, it is advisable to encourage the discharge from the nose. This can be done by steaming the head over bran and boiling water. Add a teaspoonful of terebene and oil of eucalyptus to each inhalation.

Continuance of this treatment for a few days will usually be found to give satisfactory results. If influenza is present treat accordingly,

General Management.—Clothe the throat and chest. Take care that the clothing comes "well up" under the jaws. Allow plenty of fresh air, but avoid draughts. Give linseed gruel to drink, and add two or three tablespoonfuls of glycerine to it each time.

Avoid the use of chaff, hay, etc. Scalded oats and boiled carrots are excellent foods when the animal is suffering in this way.

To the drinking water add half an ounce of chlorate of potash twice daily.

Use the electuary about four times daily, and steam head twice or thrice each day.

Skin, Air beneath.—Sometimes a puncture of the skin is followed by an accumulation of air beneath the latter, more especially if the wound is in the neighbourhood of a part executing much movement, and the skin is loose and abundant. (*See Elbow, Wounds of.*)

This pneumatic appearance of the animal is readily detected by the sense of feeling imparted to the fingers when these are passed lightly over the inflated area.

In rare instances the mare is in this condition before it is delivered, brought about through the death of the young animal within the womb, and subsequent putrefaction, and the generation of decomposition gases beneath the skin. Such a condition renders the foal difficult to deliver.

The air must be allowed exit. This is done by making incisions into the skin.

Spasms.—(*See Colic.*)

Spavin, Blood.—Probably a more senseless term was never invented. It is used to indicate a distended (varicose) condition of the saphina vein as it passes over the hock.

Some veterinarians would reject a horse showing evidence of such.

Spavin, Bog.—This is another somewhat ambiguous expression. It is applied to a swollen condition of the hock other than that of bone, of a soft but yielding nature. Such swelling may result from a variety of causes. Some horsemen, finding the slightest fulness about the hock, will designate it “bog spavin.” Again, thoropin is sometimes spoken of as bog spavin. A permanently enlarged hock, or one in an acute state of inflammation, might, with equal propriety, be similarly designated.

The so-called “sprung hock” consists of a general enlargement of the joint.

If the term “bog spavin” is restricted to an acutely inflamed condition of the synovial (joint oil secreting) membrane of the hock joint proper, then it is certainly an uncommon affection, and of course an “unsoundness” in every sense of the word; but a slight “fulness” of the joint, without heat, lameness, or want of flexion, cannot be regarded in this light.

It is said that distension of the true hock joint is commonest in young horses having “upright” hocks. (*See Thoropin.*)

Weak hocks of any description are liable to suffer in this direction.

With regard to the causes and treatment of bog spavin it is impossible to lay down any rules, knowing that there is so much ambiguity as to the correct interpretation of the term. An acute inflammation of the joint may result from a wound or other injury; may be of rheumatic origin, or come on after the joint has been affected with a more chronic inflammation.

Mere distension of the joint after rest requires no treatment.

If the hock joint is acutely inflamed there will be a good deal of constitutional disturbance.

The treatment under these circumstances comprises the use of cooling lotions (*see* Lotions), subsequently warmth and moisture.

When the inflammation has subsided a blister can be applied.

Internally the bowels must be kept open by mild doses of linseed oil (2 to 6 tablespoonfuls) or green food, while the fever can be moderated by allowing four drachms of bicarbonate of potash, along with one drachm of iodide of potash in the animal's drinking water twice daily.

A high-heeled shoe may be put on, if possible.

Sometimes it is necessary to afford rest in the sling. (*See* Slings.)

Spavin, Bone.—Almost every horseman is familiar with this diseased condition of the bones of the hock, yet it is a disease causing at times the most diverse opinions.

The reasons of this diversity of veterinary opinion is owing to the great variance in the natural conformation of the hock.

For instance, one veterinarian might consider a hock spavined, while another would regard it as a matter of natural conformation.

Spavin may be regarded as a chronic inflammation of the bones on the inner and lower part of the hock, involving, in some instances, the ligaments, connecting tissue material, and synovial (lubricant secreting) membrane.

The production of a various-sized bony tumour, *i.e.*, the spavin, is the product of the inflammatory process, and thrown out as the natural method of repair.

When this latter process has cemented the bones together it is not usual for the horse to go lame, so that it has a salutary effect. In about 50 per cent. of instances this takes place.

It cannot, however, be expected that a horse thus affected will have the freedom of hock action possessed by one perfectly free from spavin.

The course of the disease is slow (chronic) and the lameness often difficult of detection.

Usually the bony deposit is preceded by lameness, lasting from two to four weeks; but in old horses the disease processes may continue to advance into the substance of the bones, rendering repair impossible, and ever increasing lameness.

Causes.—The most important of these is in connection with the conformation of the hock.

Probably this is just about as far as we are warranted in going when we come to regard spavin as “hereditary.”

It is not the disease that is transmitted, but peculiarities in the conformation of the hock.

This predisposition appears to be specially manifested in hocks which are “turned out,” over-bent or sickle-shaped, narrow at the head of the cannon bone (tied-in hock), and cow-hocks.

Young animals are undoubtedly particularly liable to develop spavin, more especially if the conformation of the hock approaches any of the foregoing anatomical peculiarities.

The commonest “exciting” cause is concussion, but any injury or disease in connection with the hock is liable to be followed by the deposit of bony material (spavin).

Symptoms.—As a rule the lameness comes on gradually,

the bony deposit occasionally appearing about the same time, though usually not until several weeks afterwards. One method of detecting a spavin is by placing the hand (inner side of the fingers) on the inner side of the hock, and then doing the same on the opposite hock. Any difference in the size at the inner and lower parts of the hocks should, in our opinion, lead us to consider the enlarged hock (if due to a bony deposit) as "spavined," more especially if we flex the limb, maintain it in this position for about half a minute, and the horse then goes lame, either when trotted or moved sharply round, as soon as the limb is allowed to come to the ground. This is the "spavin test."

An important sign of the disease is its disappearance during work or movement, and the recurrence after rest.

Continuous lameness may be present, though this chiefly happens in old horses. This is due to failure in the reparative processes. The cardinal signs of inflammation, viz., heat, pain, etc., swelling, are inconstant.

There is greater liability for the horse to go lame when the bony deposit lies close to the front of the joint, and veterinary surgeons usually reject such animals. However, it is not a positive sign that its presence in this situation will cause lameness.

"Double-sided spavin" and a "pair of coarse hocks" offers the greatest difficulty of distinction.

In certain instances the lameness disappears after the animal has had a long rest, and then recurs when put to work again.

It may be asked, "Does spavin constitute unsoundness?" Strictly speaking it does so, therefore a spavined horse is "unsound." Although such an animal is "unsound" (legally), the reader is not to suppose that every spavined

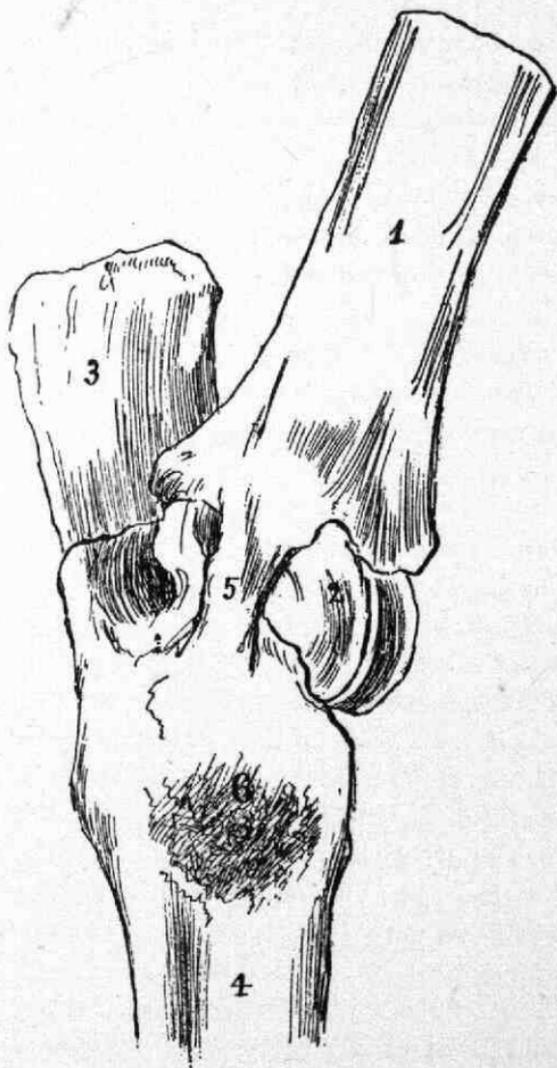


Fig. 62.

HOCK JOINT OF NEAR (LEFT) LEG, SHOWING SEAT OF BONE SPAVIN. 1, Lower end of Tibia or Shank Bone, articulating with No. 2, the Astragalus or screw-like bone forming the "so-called" true Hock Joint; 3, Heel (Oscalcis), the top of which forms the point of the Hock; 4, upper end of Cannon Bone; 5, Inner Lateral Ligament; 6 is placed on the shaded spavined part, and indicates the usual situation of this disease.

horse must be condemned on this account. In fact, many horses are practically quite as useful for work as those perfectly free from the disease. Indeed, veterinary surgeons (some, at least) are in the habit of recommending the purchase of a spavined horse, provided that the animal is particularly suitable for the purchaser's work, and that other conditions are favourable towards such recommendation.

It is reasonable to assume that the vendor would, under these circumstances, make a reduction in the price.

Before deciding to make purchase of a horse thus affected, the author suggests for consideration the following :—

1. The animal's age. Don't buy a young or an old animal having the slightest suspicions of spavin.
2. When the spavin is in front of the hock, have nothing to do with the horse.
3. If the hock is at all faulty in its conformation, decline to purchase, remembering that "tied-in hocks," sickle-shaped hocks, cow hocks, or weak hocks of any description, are predisposing factors in the production of spavin.
4. The size of the bony growth is no criterion as to the degree of lameness; in fact, a small deposit will often enough be found to render the horse quite useless for work, while a large one causes no inconvenience.
5. Nature of the work to be performed. Heavy draught horses and hackneys are not to be recommended owing to the severe exertion they may be called upon to perform.
6. Strong coarse hocks are favourable towards making a purchase.
7. Never have anything to do with the animal whilst it shows the slightest signs of lameness.

Spavin lameness must be distinguished from stringhalt, hip lameness, foot lameness, sprained tendons and ligaments, ring-bone (less frequently curb), and foot inflammation. (*See* these diseases.)

Treatment.—It is hardly necessary to say very much about this. If the animal shows the least signs of hock lameness, give four to eight weeks' rest. It is fair to assume that it will take about this length of time for the process of "repair" to be completed.

The reader is not to suppose that the joint reverts to its former natural state, the bones affected becoming bound together by the spavinous deposit (ankylosis).

Raise the heels of the shoe, give long quarters, and a short toe. Blistering is utterly useless. Firing is a shade better. If this is adopted, "point" firing is recommended.

Of the veterinary operations the most useful appears to be that devised by Peters, so that if the layman is anxious to try the effects of any operation he would do well to get a veterinarian to perform the operation. It must not be assumed that the operation of Peters will cure every spavin, but it is said that it does so in numerous instances, therefore it is worthy of trial in the case of a valuable horse.

In this operation the covering of the small bones (cuneiform) of the hock is divided, part of the inner lateral ligament, and the inner tendon of a muscle (flexor metatarsi). It would be quite out of place to enter into details.

A period of about six weeks' rest is required after the horse has gone through this operation.

Speedy-Cutting.—A "speedy cutter" is a horse which strikes the inner side of the leg (knee) with the shoe

of the opposite foot. It is a dangerous practice, and a fault which should condemn any horse. This bruising or cutting of the skin may appear on the inner side, above or below, or in the middle of the knee.

When buying a horse never fail to look here for evidence of these marks. The bruising of the skin sometimes causes the formation of a watery-like abscess.

Treatment—1. *Preventative*.—Remove the shoes every three weeks. Use a three-quarter shoe, or one of the Charlier pattern. Keep the foot narrow on its inner side. If these methods fail, get the saddler to make a leather gaiter extending up to the knee, to fasten on the outer side.

2. *Medicinal*.—Give a doze of laxative medicine if the horse is a bit out of sorts. Open abscesses with a pocket-knife. Try and get rid of any thickening by the daily use of iodine ointment.

Splint.—A splint is a bony desposit situated upon and between the cannon bone and inner small splint bone, appearing about the middle of the latter, or a little above this. Sometimes a splint appears upon the back of the cannon bone, front, or side of it, or upon the outer splint bone, and, in some cases, the bony deposit has spread itself over a considerable area of the backs of the cannon and splint bones. In exceptional instances a splint occurs upon the front of the corresponding bone in the hind limbs.

A splint is due to a local inflammation of the covering, or nourishing, membrane of the bone (the "periosteum," and the disease "periostitis") resulting in the deposit of bone, the size of which will depend upon the extent and duration of the inflammation.

Commonly the splint has an elongated form, but it is not in the least uncommon to find the bony deposit of a flattened or nodulated character.

On this account we often hear a splint spoken of as being "simple," "compound" (several small deposits), "rough" (asperous), "smooth," "double or pegged" (on inner and outer splint bones, with an isthmus of bone between), and so forth.

It is during the inflamed stage of the membrane that the pain and lameness are present, disappearing, usually, when the splint-like deposit has been laid down. This latter must be regarded as the legacy of the inflammation, and its relationship to the injury is a salutary process, though an unwelcome one to the owner.

Young horses doing severe work may have repeated lameness through splint, and this because the membrane continues inflamed.

Strictly speaking, "splint"—no matter where situated, its shape, size, and of whatever nature these be—constitutes "unsoundness," but it must be distinctly understood that a simple splint hardly ever causes a veterinary surgeon to hesitate in passing the horse as being sound in a practical sense. When the deposit is close to the knee it is liable to cause lameness at any time, so that the horse must be condemned. If the splint interferes with the play of tendons, or injuries, ligaments, etc., the same objections hold good.

Defective conformation of the fore limbs may render the splint liable to be struck with the opposite foot and so renew the inflammation and lameness. This is particularly liable to happen if the splint is of any size.

Causes.—Correctly speaking, "a splint" is either due to

unequal distribution of pressure or external violence, e.g., a blow, inflicted by the animal itself, perhaps.

Those splints resulting from the first cause are mostly elongated and confined to the small splint bone, whereas the latter are irregular or rounded.

Defective action, bad or faulty shoeing; in young animals at pasture through overgrowth or inequality of growth of hoof horn, severe work on hard or irregular roads, and galloping upon uneven ground, etc., etc., are the exciting agents operative in the production of splint and splint lameness.

Signs of Splint and Splint Lameness.—The pain resulting from the inflammation of the membrane covering the bone at the seat of injury produces the lameness, which latter is not as evident in coarse-bred animals as in those of better breeding. In ordinary instances splint lameness persists for about three weeks.

If the membrane is inflamed close to and at the back of the knee joint, the lameness may last much longer, perhaps extend into the joint, causing it to become permanently deformed (anched).

Lameness from "splint" is better seen when the animal is made to trot over hard ground.

Perhaps a want of flexion about the knee joint. A marked feature of splint lameness is its tendency to increase after trotting the horse a little while. It may walk apparently sound, but trot very lame.

When the splint is forming (hot stages) there is increased heat at the part, slight swelling, and pain on pressure. The detection of a bony splint is a very simple matter. Pass the fingers (palm of hand looking towards the head of animal) down the back of the leg, extending from the knee to a little above the fetlock.

Splints in other situations can either be seen or felt in the same manner.

If the animal has been in the habit of striking the splint a small white scar will be seen.

Heavy cart horses less frequently have splints.

The lameness arising during the formation of splints might be confounded with "navicular" lameness (*see* this). Movement (work, etc.) "increases" the former, but "decreases" the latter. Again, commonly the former is only temporary, the latter permanent.

Treatment.—Give the animal rest for a few weeks. Now apply the following liniment:—

R̄. Corrosive Sublimate,	- - - -	2 drachms.
Tr. of Cantharides,	- - - -	2 drachms.
Spirit of Wine,	- - - -	1 ounce.
		Mix.

Directions.—Paint the inflamed part, and then rub it sharply in with the tips of the fingers.

When the splint has been present some little while, the daily use of red blistering ointment can be tried. This will be assisted by devising some form of pressure to constantly bear upon the splint, taking care not to destroy the vitality of the skin through leaving the arrangement on too long at a time. A splint will often disappear of its own accord.

Staggers, Grass.—This disorder arises through eating the rye grass during a particular phase of its ripening process. Its appearance is limited to animals grazing upon rye grass during this period, *i.e.*, when the straws have begun to wither. A want of control over the hind quarters is the most prominent symptom.

Treatment—1. *Preventative*.—Avoid pasturing upon rye grass during the stage mentioned.

2. *Medicinal*.—Remove from pasture and give each a dose of physic.

Staggers, Stomach.—(*See* Indigestion.)

Stomach, Inflammation of.—This organ is seldom inflamed apart from such as may be produced through the ingestion of poisonous matter, mineral* or vegetable. During certain specific diseases it may participate in the inflammatory action.

We believe that its lining membrane seldom becomes inflamed through causes dietetic.

The symptoms and treatment will vary in accordance with the agent operating in the production of the inflammation. (*See* Poisons, Indigestion, etc.)

Stomach, Rupture.—This accident cannot be considered of every-day occurrence, yet it is not uncommon.

Thinning of its walls, either through advanced years or disease (ulceration) may predispose to it, but we believe that "attempts" at vomiting is by far the most likely to produce it. It has been argued that "vomiting" or attempts to accomplish this act must be regarded as a sign that the horse has a ruptured stomach. It is impossible to take this as proof positive, because horses have been seen to vomit, or attempt to, which, after death, had no rupture in this region. The rupture usually happens along the line of the greater curvature. The margin of the wound will be found inflamed. We have known a man create a rupture in the stomach after death, so as to assign a cause for this.

Such a fraud is easily detected. In a recent case, a horse made repeated acts of vomiting, extending over several months, which, after death showed a pouch, formed from the lower end of the gullet, just before its junction with the stomach.

Strangles.—In its simplest form, this disease is characterised by the formation of an abscess or abscesses at the under side of the jaw.

In the so-called irregular (vulgarly, bastard) strangles, the abscess is removed from the situation indicated, appearing in some other part, either externally, as at the point of the shoulder, or "internally," probably in connection with the lining of the belly, chest, etc., or perhaps about the brain.

It is the formation of internal abscesses that renders this malady liable to end unfavourably.

Simple strangles is a comparatively mild affection, retrogressing with the bursting or opening of the abscess.

It is particularly prone to attack young horses; indeed, we believe that we are correct, or fairly correct, in asserting that most horses pass through the disease, although the attack may have been a very mild one.

Many adult horses become affected with strangles. The author is inclined to think that once the animal has passed through a well-marked attack, the system is protected, to some extent at least, against a second invasion of the same malady.

Sometimes strangles appear to attack a number of animals in a certain locality, at or about the same time (enzootic disease).

Symptoms—1. *Simple Form.*—Slight fever and a catarrhal

discharge from the nostrils. Soreness of the throat and difficulty in swallowing.

Very shortly a swelling makes its appearance beneath the jaw, confined to one side, or occupying the space between the jaws (lower).

This swelling gradually increases in size, becoming hot, tense, and painful, causing some difficulty or interference with the breathing.

In due course the abscess bursts, discharges its contents, and the animal regains its health, even progressing better than before the illness.

It is not always that the abscess runs straight on to the formation of matter. It may remain in a tardy or stationary condition for weeks, ultimately disappearing without suppurating.

We have found this particularly the case when the swelling has been blistered too early. This is a very bad plan.

Treatment.—Put the animal in a warm, dry, and well-ventilated loose-box or other outbuilding. It is not advisable to allow colts to run out at grass during the time that the abscess is forming (breeding strangles).

Clothe the body. Add half an ounce of chlorate of potash to the drinking water night and morning.

Green food, or else put three or four tablespoonfuls of linseed oil in a bran mash, along with some scalded crushed oats.

With regard to the abscess under the jaw, it is a common practice to apply hot water fomentations or poultices. If this can be done twice or thrice daily for about an hour at once, we advise the owner to have it done, subsequently rubbing on a little elder ointment and keeping the jaw

warm. However, it is not always convenient to follow this plan, so that it is better to give the abscess time to ripen, simply rubbing in belladonna ointment night and morning.

As soon as the abscess begins to be a little soft, though only progressing slowly, apply a fly-blister to it, and in about twenty-four or thirty-six hours afterwards, a few good hot linseed meal poultices.

This treatment will hasten the maturation of the boil.

It is now a question whether the abscess shall be allowed to burst itself or be opened with the lancet. If suffocation is threatened, tracheotomy must be performed (*see* this). The signs for opening are:—Pointing, then softening and pitting at the point when the finger is pressed upon it.

The point has a sodden feel.

If the amateur has sufficient courage to open the abscess, he should do so at its most dependent part, so as to allow free drainage of its contents. This is a *sine qua non*.

The escape of the contents will be encouraged by fomenting with warm water. Now treat the cavity as an ordinary wound, *i.e.*, wash it out (using a syringe) with white lotion (*see* this) or Jeyes' fluid (1 to 40 of water).

Keep the wound open for three or four days. This can be done by inserting a piece of tow. At the end of this time take the tow out and allow it to heal. If the healing process does not go on as quickly as you would wish, touch the edges of the wound with lunar caustic.

Further treatment is seldom called for.

2. *Irregular Strangles*.—Although the irregular forms of the malady is as a rule more to be dreaded than the preceding, the mere removal of the abscess from its ordinary

situation does not necessarily imply any more seriousness.

A well-developed abscess at the point of the shoulder is even preferable to one in the region of the throat.

A question arises whether an abscess at the point of the shoulder, either in a colt or filly, more rarely an adult horse, ought to be regarded as being of a strangaloid nature, if so, whether an external injury (bruise, etc.) has determined its appearance in this situation.

Both of these queries we would answer in the affirmative.

The treatment of this abscess is the same as the last. (*See Abscess.*)

The formation of an abscess in connection with the brain has been the cause of death some time after apparent recovery from a simple (apparently so) attack of strangles. Usually death is concomitant with the bursting of the abscess, though it may not take place until the infective material discharged from the abscess has excited inflammation (*e.g.*, peritonitis). When this is within the belly there will be the ordinary symptoms of inflammation affecting this part, *viz.*, quick and small pulse, cold or patchy sweating, continually lying down and rising again, anxiety of countenance, etc.

If the tumour is in the region of the heart there is distressed breathing when the animal is made to move, patchy sweats, dropsical swellings, and other minor symptoms of disease about the heart. Pleurisy has been known to occur in the same way. (*See Pleurisy.*)

Why these anomalous cases of strangles should happen in one instance and not in another it is difficult to say. Injuries, internal weakness, or bad surroundings, doubtless have a determining influence.

Treatment.—External abscesses can be fomented and opened, or allowed to burst. Internal abscesses are incurable, death being the rule. Chlorodyne (in half-ounce dozes) can be tried for the relief of internal pain.

Pleurisy from this cause requires treating identically the same way as that occurring from other causes. (*See Pleurisy.*)

General Management.—Support the system in every possible way. Brandy and eggs should be used at frequent intervals, though we are afraid with little hope of success when the disease is situated in parts so vital, gruel, or a little green food. The free use of disinfectants, clothing to body, plenty of ventilation, cold water to drink, with a little nitre added to it. After “apparent” recovery—because it is difficult to be certain about this—gentle exercise. A few tonic powders or balls will help to sharpen up the appetite.

Stranguary.—(*See Urine, Suppression of.*)

Sterility, or Barrenness.—It is said that “rigs” having both testicles absent from the scrotum are usually sterile. In mares the causes of sterility are varied.

Disease of the ovaries or any portion of the generative passage may prevent conception. For barren mares an apparatus has been introduced whereby the male fertilising element is introduced directly into the womb (artificial impregnation).

Stringhalt.—This term is applied to an involuntary (want of control) movement affecting the muscles of one or both hind limbs, and in exceptional instances a fore limb.

In bad cases of stringhalt the limb is lifted high up, remaining flexed for about a quarter of a minute.

It is a very common disease, as a rule coming on gradually. It is an unsoundness, and incurable. The causes are not thoroughly understood, some believing it to be a disease of the nerves.

Symptoms.—The affected limb is drawn up suddenly. Turning the animal around or backing it is a very good test for bringing it into view. Horses having string-halt are able to perform their work.

Superpurgation.—(*See* Diarrhœa.)

Suspensory Ligament, Sprain of.—

INTRODUCTORY.—The suspensory ligament is a strong ribbon-like band running down the channel formed by the back of the cannon bone and small splints, and extending from the head of the first-named bone, winding around the fetlock joint as a double band, becoming joined to the extensor pedis tendon in front of the limb, and ending at a point on the upper and front part of the coffin bone. It contains some muscle fibres.

Its use is obviously to act as a brace or stay against over-extension.

Sprain of the ligament may happen during a gallop, especially through inequality of the ground.

Symptoms.—Lameness. Increased heat at the back of the cannon bone, along the course of the ligament. Swelling and pain on extension of the joints below.

Treatment.—Rest. Cooling lotion (*see* this), and a bandage. If thickening remains try a good fly-blister, or fire the back part of the limb.

Swollen or Filled Legs.—It is quite impossible to enumerate the various causes producing swelling of the limbs.

During such diseases as weed (Monday morning disease), either through injury (puncture) of the foot, or the result of rest, grease, rheumatism, erysipelas, etc., etc., swelling of the lower or upper part of the limb or limbs are common symptoms.

Overwork may produce a filled condition of the legs, particularly after standing in the stable a few days. This swollen state appears to result from defective circulation of the blood in the limb, increased through standing still after a period of brisk exercise.

Treatment must be regulated in accordance with cause or supposed cause.

Shivering.—(See Chorea or St. Vitus' Dance.)

Shins, Soreness of.—This is an inflammation in connection with either of the cannon (metacarpal) bones. The lower end of the bone is most frequently affected, though the whole surface may be more or less inflamed.

The disease appears to start as an inflammation in the covering (periosteum) of the bone, brought about through a blow to the part, or else from concussion, and its most frequent occurrence in young thoroughbreds is due to the cause last named.

Symptoms.—Heat, pain, lameness, and swelling, over any part or the whole of the cannon bone.

The swelling may be soft or hard, and tense. If the disease has been going on for some time the deposition of new bony material will likely be felt.

In some instances the old bone becomes encased within the shell of a new one.

A good deal of constitutional disturbance is frequently present.

Treatment.—In the early stages cold applications should always be used, followed in twenty-four hours by warmth and moisture.

Cold water and the cooling lotion (*see* Lotions) will meet the first want, while warm water and flannel bandages answer for the latter.

When the swelling is extensively distributed over the surface of the bone, and the skin tense, it is an excellent plan to make two or three incisions through the covering of the bone.

The skin has only a very tiny cut made into it, through which a knife (periosteotomy knife) is introduced, so as to sever the covering over the bone, and thus favour the drainage of the liquid product of inflammation. This is an operation demanding professional assistance.

Under ordinary circumstances this is not necessary, and the layman can treat "sore shins" quite confidently by (1) applying the cold water; (2) then warm for a few hours, and (3) apply a good cantharides (fly) blister over the diseased part. Never mind about inflammation being still present.

A mild dose of physic—say 4 drachms of aloes in solution—will assist matters towards a favourable issue.

Half-ounce doses of chlorate of potash can be added to the animal's drinking water once daily.

General Management.—Perfect rest, cleanliness, good food and plenty of it, bran mash to assist laxative medicine. Afterwards steamed oats, linseed, and carrots.

Be sure and apply the fomentations with due justice. After blistering don't forget to tie the head up. Keep the animal on soft ground if possible. A peat moss litter bed is very suitable.

Shying, Some Causes of.—The eyes should always be subjected to very close scrutiny when a horse is given to shy at objects. Various structures of the eye may be defective. Unlike man, the horse, under all ordinary circumstances, has its visionary power limited to objects at the side only. The commoner defects of sight are included in the following:—

- (1) Cloudiness over part or the whole of the circular transparent watch-glass-like part of the eye (*i.e.*, the cornea).
- (2) Displacement of the so-called "sooty bodies" (pigment particles).
- (3) Cataract, *i.e.*, disease of the refracting lens, its covering, or both.
- (4) Short-sightedness and long-sightedness.
- (5) Various other visionary defects and diseases.

The methods of detecting ocular deficiencies will be found on reference to the several diseases. In certain instances "shying" is due to nervousness.

Sitfast.—(*See Saddle-Galls.*) .

Side-Bone.—This is a diseased condition of one or both flexible plates of cartilage, situated on either side of the upper edge and back portions of the hoof. Normally these cartilaginous plates yield when pressed with the thumb,

feeling like elastic. In shapes the plates are triangular, partly hidden within the hoof (*see* illustrations) and attached to wing-like processes of the coffin bone (*os pedis*). In side-bone these plates of cartilage have become either partially or completely calcified, consequently they do not yield freely to the pressure of the thumb.

One or both fore (more rarely the hind) feet may be affected, likewise the inner, outer, or both sides.

Cart horses are the usual sufferers from side-bone, more rarely the lighter breeds.

In this latter class (hackneys, etc.) it constitutes one of the most serious defects so far as the horse's value is concerned, though we have known this class of animal have exceptionally large side-bones, yet go perfectly sound.

Their purchase must however be condemned.

Cart horses having good feet—open at the heels, etc., though affected by side-bone—may perform years of useful work without the slightest sign of lameness.

A large percentage of horses do, however, go lame through side-bone.

In selecting a sire or a brood mare, particular care should be exercised to avoid breeding from such as have side-bone, whilst animals which have straight-up fetlocks, contracted and small feet, must be condemned for stock purposes.

In side-bone lameness the animal brings the toe to the ground first. Manipulate the cartilages for evidence of the disease.

Treatment.—As a rule this is not very satisfactory. Sawing the hoof has been recommended, and it does good in some instances, certainly not in all. We have found pneumatic pads often of great utility, many horses going

sound when shod with these upon them. Nerve-section has been tried, and is said to be beneficial.

Sole, Dropped.—The horny sole is normally concave, which to some extent prevents bruising of it.

In certain diseases, such as laminitis, there is a tendency towards flattening, or even convexity, of the solar surface, predisposing this part to severe concussion, in this way favouring the development of other diseases.

Flat or dropped soles, though readily seen whilst the shoes are on, shows better when they are removed. A horse having its foot or feet in this condition is of course "unsound."

The use of a pneumatic pad or leather sole is applicable under these circumstances.

T.

Teeth, Temporary and Permanent.—

Sometimes it is a matter of great importance to distinguish a "temporary" incisor tooth from a "permanent" one. This can be done by paying attention to the following facts:—

(a) Permanent teeth are flat: temporary ones convex from side to side.

(b) Permanent teeth are broad, large, and have a vertical groove running down the face of each tooth, particularly well marked in the lower cutting teeth: temporary teeth have no groove, are not so broad, and altogether smaller.

(c) The so-called mark is plainer in permanent incisors than temporary ones.

Briefly, then, the foregoing are the leading distinctions between a "sucking" or "foal's tooth," and a permanent one.

Teeth, Age by the.—The "first," "second," and "third" molars (grinders) are but "temporary," whilst the "fourth," "fifth," and "sixth" are "permanent," *i.e.*, never replaced.

On the other hand all the incisor (nipping) teeth are "temporary," and it is their replacement, etc., which affords (aided in part by an inspection of the molars) such reliable

evidence of the horse's age, at least up to eight or ten years. After this time an opinion becomes more speculative. When the foal is one year old the "fourth" permanent molar is up, but not worn, and at the age of two years the "fifth" permanent molar is up.

The "sixth" permanent molar is not cut until the horse arrives at three and a half years.

When the animal is two years and six months the "first" and "second" temporary molars are replaced, and the "third" one at three and a half years.

Up to two years or thereabout all the nipping (incisor) teeth are of a temporary nature. At three years the central permanent incisors are level, at four years the middle pair the same, and at five years the corners are on a level with the others. Many horses bred in the north of Scotland are frequently several months later in getting their teeth.

When the horse arrives at six years the corner teeth show wear confined to their front edge, absent in a horse at five years.

Seven and eight years afford the cheating horse-dealer the greatest delight.

To many of these gentlemen all the horses they have for disposal are either seven or eight, and in one instance we remember examining the teeth of a pony said to be seven, yet it proved to be thirty years old at least.

At seven years the "mark" is elongated, and it is very near the hinder edge.

Look at the corner teeth, in which the "mark" nearly runs the length of the tooth, but in a horse at "eight" it is very much smaller. This also applies to the other incisors.

At ten years a groove starts upon the outer face of the upper corner incisor.

In all cases it is the rule to refer to the lower incisor teeth only, unless the mouth be kept closed

For a further description the reader is referred to other works dealing specially with this subject.

Teeth, Some Diseases of.—

IRREGULARITY IN THE REPLACEMENT OF THE INCISORS AND MOLARS.—The shedding of the milk teeth (incisors) frequently leads to trouble. If the root of the old temporary tooth is not properly cast off, it either gets entangled in the same parts of the new one, or else causes the latter to appear in a displaced position. Probably the new one will be found standing in front of the old stump.

We have seen some horses have this bother with the cutting of all the permanent incisors, giving the mouth a very peculiar appearance.

The same condition frequently happens in connection with the molar teeth, at the time they are being cast off.

The dentistry comprises removal of the old teeth when this is possible—because it is not always so. The subsequent shrinking of the gum will bring the tooth pretty well into its position.

Mere shells can be removed with the fingers, but in other cases forceps are needful.

PARROT-MOUTH.—When the mouth is closed the upper row of incisor teeth project, thus overhanging the lower teeth. This constitutes "parrot mouth."

It will be obvious that a horse having its teeth thus arranged is placed at a great disadvantage with regard to grazing.

POLISHED MOLARS.—In old horses (more rarely in the young) the grinding surface of the molars occasionally becomes polished (eburnation) through wearing away below the level of the enamel, which normally covers the crowns of the teeth. In young animals the cause is somewhat different. Under any circumstances it is a serious drawback to the horse.

CARIES OF THE TEETH.—Any of the molar teeth may become decayed; such decay generally starts at the grinding surface, extending towards the fang. A decayed molar tooth of the upper row is a frequent cause of nasal gleet.

The odour and colour of the tooth are sufficiently indicative. It is brownish black, brittle, and as to the odour, the less we say about this the better.

Dentistry comprises extraction, so that it is needful to consult a veterinary surgeon.

SUPERNUMERARY TEETH.—These are commonly spoken of as wolf's teeth. As a rule they are perfectly harmless, but now and again a tooth of this sort grows into the soft structures; if so, it will need shortening with tooth shears.

SHEAR-MOUTH.—In shear-mouth the grinding surfaces of the molars have worn too much away in an oblique direction, consequently the grinding action is greatly interfered with, in fact so much so in some cases that the animal cannot chew its fodder.

It is due to imperfect wear of the outer edge of the upper molars and inner edge of the lower ones.

Put in the mouth-gag and rasp away the edges as much as possible.

DENTAL FISTULA.—Sometimes a nasty sore place is found on the horse's lower jaw as the result of a diseased tooth or a broken bone. The sore is usually opposite the first

and second molars. In order to ascertain whether it is the outcome of a carious tooth the probe should be employed. Under these circumstances the tooth will need extraction.

Testicles, Inflammation of.—A wound or blow upon the testicles may cause inflammation in one or both of them. The same condition has been noticed in blood-poisoning.

Symptoms.—A painful swelling in the region of the testicles, and straddling gait. Fever and loss of appetite.

Treatment.—Rest. Bathe the scrotum with white lotion (*see* Lotions), and then rub it with belladonna ointment. Give a mild dose of physic. Soft food.

Tendons, Sprained or Inflamed (Sprain of back sinews). Sprain, with subsequent inflammation of the flexor tendons—*i.e.*, those running down the hinder surface of the limb—is of very common occurrence amongst horses, especially such as are used for fast work. Rheumatic inflammation of the tendons is not infrequent, though I believe that this latter is more liable to attack the heavier breeds, particularly such as have a large amount of loose connecting tissue beneath the skin around the tendons and joints.

The flexor tendons of the fore-limbs are commonly affected, because they have greater strain thrown upon them. Perhaps the hind limbs of cart horses are oftener the seat of strain.

Causes.—Horses having long slender fetlocks or softness of the tendons are predisposed. Oblique pasterns play much the same part, length and obliquity increasing the tendency to strain. The portion of tendon usually sprained

is that lying between the knee and fetlock, or hock and the latter.

Over-exertion is the chief cause of tendinous sprain, though a blow over the tendon will bring it on. Rheumatism has already been referred to, though it must be mentioned that such is not uncommon during or after influenza, and the inflammation begins in the tissues surrounding the tendons. Low heels have a tendency to favour sprain of the flexors. The fibres composing the substance of the tendon may be either stretched or torn.

Symptoms.—If the injury is recent there will be increased heat, swelling, pain, and usually lameness. Resting of the limb, and any attempt to bear weight upon it is brought about by using the heels as much as possible.

Later on the swelling gets harder, and the tendon shortens. The so-called "break-down" in race-horses is due to the rupture of the tendinous fibres. Both limbs may be affected.

"Knuckling over" is commonly brought about through contraction of the flexor tendons or their check ligaments, though such may be caused by muscular contraction.

If the tendons are contracted, the joints below the knee knuckle over. When the muscles are affected, then the knee-joint is bent over as well.

Treatment.—Knuckling over in both limbs should be considered practically beyond remedy.

Rheumatic inflammation must be treated in accordance with the principles laid down for this disease. (*See Rheumatism.*) In the early stages the horse must have absolute rest, and a high-heeled shoe placed upon the foot. Apply cooling lotion. (*See Lotions.*) In about forty-eight hours this must be substituted for warmth and moisture.

Make two rolls of tow, about the thickness of the thumb, and dip these into warm lotion composed as follows :—

R̄. Tincture of Arnica,	-	-	2 ounces.
Warm Water,	-	-	1 pint.

Now apply the rolls on either side of the sprained tendon, close against the back of the cannon bone, surround these *with a cotton bandage*, and fasten the whole in position by means of a hot flannel bandage, applied rather tightly. Take care to have the tow and bandages so applied that the pressure they exert is evenly disposed upon the tendon, and that the dressing is changed every four hours. The intervals in the changing of the dressing can be filled in by rubbing the thumb and fore-finger along the sprained tendon. This is massage, and it is very useful in helping to remove the swelling. Chronic thickening of the back tendons can have a smart blistering, or what is better, firing.

Avoid heavy work for a considerable time after firing or blistering.

Tenotomy is an operation for the cure of Contracted Tendon. Sometimes it is a very useful one.

The operation will usually cure knuckling over in the fore limbs, but the writer would not recommend the owner to have it carried out if the hind limbs are affected.

A good deal of useful work can be got out of a horse after tenotomy has been applied to the fore limb.

If the operation has been successful the limb should seem a good deal the better immediately afterwards. When there appears little benefit, it is a good plan to place the knee against the front of the animal's limb, and extend it as much as possible. Some degree of force is required to do

this. It is a good sign if the horse walks upon his heels for a few weeks afterwards. The wound is bandaged after operating. In about six weeks' time the animal will be fit for ordinary work. Some horses with contracted tendons (knuckling over) will work very well on soft ground by shoeing them with a long toe.

Tendons, Contracted (knuckling over), in Foals.—Thorough-bred foals are frequently born in this condition. Sometimes the little animal cannot move through the excessive knuckling over on the fore limbs.

It may come on between birth and two years.

Various theories have been offered to explain the cause of this knuckling over in foals.

The cannon bone may be too long, or the tendons not long enough.

Symptoms.—The foal may not be able to stand. Sometimes it stands upon the front of the fetlock joints. It is impossible to detect any disease in connection with the tendons or muscles. In some instances the hoof is very upright. If the disease is present in a newly-born foal the defect will be seen at once.

Treatment.—Very often the defect can be got rid of within a fortnight from birth.

Throw the foal; place the knee against the fetlock joint, and extend the parts below this by means of the hands, so that the fetlock is brought into an oblique position. Having done this, while in this position, put on a linen bandage soaked in hot boiled starch, or a plaster of Paris bandage¹

¹ A cotton bandage—say 1½ inches wide—is spread, throughout its length and breadth, with dry powdered plaster of Paris, and then rolled up. It is now soaked in tepid water and applied.

is perhaps better still. In either case a dry cotton bandage must go on before the starch or plaster bandage. After this has been done, the foal will usually place weight on the limbs. In four days remove the bandage, the removal of which will now favour extension of the tendons.

Padded splints prove very useful in some instances. Such ought to be made to fit the front of the leg—extending nearly to the knee and then strapped on, or a bandage applied. Gutta-percha or leather splints act well.

Thrush affecting the Feet.—This is a form of erythema attacking the cleft of the frog and heel. It is almost always the result of irritation through excreta accumulating in the feet, in fact good evidence that the soles are not kept properly clean—a fact which proprietors will do well to note.

One or more of the feet may be affected, though it is probably much more frequent in the hind ones. When thrush is neglected, it destroys the frog, and it has been suggested that “canker” is the outcome of this complaint.

Keep the feet clean and dry. A simple dressing of archangel tar and tow will often cure it, and the blacksmith (farrier) can apply this when shoeing the horse. Equal parts of boracic acid powder and calomel, mixed together, and inserted into the diseased fissure is an excellent remedy.

Thrush, or Aptha.—This is a disorder of the mouth, commonest in sucking foals, though occasionally seen in older animals.

It is due to a fungus, whose nature it is to thrive on fluids containing sugar, starch, etc.

Whenever a foal does not suck properly without any

apparent reason, examine the mouth to see if it is not affected with this.

Blisters and greyish masses, along with a nasty odour, will probably be found. The tongue, cheeks, and top portions of the mouth are the usual places to find the sores.

Treatment.—If a foal, wash the mouth out with a solution of alum (one teaspoonful to half a pint of warm water) or boro-glyceride, in the same proportions, and give a stomach powder such as :—

R̄. Powdered Carbonate of Magnesia, -	2 drachms.
,, Bicarbonate of Soda, -	3 drachms.
Bitter Aloes, - - - -	40 grains.
Powdered Rhubarb, - - - -	50 grains.

Mix, give in a little water.

Adult horses should receive a mild dose of physic, and have the mouth washed out twice a day with a solution of permanganate of potash, say 20 grains to every pint of water.

Feed entirely on soft food. Linseed tea is particularly useful under these circumstances.

Thoropin.—Both light and heavy horses are liable to have “thorough pin,” especially so if young and their hocks of an upright conformation. As a rule, only one hock is affected, but both may be so.

Lameness is not usual, but it is present in some cases of thoropin after severe work. Neither heat nor pain are present, so that the only way the amateur can tell whether a horse has or has not a thoropin is by careful examination of the back of the hock with the fingers, manipulation with which will probably disclose a swelling capable of

being pressed from the inner to the outer side, or *vice versâ*. Thoropin is a distended condition of the capsular ligament of the hock joint, and the contents of the overfilled capsule is a viscid fluid. It constitutes unsoundness, and the vendor of a horse, knowingly selling such an animal with a full warranty, renders himself liable to be sued for restitution of price, and reasonable expenses.

Surgical treatment is sometimes adopted for the cure of thoropin, but it is not always successful.

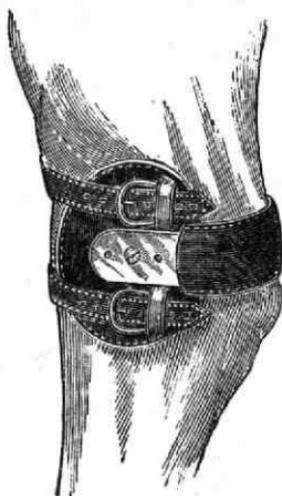


Fig 63.—THOROPIN TRUSS APPLIED.

Toe, Bleeding from, in disease.—(See Bleeding.)

Tongue, Inflamed.—Injuries and certain germ diseases are sometimes accompanied by an inflamed condition of the tongue. The organ is swollen, and in bad cases blueish coloured. Treatment must be left to the veterinary surgeon.

Tongue, Wounds of.—(See Wounds.)

Tongue, Paralysis of.—A paralytic condition of the tongue is occasionally seen, the organ hanging partly out of the mouth if the paralysis is double-sided. It is a disfigurement to any horse, but does not necessarily interfere with its general vigour. The tongue is chiefly formed of muscles, these are supplied with nerve force, and it is through impairment of this that the organ becomes paralytic, in part, or as a whole.

It must be understood that mere protrusion of the tongue does not necessarily imply paralysis of it.

In the latter there is complete inability to withdraw the organ into the mouth.

In some brain affections the tongue participates.

Tracheotomy, or Opening the Wind-pipe.—This is an operation frequently performed upon the horse for the relief of "roaring," likewise to afford temporary relief at any time when an animal appears in imminent danger of dying through suffocation.

For instance, the swelling about the throat during an attack of strangles may press upon the great air-tube to such an extent as to prevent the "inlet" of air in sufficient quantity. Other swellings about the throat may act in the same manner. Injuries in connection with the nose sometimes make it necessary. Owing to the length of the horse's neck, together with the nearness of the windpipe to the surface, this operation becomes exceedingly simple, and can in emergency be performed by any dexterous layman.

The necessary appliances consist of a sharp knife and a tube for inserting, known as a "tracheotomy tube," a simple form of which can be manufactured by a tinsmith.

The material for such should be block tin.

How to operate.—Place the horse in a stall, with its hind quarters against the manger; have a twitch applied, a strong man to hold it, and raise the head well up. Now tense the skin over the windpipe with the left hand, and make a clean cut, lengthwise, through skin, flesh, and front of windpipe. Having done this, insert the tube (with the pipe-like tube pointing downwards), fastening it around the neck by means of a couple of tapes.

The place to make the opening should be about one-third from the angle of the lower jaw, and the length of the cut about one and a quarter inches.

When inserting the tube, take care that the edges of cut in the windpipe are not carried in along with it, but allowed to rest at the sides.

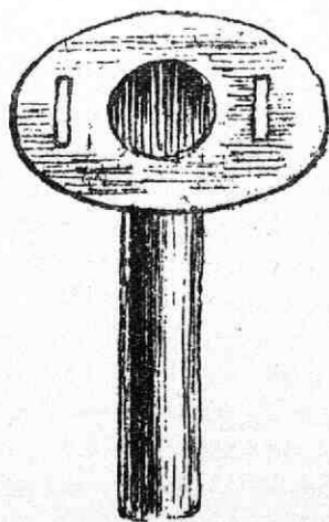
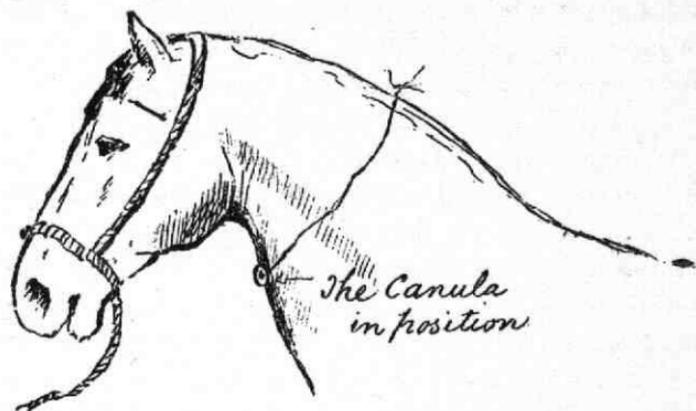
The tube may be taken out daily, washed, and replaced.

It is a very good plan to clip a little bit of the hair off over the part where the cut has to be made, because this sometimes irritates the wound, but it is not absolutely necessary.

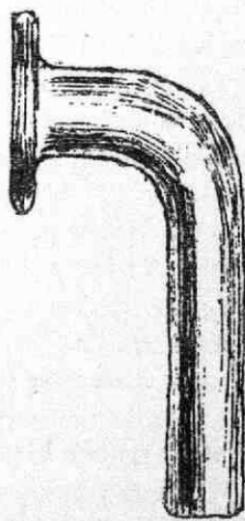
If the tube is inserted as an "anti-roarer," it will only require taking out occasionally. For this purpose an oval opening is the best.

In strangles, etc., it is quite easy to tell when the animal can dispense with the appliance by placing the fingers over the opening. Natural breathing is the sign for the removal of the tube, allowing the wound to heal itself.

When making the cut through the skin, it is advisable to draw this latter a little bit to one side, so that when the tube is removed the skin covers the wound, and prevents air gaining admission. It must be added that various tubes are sold by veterinary instrument dealers, but it is not so much the form of tube, the principal matter being the angle of curve given to the pipe-like portion. If this be too acute, the bend will rest against the back of the windpipe—of course on its inner side—consequently pushing the open end towards the front; if the angle of curvature is too oblique, the end of the tube within the windpipe will occupy the position of the bend in the last instance. The bend must be kept close towards the upper end, and the diameter $\frac{1}{2}$ to $1\frac{1}{2}$ inches.



2



3

Fig. 64.—TRACHEOTOMY TUBES.

In (1) the tube is inserted ; (2) and (3) shows simple forms of tubes.

Tuberculosis, or Consumption.—This is not a common disease in the horse, indeed it is only within this last few years that its occurrence in this animal has been noted, and experimentally confirmed, by the most eminent and reliable investigator¹ in connection with veterinary science in this country.

As in other animals, it is a specific or germ disease, due to the presence of a minute living organism known as the "tubercle" bacillus (Koch's bacillus).

The disease can be communicated to the horse by injecting tuberculous matter, or the cultivated germs, beneath the skin. Just as tuberculosis can be conveyed to the horse from other animals, so may these latter transfer it to the horse, though it must be said that the horse and dog are less liable to tuberculosis than man, etc.

The layman is hardly likely to recognise a consumptive horse, unless it be through a gradual loss of flesh, persistent cough, temperature remaining between or about 102° F. and 103° F. A substance known as "tuberculin" may prove of service in helping to diagnose tuberculosis in the horse. A fixed quantity of this material is injected beneath the skin. A rise of temperature points to its presence.

As regards the after-death appearances, these are largely in connection with the spleen (melt) and lungs, but the diagnosis rests upon the presence of the germs, the discovery of which is quite in the sphere of the amateur.

With reference to the treatment of an animal suspected of suffering from consumption, little hope can be given, the disease proving fatal sooner or later.

Out-door grazing, when possible, is advantageous; the

¹ The gentleman alluded to is Professor M'Fadyean, of the Veterinary College.

best of food-stuffs, light work, and some tonic powders, will form about the most that can be done.

Tumours.—Various kinds of abnormal growths occur in different parts of the horse's body, both internally and externally. In reality the word "tumour" can be applied to any kind of swelling.

Smaller, or even moderate-sized tumours, in connection with the skin of the trunk or limbs, can be removed with safety by the amateur. An elastic ring is slipped over the tumour until it comes to rest at its base (root). It is allowed to remain here until the growth sloughs away. The ligature may require tightening every now and then, the main affair being to keep (cut off) the blood supply (nourishment) away from the tumour.

As its death is brought about gradually no bleeding usually happens.

Any offensive odour from decay of the growth can be kept under by moistening it with carbolic acid lotion (one drachm to a pint of water, having a few drops of glycerine added). Catgut, string, or wire may be used in place of the india-rubber ring, but these must be fixed on tightly, and in the same place.

A very common form of tumour is known as a "polypus" (*i.e.*, a pendulous tumour), and such are commonly found growing from within the nose, womb and its passages, the rectum, etc.

Sometimes a good deal of bleeding follows their removal, so that the veterinarian is usually necessary. One or more may be present in the same situation.

For the treatment of capped elbow, thickening of the cord

of the testicles, and warty growths, the reader is referred to the several letters under which these come.

Tumours containing particles of black colouring matter (melanin) are not of uncommon occurrence in aged or old white horses, and appear to be the outward manifestation of the deposit of this same colouring matter within certain glands (absorbent glands) inside the body.

The external seat of the tumour or tumours is commonly about the vulva, under the tail and anus, scrotum; and mammary gland in the mare. Sometimes a large bunch, or bunches, of tumours, are found hanging from the skin.

The cause of this condition (melanosis) has not been satisfactorily explained.

The *Treatment* comprises the removal of the tumours by ligature, but preferably with the knife, giving the portion of skin removed a good wide berth, because the growths are malignant, *i.e.*, have a tendency to reappear.

U.

Urine, in Health.—The average amount of urine passed by a horse during twenty-four hours may be set down as being about ten pints. In summer and during severe exertion a large proportion of the water is got rid of through the skin, consequently the animal gives off less urine.

Such substances as nitrates, heated hay, musty oats, vetches, and numerous diuretic medicines largely increase the amount of fluid removed through the kidneys. Under ordinary circumstances the urine has a faint yellow colour, but when passed excessively it becomes very pale, or even colourless.

It contains, along with other substances, an important substance termed "urea," and the chief acid is "hippuric acid," taking the place of the uric acid found in the urine of man, dog, etc., and which only occurs in the horse's urine when the animal is out of health. Outside the body a living ferment soon converts the urine into ammonia.

Urine, Excess of.—(*See Diabetes.*)

Urine, Incontinence of.—This means inability to retain the urine, which may be constantly dribbling away from the animal. It is but a symptom of disease, and very

difficult at times to find out the cause. It may be due to irritability, inflammation, or paralysis of the bladder. The writer remembers a horse in which it was due to a partial constriction (stricture) of the tube leading away from the bladder, the walls of the latter being greatly thickened, probably on account of the additional work the organ had to perform.

Foals are often seen to be passing urine through the navel. This is the result of a tube (the urachus), continuous with the bladder, not being properly closed (by Nature) after the young animal has been born.

Treatment.—Try and find out the cause. If due to stone within the bladder, or obstruction in the passage, an operator will likely be needed. Examine the bladder by inserting your hand and arm into the rectum, pressing gently but firmly in a downward direction, when the state of the bladder is easily ascertained.

In foals incontinence can be cured by throwing the animal, and then just touching the open urachus with the point of a thin red-hot iron, or a little blistering ointment rubbed well in around the navel opening may suffice to effect a cure.

To adult horses suffering from inability to retain their urine, the following balls are worthy of a trial and should be given night and morning :—

R̄.	Extract of Nux Vomica,	-	-	-	48 grains.
	Extract of Gentian,	-	-	-	12 drachms.
	Extract of Belladonna,	-	-	-	6 drachms.
	Linseed Meal,	-	-	-	9 ounces.

Treacle, a sufficiency.

Mix, and divide into 12 balls. Give one twice daily.

In addition to this treatment, give a fair amount of dry bran, oats, linseed, beans, hay, etc.

Urine, Stoppage of.—This may result from a variety of causes. For instance, during an attack of colic (gripes) no urine is passed. In this instance we believe it is due to spasm of the neck of the bladder, which is overcome when the same disturbance of function, in connection with the bowels, has ceased.

Paralysis of the bladder, perhaps from stone within it, stone within either of the urine tubes leading from the kidneys to the bladder, or within the passage leading from the latter to the outside, as well as constriction of this, are all causes of urinary stoppage. Suppression may be the cause. Cantharides (fly blister) will cause "stranguary," *i.e.*, a condition in which the urine comes away in drops.

Treatment.—Examine, if a horse, the sheath and end of penis. If this seems all right then the sooner professional aid be had, the better.

Urine, Suppression of.—The secretion of urine by the kidneys may be "partially" or completely suppressed, a condition which is likely to result from an acute or chronic inflammation, attacking one or both of these organs.

The differences between "suppressed secretion" and an "obstruction or stoppage to the flow" are very important in connection with the diagnosis and treatment, and demand a diametrically opposite course of treatment.

In the former case the kidney or kidneys refuse to act; but in the latter they do secrete, though the secretion fails to be excreted through its proper channels.

Suppression (complete) is distinguished by the bladder being empty, and other signs pointing to a kidney affection.

Stoppage will most likely be indicated by a distended bladder, the excess trickling away drop by drop, or in other words, strangury will be present (*see these*). For treatment of "suppression" the reader is referred to Kidneys, Inflammation of.

Urine, Blood contained in.—Blood is sometimes expelled along with the urine, or immediately after the act of urination has been completed. In the horse it will likely have come from the kidneys, bladder, or passages leading the urine to, and away from, either of these, but in the mare from the reproductive organs as well. It may be passed as blood, is ordinarily observed either as a bright fluid or a dusky red clot; or it may be in a state of solution in the urine, giving the latter a coffee-coloured appearance, and it is then due to disturbed digestion. (*See Azoturia.*) If the blood comes from the kidney it generally "succeeds" urination: if from the passage leading the urine out from the bladder, it "precedes" this act.

The *Causes* are, at times, very obscure, difficult, or well-nigh impossible to determine.

Injuries to the loins (kidneys), stone or gravel within the urinary conduits, diseases or injuries to the generative organs, as well as defective assimilation, are amongst the most important of these.

It is impossible to lay down any rules as to treatment. (*See Azoturia, Kidneys, Stones within, and Inflammation of, etc.*)

V.

Veins, Inflammation of.—Occasionally the large vein in the neck (jugular vein) becomes inflamed, and this chiefly through having used a rusty or dirty fleam when bleeding the animal.

Symptoms.—The edges of the wound are red, thick, and angry-looking, and the vessel is distended, cordy, and somewhat hard. Very soon there is a slight discharge, and the swelling runs upwards, perhaps resulting in the vein becoming obliterated, thus rendering the animal predisposed to an apoplectic fit. In certain instances, blood-poisoning may come on, as a result of the wound.

Treatment.—The wound must be cleaned through the use of a little warm water and a soft sponge. All irritating material about the lips of it ought to be gently removed, and then the hair clipped off along the course of the vein, which may now be rubbed with tincture of cantharides. The lips of the vein should be touched with a lunar caustic point. This latter may be repeated, if thought fit, in a few days' time.

General Management.—Keep the head tied up and give a light diet; green food in moderation. If an abscess forms about the wound it will, when ready, require lancing. (*See Abscess.*) Any burrowing of matter must be given free exit.

Vomiting.—An attempt at or the actual performance of this is by no means of frequent occurrence in the horse. The reason of this appears to be associated with certain anatomical and physiological peculiarities of this animal. Drugs, which readily cause other animals to vomit, are quite incapable of exerting the same influence upon the horse. It has been asserted that vomiting, or an attempt or attempts at, is a sign of the horse having a ruptured stomach; but this is hardly correct, knowing that horses have vomited which, upon after-death examinations, have had their stomach intact. Probably it is more correct to assume that attempts at vomiting in a horse are indications of this animal being in danger of having its stomach ruptured.

Vertigo, or Megrims.—Some horses are occasionally seized with this affection, more especially harness horses wearing tight-fitting collars, thereby acting as a mechanical impediment to the return of blood from the head. The disease is characterised by the suddenness of attack, and, in many instances, the equally sudden return to apparent health.

Causes.—Doubtless a certain class of horses are “predisposed” to this affection. I now refer to those animals having erect and stiff necks, overfed, underfed, or having disease in connection with the heart, or, it may be, through obliteration of the large vein in the neck. (*See Inflammation of Veins.*)

The exciting causes, *i.e.*, such as are concerned, or believed to be, the immediate producers of the attack are: tight-fitting collars, exposure to the heat of the sun, irritability of the digestive organs, and excitement. Heart diseases are predisposing causes. Although these various causes have

been enumerated, the writer has observed this disease in young and vigorous animals, without being able to connect its occurrence with any of the aforesaid causes.

Symptoms.—If a harness horse and at work, then the animal is suddenly brought to a standstill, and perhaps falls to the ground at once. There is usually a shaking of the head, and twitching of the muscles of the latter, along with those of the neck. The horse may be unconscious for the time being, or it may become unmanageable, plunging and rearing during the paroxysm. As already stated, the attack is usually of short duration, the animal regaining the use of its limbs, and proceeding along its journey as though nothing had happened, unless some injury has been inflicted.

In hunters a similar class of symptoms occasionally occurs when riding to hounds.

Treatment.—During the attack, if a collar is being worn, remove the pressure of this at once, and very likely the horse will then rise. As a safeguard against future attacks, substitute a breast-band.

If the bearing-rein is believed to be a cause, then by all means do away with it. Avoid exposure to undue heat.

General Management.—Avoid working the animal just after it has been fed. Always give rather a light sort of diet, such as green food, steamed oats and bran, linseed, a small amount of good hay, chaff, etc.

Regulate the bowels with an occasional mild dose of physic. Work the animal at a quiet pace. By attention to these matters, the horse may be got to do a lot of useful work. It must be remembered that a megrimed horse is "unsound," and for fast work a constant source of danger.

W.

Warbles.—(See Saddle-Galls.)

Warranty.—It is hardly necessary to say that the law of warranty in this country is very unsatisfactory, and capable of different interpretations.

Were veterinary opinions unanimous, conclusions upon the part of both judge and jury would often be of a more decisive nature. It is conflict of professional opinions that renders the delivery of judgment uncertain and unsettled.

When a warranty is given as to the "soundness" of an animal at the time of purchase, the buyer can recover from the vendor in the event of "unsoundness," provided that there is acknowledged proof that such was present "antecedent" to the sale. The word antecedent has been placed within inverted commas, because it is upon this where both frictional and fractional differences usually arise.

A horse may be sound at the moment of sale, but become unsound immediately afterwards. For instance a colt might be perfectly sound at the moment of purchase, but in going to his new home become "unsound" through slipped stifle-joint, etc.

Defects spring more suddenly into existence with the young than in the case of a more matured animal.

Sometimes a warranty, as to freedom from vice, is given. Such, not infrequently, gives rise to dispute, because a

horse might be quiet enough with one person, but become "spirited" or even vicious with another, particularly if the party allows the animal to get too much of its own way.

A "heavy-handed" rider may cause a horse to show bad temper.

Before purchasing a horse for hackney or roadster purposes, the intending purchaser ought to try the animal in saddle, harness, or both, so as to determine the temper and even vice. Never allow the seller or his groom to either ride or drive the animal for you, because, under these circumstances, defects or vice may be hidden.

Horses intended for heavy draught can be tried in accordance with the work they will have to perform.

If possible, a riding horse should be ridden (1) alone, (2) in company. Some horses will go quietly enough when they have a companion, but become vicious when ridden alone, and *vice versa*. Take care to ride the horse behind as well as in front of other animals.

When purchasing a horse at a market or fair the vendor may be unwilling to allow anyone, excepting himself or his man, to show the horse; if so, the chances are that there is something wrong, so that it is better to err on the safe side, *i.e.*, decline to have anything to do with the animal.

Again, the "would-be purchaser" must not forget that a horse from a dealer's stable has been leading a somewhat artificial life, having been kept in a warm (sometimes hot) stable, receiving plenty of good food, constantly groomed and trimmed, regularly exercised, and every effort strained to get the animal into the highest standard of excellence (so far as appearances go), a condition which the purchaser sees, sorrowfully, fading away, but which he cannot maintain.

For a fuller description of sale, law of warranty, etc., the reader should consult the author's work, "Unsound Horses and How to Know Them."

Warts.—A warty growth or growths may appear upon any part of the body covered by skin or epithelium, this latter being the essential constituent of a wart.

In the horse the commonest situations to find warty growths is upon the penis, its sheath, or both, upon the eyelids, less frequently upon the tongue and roof of the mouth, lips, etc.

Warts vary in their size, shape, and number.

As a rule, the smaller they are the more numerous, though it is quite usual to find them present in various stages of development.

The growths have a central core of tissue (connective), from which branches may spring, and through which numerous blood-vessels course, consequently the removal of a wart causes a considerable degree of bleeding, in comparison with its size.

Treatment.—Removal with the knife or ligature. To the layman the latter is the most advisable, provided that such is applicable. A piece of catgut, silk thread, or an india-rubber ring is made to grasp the growth at its base, so that it dies, and is then cast off. In this way bleeding is avoided.

Warts upon the penis or sheath will, if large, most likely necessitate an operation by a veterinary surgeon.

Small warts can be painted with a strong acid, such as acetic, nitric, etc., or touched daily with lunar caustic. When in the neighbourhood of the eyes, care must be taken to prevent any of the caustic agent entering the eyelids. A

much better plan comprises snipping the warts off with a sharp pair of blunt-pointed scissors. If the part is painted with a solution of cocaine (six grains of the latter to a quarter of an ounce of water), at intervals of two or three minutes, the horse will stand quiet, as he feels no pain through the use of cocaine. When the warts are numerous they should be painted with a solution of chromic acid (100 grains to an ounce of water). This can be applied daily.

Weaving.—A “weaver” is a horse which has acquired the habit of constantly moving the head and fore legs from side to side. This habit is not continuous, but appears to begin when the approach of any one is evident. It is an objectionable practice, and commonest amongst horses tied up, though it is said that a horse may weave even when enjoying the freedom of a loose-box.

Weed, Acute and Chronic.—(See Lymphangitis.)

Whistling.—(See Roaring.)

Wind, Broken.—This diseased condition is of common enough occurrence amongst horses, constituting one of the most serious defects to which this animal is subject.

The most frequent sufferers are the heavier breeds, but the affection is met with amongst all classes of horses, from the Shetland pony to the Clydesdale and shire bred horse. It is a disease intimately associated with (1) disturbance of the digestive organs; (2) interference with respiration (breathing).

The precise nature of the pathological (disease) changes producing broken wind are as yet but imperfectly understood. Probably such are in connection with the nerve (pneumogastric), supplying the stomach and lungs with natural (in broken wind unnatural) impulses. In other words, the disease results from nerve irritation, or nerve changes. The walls of the stomach are commonly found after death very thin.

Causes.—One of the worst of these is that of feeding a horse on bulky food, watering the animal, and then working it immediately afterwards. There is no surer method of bringing on "broken wind" than this.

Dusty fodder and chopped hay are equally pernicious.

Inferior or coarse hay should never be given to horses; in fact, a great deal of foreign hay is only fit for bedding material.

Symptoms.—As previously stated, "broken wind" is a disease particularly affecting cart horses, though not confined to this class of animal.

Greedy feeders, mares, and in-foal mares, seem particularly liable to suffer from this complaint.

Symptoms of indigestion are invariably present, and the author's opinion regarding the hereditary supposition of broken wind is that the predisposition has its home in weakness of the digestive or part of the digestive apparatus.

There are *two cardinal signs of broken wind, viz.:*—

1. The Cough.
2. The Breathing.

1. **THE COUGH.**—Once the cough of a broken-winded horse has been heard, there is no difficulty in recognising it

a second time. It is a hollow, short, dry sound, most frequently heard when feeding or drinking, or at exercise. The cough apparently causes no pain.

2. *THE BREATHING.*—The taking “in” of air (inspiration), is “shorter” than the natural (normal) act.

The giving “out” of air (expiration) is “longer” or more prolonged, and broken into two acts as it were.

In the “first part of the act” the air seems to be forced out of the lungs “suddenly,” while in the “second part” it is squeezed out “gradually.”

The amateur should have no difficulty in recognising a broken-winded horse.

Occasional symptoms attendant upon the complaint are wind-sucking, loss of energy, and others, along with such as may arise from various heart affections.

Treatment—1. *Preventative.*—Feed carefully, and avoid exercise or work immediately after feeding.

Water before giving food. Don't use bulky or dusty food.

2. *Medicinal.*—So far as we know it is impossible to cure the complaint. Once broken wind, always broken wind.

By giving half an ounce of Fowler's solution of arsenic in the drinking water, or sprinkled over the food twice daily, the symptoms vanish, but only so long as the drug is continued, returning on its withdrawal. A couple of grains (not more) of powdered arsenic mixed with the food, and given twice daily, serves the same purpose, and has the advantage of being extremely cheap.

Gas tar is another effective means of keeping the unpleasant symptoms hidden. The best method of using this is that of allowing the horse to drink out of a trough or other vessel containing a layer of tar at the bottom, over which the water has been standing. Frequent small doses

of linseed oil, green food, or other laxatives do temporary good. Likewise a favourite drug is nux vomica, so that I append the following recipe:—

R̄. Powdered Nux Vomica,	- -	1½ ounces
Powdered Bicarbonate of Potash,	-	6 ounces.
Powdered Arsenious Acid,	- -	24 grains.
Powdered Ginger,	- - -	6 ounces.
Powdered Liquorice,	- - -	6 ounces.

Mix thoroughly, and then divide into 24 powders.

Directions.—Give one powder twice daily in food. The powder, or the arsenic, tar, etc., can be continued for months, or even years, provided that a day or two's interval be allowed about once a month, followed by a mild dose of laxative (not a physic ball) medicine.

Horse-coupers sometimes administer large doses of shot and grease to a broken-winded horse, and then try to effect a sale at a fair.

Wind-Sucking.—Some horses acquire this most objectionable and pernicious practice.

A "wind-sucker" seems to gather air in his mouth and then swallow it. There is a smacking of the lips and extending of the head during the act, which is denoted by a suction-like sound.

Like crib-biting, it is a vice, and such animals are always unthrifty. Flatulency is easily produced in this way.

The writer's opinion is that irregular or insufficient feeding is a common cause. It is an unsoundness. Horses fed regularly and having the best of food, do, we admit, suck wind.

Treatment—1. *Preventative*.—Feed regularly, liberally, and use good fodder.

2. *Medicinal*.—Add half an ounce of bicarbonate of potash to the food or drinking water daily or twice a day. Chalk in manger. Sometimes a strap with projecting studs is used as a preventative.

Wind, Thick.—(*See* Chronic Bronchitis.)

Wind-Galls.—These are very common amongst horses. A wind-gall is a “puffy” kind of swelling commonly appearing about the fetlock joint.

The swelling (distension) varies in size from that of a marble to a goose’s egg, and its contents may consist of a small amount of yellowish liquid, or else a little granular material. The swelling or swellings can be either in the fore or hind fetlocks, appearing a little above, or below the joint. When the limb is taken in the hand and flexed, the wind-gall disappears for the time being. The causes of these swellings appear to be that of chronic irritation, resulting from hard work, leading on to dropsy of the joint, or sheath, and surrounding tissue of the tendons.

Treatment.—The best and most lasting effects are produced through firing, though, of course, a blemish results. Blistering plaster is better than blistering ointments for this purpose. If the swelling is recent and small, it will at times be got rid of by this latter method. The daily use of iodine ointment, or the liniment recommended for this purpose. (*See* Liniments in the Introductory.)

Light work assists repair.

Withers, Fistula of.—The formation of fistulous sores upon the withers is the outcome of a bruise, arising through several causes.

At the outset the bruise is denoted by a swelling situated upon one or both sides of the withers, exactly akin to what happens when the poll (top of head) is bruised, subsequently becoming the so-called "poll-evil." The serous abscess thus formed has a soft watery feel when touched, quite unlike an abscess filled with pus. These two conditions can readily be distinguished by exploring the swelling with a stout needle.

The swelling will require lancing. It should be previously washed with carbolic acid solution. A cut is now made into it with the lancet, and the cavity washed out with a solution of chinosol (1 to 600). Once fistulous sores have formed, they are often very difficult or even impossible to cure. The matter is liable to burrow on the inner side of the shoulder blade, and often the spines (processes) of the vertebræ become diseased. In this way the chances of recovery are small.

Setons are sometimes employed, and have for their aim that of "preventing" and "clearing away" matter, but they don't always prove of benefit. Sinuses will require cutting open and injecting with chinosol solution or some other antiseptic agent.

Womb, Prolapse of.—This accident occasionally happens when the mare has been straining severely, either to expel the foal, or the cleansing. Old age and previous prolapse are pre-disposing factors in its production.

Symptoms.—If the organ is completely out, it will be found to be a pear-shaped or cylindrical swelling, and the

part corresponding to the broad end of the pear hangs free. The protrusion varies in colour from that of a bright red to a blackish brown, this variation depending upon the time elapsing since the catastrophe happened. Sometimes the mare kicks and tries to bite the organ.

Treatment.—Few laymen would, we anticipate, feel disposed to treat an accident of this severity. The veterinary surgeon should be summoned immediately, and in the meantime the protruding organ ought to be supported by two assistants holding a sheet beneath it. The hind quarters can also be raised up a couple of feet or so by means of bedding material.

If straining is severe, give from one to three ounces of laudanum in a pint of cold water. Soft or green food should be given.

Womb, Inflammation of (Parturient fever).

This is not a common disease in the mare. Retention and subsequent decomposition of the "after-birth" is, in our experience, the most fertile cause. Neglect to remove the after-birth may be productive, in the mare, of fatal results. It must be exceptional for this disease to occur at any other time than that of labour, no matter whether this takes the form of an abortion, premature, or "full-time" birth.

This, then, is the predisposing cause, while the exciting ones may be a decomposed or decomposing after-birth (cleansing), injuries to the womb, prolapse of the organ, a chill, and a dead putrifying foal.

Symptoms.—The disease usually runs its course within five days. Death is the most frequent ending.

At the beginning the symptoms are very slight, but in

comparison with the rapidly fatal, or invariably so, nature of the malady it is certain that extensive disease changes are going on within the body. The pulse is usually about 75 per minute, and somewhat hard, *i.e.*, feels as though the artery were harder than usual. This continues for a couple, or even three days.

The appetite, though not good, is not lost.

If the vulva is looked at it seems to be "full," the lips reddened deeply, and there is a rusty-coloured discharge issuing from it. The same deep redness extends inwards.

When the temperature is taken it will likely be found to be about 105° or 106° F., perhaps more frequently between the two. If the temperature rises to a couple or even one degree over this, it almost certainly forebodes death.

The animal may maintain the standing posture until (in some cases) the fourth day or there about, and with apparent freedom from pain. All this time, however, one or more patches of sweat will be found upon the body.

The discharge from the vulva, the quick, hard pulse, the high temperature, the confined bowels, and the sweaty patches continue until the fourth or fifth day, when the animal falls suddenly to the ground, cold sweats come on, and death occurs either in a convulsion, or the animal becomes comatose.

Treatment—1. *Partial Preventative*.—Removal of the after-birth within the limit of twelve hours, particularly if the weather be warm and close.

2. *Medicinal*.—Urgent skilful assistance is demanded in an affection so grave in its nature.

The womb and passages will require washing out with such substances (in solution) as Jeyes' fluid, creolin (half an

ounce to a pint of water), carbolic acid (1 to 20), corrosive sublimate, etc., etc.

A large female spray pipe is fixed to a horse clyster syringe, so as to ensure complete cleansing of the womb. This requires doing twice daily. A laxative should be given, whilst large doses of quinine—one to two drachms—along with creolin can be given twice daily. For this purpose the following draught will be suitable:—

R̄. Sulphate of Quinine, -	-	-	2 drachms.
Dilute Hydrobromic Acid, -	-	-	1 drachm.
Creolin, -	-	-	$\frac{1}{2}$ an ounce.
Water, -	-	-	$\frac{3}{4}$ of a pint.

Mix, and give the whole.

N.B.—Note the importance of giving large doses of quinine.

General Management.—If veterinary aid has been sought as directed, there is no need to enter into this. The veterinarian will give his directions accordingly.

It may not be out of place to mention one or two little matters. The most important of these is the free use of disinfectants about the building, along with strict cleanliness. Food and water must be as fresh as fresh can be. Green food may be called for. Admit plenty of pure air, but no draughts. Sponge away any soiling of the hind parts with the discharge. Use Jeyes' fluid and water for this purpose. Keep the body well clothed, and sponge twice daily with tepid vinegar and water. Brandy and eggs may be required. Constant attendance is essential.

Womb, Discharge from.—This may result from a variety of causes, such as inflammation, either of an acute or chronic character, tumours, etc., etc.

Although a discharge may be issuing from the female organs, it is no criterion that same is coming from the womb. Quite likely the discharge is coming from parts external to it, *i.e.*, the vagina.

Injections of permanganate of potash and sulphocarbolate of zinc can be tried :—

The Injection.

R̄. Sulphocarbolate of Zinc,	-	-	2 drachms.
Permanganate of Potash,	-	-	1 drachm.
Tepid Water,	-	-	1 quart.

Inject the whole of the above daily until the discharge ceases.

Internally give the tonic powders. (*See* these in Tonics.)

Worms.—The horse, like most other animals, is commonly the subject of internal parasites, some species of which are not uncommonly the cause of fatal results.

It is convenient to speak of worms in accordance with their shape. For instance, they may be oval and flattened, tape-like, round, and tapering, or fine and thread-like.

FLAT WORMS.—The “liver fluke” (*Fasciola Hepatica*) so common amongst sheep (producing sheep liver rot) is occasionally found in the bile passages of the horse. We remember seeing a liver of this animal with a large number of flukes. Apparently they do not cause much inconvenience.

TAPEWORMS (*Tænia*). *The perfoliate tapeworm* (*Tænia Perfoliata*) is the commonest species of this kind in the horse. It has a square head, with two lobes, and the segments making up the substance of the parasite overlap each other like the tiles on the roof of a house.

Its length is from one to four inches. Its habitat (lodgings) is in the large bowel (cæcum and colon).

The Plaited Tapeworm (*Tænia Plicata*).—This is the longest tapeworm met with in the small bowels. It may be quite three feet in length.

The head is large and square, provided with four suckers, one at each angle. The margin of the body has a saw-like or plaited outline.

Treatment for Expulsion of Tapeworms.—After feeding the animal the previous day on soft food (bran, etc.), give either of the following draughts, subsequently a dose of physic (aloes):—

℞. Oil of Turpentine, - - -	1 to 2 ounces.
Oil of Peppermint, - - -	10 drops.
Linseed Oil, - - - -	1 pint.

Mix, and give the whole draught at once. Repeat in twenty-four hours.

Or use:—

℞. Liquid Extract of Male Fern, -	$\frac{1}{2}$ an ounce.
Oil of Savin, - - - -	$\frac{1}{2}$ an ounce.
Milk, - - - - -	1 pint.

Mix. Give the whole. Repeat in twenty-four hours. Give physic ball.

After having given worm medicine, the excrement ought

to be glanced at in order to find out whether any or many worms have been expelled. Some notice must be taken of the kind of worm.

ROUND WORMS (Næmatadoes).—*The Palisade Worm* (*Strongylus Armatus*).—This worm is notorious for its wandering habits, and is found throughout the whole of the intestines of the host. From the bowels they pass into the blood-vessels, and may cause disease here (aneurism). The parasites sometimes cause very heavy losses amongst yearlings.

The average length of the male is one and a half inches, whilst the female measures slightly more. The body is tapering, and the head round and trunk-like, bearing numerous teeth arranged after the fashion of a circular saw.

It is said that this worm is almost constantly present in the ass, and that disease of the blood-vessel (anterior mesenteric artery) is quite common in this animal.

This parasite is one cause of colic (gripes), and is capable of producing lameness, through blocking up of a blood-vessel. Its wandering nature accounts for its occasional discovery in various parts of the body, and it is this which makes it so objectionable.

The common seat of the aneurism (bulged blood-vessel wall) is a branch coming off from the trunk running down the inner side of the back. The latter is known as the posterior aorta, and the branch as the anterior artery of the mesentery, *i.e.*, the sling-like sheet attached to the bowels, with the artery to nourish it and the bowels.

In any case of pain in the belly we should not forget the possibility of the presence of these worms being the cause.

FOUR-SPINED WORM (STRONGYLE) (*Strongylus Tetracan-*

thus). This is a common enough parasite. The palisade worm is often found along with it. It is a frequent cause of diarrhœa (very often a fatal one) amongst colts, and a fairly common cause of inflammation of the bowels in the horse at any period of its life.

The worms take up their abode in the wall of the bowel, and may be spread over several feet of its length.

When the parasites are gorged with blood they assume this colour, but at other times they are white or grey. As many as sixty worms have been counted in a square inch.

It is quite possible that these parasites are more frequently the cause of bowel inflammation than is supposed, at least by some. For a further description the reader should turn to Diarrhœa.

Treatment.—For special symptoms, the treatment is indicated under Diarrhœa and Inflammation of the Bowels (*see* these).

Tonics, good food, occasional doses (twice weekly) of two ounces of turpentine, given in a gill of linseed oil, will be found as suitable as any treatment we can adopt. The dung should be looked at for evidence of the worms.

THE LARGE ROUND WORM (*Ascaris Megalocephala*).—This is the largest and commonest round worm found in the horse, ass, and mule.

The parasite is broadest in the middle, tapering at each end (spindle-shaped). Its length may be 17 inches, the females being the longest. It is found in both the large and small bowels. Enormous quantities occur in the bowels, in fact these worms do very little harm unless abundant.

Treatment.—Give the following powders:—

R̄. Santonin	-	-	-	-	-	1½ ounces.
Tartar Emetic,	-	-	-	-	-	1½ ounces.
Powdered Gentian,	-	-	-	-	-	3 ounces.
Powdered Nux Vomica,	-	-	-	-	-	6 drachms.

Mix, and divide into one dozen powders.

Directions.—One night and morning in a small bran mash.

Thymol is an excellent remedy for round worms. Give 10 grains, dissolved in 1 ounce of spirit of camphor, and subsequently mixed with a pint of linseed oil. Repeat in a week's time. Powdered Chinosol (45 grains) is useful.

THE PIN WORM (*Oxyuris Curvula*).—This worm locates itself within the large bowels, but particularly in the rectum, causing, in many instances, severe kicking.

The males are about one and three quarters of an inch in length; the females four inches.

The eggs may be taken into the body by an animal licking a stall post, etc., after an infected horse has been rubbing its posterior parts here.

Treatment.—Give an occasional clyster of salt and water, with the addition of two or three tablespoonfuls of turpentine. This soon dislodges the parasites.

THE MAW-WORM (large and small)—(*Spiroptera Megastoma* and *Microstoma*).—The large maw-worm is found in the wall of the stomach, and the small one free in the cavity.

THE THREAD-WORM OF THE EYE (*Filaria Oculi*).—This parasite usually takes up its home in the eyeball, but has been found in other parts, *e.g.*, muscles, brain, etc.

Numerous other parasites affect the horse, but the principal ones have been enumerated.

In all instances of an animal being suspected of having worms it is necessary to examine the ejecta carefully.

Loss of usual energy, staring coat and general unthriftiness are the constitutional symptoms in milder cases of internal parasitism.

Wounds.—The horse, through the nature of his work, is specially liable to be wounded, the injuries thus received varying from simple abrasions of the skin to those piercing the cavities of the chest, belly, etc.

Clean-cut wounds are spoken of as "incised," but if the part is torn as "lacerated"—a very common form of injury, and "punctured" when the deeper lying tissues have been injured, as commonly happens in "prick of the foot." Punctured wounds necessarily demand care, and it is very essential that their depth be found, as it is likely enough that some foreign substance will be left in the depths of the wound, and in this way excite blood-poisoning, constituting a "poisoned wound," to which the same term is applied when the animal has been bitten by a venomous beast of some sort.

Contusions are injuries accompanied by a good deal of "bruising" of the tissues.

Many wounds are accompanied by broken bone (fracture), the gravity of both being increased.

Another variety is the so-called "gunshot" or "bullet" wound.

Wounds in the region of the skull, chest, belly, and foot are, if severe, very liable to prove fatal.

An effort should be made to ascertain the extent of the damage within.

A fairly common form of street accident is that of the point of the shaft penetrating the chest, the result of

collision with a runaway horse and carriage. Important blood-vessels may be injured, or pleurisy, etc., supervene.

The same applies to puncture of the belly cavity, as the bowels, etc., are liable to be torn, or even protruding, though not necessarily injured in themselves. Frequent injuries are "kicks" from other horses, either in the stable or whilst at grass. The situation and extent of the injury will be the best guide as to the probable results.

When the muscles are deeply cut across, if about the thigh, forearm, etc., lameness often remains for a long time, ultimately disappearing.

Wounds in the rectum or vagina are commonly fatal, especially when no antiseptic treatment has been adopted. Subcutaneous wounds are—as the name implies—"beneath the skin."

The constitutional disturbance is not always proportionate to the extent of the injury.

For instance, a slight abrasion about the mouth may be the channel for the introduction of anthrax germs, or some trifling wound perhaps followed by lockjaw.

We shall now give a brief account of the healing of wounds.

Healing of Wounds.

The various methods through which the healing of a wound occurs are commonly grouped as follows :—

1. By Immediate Union.
2. By First Intention.
3. By Granulation.
4. By Secondary Adhesion.

1. **HEALING BY IMMEDIATE UNION.**—This is not a common method of wound-healing amongst the lower animals.

The albuminous material dries at the surface and acts as a sort of seal over the wound. Three conditions are necessary: a clean cut, absence of germs (practically so), and accurate pressure in order to keep the two sides of the wound firmly bound together. The painting of an abrasion with Friar's Balsam or tincture of marigold often assists a wound to heal in this manner.

2. **HEALING BY FIRST INTENTION** (first adhesion).—Although a wound upon the horse may at times be got to heal in this way, we are of the opinion that such is not frequent. The difficulty lies in not being able, as a rule, to keep the parts in accurate adjustment. This is essential if a wound has to heal by this method.

The same three factors as in healing by "immediate union" are required. We fear that there is seldom hopes of attaining these desiderata, however. Wounds in the neighbourhood of the eyelids, nostrils, face, etc., should always be very neatly sewn up, and every precaution taken to try and bring about union in this way, so avoiding a blemish. Painting the part with collodion and then putting the horse in the pillar reins will assist these ends.

3. **HEALING BY GRANULATION** (second intention).—This is a very common, in fact, the commonest, method of healing amongst the lower animals. Severe wounds on the knees (broken knee) usually heal after this fashion.

If broken knees could only be got to heal by either the first or second methods the blemish would be slight. We do not refer to a mere grazing of the skin.

The wound is exposed to the air, and germs are allowed to have full play, while the bottom of the wound has no

pressure upon it, consequently granular-like projections spring up, which, when excessive or too exuberant, are designated by the popular name "proud flesh."

These granular projections consist of the minute blood-vessels (capillaries) and a little of the surrounding tissues.

Liquid material and colourless blood-cells escape from the vessels, and the tissue around now begins the real process of repair. Its cells begin to multiply, and in course of time the wound becomes filled up by new tissue, while the granulation stage has been gradually overcome. Having served the purpose it is now no longer required.

4. HEALING BY SECONDARY ADHESION.—Here the two surfaces of a wound, healing by granulation, are pressed together, the sustained pressure causing them to unite.

In the processes of healing under Nos. 1 and 2 there is no inflammation, granulation, or suppuration, etc.

General Principles of the Treatment of Wounds.—When there is severe bleeding from a wound it is advisable to try and check this as speedily as possible. If an artery has been torn the blood is sent out in "jets," as it were, whereas bleeding from veins is "continuous" and less serious than the former, being impure blood and of a purple colour. Pressure by the finger can often be used to control bleeding, a fact to be remembered in cases of emergency.

If the bleeding vessel can be grasped, it may be tied off with a piece of catgut or silk thread, etc.

The free use of cold water will often stop the bleeding and should always be tried; besides, it helps to clean the wound.

The application of tincture of steel, Friar's Balsam, styptic collodion, alum, etc., are used for the same purpose, when the bleeding is not excessive.

Bruises to the knee (broken knee) are best treated by fomentation with moderately hot water, which greatly assists in keeping back the swelling, though this is rather a disadvantage if there is a discharge of fluid from the tendon sheaths or joints (open joints). If this has happened it is indicated by the issue of a glassy semi-fluid, and we recommend that cold water be substituted in order that advantage may be taken of the swelling to assist in closing the wound.

Wounds about the eyelids should be bathed with warm water for half an hour or so, and then carefully stitched up, using fine silver wire, catgut, or silk. The stitches must be what are known as interrupted, *i.e.*, each stitch is taken separately, and then tied off before proceeding to the next one.

A curved suture needle is needed to do this properly, therefore a few assorted needles of this kind should form part of the armamentarium of the amateur veterinarian.

Sometimes "pins" are used instead. The pin is passed through the lips of the wound and then tied off by twisting a little horse hair—figure of eight fashion—around the free ends of the pin, in this way maintaining the pins in position.

A great deal of skill is necessary when stitching up wounds in the region of the eyelids if a blemish has to be avoided. The torn parts require very careful adjustment and the stitches should not be drawn too tight, otherwise subsequent swelling will probably tear them out.

After the edges of the wound have been properly adjusted, it can be painted with Friar's Balsam or tincture of calendula, etc.

Deep wounds about the chest, buttocks, etc., require strong metallic wire, and each free end should be twisted

around a button (suture button) specially made for this purpose by surgical instrument dealers.

Wounds of the tongue, if slight, call for no special treatment, but if severe, veterinary aid should be got.

We have already alluded to wounds about the chest, belly, and head, most of which call for professional assistance.

Superficial abrasions can be treated by the application of boracic acid ointment, iodoform, thymol, or carbolic acid ointments. Oxide of zinc ointment is very useful for the same purposes.

Punctured wounds should be syringed out several times a day with some antiseptic lotion such as chinosol, Izal, Sanitas, Jeyes' fluid, carbolic acid, etc., in accordance with the instructions laid down upon the bottle labels of these agents.

Half an ounce of carbolic acid and the same quantity of glycerine, added to a quart of warm water, is a useful antiseptic lotion for every-day use.

Wounds upon the lower parts of the fore or hind limbs can be covered up with lint and a bandage, or tow soaked in carbolic glycerine, and a bandage over this.

Broken knees may be treated in this way.

If a wound is found to be healing too rapidly—denoted by proud flesh—its surface should be touched with lunar caustic or blue-stone.

Broken Knee.

We have already alluded to this when speaking of the general principles of the treatment of wounds.

Much will depend upon the extent of the injury.

If the skin is cut it is advisable to keep the horse tied short, in order to prevent it lying down. Thorough cleansing from sand, etc., should be done at once, and then bathed with antiseptic lotion such as Jeyes' fluid (1 table-spoonful to a pint of water).

The amateur should not attempt sewing a wound in this region.

Blemishing, to a great extent, can be prevented by skilled assistance. Iodoform ointment may be used for simple injuries. Apply on tow or lint.

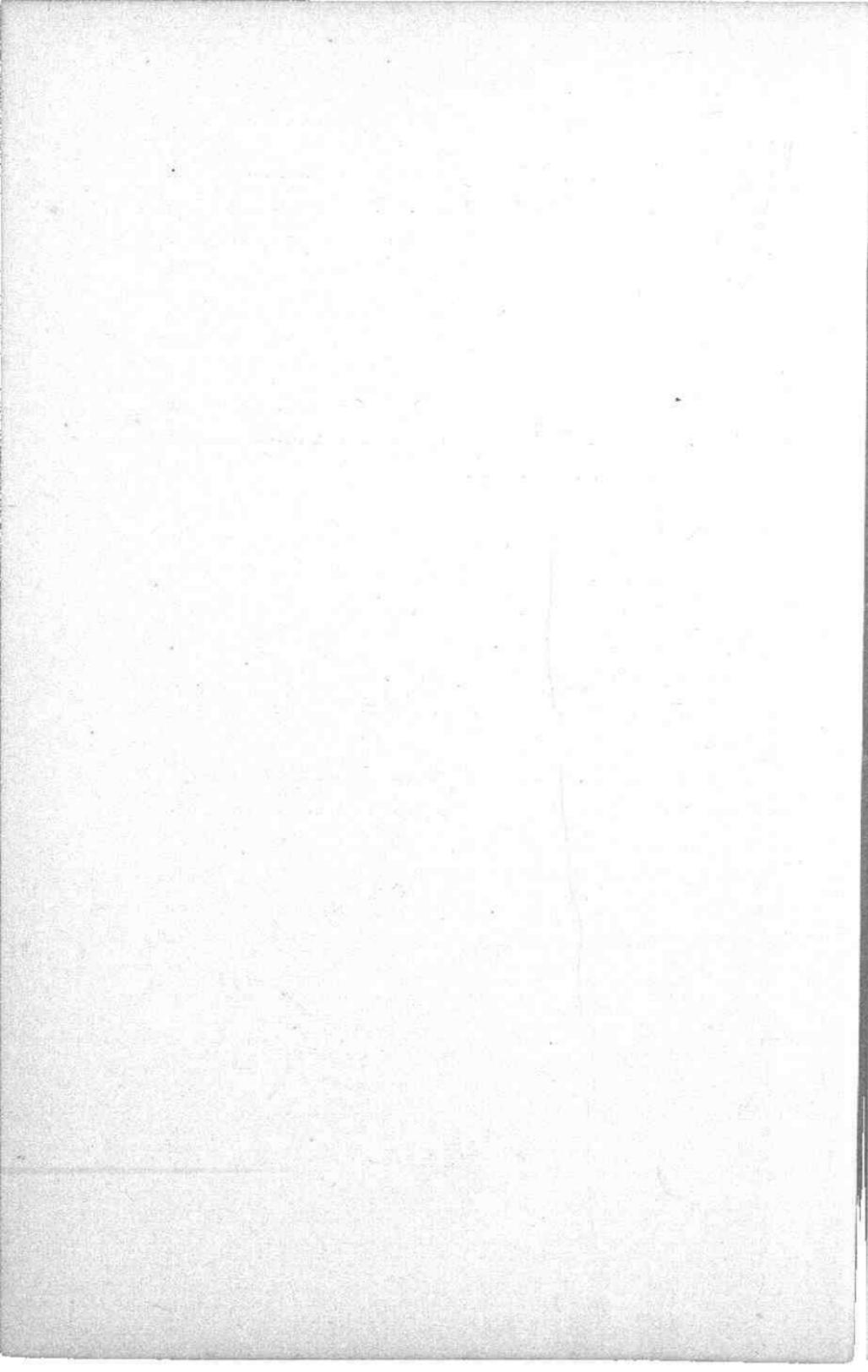
Wry-Neck,—Distortion of the neck may proceed from several causes, so that it is upon this that its gravity depends. When of a rheumatic nature it usually passes off under appropriate treatment.

A tumour upon the brain is fatal.

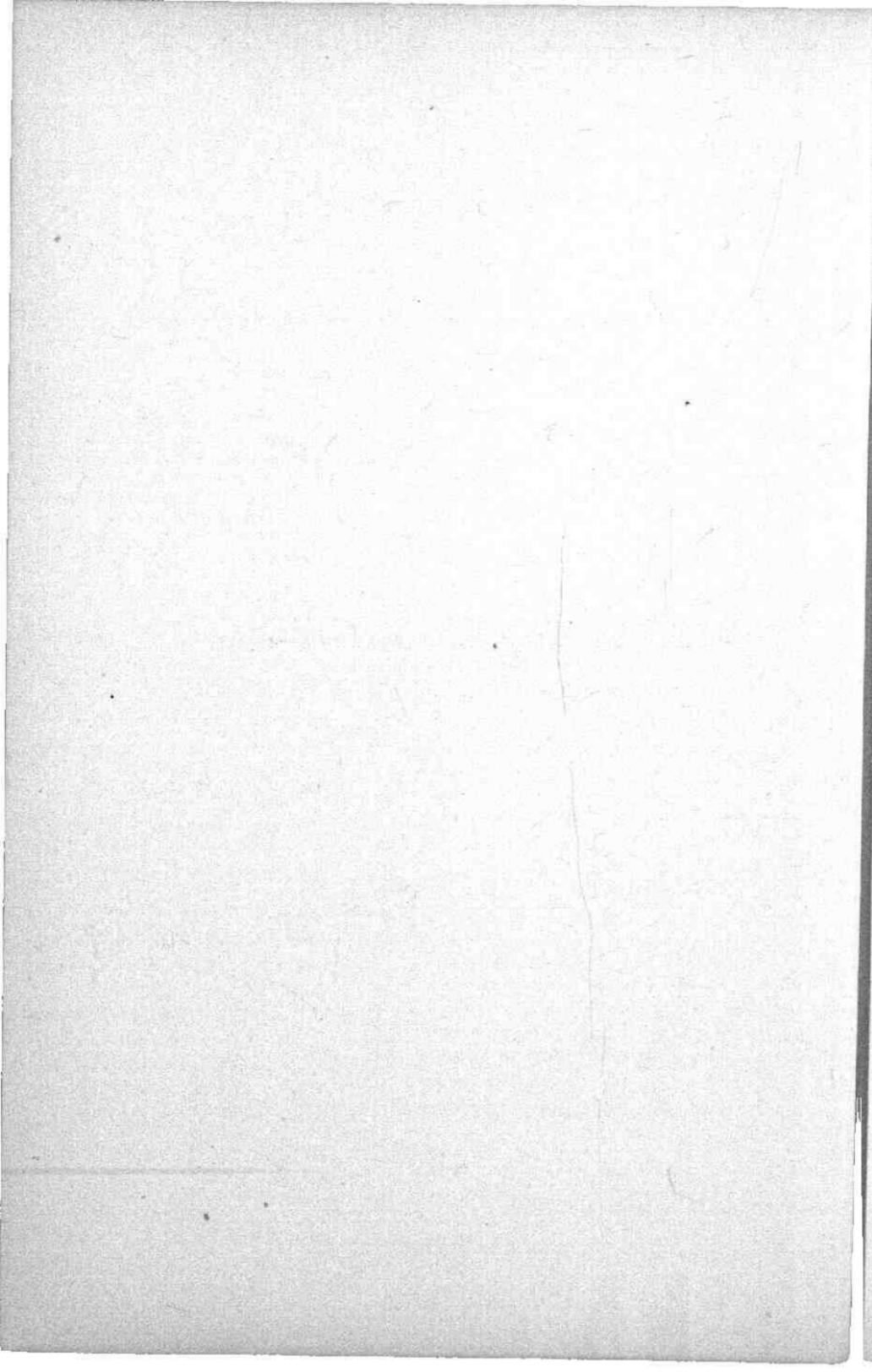
Complete dislocation, or fracture of any of the bones of the neck.

Paralysis of the muscles of the neck are another cause of this distortion. Inflammation of, and in connection with, the muscles produce similar symptoms.

The treatment must be directed to the disease upon which the wry-neck depends. For instance, if rheumatic, treat as for this disease, and so on.



MISCELLANEOUS RECIPES



MISCELLANEOUS RECIPES

Anti-Colic Draught.

R̄. Chlorodyne B.P.,	-	-	-	-	1 ounce.
Sweet Spirit of Nitre,	-	-	-	-	2 ounces.
Sal Volatile,	-	-	-	-	1 ounce.
Water,	-	-	-	-	1 pint.

Mix. Give whilst the horse is in pain, and if the latter continues, repeat in 3 hours.

Another Formula for a Colic Draught.

R̄. Powdered Barbadoes Aloes,	-	-	-	-	7 drachms.
Sal Volatile,	-	-	-	-	1 ounce.
Tincture of Belladonna,	-	-	-	-	1 ounce.
Tincture of Ginger,	-	-	-	-	2 drachms.
Chloric Æther,	-	-	-	-	2 ounces.
Water,	-	-	-	-	1 pint.

Mix. This draught is specially serviceable when the animal is constipated.

Draught for Flatulent Colic.

R̄. Terebene,	-	-	-	-	$\frac{1}{2}$ an ounce.
Spirits of Turpentine,	-	-	-	-	2 ounces.
Linseed Oil,	-	-	-	-	20 ounces.

Mix. Give the whole.

Anti-Worm Draught.

℞. Liquid Extract of Male Fern,	-	-	2 drachms.
Oil of Turpentine,	-	-	3 ounces.
Linseed Oil,	-	-	20 ounces.

Mix. Give after fasting for 6 hours.

Anti-Bilious Ball.

℞. Powdered Barbadoes Aloes,	-	-	3 drachms.
Powdered Podophyllin,	-	-	20 grains.
Calomel,	-	-	20 grains.
Extract of Taraxacum,	-	-	1 drachm.
Treacle,	-	-	A sufficiency.

Mix, and make one bolus. Use for jaundice, etc.

Resolvent Ointment.

℞. Powdered Iodine,	-	-	1 drachm.
Glycerine,	-	-	1 drachm.
Powdered Iodide of Potash,	-	-	1 drachm.
Benzoated Lard,	-	-	1 ounce.

Mix. Uses—for swellings, such as bursal and tendon sheath enlargement. To be well rubbed in every day.

Red Blistering Fluid.

℞. 1. Red Iodide of Mercury,	-	-	$\frac{1}{2}$ an ounce.
2. Glycerine,	-	-	1 ounce.
Almond Oil,	-	-	4 ounces.

Mix 1 and 2 together, then add the oil, and shake.

Red Blistering Ointment.

℞. Red Iodide of Mercury, - - -	2 drachms.
Glycerine, - - - - -	2 drachms
Benzoated Lard, - - - - -	2 ounces.

Mix.

Fever Draught.

℞. Chlorate of Potash, - - -	3 drachms.
Bicarbonate of Potash, - - -	3 drachms.
Sulphuric Æther, - - - - -	2 ounces.
Tincture of Aconite B.P., - - -	1 drachm.
Water, - - - - -	1 pint.

Mix. Give one of the above draughts every 8 hours.

Tonic Balls.

℞. Quinine, - - - - -	1 ounce.
Extract of Gentian, - - - - -	1 ounce.
Powdered Calumba, - - - - -	4 ounces.
Treacle, - - - - -	A sufficiency.

Mix well and divide into 8 balls, giving one night and morning.

Iron Tonic Balls.

℞. Powdered Dried Sulphate of Iron, -	1½ ounces.
Powdered Calumba Root, - - -	6 ounces.
Treacle, - - - - -	A sufficiency.

To make 6 balls. Give one night and morning.

Hoof Ointment.

R̄. Yellow Wax,	-	-	-	4 ounces.
Almond Oil,	-	-	-	2 ounces.
Olive Oil,	-	-	-	2 ounces.
Soft Paraffin,	-	-	-	4 ounces.
Turpentine,	-	-	-	4 ounces.
Russian Tallow,	-	-	-	4 ounces.

Melt. Good for brittle and contracted feet.

Anti-Cough Balls.

R̄. Extract Belladonna,	-	-	-	3 drachms.
Extract of Hyoscyamus,	-	-	-	3 drachms.
Powdered Squills,	-	-	-	3 ounces.
Powdered Camphor,	-	-	-	6 drachms.
Powdered Barbadoes Aloes,	-	-	-	1 ounce.
Linseed Meal,	-	-	-	$\frac{1}{2}$ an ounce.

Mix thoroughly in a mortar and divide into 6 balls. Give one daily.

Anti-Cough Powders.

R̄. Powdered Squills,	-	-	-	6 ounces.
Powdered Chlorate of Potash,	-	-	-	2 ounces.
Powdered Aconite Leaves,	-	-	-	2 ounces.
Powdered Myrrh,	-	-	-	2 ounces.

Mix, and divide into 1 dozen powders.

Directions.—Give one powder night and morning in a warm linseed and bran mash.

Diuretic or Staling Balls.

R̄. Powdered Resin, - - - -	2 ounces.
Saltpetre, - - - -	2 ounces.
Venice Turpentine, - - - -	1 ounce.
Soft Soap, - - - -	1 ounce.

Mix and make into 6 balls.

Directions.—One to be given occasionally.

Diuretic Draught.

R̄. Powdered Nitre, - - - -	3 drachms.
Bicarbonate of Potash, - - - -	5 drachms.
Sweet Spirit of Nitre, - - - -	2 ounces.
Water, - - - -	1 pint.

Mix.

Purgative Draught.

R̄. Powdered Barbadoes Aloes, - - - -	7 drachms.
Tincture of Belladonna, - - - -	1 ounce.
Tincture of Ginger, - - - -	$\frac{1}{2}$ an ounce.
Water, - - - -	20 ounces.

Mix. Give the whole at night in sloppy or green food.

Purgative Balls.

R̄. Powdered Barbadoes Aloes, - - - -	3 ounces.
Glycerine, - - - -	A sufficiency.

Mix, and divide into 3 balls for a heavy cart horse; if for a van horse, divide into 4 balls, and for ponies, 5 balls.

Another Recipe for Purgative Balls.

R̄. Barbadoes Aloes,	- - - -	4 ounces.
Treacle,	- - - -	2 ounces.
Ground Ginger,	- - - -	$\frac{1}{2}$ an ounce.
Extract Belladonna,	- - - -	6 drachms.
Palm Oil,	- - - -	$\frac{1}{2}$ an ounce.
Linsced Meal,	- - - -	$\frac{1}{2}$ an ounce.

Melt over a water bath the aloes, treacle, belladonna, and palm oil, and add the rest. When set, make up a ball, or balls, in accordance with size of the horse or the effect it is desired to produce. Dose, 4 to 10 drachms.

Lotion for Wounds.

R̄. Jeyes' Fluid,	- - - -	$\frac{1}{2}$ an ounce.
Water,	- - - -	20 ounces.

Mix.

Antiseptic Ointments.

The following ointments will be found of exceptional value for treating wounds such as cuts, broken knees, saddle galls, etc., and can be had from most chemists:—

Iodoform Ointment.

Thymol Ointment.

Zinc Oxide Ointment.

Carbolic Acid Ointment.

Eucalyptus Ointment.

Elder Ointment.

Boracic Acid Ointment

Alterative Powders.

R̄. Precipitated Sulphur,	-	-	-	6 ounces.
Bicarbonate of Potash,	-	-	-	3 ounces.
Powdered Gentian,	-	-	-	4 ounces.
Powdered Calumba,	-	-	-	4 ounces.

Mix and divide into 18 powders.

Directions.—Give one night and morning in food.

N.B.—If 36 grains of powdered arsenic be mixed with the foregoing, the improvement in the condition of the skin and coat is marked after being used for three or four weeks.

Liniment for Rheumatism.

R̄. Opodeldoc,	-	-	-	4 ounces.
Spirits of Turpentine,	-	-	-	2 ounces.
Tincture of Capsicums,	-	-	-	2 ounces.

Mix, and rub well into the affected parts night and morning.

Eye Lotion.

R̄. Acetate of Lead,	-	-	-	1 drachm.
Water,	-	-	-	20 ounces.

Mix.

Directions.—Wet the eyes with the lotion several times a day,

Lotion for Sore Shoulders, Saddle Galls, etc.

℞. Sulphate of Zinc,	-	-	-	6 drachms.
Sugar of Lead,	-	-	-	1 ounce.
Water,	-	-	-	20 ounces.

Mix, and filter from the precipitate, then add another 20 ounces of water to the liquid.

N.B.—This lotion is equally useful for cracked heels, grease, etc.

Tonic Powders.

℞. Quinine,	-	-	-	6 drachms.
Sulphate of Iron Powder,	-	-	-	1½ ounces.
Powdered Calumba,	-	-	-	1½ ounces.
Powdered Red Cinchona Bark,	-	-	-	1½ ounces.

Mix, and divide into 6 powders.

Directions.—Give one night and morning in food.

Lotion for Sprains and Bruises.

℞. Tincture of Arnica,	-	-	-	1½ ounces.
Goulard's Lotion,	-	-	-	2 ounces.
Water (cold),	-	-	-	1 quart.

Mix. Apply with tow and a bandage.

Lotion for Thrush of the Feet.

℞. Chloride of Zinc,	-	-	-	1 drachm.
Creolin,	-	-	-	½ an ounce.
Water,	-	-	-	10 ounces.

Mix, and apply by pouring a little into the cleft of the frog, then filling in with calomel and tow.

Draught for Chills, etc.

R̄. Whisky, - - - - -	6 ounces.
Aniseed Powder, - - - - -	$\frac{1}{2}$ an ounce.
Warm Ale, - - - - -	1 pint.

Mix, and give the whole.

White Oil.

R̄. Strong Ammonia, - - - - -	$2\frac{1}{2}$ ounces.
Powdered Muriate of Ammonia, -	$\frac{1}{2}$ an ounce.
Oil of Turpentine, - - - - -	15 ounces.
Boiling Water, - - - - -	$2\frac{1}{2}$ pints.
Oil of Origanum, - - - - -	2 drachms.
Soft White Soap, - - - - -	6 ounces.

Dissolve the soap in the boiling water, and add the muriate of ammonia and turpentine, shake in a large bottle, subsequently adding the origanum and solution of ammonia.

This embrocation is used for precisely the same purposes as Elliman's, *i.e.*, sore throat, sprains, bruises, etc., etc.

Anti-Diarrhœa Mixture.

R̄. Chlorodyne, B.P., - - - - -	3 ounces.
Chloric Æther, - - - - -	3 ounces.
Powdered Cinchona Bark, - - -	4 ounces.
Powdered Catechu, - - - - -	4 ounces.
Spirits of Camphor, - - - - -	3 ounces.

Mix, and give from $\frac{1}{2}$ to $1\frac{1}{2}$ ounces every 6 hours in a pint of cold rice water.

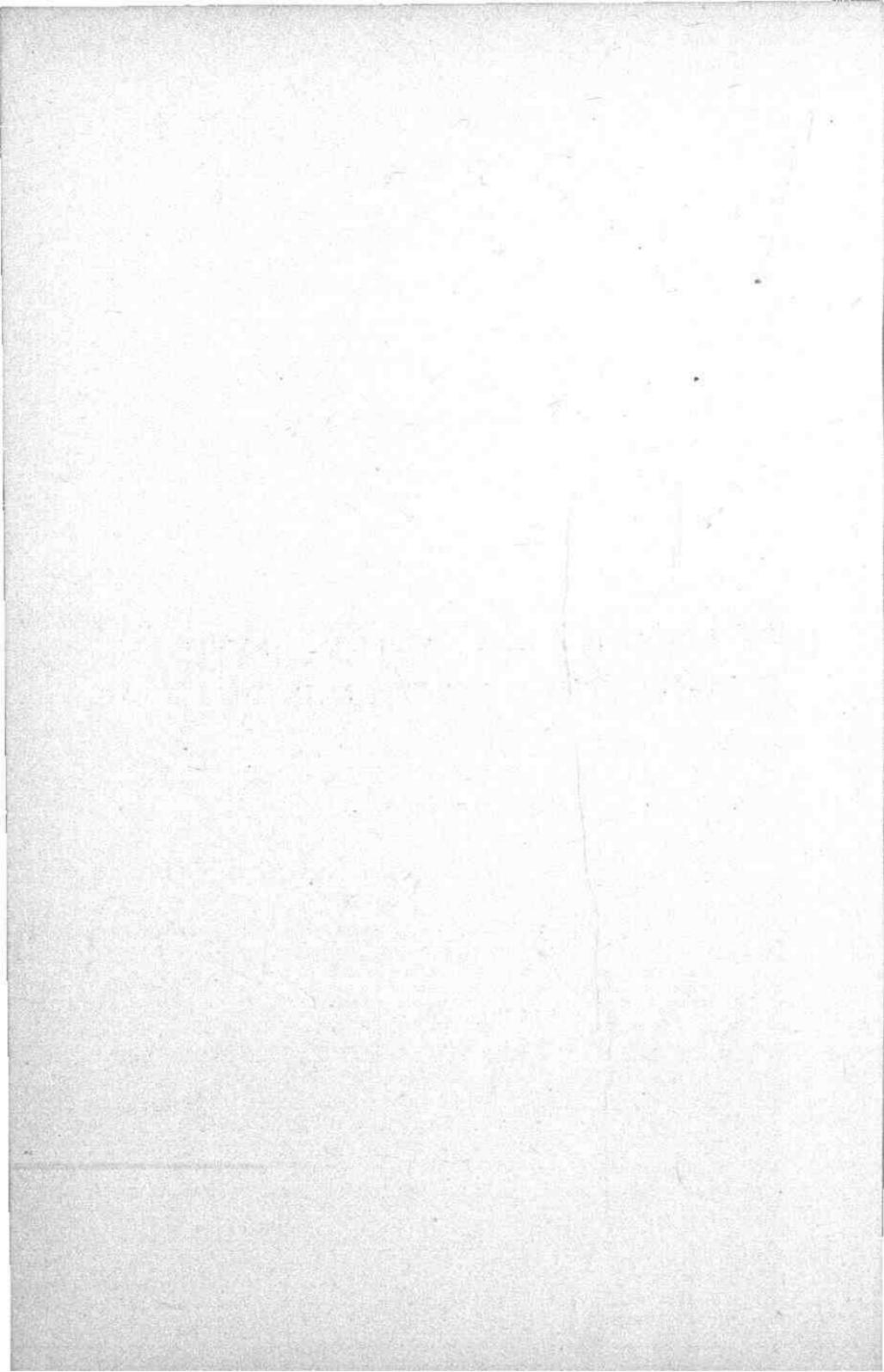
Some commonly used Drugs and their Doses.

	Dose.
Powdered Aloes, - - - -	$\frac{1}{4}$ to 1 ounce.
,, Arsenic, - - - -	2 to 4 grains.
Tartar Emetic, - - - -	$\frac{1}{2}$ to 1 drachm.
Powdered Nitre, - - - -	2 to 4 drachms.
,, Chlorate of Potash, - -	4 drachms.
,, Resin, - - - -	2 to 8 drachms.
,, Ginger, - - - -	2 to 4 drachms.
,, Gentian, - - - -	Do. do.
,, Calumba, - - - -	Do. do.
,, Sulphate of Iron, - -	Do. do.
Quinine, - - - -	$\frac{1}{2}$ to drachm.
Powdered Capsicums, - - -	20 to 40 grains.
Linseed Oil, - - - -	3 to 40 ounces.
(Average dose, 20 ounces or 1 pint.)	
Laudanum, - - - -	$\frac{1}{2}$ to 3 ounces.
Whisky, - - - -	2 to 15 ounces.
Brandy and Gin, - - - -	Do. do.
Sulphuric Æther, - - - -	1 to 4 ounces.
Sweet Nitre, - - - -	1 to 3 ounces.
Calomel, - - - -	20 to 60 grains.
Epsom Salts, - - - -	$2\frac{1}{2}$ to 16 ounces.
Oil of Turpentine, - - - -	$\frac{1}{2}$ to 4 ounces.
Croton Oil (to be given in Linseed Oil),	5 to 30 drops.
Sal Volatile, - - - -	$\frac{1}{2}$ to 2 ounces.
Mindererus Spirit, - - - -	4 to 8 ounces.
Carbonate of Ammonia, - - -	1 to 4 drachms.
Iodine, - - - -	25 grains.

	Dose.
Iodide of Potash, - - - -	1 to 2 drachms.
Flowers of Sulphur, - - - -	$\frac{1}{2}$ to 4 ounces.
Powdered Aniseed, - - - -	$\frac{1}{2}$ to 1 ounce.
„ Carraway, - - - -	$\frac{1}{2}$ to 1 ounce.
Bicarbonate of Potash, - - - -	2 to 8 drachms.
Bromide of Potash, average dose, -	$\frac{1}{2}$ to 1 ounce.
Sugar of Lead, - - - -	$\frac{1}{2}$ to 1 drachm.
Powdered Opium, - - - -	$\frac{1}{2}$ to 2 drachms.
Chlorodyne, - - - -	2 to 8 drachms.
Powdered Cinchona Bark, - - - -	$\frac{1}{2}$ an ounce.
Castor Oil, - - - -	1 pint.
Concentrated Acetate of Ammonia, -	2 to 4 drachms.
Ext. Belladonna, - - - -	$\frac{1}{2}$ to 2 drachms.
Ext. Hyoscyamus, - - - -	1 to 3 drachms.
Tincture of Aconite B.P., - - - -	10 to 60 drops.
Oil of Juniper, - - - -	$\frac{1}{2}$ to 1 drachm.
Powdered Areca Nut, - - - -	$\frac{1}{4}$ to 1 ounce.
Salicylate of Soda, - - - -	1 to 4 drachms.
Tincture of Steel, - - - -	$\frac{1}{2}$ an ounce.
Powdered Carbonate of Bismuth, -	2 to 4 drachms.
Liquid, Extract of Male Fern, - -	$\frac{1}{2}$ an ounce.
Hyposulphite of Soda, - - - -	$\frac{1}{2}$ to 2 ounces.
Powdered Nux Vomica, - - - -	20 grs. to 1 dr.
Podophyllin Resin, - - - -	30 grains.
Acetate of Potash, - - - -	2 to 8 drachms.
Hydrate of Chloral, - - - -	$\frac{1}{2}$ to $1\frac{1}{2}$ ounces.
Fowler's Solution of Arsenic, - -	2 to 8 drachms.
Santonin, - - - -	$\frac{1}{2}$ to 2 drachms.
Sulphate of Copper, - - - -	$\frac{1}{2}$ to 1 drachm.
Spirits of Camphor, - - - -	$\frac{1}{2}$ to 1 ounce.

	Dose.
Compound Tincture of Camphor, -	2 to 8 drachms.
Grey Powder, - - - - -	1 to 3 drachms.
Dover's Powder, - - - - -	$\frac{1}{2}$ to $1\frac{1}{2}$ drachms
Linseed Meal, - - - - -	2 to 16 ounces.
Locust Meal, - - - - -	<i>ad lib.</i>
Prepared Chalk, - - - - -	$\frac{1}{2}$ to 4 ounces.

OUTLINES OF AN AFTER-DEATH
EXAMINATION OF THE BODY



OUTLINES OF AN AFTER-DEATH EXAMINATION OF THE BODY

IN the case of an animal having died suddenly, away from observation, the layman should pay attention to the following points, viz., the position of the animal, whether there is evidence of death having taken place quietly, or whether the ground has been disturbed through struggling. The body should be felt for warmth, or after-death stiffening (rigor mortis) in order to gain some idea as to the time which has elapsed since death occurred.

In strong and vigorous horses after-death stiffening comes on "slowly," but lasts a considerable time. On the other hand in a poor weakly subject it usually appears "soon" after death, and passes off quickly.

Note whether the belly is distended with gas, and scan the hair over the body, etc., for evidence of "singeing," as sometimes happens in death through "lightning stroke." Look for marks of violence or external injury. Examine the natural orifices, nose, mouth, generative organ and anus, for discharge, straining, etc.

Having noted the presence or absence of external indications in connection with the animal's death, it is desirable to place the body resting upon its back, with the fore and hind limbs spread apart as much as possible.¹

¹ A post-mortem should always be made as quickly as possible after death, otherwise it is desirable to wait until the rigid condition of the muscles has passed off.

The skin should now be separated from the point of the jaw, down the neck, over the chest, belly, and sides, and on the inner sides of the thighs to the points of the hocks and knees.

While this is being done, look for effusion (escape) of blood, or evidence of gases (indicated by crackling) having been formed in the tissues beneath the skin. This latter is common in anthrax, blood-poisoning, and lightning-stroke.

The cavity of the belly should now be laid open, and its contents, as far as possible, viewed without being disturbed, unless it is the contents of the chest only which it is desirable to see.

In this way inflammation of the belly lining may be brought into view, likewise disease of the portions of those bowels before us. Have the intestines very carefully taken out of the cavity and spread well out. Tie the bowel about a foot from the stomach before cutting out. Look for inflammation, twisted gut, telescoped gut, rupture of any portion (especially the large bowel). The last two or three feet must be carefully inspected with a view to the presence of the latter in the case of a mare dying very suddenly after being put to the horse.

Having gone very carefully over the full length of the intestine and found nothing to indicate disease, proceed to cut the big (double) colon open for evidence of worms. Do the same with the cæcum or blind gut.

Continuing the examination, look carefully at the main blood-vessel running down the inner side of the backbone, and note whether there is a bulging in the wall of any part of this vessel. In the event of paralysis coming on suddenly whilst at work, run the hand along the backbone in order to try and discover a gap (fracture) between the bodies of the vertebræ.

Examine the kidney tubes leading from these into the bladder. If the animal has suffered from a stoppage of water, cut the kidneys open lengthwise, and do the same with the tubes. Cut the bladder open. The passage leading out from the neck of the organ should also be examined. Look for stone.

Strip the capsular covering off the kidneys, noting whether it adheres to the substance of the organ here and there. This points to a chronic inflammation.

Proceeding further, if necessary, remove the stomach and liver intact. Before doing this, tie the gullet entry into it with string. Look for evidence of external inflammation in connection with the stomach. Take note of the spleen (melt) attached to it. In anthrax it is usually enlarged, and very often like a mass of tar. The liver must be examined for signs of disease. In both, especially the former, look for grape-like deposit (tubercle). Cut the stomach open, and see whether its digestive lining is reddened. (See page 65. Illustration of Stomach.) In the event of poisoning the contents must be preserved. The organ can be sewn up again and placed in a sealed jar along with part of the liver. Note the contents. Perhaps yew or some other acrid poison will be in evidence.

The sweetbread (pancreas) ought to be looked at for disease.

In the mare the generative organs will, if there has been symptoms of disease in connection with these, require careful examining. The womb may be inflamed, perhaps greenish-black in colour. Look at the vagina (passage leading from the womb) for rupture, inflammation, or discolouration. Now turn your attention to the midriff (diaphragm). It is not uncommonly ruptured after death, through distension of the bowels with gas and the pressure of these upon it.

When the rupture has occurred before death, it is quite likely that the edges of the wound will be found inflamed. The organs of the chest may now be examined. To do this it is necessary to see them in position. Cut away the ribs (sawing them) on the left side. The heart and lungs are brought fully into view. If the animal has had pleurisy, water will escape from the cavity. Look at the membranes covering the lungs. In health they are free from any streaky appearance (inflammation). Also examine for adhesion of these membranes to the chest wall or lungs (chronic, or previous attacks of pleurisy). Flakes of creamy material, or bands of the same, may perhaps be found stretching here and there (inflammation).

Take notice of the heart-bag. In health it is opaque, moist and glistening, but in disease, streaky, dullish-grey in colour, and very likely thickened.

Remove the heart and lungs from the chest.

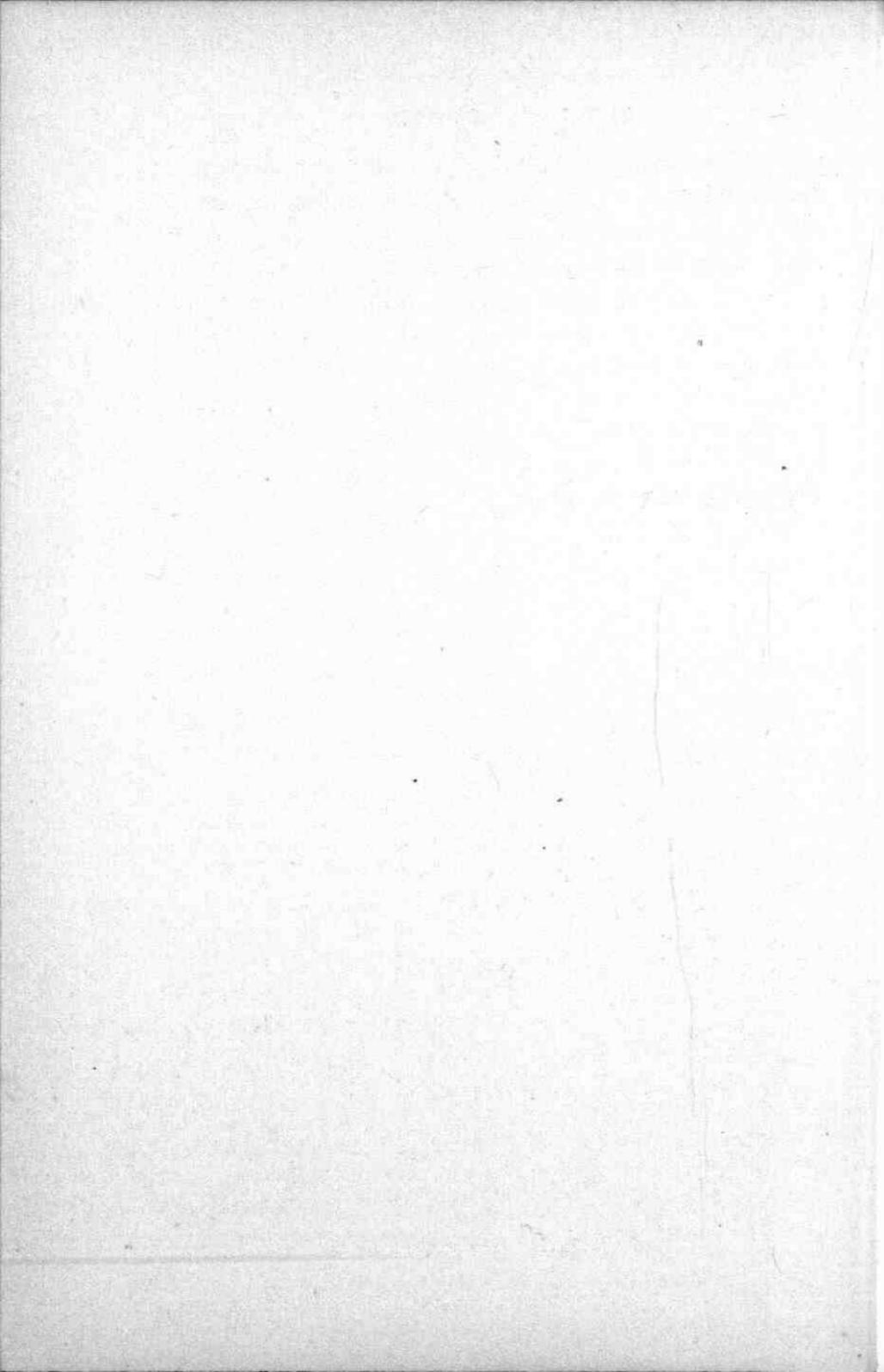
Examine the latter for inflammation or engorgement with blood. In one form of inflammation deep red patches (consolidation) will be seen, perhaps turning grey.

Mortified lungs have a sodden, greenish look about them. In the case of a foal being born dead, the lungs sink when thrown upon water. For this purpose a small bit is cut off. Cut the heart-bag open. There is always a tiny drop of liquid in this, but when dropsy has been the cause of death it sometimes contains several pints. Perhaps the bag will be adherent to the organ (inflammation).

The compartments (four) of the heart require laying carefully open. Note whether there is any warty growths upon the valves, between the compartments, or at the entrance of the large blood-vessels, coming from the interior of the organ. Subsequently trace the course of the gullet

and windpipe up the neck, laying them bare for evidence of disease externally. The jaw can then be disarticulated and the back part of the mouth carefully examined. Look at the larynx for disease. Cut open the gullet and windpipe.

The nostrils may then be slit open. Look for ulceration (glanders). If necessary (sudden death, etc.), cut open the skull, look at the brain externally for abscess, etc. Cut thin slices throughout its thickness for evidence of a ruptured blood-vessel (apoplexy). When thought fit, the spinal cord can be examined. A chisel is necessary to cut through the bodies of the bones.



SYNOPSIS OF SOME DISEASES
AND THEIR TREATMENT



SYNOPSIS OF SOME DISEASES AND THEIR TREATMENT

Abortion.—Isolation, quietude, disinfectants. Removal of after-birth if not passed within reasonable time. Veterinary aid.

Abscess.—Moist warmth, or a blister to the part. As soon as the swelling is ready for opening, cut it, and wash out with Jeyes' fluid and water (1 to 40). Subsequently keep the part clean, and don't allow the wound to heal up too rapidly.

This can be done by plugging up with carbolic tow, or similar material.

Angle-Berry.—Removal with a ligature, *i.e.*, tying a piece of catgut, etc., around the tumour, and allowing it to slough off.

Apoplexy of Brain.—Bleeding; quietude; dose of physic.

Apoplexy of Lungs.—Bleed at once if animal is strong. Stimulants. Fresh air. If occurring during hunting, dismount; ungirth; and turn animal's head towards the wind. Encourage the circulation in the limbs by frequent hand-rubbing.

Arsenic Poisoning.—(*See Poisons.*)

Asphyxia, or Suffocation.—Cold water to the poll. Pure air. Artificial respiration, if practicable, after clearing nose. Inhalations of ammonia. Foals are often restored when the mother has been a little too long in labour.

Azoturia.—Give a good big dose of physic to start with. Follow this up by administering two or three ounces of bicarbonate of soda every three hours in half a pint of cold water. Continue this treatment until the horse is able to rise, and then give half these doses, subsequently one quarter.

The urine must be drawn off twice or thrice daily at least.

Place the animal on a good deep bed of straw.

Slinging can be adopted if the horse has not yet come to the ground.

Bilious Fever,—(*See Influenza.*)**Birth, Premature.**—(*See this.*)

Bladder, Inflammation of.—Back-raking. Clysters to soothe. Try and draw off urine. If due to stone, veterinary operation. Fomentations to belly if colicky pains present.

Bloody-Flux.—(*See Dysentery.*)

Bots in Stomach.—A pint of linseed oil and 3 drachms of terebene as a draught occasionally. Destroy larvæ in dung. A couple of ounces of turpentine and a pint of oil (linseed) can be tried every three weeks.

Brain, Inflammation.—Ice to poll. Good dose of physic. Attend to injury. Bleeding if necessary. Perfect quietude.

Bronchitis, Acute.—Warm stable. Try and keep at, or about, one temperature. Avoid draughts. Steam nostrils. Liniment to chest. Use electuary freely. Clothe body and limbs. Plenty of warm and good food. Linseed tea and bran mashes. Scalded oats and hay. A little green food. Small doses of linseed oil in bran mash, every now and again. Put a seton in the chest if no better after a few days. If the disease is of an influenzoid nature allow a small amount of brandy—say half teacupful doses every four hours.

Bronchitis, Chronic.—Three drachms of terebene in a gill of linseed oil twice weekly. Use powders. Tar in drinking water.

Catarrh, Nasal.—Rest, warmth. Steam nostrils. Clothe body. Warm food. Camphor added to the inhalation in the form of spirit.

Catarrh, Chronic.—(See this.)

Charbon.—(See Anthrax.)

Collar Galls.—Rest or remove pressure. Work, if possible, in breast strap. White lotion to sores.

Colic.—Alay pain with laudanum, etc. If belly distended with gas, puncture and give half an ounce of creolin in a pint of water. If due to impaction with indigestible food, give a smart dose of physic, but not unless.

Never give any medicine containing aloes until the cause has been ascertained to warrant its use, and it is on this account that empirical belly ache draughts are dangerous. Keep the animal walking about.

If the pain does not abate, rub the belly with mustard paste and wash off in half an hour. Four wineglassfuls of gin, whisky, or brandy, along with a tablespoonful of ground ginger and half a pint of water, makes a useful colic draught in emergency.

Consumption.—No treatment of any avail. Good food and tonics may help to prolong life. Light work.

Constipation.—Give half a drachm of powdered nux vomica and the same quantity of extract of belladonna, along with half an ounce of powdered gentian, made into a ball with treacle, twice daily. If animal in pain, 6 drachms of aloes and 1 drachm of belladonna extract and powdered ginger made into a ball. Add a few tablespoonfuls of linseed oil to the food every night.

Cold water clysters. Sloppy food, or green meat.

Contracted Tendons.—(See these.)

Corns.—Attention to the shoeing.

Cough, Chronic.—Arsenic or tar water. Soft food.

Crib - Biting.—Use of strap or anti-crib-biting manger.

Curb.—In the early stage, cooling lotions. Rest. The daily use of red blistering ointment and iodine ointment (equal parts) to the curby swelling.

Diabetes, or Profuse Urination.—Look to food supply. Iodine internally.

Diarrhœa.—Try and ascertain cause, and treat according to the directions laid down for this symptom.

Distemper.—(*See Influenza.*)

Dislocation of the Knee-Cap.—Keep the limb extended. Blister stifle joint, and give a long rest. Avoid hilly pasturage for colts.

Diuresis.—(*See Diabetes.*)

Dropsy of the Belly.—Professional aid whenever possible.

Dropsy of the Chest.—(*See Pleurisy.*)

Dropsy of the Skin.—Try and ascertain cause. Puncture if required.

Dysentery, or Bloody-Flux.—Healthy surroundings. Injections into the bowel of hazeline, opium, and starch gruel.

Use powders recommended in this disease. Keep warm. Good food. Chlorodyne and brandy. Wheaten flour gruel to drink.

Dyspepsia.—(See Indigestion.)

Eczema.—Arsenic internally. An occasional diuretic ball. Green food to some extent. Allow the best of food. Tonic powders. Lotion to irritable spots. If at hocks or knees (mallenders and sallenders) use the ointment prescribed. Continue treatment for several months. Wash scurvy patches.

Elbow, Capped or Capulet.—1. *Preventative.*
Use pad.

2. *Medicinal.*—In the earliest stages of capped elbow, apply hot water, and as soon as the abscess is ready, open it with a sharp pen-knife.

If the swelling is hard and tumour-like, seton at side of growth, or else put an india-rubber ring around the root (base) of the latter. If preferred, make cuts into the tumour and insert powdered corrosive sublimate, rolled up in tissue paper, as pledgets. Iodine ointment will often take away a small capped-elbow swelling.

A "three-quarter shoe" can be used.

Epilepsy.—Bromides internally. Keep bowels from getting confined. Cold water to head when fit is on.

Green food, or such as is easily digested.

Erysipelas.—Lotion to sore parts. Give fever medicine. Keep bowels in a moist state with bran and linseed mashes. Foment swelling.

Erythema and Mud-Rash (Saddle and collar galls).—If legs cannot be thoroughly dried after washing, then allow the mud to dry before brushing off. Try Irish method of clipping, viz., removing hair off body, but not below hock and knees.

For collar galls try breast-band to work in. White lotion to sore places. A course of arsenic internally if the sores appear more of a constitutional nature. Zinc powder can be dusted upon the sore spots. A few days' rest may be essential.

Eyelids, Torn.—Sew up. (*See Wounds.*)

Eye, Inflammation of.—Treat according to cause. For instance, if caused by a hay-seed, etc., getting on the membrane, try and remove this, afterwards use white lotion, or the lotion recommended in this disease. Keep in a darkened stable or loose-box.

Farcy.—Report to the Local Authority of the District.

Feet, Inflammation of.—Remove shoes, and apply ice-cold bran poultices to the feet. Give a purgative draught of aloes (4 or 5 drachms), along with a pint of linseed oil and 3 drachms of tincture of belladonna. Dissolve the aloes in hot water, and add it to the oil.

Allow the animal to lie as much as possible upon a deep, short, dry straw bed.

As soon as the purgative begins to act give the draught recommended for this disease (which see).

Green food can be given if the bowels are not too loose. Bran, scalded oats, and gruel ought to form the chief foods.

We do not believe in the exercise treatment, but it appears to have many advocates.

If the cold water to the feet has been used for 48 hours, it may then be substituted for warm, taking care not to have the poultices too hot, otherwise the foot will be damaged.

Flatulent Colic.—If nothing but turpentine is at hand give three ounces of this, along with half a pint of linseed oil, or beaten up with the yolks of half a dozen eggs and half a pint of warm water. Four tablespoonfuls of sal volatile, along with two ounces of sweet nitre in half a pint of water is another simple remedy. If there is danger of suffocation before a veterinary surgeon can be got, then puncture the bowel with the trochar. The place to puncture is that point which projects the most through the distension.

Foot, Punctured or Pricked.—Remove the shoe. Pare the sole so as to allow free exit of any discharge, if such is present. Cleanse the whole foot by soaking it in a foot-bath containing Jeyes' fluid (four tablespoonfuls to every gallon of water). A warm bran poultice may now be put on. A little rest and subsequent protection with a leather sole will usually suffice to effect a cure. Don't neglect to open the wound to its very bottom.

Foot, Canker of.—Dust the surface with dry powdered nitrate of lead, and repeat this in a few days'

time. Be sure to remove all loose and diseased horn with the drawing knife. The smith will do this. By soaking the diseased foot in hot water, this part of the business is rendered much easier.

• Stripping the whole sole off, and dressing with chromic acid is recommended. The animal must be cast, and the foot then bandaged up tightly by means of tow and a long bandage. Formalin applied daily.

Founder of Feet.—(See Inflammation of Feet.)

Founder of Chest.—(See Rheumatism.)

Fractures.—(See these.)

Gastritis.—(See Stomach, Inflammation of.)

Glanders and Farcy.—Isolation. Inoculation test. Report at once to the nearest Local Authority.

Gleet.—(See Chronic Nasal Catarrh.)

Grass Staggers.—Removal from pasturage. Dose of physic.

Grease.—1. *Preventative.*—Grease hair and skin about fetlock joint in wet weather. Cleanse the sore parts. Use liniment prescribed and as directed. An occasional diuretic ball. Dust with the powder. Remove warty growths with hot iron and blacksmith's shovel. Mild dose of physic.

Gripes.—(See Colic.)

Gullet, Inflammation of.—Use electuary. Nutrient clysters. Liquid food. Look for injury. Chlorate of potash.

Gullet, Stoppage of.—(See Choking.) In stricture, use electuary and enemas for food giving.

Heart Valves, Inflammation of.—Rest and quietude. Clothe body, and keep very warm.

Mild doses of linseed oil. Linseed and bran mashes. Carrots, bicarbonate of potash, brandy. Give draught prescribed under the heading of this disease. Mustard paste to left side of chest. Horses having heart affections should be put on to very light work.

Herniæ, or Ruptures.—In foals, if the rupture is at the navel, allow time for self cure.

When a rupture becomes strangulated (indicated by pain) call in the veterinary surgeon.

Herpes.—Mild dose of physic. If sores inside mouth use borax and honey. Apply zinc or boracic acid to sores. Tonic powders. Green food such as clover.

Hide-Bound.—Linseed in food, and occasional tea-cupful doses of the same oil, given the same way. Carrots. Good hand rubbing to skin and muscles (massage). Green food and cod-liver oil when obtainable. Cleanliness. Tonic powders.

Hock-Capped.—Apply red blistering ointment. Earliest stages use cooling lotion.

Hock-Joint, Inflammation of.—(See Sprain and Open Joint.)

Indigestion, Acute, or Stomach Stagers.—1. *Preventative.*—Avoid excess of or indigestible food.

2. *Medicinal.*—Open the bowels with a purgative. Allay pain with the draught prescribed under the heading of this disorder. Cold water to the poll. If the animal is stout and vigorous and inclined to be "staggery," withdraw about three quarts of blood.

Feed sparingly. Give green food if such can be had.

A clyster of soap, salt, and water, will assist the purgative.

Indigestion, Chronic.—Careful feeding. Examine teeth.

Soft food. Glycerine. Ox-gall. Balls as prescribed.

Avoid exercise until some time after feeding. Give food regularly.

Allow a piece of chalk in the manger.

Inflammation.—*Internally.*—Anti-pain medicines.
Externally.—Cold applications for the first twenty-four hours, then warmth and moisture. Inflammation in internal organs (except feet and brain) is scarcely ever treated with cold applications, but usually by warmth and moisture, mustard or blisters (fomentations and counter irritants). Rest is as essential to an inflammation of an internal as it is to an external organ or part.

Influenza; or Horse Distemper.—Good nursing. Steam nostrils and add a little oil of eucalyptus to the substance (bran, hay, and boiling water, etc.) used for this purpose.

Stimulants, such as brandy and ammonia, given in a pint of strong coffee. Mild doses of linseed oil. Green food. Bandages to limbs and clothing to body. Attention to cleanliness. A free supply of pure air. Chlorate of potash or hyposulphite of soda, in half-ounce doses, to be added to the drinking water night and morning.

Use electuary and liniment. Soft and warm foods.

Isolation and disinfection. During recovery, tonics and easy exercise.

Strict attention to duties when nursing a distempered horse.

Intestines, Inflammation of.—Laudanum to allay pain. Mustard paste externally. Friction to limbs. As a rule, treatment proves futile. Professional assistance.

Irritant Poisons.—(*See Poisons.*)

Jaundice.—Sulphite of soda in drinking water. Give ball and draught as prescribed. Exercise and a little green food.

Joints, Stiffness of (Anchylosis).—Treat in accordance with cause.

Kidneys, Inflammation of.—Clothe body well. Keep in dry and warm stable. Bandages to limbs.

Give the draught recommended for this disease. Liniment to loins. Warm water to drink. Linseed tea.

Knees, Broken.—(*See Wounds.*) Cleanse the wound, taking care to remove all particles of grit. If bleeding much use cold water freely to it.

Look to see whether the tendons are exposed, or the joint opened—indicated by a glairy discharge (this, by the way, may also come from a bruise, and is not then so serious). Fractured knee bones usually end in “stiff knee,” rendering the horse useless, unless it be for slow work.

Superficial injuries should be brushed over with collodion, then covered with dry tow and a bandage. Now tie head between stall posts. Horse must not be allowed to lie down for 48 hours or so.

Dress the wound daily, or every other day. Mild dose of physic can be given, but green food will do as well.

Lameness.—(*See the various forms.*)

Laminitis.—(*See Feet, Inflammation of.*)

Lice.—Cleanse fittings, clothing, and all other appliances which have been in contact with animal. Dress body and limbs with the lotions recommended for this purpose.

Ligaments, Sprain of.—Rest. Cold applications, and then moist warmth. Perhaps subsequent blistering or firing.

Liver, Congestion of.—(See Jaundice and Influenza.)

Lockjaw.—Perfect quietude; purgative; use electuary of belladonna. Clysters if bowels don't act soon. Liquid food. Attention to wound. Slinging if required.

Lungs, Acute Congestion or Engorgement of (Pulmonary Apoplexy).—If the subject is suitable, *i.e.*, a good constitution, bleed the animal at once, then give stimulants, such as brandy, whisky, ammonia, etc.

Lungs, Inflammation of.—Fresh air, and plenty of it. Clothe body and limbs. Mustard paste or cantharides liniment to chest. Stimulants. Brandy and eggs. Small doses of linseed oil along with sloppy food. Cleanliness. Linseed gruel. Crushed carrots.

In cold weather artificial warmth in stable. Light clothing for body in summer, and woollen rugs in winter.

Lymphangitis, or Weed.—Exercise. Purgatives. Green food.

The swelling may be fomented or rubbed with liniment. A diuretic ball can be given.

As a "preventative" of "Monday morning disease" give half an hour's walking exercise on Sunday morning.

If practicable—though we fear such is not the case in towns—it is an excellent plan to allow the animal to run about a pasture for a short time. This has a dual benefit.

Madness.—Destruction. Report to Local Authority.

Mallenders.—(See Eczema.)

Mange.—Washing, dressing with lotion. Separation. Thorough cleansing of all objects with which the animal has been in contact. Don't neglect harness, head-collar, clothing, brushes, scraper, etc., etc.

Megrims.—(See Vertigo.)

Mud-Fever.—(See Erythema.)

Muscles, Sprain of.—Rest. Slings if necessary. Mild dose of physic. If muscles under loins sprained, clysters, to which half an ounce of tincture of belladonna and laudanum have been added. If flexor tendons sprained raise heels with shoe: extensors, lower heels and raise toe. Cold applications at first, and, as soon as the inflammation subsides, blister.

Nail-Bound.—Remove shoe.

Nasal Gleet.—Try and ascertain cause.

Navicular Disease.—Keep toe short. Rest. Unnerving operation by veterinary surgeon.

Nettle-Rash.—Give dose of physic prescribed. Apply white lotion to irritable place. A useful application is made by adding a handful of baking (bicarbonate of) soda to a pint of cold water. This stops the itching. Green food. Bicarbonate of potash in drinking water.

Newmarket Fever.—Use electuary recommended for influenza. Keep in warm stable. Clothe body and bandage limbs. Tonics during recovery.

Nose, Bleeding from.—Try and find out cause, and treat accordingly.

Œsophagus, Diseases of.—(*See Gullet.*)

Open or Punctured Joint.—Rest in slings. Cold or tepid water fomentations in the early stages. Use wood-wool wadding and the lotion prescribed. Mild dose of physic and febrifuges. Later on try and get wound healed by blistering swollen joint. High-heeled shoe. Don't interfere with dressings too often. Oil of cloves may be tried.

Ophthalmia.—(*See Eye, Inflammation of.*)

Ossified or Calcified Lateral Cartilages.—(*See Side-Bones.*)

Over-Reach, or Tread.—Remove shoe. Put foot in warm water. Bran or meal poultices. Belladonna ointment smeared on.

Ozœna.—(*See Chronic Nasal Catarrh.*)

Paralysis.—Treat according to cause.

Parasites.—(*See Mange, Worms, and Lousiness.*)

Pericarditis.—Perfect quietude. Mustard to chest. Give the mixture as ordered when speaking of the treatment of this disease.

Peritonitis.—Hot water or mustard to belly. Opium to allay pain, along with half a drachm of calomel in the form of a ball. Gruel and other liquid food. Allow ten drop doses of Fleming's tincture of aconite in a quart of drinking water, or gruel, three times daily.

Pink-Eye.—(*See* Horse Distemper.)

Pleurisy.—Place the animal in a warm but well-ventilated stable. Mustard to chest, bandages to limbs, and clothing to body. Iodide of potash in drinking water. Linseed oil in food; failing this, green fodder in moderation. Gruel, linseed tea, and scalded oats with bran. Brandy and eggs. Mixture. During convalescence, tonics, including gentle exercise.

Pneumonia.—(*See* Lungs, Inflammation and Apoplexy of.)

Poll-Evil.—During early stages cold applications and pressure, and when the inflammation subsides blistering a little with corrosive sublimate ointment.

If an abscess forms (containing pus), it must be laid freely open, the cavity cleansed with creolin (wound lotion), and treated as an ordinary wound.

When there is a fistulous sore already present it is necessary to make a free opening for the exit of matter, and if the same has begun "burrowing" amongst the tissue

between the muscles these latter will require separating with the knife handle so as to convert the whole into a healthy wound. The latter must be kept open.

Poisoned wounds.—(*See Wounds.*)

Poisons.—(*See these.*)

Purpura.—Strict attention to cleanliness. Good food. Half-ounce doses of chlorate of potash in drinking water night and morning. Ounce doses of turpentine in 6 ounces of linseed oil twice or thrice daily. Iodide of potash.

Quarter, False.—Relieve pressure upon the quarter by using a shoe having an indentation upon it, or else by paring out a piece of horn at the wall, so as to vault against pressure upon the false quarter.

Quitter.—Bottom sinuses. Operation by veterinary surgeon.

Rabies.—Report to Local Authority at once.

Rectum, Protrusion of.—Cleanse and return the protrusion. If necessary consult a veterinary surgeon.

Rheumatism.—House well. Clothe body. Use powders, lotion, or liniment accordingly. Keep bowels open. Massage night and morning.

Ring-Bone.—In early stages try and subdue inflammation, and so prevent bony deposit, through the use of cooling lotions, rest, and a mild dose of opening medicine.

Later on, bar shoe, or high-heeled shoe, according to the situation of the ring-bone. Allow wall to transmit weight. Deep firing or blistering can be tried.

Ringworm.—Iodine. Jeyes' fluid in its raw state. Washing with soft soap and warm water. Nitrate of mercury, or red blistering ointment are effectual.

Chrysophanic acid ointment is equally serviceable.

Roaring.—Try and ascertain cause. Opening wind-pipe and use of a tube will enable the animal to continue to work agreeably.

Saddle-Galls.—1. *Preventative.*—Don't remove the saddle until about one hour or so after putting the horse into the stable.

2. *Medicinal.*—Cold applications to start with, subsequently warmth and moisture. If a sitfast, cut out the diseased area.

Sallenders.—Rub on chrysophanic acid ointment daily.

Sandcrack.—Remove pressure over seat of crack. Put in a bolt. If crack is deep, pare it out, clean it in a solution of creolin (a tablespoonful to every gallon of water). Rest.

Seedy-Toe.—Sole pressure. Remove clip.

Shins, Soreness of.—In the early stages cold applications, subsequently warmth and moisture. Afterwards blister.

Shoulders, Soreness of.—(*See Collar-Galls.*)

Side-Bone or Bones.—(*See these.*)

Sitfast.—(*See Saddle-Galls.*)

Sore Throat.—Use the electuary, and rub the throat with camphorated oil and turpentine (4 ounces of the former to 4 of the latter). Clothe the throat. Add chlorate of potash ($\frac{1}{2}$ an ounce) to the drinking water night and morning. Steam head occasionally.

Spasms.—(*See Colic.*)

Spavin, Various Kinds.—(*See these.*)

Speedy-Cutting.—Keep shoe and foot narrow. Try the effects of a boot. Remove shoes frequently, and rasp the inner wall well.

Splint.—When forming, rest. Cold applications. Later on the daily application of red blistering ointment.

Staggers, Stomach.—Give a purgative. If animal shows head symptoms and is vigorous, draw three or four quarts of blood. Soft or green food.

Staggers, Grass.—Remove from pasturage. Dose of physic.

Stomach, Inflammation.—Give a pint of linseed oil, along with half an ounce of tincture of belladonna or one ounce of tincture of hyoscyamus. If due to a poison, use the correct antidote.

Professional aid ought to be sought in the meantime.

Strangles.—Apply a fly blister to hasten the abscess on to ripening, and as soon as it pits on pressure, make a cut with a sharp knife, wash the abscess cavity out with wound lotion (*see this*), then keep it open by means of the insertion of a bit of tow for a few days. Now allow it to heal. Keep animal indoors and feed well. For further treatment see the disease in question.

Stranguary.—Pass catheter.

Superpurgation.—(*See Diarrhœa.*)

Teeth, Diseases of.—(*See these.*)

Tendons, Inflammation of.—In early stages cooling lotions, afterwards warmth and moisture. Rest. High-heeled shoe. If rheumatic, treat accordingly.

Tendons, Contraction of.—Firing. Blistering. Tenotomy, *i.e.*, division of the tendon or tendons.

Tendons, Contracted, in Foals.—Extension. Plaster of Paris or starch bandage. Splints if desirable.

Testicles, Inflammation of.—The application of white lotion. Belladonna ointment. Mild dose of physic. Soft food. Suspensory bandage to support testicles, and thus ease the pain.

Thrush in Clefts of Feet.—1. *Preventative.*—Cleanliness.

2. *Medicinal.*—Powder with equal parts of calomel and iodoform.

Thrush, or Inflammation of the Mouth.—Give powders and use gargle as recommended under the heading of this disease. Cleanliness. Green or soft food, liquids preferable. Borax and honey electuary.

Thoropin.—Paint with iodine. Puncturing. High-heeled shoe. Elastic bandage.

Tongue, Wounds of.—Liquid or soft food. Rest. Paint with Friar's balsam, or tincture of marigold.

Tuberculosis, or Consumption.—Very light work. Best of food. Tonics. Cod-liver oil. Treatment of very little use. Don't breed from stock with predisposition towards this disease.

Urine, Incontinence of.—Try and ascertain causes. Veterinary operation may be necessary. Examine bladder. If a foal, and it is issuing from open urachus, touch with hot iron, or blister around the navel.

Urine, Stoppage of.—Examine sheath and penis, also bladder. An operation may be indispensable. Professional assistance.

Urine, Suppressing of.—Treat as in Kidneys, Inflammation of.

Urine, Blood Contained in.—(*See* Azoturia and Inflammation of Kidneys, etc.)

Veins, Inflammation of.—Keep head tied up. Cleanse wound. Puncture any abscesses. Blister along course of vein.

Vertigo, or Megrims.—Raise collar off neck, and if this is the cause, substitute a breast-band to work in. Give dose of physic. Avoid exposure to excessive heat of sun. Prevent animal from inflicting injury to self or person.

Warbles.—(*See* Saddle Galls.)

Warts.—Removal by ligature.

Weed.—(*See* Lymphangitis.)

Wind, Broken.—1. *Preventative.*—Avoid working immediately after feeding. Don't use dry or dirty hay. Soft food. Give an occasional laxative. Arsenic.

Wind-Sucking.—(*See this.*)

Wind-Galls.—Rest as much as possible, and the daily application of iodine liniment.

Withers, Fistulous.—In the earliest stages cold applications. If there is an abscess cut it open, after having taken special pains to shave off the hair around, and wash with corrosive sublimate lotion.

All matter must be given free exit. If there is disease of bones, such diseased particles must be got rid of.

Setons may help to prevent matter from burrowing.

Womb, Protrusion of.—The protruded organ should be supported by a clean linen sheet, held at each side by assistants until professional aid arrives.

Womb, Inflammation of.—The sooner a skilled veterinarian is sent for the better. When the cleansing is not passed within a reasonable time, say 12 hours in summer—not more—then the V.S. ought to be summoned immediately.

Womb, Discharge from.—Tonics internally and injections locally. (*See above disease.*)

Worms.—(*See paragraph dealing with these.*)

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