

ALTEMUS' HANDBOOKS
for
ANIMAL OWNERS



THE HORSE

F. T. Barton, M.R.C.V.S.



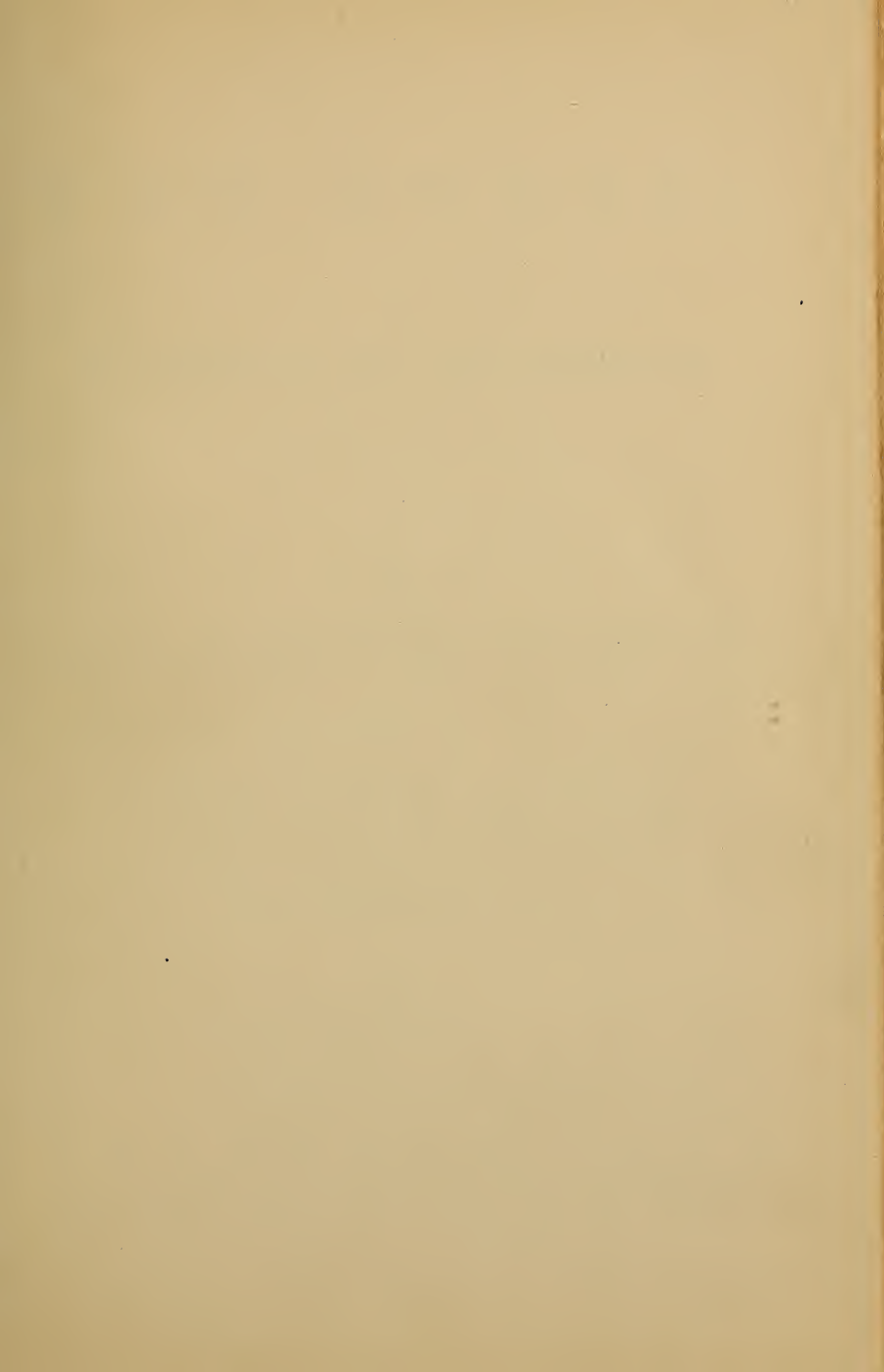
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THE HORSE:

AILMENTS AND ACCIDENTS

BY

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'THE PRACTICE OF EQUINE MEDICINE'; 'THE ESSENTIALS OF
THE PRACTICE OF COMPARATIVE MEDICINE'; 'THE AGE
OF THE HORSE'; 'BREAKING AND TRAINING HORSES';
'THE VETERINARY MANUAL,' ETC.

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P H I L A D E L P H I A
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P R E F A C E

UNDER the title of *The Horse: Ailments and Accidents*, the author has endeavoured to supply the amateur with a practical guide pertaining to the commoner ailments and accidents affecting the horse. The book is not written with the idea of enabling the horse-owner to do without the assistance of the qualified veterinary surgeon; in fact, the author is strongly opposed to the home-doctoring of live-stock, and believes that much mischief is frequently done through the adoption of this foolishly economical plan. The work has been expressly prepared for the service of those who, when requiring professional advice and aid, have a difficulty in getting it quickly, or perhaps cannot get it at all, as is sometimes the case in countries where there is not sufficient work to encourage veterinary surgeons to take up their residence.

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INTRODUCTION

Stable Management.

To ensure the well-being of horses it is necessary to give proper attention to all matters pertaining to the stable, not only within, but also without.

A capable horsekeeper will endeavour to make the most of a bad or indifferent stable; and bad or indifferent stables are, we regret to say, only too commonly met with. On the other hand, a careless or lazy horsekeeper has his stable and appliances, however good they may be, always in a mess, or only now and again, after a great effort, manages to right for the moment matters that should never have been allowed to get out of order. What is said here of the stable applies to the horses as well; they, too, must be kept in a good condition, for, as it is hardly necessary to say, horses, when in poor condition, are quite unfitted to perform even an ordinary amount of work, let alone the heavy tasks that are so commonly imposed upon them.

When acting in a professional capacity, the

writer has frequently noted the exceedingly negligent manner in which proprietors treat their horses. This negligence very often arises through want of sufficient knowledge regarding the requirements of the horse; and it should be the duty of every horse-owner to make himself acquainted with the care and general management of his stud, for horsekeepers are not slow to find out just how much or how little their masters know of horses, and an unprincipled man will sometimes take advantage of his master's ignorance, and, thinking that his faults will go undetected, not only shirk his work, but perhaps appropriate money that should have gone towards the benefit of the stud.

Among horsekeepers, as in all classes, there are black sheep, and the master who does not keep in touch with things, but leaves the management of his stables entirely in the hands of his man does injustice to himself, his man, and his horses. He makes it too easy for irregularities to occur, and we would advise every master to supervise the purchase of forage and stable appliances, to pay the shoeing bills himself, and to visit the stable as often as he can. A good groom is worth keeping, and it is when he finds that his master takes a proper share of interest in the work of the stable that a groom appreciates his situation.

Ventilation and Cleanliness.

Both ventilation and cleanliness are important factors in the maintenance of health.

Overheated and foul-smelling stables are very common. They belong, as a rule, to tradesmen and small dealers, but are by no means confined to these classes.

A hot stable causes horses to put on flesh, and dealers take advantage of this, for it enables them to improve the appearance of horses that are in poor or indifferent condition. Horses turned out sleek in this way, from hot stables, are not, however well they may look, in hard-working condition, as the purchaser will soon find out for himself.

The stable should be kept cool, yet free from draughts. Air should enter by a ventilator facing the south, and escape by another ventilator in the roof. Many arrange the windows immediately over the manger, but this does not appear to the writer to be a wise plan; far too much cold air is admitted directly upon the animal's head, and catarrh often follows.

Probably the most general plan adopted for the admission of fresh air is that of having the door in halves so that the lower portion can be fastened and the upper left open. For loose boxes this is

most useful, but, in a stable having many stalls, hardly gives sufficient ventilation, for it is useless to have an inlet for pure air unless there is provision made for the outlet of the impure.

Another matter well worthy of the attention of those contemplating the arranging of a stable is to avoid having a double row of stalls. It is dangerous, not only to the horses, but also very often to the grooms, more especially if the centre way is narrow. Plenty of depth and width, with complete separation of the horses, is advisable, both for the comfort and the safety of all concerned.

During the hot weather it is a matter of common-sense that as much ventilation as possible should be allowed, but when east winds prevail, or the days are damp, wet, and cold, one must study the amount of air to be admitted.

In the summer the stable floor may with advantage be washed down once daily, preferably in the early morning. A good deal will depend upon the nature of the material that has been used in the construction of the flooring. When cobblestones form the floor, and there is no cement between, too much washing makes the ground very damp, and assists to loosen the cobblestones. The best material for a floor is roughened cement, vitrified paving, or one or other of the

materials specially manufactured by dealers in stable fittings. Asphalt, wood, brick, flag-stones, etc., are not suitable materials for stable floors. In winter, once or twice a week will be often enough to wash down the floor. When flushing the drains, add some carbolic acid to the water.

All stable fittings ought to be scrubbed at least once a week; in fact, many stud grooms compel the strapper to wash these two or three times weekly. Nothing looks worse than dirty mangers smothered in sour food. This condition tends to sicken a horse, especially if the animal is a little bit out of its usual form.

Stable walls, doors, and stall-posts should all be gone over in the cleaning, and any one skilled in his work will perform these duties in a surprisingly short time. On the other hand, the lazy groom often takes a very long time over his work, without getting anything really finished. Let the general and special work be thoroughly done, and it will prove a source of pleasure to all concerned.

When the stable walls are whitened, it is a good plan to renew the limewash once every three months.

The Bedding.

Unfortunately, for some poor horses no bedding

material is provided; consequently many of these slaves never lie down to rest. A horse that is not a good rester never thrives as well as one that is, and its limbs suffer the effects of wear sooner.

The best bedding material is straw, but some horses have an abominable habit of eating their bedding. When this is the case, the animals must be tied up or else muzzled at night, and the bedding taken up during the daytime.

Moss-litter is extensively used, chiefly because it proves more economical, and occupies less bulk both before and after use. Its power of absorption is great, and it is antiseptic; that is, it does not quickly become foul. This is a strong recommendation where there is no drainage, or the sanitary arrangements are in any way defective.

Shavings and dried bracken are sometimes used. The last named is fairly good, but some horses will eat it, and this is a pernicious habit.

All droppings and soiled straw should be removed several times daily, and the bedding nicely sorted over with a two-pronged, blunt-pointed fork.

Straw, when it is scarce, can be taken up during the daytime and relaid at night after the animal has been fed. Some horsekeepers

make a practice of drying the bedding in the open air daily. This is commendable.

In some counties farmers have an unlimited supply of straw, more especially if the previous harvest has been a bountiful one. In town the matter is different, and the proprietor of a stud often has great difficulty in procuring straw. Moss-litter can, however, always be had at reasonable rates. If used, it requires to be well broken up, and raked over several times throughout the day. Parts saturated with urine should be removed.

Clothing and Bandages.

All the lighter breeds of horses are the better for being clothed both summer and winter. In the summer it is advisable to have cotton or linen rugs, or what the writer considers very much better, a light flannel rug or suit. Heavier woollen rugs are requisite for winter use. If horses are well clothed and regularly groomed, there is no necessity to have recourse to clipping.

Bandages are of great advantage to light horses. They improve the circulation and keep the lower portions of the limbs in a healthy state, and should always be used in the case of horses that are inclined to become puffy about their joints

after standing in the stable a few hours. Some proprietors only bandage the limbs at night, whereas others allow the bandages to remain on throughout the daytime. Horses are frequently exercised in bandages. Flannel and cotton are the materials of which bandages are generally made.

It is not every groom that can apply a bandage properly. The bandage must first of all be tightly rolled up, but it should not be put on too tightly; it should be evenly and firmly adjusted so as to give the desired pressure without interfering with the circulation.

Rubber and adhesive bandages are sometimes employed for special purposes. When ordinary bandages are taken off, the string or tape marks ought not to be observable.

Grooming.

Grooms may be classified as good, bad, and indifferent.

A good groom or horsekeeper is worthy of respect, but the one who does his work in a slipshod or indifferent manner does not, in the author's opinion, deserve any consideration, for he does not show due consideration to those that are unable not only to help themselves, but also unable to complain of the poor attendance

bestowed upon them. If work is worth doing at all, surely it is worth doing well.

To find one's horses turned out half-groomed is most galling; and the writer has had more than one reckoning with grooms on this score. It is the excuses that cut so deeply. If a man has sufficient honour to admit that his charge is in a dirty state, one might forgive; but to argue against the truth is, to my mind, the worst offence a strapper can commit. When a horse comes in, its feet should first of all be washed, but do not wet the heels unless you have the time afterwards to dry them thoroughly. To leave the heels wet predisposes them to become cracked, as hands become chapped.

If the weather is hot and the animal sweating, it is a good plan to wash the sweaty portions, afterwards drying them with a chamois. The face, beneath the arms, under the tail, the thighs, etc., should be sponged. The horse is now put in the stable or else gently exercised until it is sufficiently cool to be rugged up. When a horse has a heavy coat it is a very difficult matter to dry it satisfactorily. This shows the advisability of keeping the coat short. Sponging the sweaty patches and then vigorously shampooing with a wisp of straw is the usual custom. Never put on the clothing until the animal is thoroughly

dry. If a horse comes in covered with mud, it can either be washed, or the mud allowed to dry and then brushed off. Both plans are general. If it is cold weather, you ought not to wet the horse any more than is absolutely needful. Sponge over with warm water.

As to how the legs should be cleaned, horsemen differ so much that the writer does not feel inclined to enter the arena of discussion. Every man has a right to hold his own opinion until he is convinced that his views are wrong. This is a matter upon which no dogmatic assertions can be laid down.

If the lower portions of the limbs have not been clipped, it is perhaps as well not to wet them, but to allow the mud to dry, and then to brush it off. The dandy-brush and curry-comb must be freely used; the latter for cleaning the brush. It is a very easy matter to ascertain if a horse has been properly cleaned. Pass the hand lightly over the body and limbs, more especially under the forearms and inside the thighs. If there is any mud left on, it will be felt in small lumps beneath the hand.

After the dirt has been removed with the dandy-brush the coat should be gone over with a soft brush, and the chamois used to put on the finishing touches.

Feeding and Watering.

The grand principles of feeding are:—

- (a) To give food regularly.
- (b) To give sufficient in quantity.
- (c) To give food of the finest quality.
- (d) To feed upon a mixed diet.
- (e) To feed at least one hour before exercise or work.

If these rules be duly followed the results are almost sure to be satisfactory.

A mixed fodder may comprise such cereals as oats, maize, barley, combined with beans, peas, bran, chaff, etc. The oats should constitute the bulk, or, at any rate, be next to the cut stuff. Bran should come next, and then the maize, beans, and peas, all these being bruised. The number of times to feed a horse throughout the day will entirely depend upon the work the animal has to perform. Three or four times daily is the rule. Unless a horse is performing a fair share of work, three times a day is quite often enough. From 5 to 14 lbs. of the best hay is necessary each day. During summer grass or other green meat can be substituted for a portion of the hay, but not for the other food, for a horse cannot perform its work satisfactorily on green food alone.

Don't feed a horse immediately it comes in from work. Allow it to cool down first. About a quart of cold water may be allowed as soon as the animal comes in.

Both oats and hay ought to be one year old before being used.

Feeding Sick Horses.

Any one that has had the charge of horses in health and disease knows that there is a vast difference under the two conditions. When a horse is really ill, it usually requires a good deal of skill and patience to tempt it to partake of any food. A thoughtful groom will prepare and procure all sorts of forage in order to bring back the desire for food. Carrots, swedes, grass, linseed cake, cabbage leaves, scalded hay, steamed corn, etc., have all, perhaps, to be tried in turn.

It is important never to leave food before a sick horse. Remove what the horse does not take then and there, and try the patient with something else a little later on in the day.

How to Administer Liquid Medicine, Balls, and Powders.

It takes some skill to give a draught or dose of liquid medicine to a horse in a satisfactory

manner. The writer has often been surprised to see how indifferently these draughts have been given by those who might have been expected to know better. It must be understood, however, that horses differ in their way of taking medicine. Some horses prove extremely refractory, and others will hold the fluid for an indefinite time. This is particularly annoying to those assisting, for a horse's head is no light weight to support. Foolish grooms sometimes resort to the dangerous expedient of pinching the throat or rubbing the neck in order to make the animal swallow. This trick cannot be too strongly condemned. It is useless as well as dangerous. Another nasty trick is that of pouring fluid down the nostril. In the author's opinion this ought to be made a criminal offence. Have the head well supported with a rope or twitch, and then pour the fluid slowly in at the left side of the mouth, taking particular care that the neck of the bottle does not pass in between the grinders. Support the lower lip, as this forms a pouch, and the animal usually relies upon it to contain the bulk of the draught, ready to be disgorged directly the head is lowered.

Powders can be mixed with the food, or, if soluble, given in water. Balls require to be

given expeditiously, and the hand or balling-gun can be employed for this purpose.

Electuaries are now a good deal used by veterinary surgeons, and this constitutes a most excellent method of administering solids and semi-fluids.

CHAPTER I

THE HEART—THE PULSE—TEMPERATURE

INTRODUCTION.—The heart of the horse is situated about the centre of the cavity of the chest, and is suspended in its position by means of large blood-vessels chiefly. It is composed of an apex and a base; the apex is free, but the base is the junction between the heart and the body. The heart is a hollow, muscular organ, made up of a special variety of muscular fibres. There are, really, a right and a left heart, consisting of the right and the left ventricles below, and the auricles above.

These compartments communicate by means of valves, and the large vessels of the heart also have valves. Any of these valves may become diseased, and cease to work properly.

The heart is enclosed in a serous membrane or bag, known as the *pericardium*. Sometimes this bag is the seat of a dropsical effusion—dropsy of the heart.

The heart beats normally at the rate of 36 to 45 times per minute, but this is greatly increased during exertion and in some diseases.

Diseases of the Heart.

The horse, in common with other living creatures, is liable to suffer from many troubles in the heart. These are organic; or functional. Organic trouble means that the structure is diseased, and when structural changes take place in the horse's heart the animal is, necessarily, of very little utility. A horse suffering from heart affection is not safe to ride, owing to the possibility of a sudden breakdown, which may result in serious injury to the rider.

What is known as 'cardiac syncope' occurs in the horse, and may account for many instances of the so-called *megrims*.

All diseases of the heart are beyond the diagnosis of any one but the professional, and the horse-owner, if he suspects the existence of disease, should seek professional advice forthwith.

When a mare is affected with a heart complaint, she can be used for breeding purposes, and in this way will be still a useful asset.

Inflammation of the heart, or the sac, valvular disease, fatty degeneration, dilatation of the heart, rupture of the heart, and palpitation are the chief

cardiac diseases. These—palpitation excepted—are, as previously stated, beyond the diagnosis of the layman, so that it would be useless to enter into a discussion as to their causes, symptoms, and treatment.

The Pulse.

This consists of an undulation or series of undulations in the walls of arteries, in response to an afflux of blood thrown into these vessels by contractions of the heart. The normal number of pulsations a minute in the horse is from 36 to 45, or thereabout. In young animals the pulse is very much quicker.

Each pulsation should, in perfect health, be full and regular, and should take a given time.

The pulsations in disease are spoken of as being quick, slow, irregular, wiry, steady, intermittent, hard, soft, double, and so forth.

Considerable practice is necessary before one can appreciate, to its full extent, the variations of the pulse. The character of the pulsations, individually and collectively, is of more importance to the physician than the actual number of pulsations.

Most veterinary surgeons take the pulse at the artery beneath the jaw, this being the most convenient. The second and third fingers of the right hand are placed lightly, yet firmly, upon the

wall of the artery, whilst the left hand steadies the animal's head.

The Temperature.

To ascertain the amount of bodily heat, it is necessary to employ what is known as a *clinical thermometer*.

Good thermometers can be purchased at any chemist's for 2s. 6d. or 3s. 6d.

This instrument consists of a bulb, containing mercury, and a stem with figures upon it, and strokes between the whole numbers. A small rod of mercury will be found towards the lower end of the stem. This is the index or registering medium.

The figures—95, 100, 105, and 110—are degrees in the Fahrenheit scale, but the centigrade is divided into 100 parts. Thermometers are also sold, though not greatly used in this country. The short, small strokes between the longer ones on the scale are equivalent to two-tenths of a degree, and the temperature is read thus:—100, 100·2, 100·4, 100·6, 100·8, 101, 101·2, 101·4, and so on.

The normal temperature of the horse at rest is 100 F. or 101 F., certainly not 102 F. In some fevers common temperatures are 104, 105, 106; a higher temperature than 106 means that the condition of the patient is critical. Take the

temperature in the rectum, by holding the thermometer in the right hand, elevating the tail and inserting the bulb into the bowel, with the right hand supporting the stem; allow the thermometer to remain a couple of minutes. Take the temperature night and morning, and always make a note of it. The clinical thermometer is a valuable aid to diagnosis, and should be kept in every establishment where there are animals.

CHAPTER II

AFFECTIONS OF THE AIR-TUBES AND CHEST

Bronchitis.

INFLAMMATION of the bronchial tubes may be either acute or chronic, and it is usually associated with disease of the lungs, such as pneumonia, glanders, etc. So long as the inflammatory action is chiefly confined to the larger air-tubes there is not much danger, but when the minute tubes (capillary air-tubes) become involved, there is a tendency for the complaint to end in catarrhal pneumonia, and this it frequently does.

Mechanical bronchitis is that brought on by the inhalation of irritating vapours, or else through invasion of the bronchial tubes by thread-worms—an uncommon cause in colts and foals.

Chronic Coughs and Broken Wind: Roaring.

A horse is said to have a 'chronic cough' when the cough has been in existence for a lengthened period.

Although this may arise through a variety of causes, it is generally indicative of 'broken wind,'

and the tone of the cough is very characteristic. If once heard, it is easily recognised a second time. It is a *deep, sepulchral cough*, and may be provoked by gentle manipulation around the upper part (larynx) of the windpipe.

By noting the horse's breathing, the owner can satisfy himself if the cough is indicative of broken wind. The *expiration*, *i.e.* the squeezing out of air, is performed in two movements instead of by a single effort. During the first part of the act the air is forced out of the chest suddenly until a certain point is reached, and then there is a pause in the act, the remaining air being as it were *squeezed out*.

When about to purchase a horse, always take particular care to see that the animal is not broken-winded, for a horse of this description has no market value.

Dealers, when they want to sell a broken-winded horse, endeavour to conceal the cough by administering such substances as shot and grease, etc.

A *whistler*, as the name implies, makes a *whistling sound during exertion, either slight or severe*.

A thick-winded horse is to all intents and purposes a roarer.

When an attempt is made to strike, or the

animal is suddenly frightened, it will, if a roarer, be almost certain to grunt, but grunting is not always a sign that the animal is a roarer, being, in some instances, due to nervousness.

Grunting must be taken as fairly good positive evidence that the animal is not sound in its wind, though it will not do to take it as proof.

If grunting is discovered, it is necessary to take special pains to ascertain whether the animal is or is not sound in wind. Numerous actions have been raised by purchasers against veterinary surgeons (and others) for passing grunTERS as sound, also for breach of duty in not reporting the defect to the intending purchaser. In the majority of instances roaring and whistling are due to paralysis of certain muscles of the larynx, arising through fatty degeneration of the muscular fibres.

This sort of roaring could not be *developed suddenly*, for the changes that produce it are, as a rule, the result of defective nerve-force, and take weeks or perhaps months to come about; and it is impossible for a horse honestly certified sound one week to become a roarer the next. It must be understood, however, that there are other causes of roaring, and that these may become operative at any moment; and it is here that trouble may arise when there is litigation

over the purchase of a roarer. For instance, a horse may have a pedunculated tumour growing from, or in juxtaposition to, the glottal (windpipe) opening, and although this tumour, so long as it remains in a simple or dormant condition and keeps clear of the opening, does little or no harm, it may become, at any moment, the cause of roaring, by dipping into the glottal passage and producing an obstruction to the free passage of air into the larynx and trachea. Roaring appears to be hereditary, perhaps through some peculiarity of conformation in the region of the neck.

In cases of poisoning by lead or by the Indian vetch, roaring is often very marked. It must be understood, however, that roaring horses, although their defect decreases their value, can perform ordinary work. Look at the large number of cab horses, hunters, etc., that work for years with tracheotomy tubes, and do their work well. Roaring may be either *temporary*, (laryngitis) or *permanent* (fatty degeneration), generally the latter. Drugs, excepting arsenic, have no influence over the disease when it is permanent, and tracheotomy is the best means of alleviating the embarrassed breathing. This operation must be done by a veterinary surgeon.

Sires or dams affected should not be kept for stock purposes.

Laryngitis.

Inflammation of the larynx, or sore throat, is a fairly common complaint, and is often associated with influenza or influenzoid colds.

This condition is denoted by difficulty of swallowing, more particularly of swallowing hay and other dry food. The animal has a cough, hard at first, but later on soft and moist. When the cough becomes soft, there is a free discharge from the nostrils. Internal temperature is generally up a little, and the patient out of health in other ways.

TREATMENT.—Stimulate throat with mustard paste or some other stimulating application, and add half an ounce of chlorate of potash and half an ounce of Epsom salts to the drinking-water night and morning.

Give linseed gruel, milk, and a few scalded oats, steamed carrots, etc., to eat.

Keep horse well clothed and limbs bandaged, and see that the stable has plenty of pure air admitted into it. Send for veterinary surgeon.

Catarrh.

This may be either acute or chronic, and in the chronic form it is usually *symptomatic* of some other diseased condition, such as disease of

the molar teeth, disease of the sinuses of the head, glanders, etc. Acute catarrh is a comparatively benign malady, and appears to result from exposure to cold. There is a difficulty in being certain as to whether a horse may be affected with this complaint in a simple, or in a malignant, form.

The animal appears to be a 'bit out of sorts,' as the saying goes, has a discharge from the nostrils, and does not feed as usual. The lining membrane of the nostrils is heightened in its colour, and so is the lining of the eyelids.

Chronic catarrh is indicated by a continuous, or else an intermittent, discharge from one or both nostrils, but in glanders commonly from one nostril only.

In the first-named disorder, all that is necessary, as a rule, to restore health, is to keep the animal warm, give a few days' rest, and feed on scalded bran, linseed, and crushed oats, with the addition of an ounce of Epsom salts to the drinking-water once a day. Whenever a horse has a chronic nasal discharge, it is advisable to consult a veterinary surgeon, so that a lot of possible trouble and annoyance may be avoided.

Acute Congestion of Lungs.

There is a form of pulmonary engorgement or

congestion of the lungs that is specially prone to attack hunters (and other horses as well) that have not got into working condition at the commencement of the season.

If a horse has not been 'prepared,' by daily and increasing exercise, before it is required for the chase, the chances are that there will be *bellows to mend* soon after the first sharp gallop.

The exercise increases the number of pulsations or heart-beats, and this throws an extra quantity of blood into the lungs, and, as these have not been prepared to receive it, the vessels become clogged, and stagnation ensues.

Sometimes this engorgement of the lungs is speedily followed by inflammation of the feet or founder.

Sudden engorgement of the lungs is denoted by very rapid breathing, the flanks beating all the time. The animal has a very distressed look upon its face, and is probably sweating; the pulse is small and nearly imperceptible, perhaps 100 a minute.

The horse is in a critical condition, and unless immediate relief be obtained will most certainly die.

TREATMENT.—This must be energetic. The rider must get out of the saddle, ungirth, and turn horse's head to wind, and, if it can be done,

obtain some (say a flaskful) of whisky, and give this at once in a little water.

Seek professional assistance immediately. If horse is in good condition, it must be freely bled (four to five quarts) from the jugular vein. This is the best and speediest way of giving relief, only it requires professional skill.

The whisky can be repeated.

Horse must be kept quiet, and, if possible, placed in the nearest stables, the body being well clothed, so as to aid in the restoration of the circulation.

Pleuro-Pneumonia.

The horse is a frequent sufferer from inflammation of the lungs, usually in association with pleurisy.

There is a special form of pneumonia, known as *contagious pleuro-pneumonia*, and this complaint, when once it starts amongst a stud, commonly claims many victims.

Lung complications are exceedingly common in influenza, and this accounts for the greater part of the deaths from this complaint. It is not often that pleurisy exists apart from some pneumonia, because the two structures, lungs and pleuræ, are so closely related.

The worst feature about pleurisy is its tendency

to result in effusion, and this, if excessive, constitutes dropsy of the chest—a very undesirable, morbid condition of affairs. Both croupous and catarrhal pneumonia are said to occur in the horse, but most cases are, probably, of the latter kind. Exposure to cold has been blamed as one cause of pneumonia.

Tuberculosis, strangles, etc., if they are advanced, may excite acute attack of pleurisy. The leading symptoms are: quickened respiration; a rise of four or five degrees Fahrenheit; an oppressed hard pulse; a crepitation during the earlier stages of the disease; later, an absence of the normal vesicular murmur over areas of the lung.

During the earliest stages of pleurisy there is the so-called 'dry rubbing,' or friction murmur, heard when the ear is placed to side of chest. There is also a short, suppressed cough, and very often a horse will grunt if a feint is made to strike him, ever so lightly. The animal stands obstinately, and the mucous membranes are redder than normally. Sighing is sometimes a marked feature, more especially if there is water in the chest.

The friction sound becomes lost when the latter occurs.

TREATMENT.—This should be left in the hands

of the professional man, and the sooner his aid is obtained the better the chances of success. In the meantime a mustard paste should be well rubbed over both sides of the chest-wall, the body clothed, and the limbs bandaged.

Keep temperature of stable up to about 52 degrees Fahrenheit, and see that horse is made very comfortable in every way.

Allow cold water to drink, and add a table-spoonful of Epsom salts to it daily, together with a little powdered nitre. Stimulants (brandy) are often of great benefit.

CHAPTER III

DISEASES DUE TO MICRO-ORGANISMS

INTRODUCTION.—Most of the diseases included under this heading are due to the entrance of germs into the system, and all of them—with a few exceptions—are of an infectious nature. Such diseases as strangles, glanders, and influenza are exceedingly common in this and many other countries, but surra, bursattee, and Cape horse sickness are unknown in Great Britain; so was epizootic lymphangitis before its introduction into this country during the time of the Boer War, though, fortunately, it is rarely met with over here, being a scheduled malady.

The following are the principal ailments of this class:—Actinomycosis; tuberculosis, or consumption; influenza; strangles; glanders; tetanus, or lockjaw; Cape horse sickness; surra; anthrax; epizootic lymphangitis. A brief account of these is as follows:—

Tuberculosis, or Consumption.

At one time, this disease was thought to be

exceedingly uncommon amongst horses, but it is now well known that it is not at all uncommon.

It must be admitted that it is not as frequently encountered in the horse as in the ox; nevertheless, it is now well known to the majority of veterinary surgeons. It is due to the bacillus tuberculosis. As far as present knowledge goes, it is an incurable malady in the horse.

When a horse is affected with this complaint it begins gradually to lose condition, and its general health fails.

There is not necessarily a cough, so frequent in human consumption, but there is a steady loss of flesh.

In many cases there is excessive urination (staling), and the membranes of the eyelids become very pale.

The temperature is slightly above the normal, and colic sometimes comes on.

After death examination generally discloses tumour-like growths in the spleen (melt), and, it may be, similar new growths upon the lungs and their investments. It is best to destroy in cases of tuberculosis.

Actinomycosis and Scirrhus Cord.

This is an uncommon disease in horses, and when it does occur it attacks the tongue. The

organ becomes enormously enlarged, and has a number of yellowish nodules upon it. There is a similar disease affecting the cord of geldings, often appearing soon after castration; in fact, infection usually occurs during this operation, if the organisms of the malady are present. Treatment must be left to a veterinary surgeon.

Anthrax.

This is a specific disease, arising through invasion of the system by germs, known as Bacilli Anthracis.

Anthrax is widely distributed, but more prevalent in some countries than others. It attacks cattle and horses, but is easily communicated to other animals and to man, either directly from the living animal or subject, or from its carcass, the offal, skin discharges, etc.

In this country anthrax is not at all uncommon amongst cattle, but the stringent regulations of the Board of Agriculture are of material assistance in keeping down the disease, although the writer's experience is that very much more might be done towards checking this deadly complaint, if owners would only report to the nearest authority all sudden deaths of horses and cattle, for, unquestionably, cases of anthrax frequently escape the notice of officials.

In Russia and India, especially in Russia, anthrax is very prevalent. It is known as 'jaswa,' and the Siberian plague.

It is amongst cattle and sheep in this country that anthrax is frequent, but horses are occasionally affected, particularly if an infected carcass has been cut up, and the discharges and fluids are allowed to be distributed about the premises. Pigs frequently contract the malady through feeding upon infected offal. Dogs and poultry sometimes suffer in a similar manner.

In some instances cattle recover, but this is rather exceptional than otherwise. In man, anthrax is known as 'Malignant Pustule' and 'Woolsorters' Disease, and has been given the latter name owing to the risk of infection run by those whose work is preparing woollen goods.

In one form of anthrax the head and tongue become enormously swollen. In the horse it is the rule for anthrax to assume a very active form, death frequently taking place within a few hours of the onset of the malady.

Acute inflammation of the bowels—denoted by severe pain in the belly—and collapse are usually present.

If the owner of an animal has any reason to suspect the existence of this terrible complaint, no time ought to be lost in communicating with

the nearest local authority, because anthrax is a scheduled disease.

Tetanus, or Lockjaw.

This disease arises through a wound, and is due to infection by the germs of tetanus.

These organisms are drumstick-shaped bodies, found in garden and other soils. They are exceedingly minute, and can be seen only under a very high power of the microscope.

At one time it was thought that this deadly malady could arise without the existence of a wound, but this theory is now exploded.

A remarkable fact in connection with the germs of tetanus is that they do not enter the circulation, but remain at the seat of injury, and there manufacture their poison.

Wounds of the feet and castration wounds are very often followed by the development of tetanus, and, when the disease appears after castration, no blame can be attached to the operator, because this is quite beyond his control.

It is impossible to fix any incubative period for lockjaw following natural inoculation. A preventive and curative serum has been in use for some time now, but for the latter purpose it has not proved successful, in the writer's hands.

There is a large percentage of deaths from this malady. Many cases recover without any medicinal treatment, and quietude is most important.

The leading symptoms of tetanus are:—Muscular spasms under the least excitement, and the throwing up of the head and the shooting out of the nictitating membrane (the thin auxiliary covering under the lids) over the globe of the eye, if the horse be touched under the chin.

The jaws may or may not be locked, but in the majority of cases they are. The animal is still able to swallow liquids, but unable to masticate, so that food is seized, but does not pass beyond the entrance to the mouth.

Internal temperature rises to the extent of two or three degrees as a rule, but the pulse is in a very unsettled condition, being exceedingly irritable and irregular.

There is a general stiffness of the body and the tail, and, during spasms, the breathing is difficult, and very distressing to witness. Death sometimes occurs within twenty-four hours, but in other cases the animal may continue to live several weeks and then die.

Mild attacks of this complaint sometimes occur, and the animal recovers, but, as previously stated, lockjaw is a very fatal disease.

MANAGEMENT.—The patient must be kept absolutely quiet. Place the sufferer in a loose-box by itself, quite away from all horses. Sometimes benefit is derived by placing the animal in slings, but in other cases this only serves to irritate and annoy the sufferer.

If a wound is discovered—it is sometimes difficult to find the channel through which the germs have gained an entrance into the body, or to trace the course of the poisons they discharge—the injury ought to be washed with powerful antiseptics, such as solution of chinosol, bichloride of mercury, etc.

Although medicinal agents have little influence over this disease, it is advisable to have professional aid as soon as possible.

When a horse is on the ground with this malady, the sooner it is shot the better.

Glanders.

This disease (due to the *Bacillus mallei*) is of wide distribution, horses in almost all parts of the world suffering from it, but it is most prevalent in cities, more especially where there is a constant interchange of the animals.

Most horsemen are familiar with the term 'Farcy,' yet usually fail to appreciate the full significance of this evil disease. It is but another

manifestation of glanders, in which the skin and absorbents become specially implicated.

Many years ago it was believed that farcy was a curable malady, and quack animal doctors used to give such drugs as bluestone, etc., thinking that these would, in course of time, effect a cure; but the treatment, though it patched up the animals for a time, rendered them more liable to infect other horses.

At one time glanders only was scheduled by the Board of Agriculture, but now, of course, farcy also is included. So far as veterinary surgeons are aware, glanders (and farcy) is an incurable malady, though a horse infected with the disease may continue to work for years.

What is very dangerous is that an infected horse may appear free from disease. To work a glandered horse, to take it about the country or to keep it on premises, without due notification to the local authorities, renders the proprietor liable to fine or to imprisonment, and rightly so, when one considers the danger to humanity, to say nothing of that to other horses.

Glanders may assume either acute or chronic forms, usually the last named.

Formerly it was the custom to speak of acute and chronic farcy, but this distinction has fallen into disuse. In chronic glanders the animal has,

as a rule, a discharge from the nostril—commonly from the left one—though this may be so slight as to escape notice. There is, very often, a cough, and a swelling of the glands beneath the jaw. Characteristic signs of the disease are circular, red-rimmed ulcers or sores within the nostril, but ulceration of the nostril is sometimes present in an allied disease called Epizootic Lymphangitis.

If the skin is affected the pores become corded, and farcy buds or tumours appear and discharge blood-stained pus. In other cases a limb suddenly becomes enlarged and painful. The surest way of diagnosing glanders is afforded by the *Mallein* test, which has taken the place of the older method, that of inoculating an ass. Mallein will bring positive evidence of the disease, no matter how trifling the lesions in the lungs are.

Isolation, and immediate notification to local authority, are the measures to adopt.

Horse Distemper, or Influenza.

Influenza, or horse distemper, is quite as common as the corresponding malady affecting the dog. It prevails at all seasons of the year, but spring and autumn are the seasons when the malady is most prevalent.

Influenza is communicable from one horse to another, either by direct or by indirect means, and

when a case occurs in a stud, most of the animals in the neighbourhood will contract the complaint, some in a severe, others in mild forms.

‘PINK EYE’ is a severe form of influenza, the bright red and swollen condition of the membranes lining the eyelids giving it this distinctive title.

Infection is often carried by horsekeepers or grooms from the sick animals to the healthy; and it is well that a man looking after the invalid or invalids should not at the same time attend to other horses. There is infection again in the vessels out of which the sick horse feeds—indeed, in all the stable appliances that come in contact with the animal; and great care should be taken to keep these things separate.

The question may be asked: ‘Can a horse contract this complaint through breathing the air of the place where diseased horses are kept?’

The answer to this is ‘Yes,’ it having been proved, experimentally, that infection does occur in this manner.

The author’s experience of influenza is that the severity of the disease in individual horses largely depends upon the constitutional condition of the animal at the time of infection, and upon the sanitary conditions of the stable; and that these factors also play a very important part during convalescence.

The horses of dealers are a good deal troubled with influenza; in fact, dealers' stables are specially liable to become centres of infection owing to the constant interchange of the occupants.

During the annual training of yeomanry, influenza very often comes into a district after the horses return to their homes.

It is a malady that follows the lines of traffic in horses, over land and sea, has been in existence for generations, and has every appearance of remaining.

The incubative period is given as being from four to seven days.

SYMPTOMS.—In the earliest stages the animal is wanting in its usual vigour, the carman noticing that his horse does not work as freely as usual, but sweats easily on exertion.

If a horse has been at work, it refuses its food, but seems very thirsty and done up.

Very soon the horse has a cough, and a discharge from the nose, watery at first, then of a creamy consistence.

The throat is sore, and the glands beneath the jaw a little fuller than in health. If temperature be taken, it will be found to range between 103 and 106 F., being a little higher towards evening.

Pulse is at first full, but soon becomes feeble owing to the prostrating nature of this disease.

There is a marked loss of flesh even in a few days, and the horse looks tucked up at the flanks.

The bowels are confined at the outset of illness, but later on diarrhœa often supervenes, and this tends further to weaken the patient, though it must be looked upon as a salutary process, initiated by nature to throw the poisonous material out of the system, as speedily as possible. The internal temperature may be very high one day, but fall almost to normal on the following day.

From one to three weeks is about the average time this complaint lasts, but complications so frequently ensue that it is impossible to fix any particular time.

Influenza has been described so far, by the writer, in its *simple catarrhal form*, but often such organs as the lungs and pleuræ, the eyes, the liver, and the joints become implicated, and the issue is determined by the organs or structure involved in disease.

MANAGEMENT, ETC.—Isolate the diseased. Have a separate attendant to look after the sick horse, selecting the most reliable man on the premises. Some men are good nurses, others next to no use at all.

Clothe body and throat, and, if nag horses, bandage limbs.

Rub throat with stimulating liniment, and

steam nasal passage night and morning by pouring boiling water over bran and then adding half an ounce of carbolic acid and the same quantity of turpentine.

It will be better to have professional advice, for this is a disease that requires careful guidance, and lung complications may develop and take the owner unawares. In other words, influenza is liable to mislead a layman.

Too much attention cannot be given to the housing of the sick.

Pure air, free from draughts, and a nice, well-balanced temperature of the stable will help recovery.

To drinking-water add half an ounce of Epsom salts and the same quantity of chlorate of potash night and morning. Give eggs and brandy, whisky, or claret if the patient is very depressed; say, six eggs and half a teacupful of the stimulant three or four times a day. Milk, if the horse will take it, is better than water; if not, give *cold* water to drink, because this will help to lower the fever quicker than anything else.

With reference to food:—In summer, grass or vetches, etc., are the best, but at other seasons, scalded oats, bran, and linseed gruel are all that is necessary.

Give only in the smallest quantities, and don't

leave before the patient anything that it does not eat. If food is left, it becomes smothered in the discharge from the nostrils, and the horse is put more than ever off its food.

Strangles.

This malady is almost as common as influenza, but is much more likely to attack colts than grown-up horses, though not uncommon in the last named.

There is no doubt that a well-marked attack of strangles affords its victims a considerable degree of protection against a further attack.

Strangles is communicable from one colt to another; hence the reason why a whole drove of youngsters will become affected simultaneously.

The incubative period is given as being from four to eight days, and the infection is said to enter by the respiratory tract, passing thence into the lymph glands or absorbents.

Strangles (also called cut-throat) in its simplest—and, fortunately commonest—form, is a comparatively mild complaint, recovery usually starting when the abscess beneath the jaw bursts. Internal abscesses sometimes form, and cause death either at the time of attack, or at a subsequent period.

SYMPTOMS.—For some time before this disease

may be recognised, the animal appears to be out of sorts, and, in the language of horsemen, is 'breeding strangles'—an expressive term.

There is a discharge from the nose; the pulse is quickened, and the temperature rises two or three degrees.

Very soon a swelling appears beneath the jaw, and this gradually increases in size until it either ruptures itself, or is lanced. The lancing, which requires professional assistance, gives the better result.

A horse, when it shows symptoms of strangles, should be housed and isolated, but if a number of colts are together, it is just as well to let the malady run its course amongst them.

They should, however, be kept in straw yards, and not exposed to the hardships of wintry weather.

It is advisable to apply fomentations, or blisters, to the neck; for convenience, the last named.

Sometimes a large abscess forms at the point of the shoulder, and this must be lanced at maturity. In other cases pus forms at several points along the lower border of the neck, retarding recovery.

Diseases Occurring Abroad—Surra.

Surra is a disease that occurs in certain parts of India, more especially in low-lying or swampy

districts. It attacks horses, camels, goats, dogs, donkeys, elephants, etc. Rats and bandicoots have the malady in a mild form, and may transmit it to other animals. It is due to a low form of vegetable life—a flagellated infusorian, known as the *Trypanosoma Evansii*, the suffix being added in honour of the discoverer, Veterinary Surgeon Evans.

Surra is thought to be conveyed into the system by water, grass, etc., or through the excrement of rodents, introduced into the forage of horses.

A previous attack does not, so it is said, confer immunity.

The average duration of surra is six or seven weeks, and the incubative period about one week.

The leading symptom in this disease is the gradual, though quick, wasting of the muscles, and the fever.

If the blood is examined, microscopically, the red cells will be found wanting in their tendency to form rouleaux, and the leucocytes greatly increased in number.

It is a very fatal disease, but arsenic appears to have some control over the malady.

TREATMENT.—Give from half to one ounce of Fowler's solution of arsenic night and morning, or from two to six grains of arsenious acid in food

daily, and, at the end of three weeks, give a purgative ball.

Preventive treatment must be directed towards exclusion of anything likely to contain the germs of the disease.

Cape Horse Sickness.

This has always been a troublesome complaint amongst the horses of South Africa, and in other parts, such as the Soudan.

It is a very fatal malady, killing quickly; and it has received a great deal of attention by Bacteriologists, who have done much good work in connection with it.

Native horses are not so liable to suffer as imported ones, and the frosty season is a powerful factor in curtailing the ravages wrought by this disease at certain other periods, and in particular localities.

Low-lying and swampy ground is very favourable towards the existence of Cape horse sickness.

Three forms of Cape horse sickness are recognised:—The pulmonary, the œdematous (big head), and the glossal or blue-tongue disease.

SYMPTOMS.—Rigors, followed by a rise of temperature or fever. Very soon fluid begins to run from the nostrils, as a frothy spume, coming from the bronchial tubes.

The pits above the eyes are said to bulge.

The patient does not usually live many hours in this condition.

In the œdematous form, the head becomes greatly enlarged, and, in blue tongue, the tongue livid and swollen.

The best preventive measure appears to be that of keeping animals in kraal until the dew has been dried off the grass.

The moist herbage evidently contains the virus of Cape horse sickness.

Epizootic Lymphangitis.

This complaint is infectious, and not unlike farcy, abscesses forming in the skin, bursting, and discharging an ichorous-looking pus, capable of communicating the disease to other horses, asses, and mules. A frequent situation to see the nodules or ulcers is along the inner side of the forearm, inside the thighs, flanks, back withers, etc. The nasal mucous membrane, and that lining the eyelids, are sometimes ulcerated.

Three months is given as the incubative period, infection taking place at an abrasion or a wound. It is due to a cryptococcus or fungus, not altogether unlike the yeast-plant.

The Board of Agriculture have scheduled this

malady, thus preventing it from gaining ground in this country.

When the Mallein test is used, there is no local, or constitutional, reaction, and this enables the observer to distinguish the disease from glanders. The disease is unlike glanders in another respect ; it can be cured, if taken in time, though relapses frequently occur.

When a case is suspected, the animal should at once be isolated, and a report made to the nearest local authority.

In the milder cases of this disease it is advisable to consult a veterinary surgeon, but when the constitution is undermined with it, probably the most economical method of dealing with it is to have the animal destroyed.

CHAPTER IV

DISEASES OF THE STOMACH AND BOWELS

Inflammation of the Bowels.

THE horse frequently suffers from inflammation of the bowels, proceeding from internal irritation (worms, etc.), but very commonly the result of the twisting or telescoping of some portion of the bowels. Strangulation of the gut, through rupture, is not uncommonly a cause of intestinal (bowel) inflammation. Puncture of the belly, and blows from without, sometimes produce it.

Again, inflammation may be due to the accumulation of food material in the bowels, or to foreign growths. In the writer's opinion, inflammation of the bowels in the horse is hardly ever brought on through cold, or damp. Nor does he think that colic, as a purely spasmodic affection from the beginning, ever ends in bowel inflammation. There is no evidence to show one that this has ever taken place. It is purely a matter of assumption.

Poisons sometimes cause bowel inflammation, associated with an inflamed condition of the stomach. In anthrax, the bowels may participate and become inflamed. In a record of one hundred and twenty cases of bowel inflammation, eighty-eight were said to be due to the irritation of worms, the chief mischief-maker being the blood-sucking worm, or four-spined strongyle.

The inflammation is commonly in the large bowels, and begins, usually, in the lining membrane of the gut, but in twist, etc., the whole thickness of the bowel participates equally.

SYMPTOMS.—Pain in the belly, but, unlike that of simple colic, it is continuous, seldom having intervals of remission. Pain when the belly is pressed. The pulse is small, very hard, and quick. Distressed look in the face, cold sweats, writhing in pain, and the small, hard pulse, are symptoms, the significance of which few laymen should mistake. The incessant pawing of the ground, looking at the flanks, pressing the hind quarters against the wall, and, in some instances, attempts to climb the latter, are additional indications of inflammation of the bowels. The two latter signs sometimes indicate a twisted, or telescoped gut.

The symptoms are, usually, rapidly progressive

until a certain stage, when the animal may become apparently free from pain, and will perhaps take a little food. The layman must not be deceived by this. When an animal suffering in the manner indicated suddenly becomes free from pain, it is the signal of approaching death. Here the absence of pain implies mortification (death) of some portion of the bowel. The anxiety of countenance, cold sweats, and running-down pulse tell a discerning man that the end is near.

Inflammation of the bowels is usually fatal, particularly if due to twist or intussusception (the doubling back of one part of the intestines into another). The limbs should be hand-rubbed, then bandaged, and a deep, clean straw bed laid down. Send for professional aid at once.

Purgatives should never be given to a horse suffering from pain within the belly until it is certain that the cause of the pain is through impaction with food materials. Externally, the most useful application, in our opinion, is mustard paste rubbed over the face and sides of the abdomen. Half an hour afterwards, the paste can be washed off, and the surface rubbed with a liniment consisting of equal parts of laudanum, tincture of capsicum, and opodeldoc. Now clothe the belly and loins with stout woollen

rugs. If the pain seems to be really lessened, and there be other improvements, the mustard can be repeated.

Colic.

The terms colic and gripes, etc., are used when a horse has an attack of belly-ache, and very often, by the uninformed, when the animal has inflammation of the bowels, the two ailments being indicated by pain in the belly, sweating, and rolling.

Diseases of other organs sometimes give rise to colicky pains, to which the term 'false' colic is sometimes applied. Colic, as a simple functional disturbance, is exceedingly common; in fact, the most frequent disorder from which the horse suffers.

There is a form of colic to which the prefix 'flatulent' is added, as indicative of an accumulation of gas in stomach and bowels, the product of fermentative changes, through perversion of digestive functions. The simple term for this is 'wind.'

If this gaseous accumulation is great, death may be brought about through suffocation, and this is exactly what does frequently happen.

Hence, it is expedient to send for a veterinary surgeon directly a horse is attacked with pain in

the belly, for one can never say what course the complaint may take.

In some cases colic passes off without any treatment, but in other instances no relief is afforded until professional skill has been taxed to the utmost.

For the relief of flatulent colic the veterinary surgeon has often to employ surgical measures, and may even then fail. Colic arises through a variety of causes:—drinking cold water to excess when overheated; the use of boiled foods, more particularly those prepared in leaden vessels; worms; sudden change of food, such as from corn to grass; the abuse of purgative medicine; excess of food; indigestible food, or food unsuitable in other ways; concretions, etc.

A common cause of flatulent colic is turning a horse out to pasture on clover, etc., when the latter is rich in moisture, as happens before evaporation of the dew in the morning. The danger is the greater when the digestive system is not in tone for the reception of succulent herbage.

The symptoms of colic are:—A sudden attack of pain in the belly; rising and lying; rolling; sweating when pain is acute; intervals of ease of variable duration; quick, irregular pulse; difficulty of urination.

The latter sign usually misleads the attendant, who believes that the animal has some 'stoppage of water.' For a time this is the case, the neck of the bladder participating in the spasmodic muscular contraction of the bowels.

If the pain be due to 'wind,' the sides (above the flank) will be found to bulge, and to yield a drum-like sound when struck with the hand. In addition to this, the breathing becomes quickened and oppressed.

Unless relief be afforded, all these symptoms increase in severity, and sometimes the pain continues for days, or even several weeks, in a subdued form.

In many cases of colic it is advisable to give a purgative, whereas in others this may be detrimental; the author therefore advises that, if possible, professional aid be obtained.

If this cannot be had, give a pint of linseed oil, two ounces of spirit of turpentine, and two ounces of sulphuric æther.

The draught can be repeated in three hours' time, using half the quantity of oil and turpentine.

A teacupful of gin, and a tablespoonful of ginger, given in a pint of tepid ale, is of service in some instances.

An effort must be made to ascertain, and, if possible, remove the cause of the trouble.

If the animal is inclined to partake of any food, a little scalded bran and linseed, with a small quantity of oats added, will be suitable for the first few days.

Hot fomentations to the belly are frequently of service, but require to be properly applied to become efficacious. As previously stated, the treatment of colic varies in accordance with the causes that have led to it, and upon this depends the safety of the medicaments employed.

Concretions.

The intestinal tract often contains one or more foreign bodies, in the form of variable-sized concretions or stones, formed by deposition—layer upon layer—of calcareous materials around a central nucleus (as a rule of some foreign substance).

In some cases these concretions are lodged within the stomach. Enormous concretions have been removed after death, either singly, or in number.

The peristaltic movements of the bowels frequently cause these stones to wander, such move-

ments being coincident with an attack of colic. The worst concretions are those about the size of a cricket-ball, because they may get jammed, stretch the wall of the gut, and cause it to mortify at the seat of obstruction.

When endeavouring to make a diagnosis of colic, it is necessary to bear in mind the possibility of these stones as a cause. They are sometimes passed per anus.

Internal Parasites or Worms.

Like other animals, the horse is subject to infestation by various species of worms, and larval forms of other pernicious pests. A common form of parasites, in their larval or resting stage, are what are known as 'Bots,' produced from the eggs of the Horse-bee or Bot-fly (*Gastrophilus Equi*). These eggs are of minute size, and deposited about the knees, shoulders, etc., during the summer, and are attached to the hairs by some sticky substance. They are not unlike 'Nits' in appearance.

In all probability they are taken into the stomach through the animal licking or biting at the regions where the eggs are attached.

In June and July the flies are about. These 'Horse-bots' gradually undergo certain changes in the stomach, fixing themselves to the lining

of it, mostly to that portion known as the gullet end, having a cuticular or non-digestive lining.

There are, however, numerous exceptions to this rule, the digestive portion sometimes being the seat of their location, or even the first portion (duodenum) of the bowels. When here, they have been, in certain instances, the cause of the animal's death.

The bots remain in the horse's stomach throughout the winter, until the following spring.

They now loosen their hold, and are cast out along with the eject, remaining more or less buried in the ground, until such time as they develop into the full-blown Horse-bot fly, ready to pass through the same cycle of their existence.

A very common form of round worm infesting the bowels of the horse is that known (technically at any rate) as *Ascaris Megalocephala*, and these worms are commonly passed along with the ejectamenta.

A few of them do very little harm, but if numerous, or existing with large quantities (gallons) of flat worm, they do a great deal of injury to the constitution, and even cause death.

There is a short red worm known as the four-spined Strongyle (*Strongylus tetracanthus*) that infests horses and colts. The latter gradually lose condition, many dying.

These worms reside in the wall of the gut, during a portion of their existence.

Tonics are, as a rule, necessary under these circumstances.

Molassine meal is spoken highly of as a food that causes speedy expulsion of worms, so that this can be given. It will also lead to an improvement of the animal's condition. Common salt (tablespoonful doses), together with a teaspoonful of powdered copperas, mixed with wet bran mashes, is a remedy for worms.

As a rule, it will be better to seek the advice of a veterinary surgeon.

Diarrhœa and Dysentery.

Diarrhœa, or the expulsion of liquid excrement, sometimes occurs in horses, but it is much more frequently observed in foals, many of the latter dying through this cause.

It must be borne in mind that diarrhœa is merely symptomatic of some abnormal state of the bowels, and may be either functional, or else the result of organic changes.

When the liquid evacuations are stained with blood, it is usual to speak of the disease as dysentery, though the latter usually depends upon ulceration of the lower end of the bowel for its existence.

Treatment necessarily varies with the cause of the ailment. In the case of a foal with its dam, tablespoonful doses of baking soda should be put in the mare's food, and thirty grains of grey powder combined with twenty grains of Dover's powder can be given three times a day, by placing the dry powder on the foal's tongue.

CHAPTER V

LIVER COMPLAINTS

THE horse does not appear to suffer so frequently from liver complaints as do men, cattle, and dogs, though it is by no means free from diseases and disorders of this important digestive gland. That the liver may be affected by any of the diseases attacking other parts of the horse is of course well known, but such does not constitute an independent class of liver disorders.

Cirrhosis of the Liver—Indurated Liver.

In postmortem examination the liver is occasionally found to be extremely enlarged and greatly increased in weight, sometimes to the extent of several score pounds.

In most, but not necessarily in all, cases of induration of the liver the organ is enlarged. This condition cannot be diagnosed during life.

Bilious Fever.

The term 'bilious fever' is sometimes used to

express a form of influenza accompanied by liver disturbance.

In Cape Colony there is a special form of 'bilious fever,' prevailing, it is said, as an independent complaint.

The leading symptoms are a rise in temperature, yellowness of the visible mucous membranes, prostration, loss of appetite, and constipation, together with a dry and pasty condition of the tongue and mouth.

In many cases whole studs of horses are attacked at the same time, and a number of animals die from this disease.

The pulse is usually slow and feeble, and the animal seems completely prostrated. In nearly every respect these symptoms are precisely similar to the hepatic or 'bilious' form of influenza observed amongst the horses of our own country.

TREATMENT.—As soon as ever this complaint makes its appearance in a stud, the diseased should be immediately isolated, and measures adopted to curtail the spread of the malady.

When once this complaint has gained a footing, it is practically impossible to stamp it out, for it is a disease that will run its course, and does not abate till the force of the poison has expended itself.

In addition to isolation of the diseased, it is

expedient that a separate attendant should look after the ailing stock only, otherwise the nurse will transfer the malady from sick to healthy.

The sick animals must be fed on a plain, non-stimulating diet, such as carrots, green food, bran, milk and eggs, with or without brandy, or other suitable stimulant.

The appetite requires coaxing, therefore it is necessary to give but the smallest quantity of food, taking away any surplus as soon as the animal has finished with it. *Never leave excess of food before a sick animal*, no matter what may be the nature of the complaint. To relieve the thirst, and to allay the feverish condition of the system, add one ounce of bicarbonate of soda to the drinking-water, and, if the bowels are not loose, in addition to this dissolve one ounce of Epsom salts in the same water, night and morning. In most cases it is advisable to allow small doses of powdered sal-ammoniac in the water, and three to four drachms of this drug may be mixed with the food daily, or else in water, and given at midday. A ball, composed of twenty grains of calomel, one drachm of extract of belladonna, combined with three drachms of powdered Barbadoes aloes, and sufficient powdered gentian and treacle to form a ball, can, with advantage, be administered, and repeated in half these doses,

if needful. In obstinate cases it is often necessary to place hot applications over the region of the liver. For this purpose there is nothing more stimulating than a mustard and linseed meal plaster.

Mix into a cream equal parts of mustard and linseed meal, and then apply over the region of the liver, *i.e.* on the right side just behind the last rib, in an upward and downward direction, about eighteen inches by one foot broad.

Gall Stones and Jaundice.

The absence of a gall receptacle or bladder does not admit of the formation of gall-stones in the liver, but these stones have been found in the bile-duct after death.

Their presence in this situation necessarily interferes with the free flow of bile into the intestinal canal, and may cause congestion of the liver. They may, too, but only very rarely, be the cause of colic in the horse. These stones are formed by the growing, layer upon layer, of inspissated bile-products around some foreign substance.

Jaundice, strictly speaking, means a yellow condition, and is but symptomatic of liver derangement, or disease of this organ.

For instance, in 'bilious fever' the animal is 'jaundiced.'

Multifarious liver derangements are capable of causing this condition.

In some instances one will see a horse with yellowness of the mucous membranes and a yellow tint upon the white of the eyes. In addition to this, the animal seems sluggish and unable to perform its work in a satisfactory manner.

The inference, under these circumstances, is that the 'horse has got a liver,' as the vulgar expression goes.

The functions of the liver have, through some cause or causes unknown, become perverted, resulting in the entrance of biliary (or bile) compounds into the blood; hence the discoloured (saffroned) mucous membranes.

TREATMENT.—Horse must be allowed gentle exercise. Give a drachm of calomel along with five drachms aloes ball. Mix an ounce of baking soda with food, or water, three times per day. Also give a diuretic ball, and repeat latter in four days.

Feed on grass, bran, and scalded oats.

CHAPTER VI

AFFECTIONS OF THE URINARY AND
GENERATIVE ORGANS

THE urinary apparatus comprises the right and left kidneys, with tubes (*ureters*) leading from them into the bladder; the bladder; and a tube (*urethra*) conducting the water from the latter to outside.

Above the kidneys there are two bodies known as the suprarenal capsules.

The kidneys serve to secrete the urine, and are situated beneath the loins. The right kidney weighs about twenty-seven ounces, and left twenty-five ounces. The former lies behind and under the last pair of ribs, whilst the left one is some two inches farther back.

Each kidney has an opaque covering over it. These are the capsular membranes, which in their turn are frequently surrounded by fat. After the urine has been separated from the blood within the kidneys, it is conducted by the ureters into the bladder, to be subsequently expelled through the urethra. In the horse the latter is long,

whilst in the mare it is short. In order to prevent the involuntary escape of urine from the bladder, there are numerous constricting fibres encircling the neck of it. It is by the relaxation of these and contraction of the walls of the organ that the urine is aided in its expulsion.

Kidneys, Inflammation of.

We purpose only to mention this diseased condition, for, if we did more, we should be infringing the title of the work.

This malady can be either of an acute or of a chronic nature. The horse may show signs of pain when the loins are pressed; colic, a quick and hard pulse, suppression of urinary secretion, and a urinous odour emitted from the skin are other symptoms.

Professional aid should be sought as speedily as possible.

Kidneys, Stone or Gravel within.

Sometimes a stone (*calculus*) or deposit of gravel is formed within the dilated (*pelvis*) portion of the kidney. The presence of stone leads to difficult or painful urination, the act of which may be accompanied by the discharge of blood.

Stone in the Bladder.

A calculus (*calculi* in the plural) within the bladder is not a very uncommon cause of obstruction to urination.

The mere presence of stone in the bladder does not necessarily imply that its formation has taken place within that organ. It is possible that the stone, when small, may have been handed on from the kidneys or their tubes, but its subsequent increase in size is favoured by its presence within the bladder.

An operation known as 'lithotomy' is practised for the removal of stone.

Inflammation of the Bladder.

Stone in the bladder, and the abuse of such drugs as turpentine and Spanish-fly, are liable to produce inflammation of the mucous lining of this organ.

Pain in the belly and frequent attempts at urination are amongst other symptoms of this diseased condition.

Irritability of the Bladder.

We believe that it is possible for the lining membrane of the bladder to be in an irritable condition without the presence of actual inflammation.

SYMPTOMS.—Frequent straining, accompanied by the passage of only a small quantity of urine. The degree of pain is but slight, and may continue for days or weeks, intercurrent with the small outflow of urine. General unthriftiness and loss of vigour are additional signs.

TREATMENT.—Give an ounce of sanmetto in half a pint of water night and morning.

Strangury.

In this affection the urine is passed drop by drop. It is but a symptom of some other diseased condition, and can only be appropriately treated when its significance is understood.

Incontinence of Urine.

This means inability to retain the urine. Irritability of, and paralysis of, the bladder are causes.

In the foal the urine is occasionally seen dribbling away at the navel opening. This is due to the urachus (normally sealed up before birth) remaining open and allowing the escape of the liquid. In every instance the cause should be, if possible, determined before treatment is attempted. For the open urachus in foals, the animal should be cast, and mouth of the vessel touched with the point of a red-hot iron, sub-

sequently a little blistering ointment should be rubbed well in around the navel.

Blood in, and Blood-stained, Urine.

Blood may be passed as blood at the time of, before, or after, urination, and it may come from the kidneys, the kidney tubes (*ureters*), the bladder, the bladder tube (*urethra*), or the generative organs.

In a disease known as 'azoturia,' the colouring matter of the blood cells is expelled with the urine, and causes it to have a coffee-like colour.

Mucous, pus, etc., are amongst other abnormalities of the urine, in disease.

Sheath Swollen.

The sheath protecting the penis is frequently swollen after castration, more rarely through injury. When from the former cause, as a rule there need be little cause for alarm. Exercise and laxative diet usually suffices to bring the part into its normal condition. If the swelling prevents the penis from being extruded in the act of urination, rub the sheath for half an hour with camphorated belladonna ointment (one drachm of camphor and one ounce of belladonna ointment). If this fails to afford relief, it is possible that the sheath will require scari-

fying, for which operation the surgeon will be necessary. Perhaps a dose of physic may be needed. Injuries must be treated in accordance with their nature.

Premature Birth—Picked or Slipped Foal.

It is convenient to speak of a foal's birth as being premature when it happens after the sixth or seventh month, yet within two or three weeks of the full time. The distinction between a premature birth and abortion (miscarriage) is an important matter.

Delay in the delivery—as in full time—of a prematurely born foal usually means death to the little creature. Prompt delivery is necessary. The causes of the premature expulsion of the foetus are varied, and very often difficult, or impossible to determine.

The abuse of purgatives, over-exertion, the ingestion of herbage, or excitement, will have an injurious effect upon the womb. Both in premature birth, and in abortion, the placental membrane (cleansing) is commonly retained. Its immediate removal—calling for surgical skill—is of vital importance.

Perfect quietude, and absolute regard for cleanliness, are demanded, if a successful issue is hoped for.

Abortion.

If the foal is expelled from the womb before six months are up, it may be called an 'abortion.' The aborted foal is either still-born or succumbs shortly afterwards.

The ninth week and fifth month seem to be the periods at which many mares abort, so that particular care must be exercised about these times. An abortion may happen, and yet the owner know nothing about it. A slight secretion of watery milk, and the presence of the immature foetus upon the ground, will, in other cases, be the only signs.

The constitutional disturbance intercurrent with abortion is slight compared with that often arising during premature delivery.

Normal Labour.

The mare may either stand up or lie down during the act of foaling. The onset of the labour is denoted by fugitive pains in the belly (womb). These pains gradually become stronger, and the intervals of ease diminish. As the pains increase, the membranes covering the foal separate from the lining of the womb, ultimately appearing externally as the so-called water-bag. A full water-bag is regarded as a good sign.

If the foal is born with the envelopes around it, then it is necessary to free it from these at once.

It is the contraction of the womb, together with that of the midriff and abdominal muscles, which, if the presentation is normal, causes expulsion of the foal. The cleansing ought not to be allowed to remain after twenty-four hours. Quietude, warm and sloppy diet, and a clean loose-box are essential during labour. If the mare seems to have any difficulty, then by all means obtain skilful advice immediately. Don't interfere, or allow unskilful interference.

Œstrum.

The popular terms are 'heat,' 'use,' 'rut,' 'season,' etc. Spring is the usual time, but in Scotland foals are born later than in the south. A good time of having the mare served is about ten days after she has foaled. Non-pregnant mares come in season about every three weeks. When a mare has been served, if she 'holds,' she will not come in use again until next spring, though some mares do so, and yet prove in foal.

Vagina, discharge from.

A discharge from the vaginal opening can arise from various parts of the generative tract, and a

knowledge, both of the nature of the flux, and of the part from which it comes, is essential before proper treatment can be carried out. Disease of the womb, presence of morbid growths, etc., are amongst the causes. In such cases it is always advisable to obtain professional assistance with as little delay as possible.

CHAPTER VII

CHOREA, OR ST. VITUS' DANCE

(*Shivering*).

THIS appears to be a nervous disorder, characterised by an irregular convulsive action of the voluntary and involuntary muscles of the limbs and tail, etc.

The term 'shivering'—the animal affected being a 'shiverer'—is commonly used to indicate this disease. It is an unsoundness, but often very difficult of detection.

It is chiefly, but not necessarily, manifest when the animal is made to back, or is turned suddenly round. 'Cute horse-dealers, having a 'shiverer' to sell, will try to avoid turning the animal suddenly round before the unwary purchaser.

By some, chorea is regarded as a functional, and by others as an organic, disease of some portion of the nervous system. In some cases we believe it to be associated with a heart affection.

SYMPTOMS AND DIAGNOSIS.—Back the animal, and at the same time keep your eyes on the tail and quarters, and you will most likely see shivering or quivering and elevation of tail.

Sometimes shivering is detected after a long journey, or may perhaps be brought out by touching the animal above the stifle, or by giving the foot a sharp tap.

Another plan is to place the animal in a stall, and make him pass from side to side.

Shivers frequently make their disease known whilst being shod. Horses which have been docked very short often raise their tails a little, but this is not done spasmodically as in a case of shivering. Care must be exercised. Shivering often comes out after drinking. When there is any doubt as to the animal being a 'shiverer,' keep it at work as much as possible, and then look for evidence on the following day.

TREATMENT.—As far as we are aware, any treatment for this malady in the horse is utterly useless.

String-Halt.

This disease is of frequent occurrence in the horse, especially amongst the medium and lighter breeds. It is characterised by the involuntary uplifting of a fore or hind limb or limbs, and constitutes unsoundness. The pathology of the malady is somewhat obscure, though no doubt the causes of string-halt are variable. Sometimes the limb is held up in a flexed manner for

a considerable time, and then let down with great force. In many instances string-halt is only seen when the horse executes certain movements, whilst in the more severe cases it is evident during each step the horse takes.

Paralysis.

This is but a symptom of some diseased or disordered condition, and the horse is often the subject of paralysis.

It is usual to speak of the paralytic state in terms of 'complete' and 'partial,' in accordance with the area over which the animal has lost control.

Broadly speaking, we may say that almost any organ in the body may become paralysed; thus we find the tongue, side of the face, eye, brain, larynx, gullet, bladder, penis, etc., the occasional seat of paralysis. It will at once be obvious that the causes and treatment are necessarily very variable.

What is called Apoplexy is really paralysis of the Brain; while eye paralysis comes under Amaurosis, or Glass Eye (which see). For paralysis of larynx, see Roaring. Fracture of the vertebra will cause sudden paralysis in parts behind the seat of the fracture (see Fractures).

Again, in a disease known as 'Azoturia' (see this), the animal is suddenly paralysed.

Rheumatism is an occasional cause of paralysis. Tumours pressing upon the brain or spinal cord, and depressed pieces of bone, etc., are liable to produce paralysis. In short, paralysis is a common symptom of a multitude of ailments.

The diagnosis must be based upon the history of the case, upon which the treatment will depend.

Delirium.

This is but a symptom of disease or disorder, and it may come on during the course of various affections, though its presence is always indicative of the brain, its coverings, or both, being involved in the disease. Injuries to the skull, disordered digestion, and certain specific (*i.e.* due to special causes) fevers may all be accompanied by symptoms of delirium.

A delirious horse is wild and restless, moves round and round his box, sweats, has staring and blood-shot eyes, and is so violent at times that, not only does he injure his own body, but renders approach dangerous.

The treatment will depend upon the cause.

CHAPTER VIII

NON-CLASSIFIED AILMENTS

Diabetes.

IN common with other animals and the human being, horses are liable to suffer from diabetes, either as a simple functional disorder, or as one in which the urine contains sugar. In most instances this simple form of diabetes or excessive discharge of urine is of dietetic origin, being brought on through feeding the animals on damaged fodder, such as musty or mow-burned hay, musty oats, etc.

In tuberculosis there is, sometimes, profuse urination, but this is different from the simple manifestation now being considered. The diagnostic signs of diabetes are (*a*) excessive urination; (*b*) great thirst; (*c*) depraved appetite. The urine is of low specific gravity and pale, and the mucous membranes also are pale.

In the saccharine or sugary form of diabetes the urine is more highly coloured and of higher specific gravity.

TREATMENT.—Withdraw the damaged fodder,

and matters will usually come all right. Consult a veterinary surgeon, and he will prescribe suitable remedies. If not convenient to consult him, give thirty grains of iodine in bolus daily, or half an ounce of tincture of iodine in water daily.

Azoturia.

At one time this disease was referred to under the title of nitrogenous urine, because it was thought that there was an abnormal amount of urea in the urine. This theory has exploded.

It is a malady that generally shows itself after a horse has been kept in the stable for a few days, though it has been fed just as liberally as when in full work, but the symptoms do not as a rule develop until the animal begins to take exercise, though there are said to be exceptions.

All classes of horses are equally subject to the complaint, and there are usually a considerable number of deaths from azoturia.

After an attack, the affected muscles begin to waste.

The complaint comes on quite suddenly, and the animal seems in danger of tumbling to the ground; in fact, it sometimes happens that the patient has to be brought home in an ambulance or float. Some attacks are so slight that the patient has quite recovered in two or three days,

whereas others are just as severe. When a horse is on the ground, the hope of recovery taking place is only small.

The animal loses control of the muscles either of the hind or fore quarters, most frequently the former.

When the affected quarter is examined, the muscles will be found as hard as boards, and in a state of *tonic* contraction. The most positive sign of the presence of azoturia is that obtained from the appearance of the urine.

It is nearly always coffee-coloured, though sometimes the colour is practically normal.

This evidence is not usually obtained until the urine has been withdrawn by the catheter, and this necessitates professional skill, hence the advisability of obtaining it with the least possible delay. A dose of physic may be given, and the animal put in the slings meanwhile.

Lymphangitis, or Weed.

The terms 'a shoot of cold' and 'Monday morning disease' are frequently applied to this complaint, which is an exceedingly common one all over this country.

It is a disease that affects the absorbent glands, either beneath the arm, or else those of the thighs, but, in the majority of instances, the latter.

Commonly it makes its appearance after a day or two's rest, and is denoted by sudden swelling in the regions indicated.

This swelling is hot and exceedingly tender, giving rise in some cases to a good deal of constitutional disturbance.

The whole of the limb may be thickened and as tight as a drum, so that the patient can only drag the leg a little forwards.

It must be noted that the swelling *always* begins at the top of the limb, because in injuries to the foot, hock, etc., the swelling extends from *below* to above.

One attack predisposes the animal to a recurrence, and repeated attacks lead to permanent enlargement of the whole limb.

Recovery, under suitable treatment, generally takes place within a week.

TREATMENT.—Give a purgative ball and allow exercise; put a little nitre in the food.

Feed sparingly.

Foment swelling with hot water.

Rheumatism.

The horse now and again suffers from rheumatic complaints, either in acute or chronic forms, most frequently the last named.

It is more than possible that many obscure

cases of lameness are ascribable to rheumatism, though one cannot verify this.

Muscular rheumatism, in its acute stage, occurs in the horse, the author having seen cases of this nature, but, so far as he is aware, this is uncommon, unless amongst foals.

The latter are sometimes afflicted with what is called *Rheumatic Arthritis*, and very frequently succumb to this severe malady.

It is said that the disease owes its existence to infection taking place at the navel at or about the time of birth, hence the necessity of paying particular attention to the cleanliness of the navel during the first few weeks of life. A little boracic acid powder may be dusted on the navel opening, which may also be dressed with carbolic glycerine or oil, etc.

One form of influenza is frequently attended by rheumatic swellings. These first appear in one joint—such as the fetlock—disappearing only to reappear elsewhere.

This is known as Metastasis. It is not improbable that some bone spavins, ring-bone, etc., are of rheumatic origin.

The treatment comprises keeping the animal warm, giving soft food, applying warm water to the swellings, and then rubbing them with liniment, such as white oil.

If the patient is a foal, give it a teaspoonful of baking soda and thirty grains of grey powder two or three times a day.

Purpura Hæmorrhagica.

(See Skin Diseases.)

CHAPTER IX

THE EYE : INJURIES, DISEASE, ETC.

INTRODUCTION.—The horse is a frequent sufferer from diseases of, and accidents to, the eye. There are many blind horses, but most of these are still capable of performing useful work for their owners.

Any visual defect is, however, looked upon by veterinary surgeons as a most serious drawback, consequently members of the profession always reject as unsound horses that have eye-trouble. It is very necessary, when purchasing a horse, to make a careful inspection of the eyes, but this is really the work of the expert, and the writer advises that any one contemplating purchasing a horse of considerable value should always have it examined by an experienced veterinary surgeon.

The eyelids are lined by a mucous membrane, known as the *conjunctiva*, and as this is an exceedingly vascular membrane (rich in small blood-vessels) and readily accessible for reference, it is the part usually referred to by the professional, when he wants to ascertain the condition of the system in general.

In anæmic or bloodless states it becomes very pale ; yellow when the liver is deranged ; bluish in lung and bronchial complaints. When the blood is in a vitiated condition, blood spots, which mark the unhealthy condition of the system, frequently appear upon this membrane, disappearing with the advent of convalescence.

Ophthalmia and Foreign Bodies upon Eye.

This affection may attack one or both eyes, but very often only one, and is commonly produced or excited by mechanical agencies such as a particle of chaff, etc., gaining admittance into the eye, and becoming lodged upon the globe. The presence of any foreign material between the eyelids readily excites inflammation of the conjunctival membrane. Injuries to the eyelid frequently bring about the same inflammatory changes.

In some instances ophthalmia accompanies influenza.

Many years ago there used to be a variety of eye inflammation known as *periodic ophthalmia*, or *moon-blindness*, and this generally destroyed the animal's sight. In one case that came under the author's notice the cause was unslaked lime, the farmer carting lime from the station on a windy day, and the lime being blown into the eyes of

the horse following close behind the first cart. Both eyes were severely burned and inflamed.

Various chemical substances are amongst other causes.

SYMPTOMS.—There should be no difficulty in forming an opinion as to whether a horse's eye is inflamed or not. Very likely there will be severe weeping; eyelids partially closed, and eye intolerant to light, and the cornea cloudy.

Cataract.

This is a diseased condition of the crystalline lens, and one that is not, in the least, uncommon amongst horses. Cataract may be 'complete' or 'partial,' and the capsular covering of the lens may be implicated in the diseased activity.

In complete cataract there is total blindness in the affected eye. A blow over the eye, old age (senile cataract), and repeated attacks of inflammation are liable to bring on cataract. When 'recurrent' or 'periodic' ophthalmia was prevalent, cataract, arising out of this disease, was exceedingly common.

The same thing frequently happens amongst dogs in the present day.

In *partial* cataract, the lens has one or more opaque spots, and the horse is only partially blind.

When the lens is the seat of this disease,

it assumes either a white, grey, or yellow colour, appearing as a star-shaped mass at the back of the eye, when the latter is examined in the light.

There is no cure—surgical or otherwise—for cataract in the horse, so that it is quite useless to make any attempt. Care must be taken not to confuse opacity of the cornea, *i.e.* the circular transparent portion of the eye, with this diseased condition of the lens, although most inexperienced people do so.

Torn Eyelids.

Lacerations of the eyelids require very accurate adjustment, and may be either sewed with fine wire, silk, catgut, etc., or else ‘pinned.’ The latter course does all right. To keep the swelling in check, first of all foment with warm water, and then, when the part has been adjusted (sewed), paint the external surface of the lid with tincture of calendula, or, if this is not readily obtainable, Friar’s Balsam can be substituted, though it is not so useful as the first-named application.

Worm in the Eye.

In India, etc., minute thread-worms are occasionally found swimming about in the anterior chamber of the eye, *i.e.* in the aqueous humour.

The parasite is from half to one inch in length, and may be found in other parts of the body.

The cornea becomes opaque, due to the irritation produced by the worm.

TREATMENT.—Puncture with a fine scalpel the outer border of the cornea at its junction with the sclerotic, *i.e.* the white tunic of the eyeball, so as to allow the chamber to empty itself and to discharge the worm.

It is best to throw the horse with the hobbles before operating.

Amaurosis (Glass Eye).

This diseased condition, also known as Gutta-serena, is occasionally met with, and the eye is apparently healthy, though in reality quite useless.

It is spoken of as idiopathic, sympathetic, and symptomatic, in accordance with the cause or causes believed to be operative in its production. It seems to be dependent upon paralysis of the retina, or of the optic nerve.

Sometimes it follows upon severe hæmorrhage, at other times lesions of the brain.

If the eye be carefully examined it will be found more or less opaque, the opacity spreading over the cornea.

The lash of the whip not uncommonly causes

ophthalmia, and I have seen the imprint of the lash as an opacity on the eye. Care must be taken not to confound this disease with

Stricture of the Lachrymal Duct,

because in the last named the tears flow over the face, instead of down the canal that opens within the nostril.

TREATMENT.—In every case the eyelids should be parted and the globe of the eye carefully inspected.

If due to a particle of chaff (though it may have been on the eyeball only a few hours), this should be removed at once. This can be done by drawing a camel's hair brush and a little gum lightly across the eyeball. These remarks are, of course, applicable to *ophthalmia* or inflammation of the eye. Stricture of the duct requires professional skill for its treatment.

L. OF C.

CHAPTER X

CUTANEOUS OR SKIN AFFECTIONS

Mud-Rash and Mud-Fever.

THE superficial structures of the skin are, in this disease, inflamed. It may be acute or chronic, and the eruption is occasionally accompanied by slight fever, hence the term 'mud-fever,' the source of the irritation being the presence of mud upon the skin. Leaving the mud upon the legs through imperfect grooming is a frequent cause of the complaint. The same may be said of improper drying after the mud has been washed off, and of allowing the horse to lie upon dirty bedding. It is often said that clipping the limbs below predisposes the animal to suffer from mud eruption.

TREATMENT.—Give a mild dose of physic; add half an ounce of bicarbonate of potash (powdered) to a small quantity of warm linseed and bran mash every night and morning. Keep the limbs and body clean by thorough grooming, carried out regularly. Sponge the sore places with lead lotion.

Cracked Heels.

The horse is very liable to suffer from irritation in this region, especially if the ground is sloppy, as often happens after a thaw. Washing the lower part of the limbs, yet failing to dry them thoroughly, is probably one of the most frequent causes of cracked heels.

TREATMENT—(1) *Preventive*.—If the heels are washed, see that they are made quite dry, then bandaged, and not exposed to any draught.

(2) *Medicinal*.—Allow a few days' rest, and apply lead lotion night and morning. Give a diuretic ball, and keep the bowels open, with sloppy bran and linseed mashes.

Psoriasis (Mallenders and Sallenders).

This is a skin disease attacking the flexor surfaces (especially) of the knee and hock joints, and vulgarly known under the names of mallenders and sallenders. It is a chronic inflammatory condition of the skin denoted by the loss of hair (animals), and the assumption of a dry and scurfy appearance of the skin over the joint.

TREATMENT.—Give plenty of good food, such as bruised beans, split peas, crushed oats, etc. Add half to one ounce of Fowler's solution of arsenic to the drinking-water, night and morning,

and rub the sores with chrysophanic acid ointment, night and morning, for fifteen minutes. Several weeks or months may elapse before the disease shows signs of being eradicated.

Eczema.

This is an exceedingly troublesome complaint, and is of fairly frequent occurrence in the horse. It is a non-communicable malady, and has its origin in impairment of the nervous and digestive functions.

The congested condition of the skin, unless arising from external causes, is but the outward manifestation of a similar condition existing within the body.

Though the precise nature of these changes may be difficult to determine, it will occasionally be found that the animal affected has been suffering from a disordered condition of the liver, probably owing to a diet too stimulating in its nature. Some horses appear to be distinctly predisposed to eczema (hereditary). Chemical, mechanical, and parasitical agents may cause an eruption. The last-named cause is dealt with under the heading of Parasites (mange).

SYMPTOMS.—Eczema is preceded by redness (not seen in pigmented parts) and the appearance of

minute vesicles (blisters). The blisters subsequently burst and spread their contents upon the surface of the inflamed area.

Any part of the skin is liable to be the seat of this abnormal condition.

TREATMENT.— Internally: give two grains of arsenious acid in the food every morning.

When the eruption is of a chronic nature, the sores can be rubbed for half an hour, night and morning, with boracic acid ointment. Give a mild dose of physic (aloes) every three weeks, and continue the arsenic for several months, leaving it off during the time the physic ball has been given.

Purpura.

This disease very often follows after the animal has passed through some exhausting malady, such as influenza. Purpura is denoted by the appearance of one or more swellings upon the skin, variously situated, though commonly about the head and belly. Sloughing sores ultimately appear, whilst, from the nose, blood may be discharged. Purpura is a malady requiring the exercise of professional skill for its treatment, so that no time should be lost in consulting a veterinary surgeon.

Mange.

This is a fairly common disease, and the form induced by parasites is probably found as frequently in the horse as in the dog and cat. When once mange breaks out amongst a stud or herd of young stock, it requires more than superficial measures, not only to eradicate it, but also to prevent its spreading. It often recurs.

SYMPTOMS. — Constant rubbing or biting the skin; loss of hair, especially about the mane and tail; the formation of tiny blisters (vesicles), which burst and produce the so-called scab or crust.

If we remove one or more of these crusts and examine the lower surface with the aid of a powerful pocket-lens, we shall probably see the mange mite.

By far the commonest species of mange attacking the horse is that known (technically, we ought to say) as sarcoptic. The mites in this form of the disease generally attack the hair and skin of the head and trunk, but the psoroptic variety of mite seems to prefer the root of the tail and the hair of the mane.

The psoroptic species of mite, producing sarcoptic mange, chiefly attacks the limbs, especially about the fetlock-joints.

The other mange mite is known as *Symbiotes equi*.

TREATMENT AND GENERAL MANAGEMENT.—In the event of an outbreak amongst a herd or stud, the immediate separation of the diseased is of primary importance. All fittings must be washed with boiling water and washing soda, dried, and in the course of a day or two lime-whitened, taking particular care to see that every crevice receives its share of attention. Carbolic acid may be added. Burn any straw or bedding that has been near or in contact with the diseased animal.

Halters, head collars, clothing, harness, etc., will require complete cleansing.

Take the diseased animal or animals and wash them with carbolic soft soap and warm water, and, if the hair be long, clip it off before the washing. Dry the body, and now dress it all over with lime and sulphur lotion.

If the dressing has been properly applied, the parasites will be seen in an hour or less to be dead.

The dressing can be reapplied, where necessary, in two or three days' time.

It must be rubbed well in with the hands, taking care to rub in an opposite direction to which the hairs point.

Isolated patches of mange do not demand that

the whole of the body should be clipped or washed. The patches can be dressed with sulphur ointment, or with a mixture of sulphur, oil of tar, and whale or linseed oil. One ounce of oil of tar to every eight ounces of sulphur and one pint of linseed oil makes a dressing of suitable consistence for this purpose.

Grease, or Seborrhœa.

Grease is a very troublesome complaint, and one to which certain horses are predisposed. The greasy condition of the limbs is commonly present in animals of a soft or sluggish temperament. The heavier breeds are, probably, the most frequent sufferers. Repeated attacks of grease lead to the formation of unwieldy growths, especially around the pastern-joints. The so-called 'grapes' are the granulations arising from exuberant growth. Suppuration or festering is commonly established. The hind fetlocks (especially at the back) are the parts generally affected.

SYMPTOMS.—A moist and greasy feel at the part, stiffness, suppuration, and, it may be, the formation of the grape-like outgrowths.

TREATMENT.—Internally, give half an ounce of Fowler's solution of arsenic, night and morning, in the food. If grapy growths have formed, these can be burned off with a hot, flattened piece of

iron. When extensive suppuration is present, put on a few hot linseed poultices, covering the surface of the poultices with a layer of finely powdered charcoal; subsequently dress the sores with lead lotion. A mild dose of physic, and an occasional diuretic ball, will assist matters. The arsenic must be continued for several months, and the sore places kept clean and bandaged if necessary.

There is a form of mange (*Symbiotes equi*) that attacks the pasterns, and is a frequent cause of the itchy state in this region.

Lice.

Lice frequently attack the horse. Any part of the body may be attacked, but the legs, fore ones especially (in hairy-legged horses), are common places to find lice. Poultry lice (*Gonioctes burnetti*) are often the vermin attacking the horse.

Cleanse fittings, and burn bedding. Stall-posts, hay-racks, etc., ought to be washed in a decoction of tobacco, the stronger the better. If the hair upon body is long, clip it off, and then wash body with carbolic soap and hot water; subsequently dress with tobacco water (two ounces to a quart of water).

Decoctions of tobacco and stavesacre (seeds)

are equally good parasiticides. But always bear in mind that thorough cleansing is essential, not only of the animal's body, but also of the clothing, appliances, fittings; in fact, of everything that has come in either direct or indirect contact with the lice-infested animal. Poultry, or their houses, will need cleansing, or removal.

Saddle and Collar Galls.

Every horseman knows the frequency of sores upon the horse in the regions of the collar and saddle-beds. Defective conformation and ill-fitting tackle are predisposing, and exciting, causes. Special attention should be given to see that the saddle, collar, pad, etc., are made to fit the animal, as too rarely is the case. The removal of the cause, a few days' rest, and the application of the lead lotion will suffice to effect a cure. If the horse must be worked, the injured part will require protection, otherwise cruelty arises. Perhaps a breast-band can supplant the collar. The term 'sitfast' is applied to an indolent sore upon the back. It is a scar imbedded in a zone of dead—or practically dead—tissue. Uction with iodine ointment will often excite reparative inflammation; if not, the part requires surgical treatment.

Nettle-Rash.

Nettle-rash is characterised by the appearance of numerous variously-sized oval or round elevations upon the skin, especially about the trunk. These 'weals' cause a great deal of irritation, yet the skin remains intact. The departure of the 'weals' is almost as sudden as their coming. Disturbance of the digestive and nervous systems is, probably, at the root of the whole affair.

TREATMENT.—Give a change of food, and a mild dose of Barbadoes aloes. Green food can be allowed. To allay the irritation, bathe the parts with a strong solution of baking soda. Boracic acid ointment is also a useful application for this purpose.

Ringworm.

This ring-like diseased condition of the skin is due to a microscopic parasite known as *Trycophyton tonsurans*. The patches have a scurfy and stubbly appearance.

Dress with iodide of sulphur ointment, or paint with iodine, thrice daily. It is infectious.

CHAPTER XI

POISONS AND THEIR ANTIDOTES

Arsenic.

MANY horsekeepers are in the habit of giving white arsenic (arsenious acid) to their horses, daily, for the purpose of improving their coats. The proprietor may not be aware of it until perhaps one of the animals is taken ill, and, it may be, dies with all the symptoms of acute poisoning. The administration of arsenic in this way is a practice deserving the strongest condemnation.

Horsekeepers have been known to give each horse as much as will lie upon a shilling, whereas four grains (and arsenic is a heavy powder) is the full average dose for an adult horse.

Being a 'cumulative' poison, arsenic requires special care in its administration. Another method of giving the drug is in solution (Fowler's solution), which contains four grains of arsenic to every ounce. Violent pains in the belly, extreme

thirst, dysentery, and straining are amongst the more prominent symptoms of arsenical poisoning.

Professional aid should be had at once.

Antimony.

As a mineral poison antimony is closely allied to arsenic, and the symptoms, through an overdose, are almost identical.

Antimony is extensively used by horsekeepers, blacksmiths, etc., to make up condition powders, and sold under the popular name of black sulphur, *i.e.* a sulphide of antimony. It would be far better if the drug fell out of use altogether, as its utility is doubtful.

Lead.

In certain localities, *i.e.* in the neighbourhood of smelting-works, cases of lead-poisoning are not uncommon.

The entry of lead into the system may make itself known either in a low (chronic) or active (acute) manner. Perhaps chronic lead-poisoning is the form best known. Lead is now and again introduced into the system by water or food that has been allowed to stand in lead-lined vessels.

Certain waters have a special solvent action upon lead pipes or cisterns, so that, whenever horses suffer from repeated attacks of bellyache,

inquiry should be directed to the water-supply as a likely cause.

SYMPTOMS.—In the chronic manifestation of the complaint there is progressive paralysis, unthriftiness, twitching of certain muscles (shoulder, etc.), and, it may be, a blue line (lead sulphide deposit) running around the gums. Pain in the belly is frequent in both forms of the disease. Roaring may come on, whilst knuckling over at the fetlock-joints is a pretty common sign.

TREATMENT.—Allow four ounces of Epsom salts in the drinking-water night and morning until the horse begins to purge freely. Glauber's salt can be used instead, given in the same doses and manner.

In chronic lead-poisoning, give one drachm of iodide of potassium night and morning in the water. Allow laxative food, and, of course, remove the cause if possible. Perhaps a change of pasturage may be needful.

The Yew (*Taxus Baccata*).

The yew is a very common ornamental shrub, often attaining tree-like dimensions. It must be regarded as extremely poisonous, as is proved by the rapid death of horses and cattle that partake of it. The leaves are small and numerous, dark green above and lighter below. The

berries are a pinkish red. To prevent the rapid collapse of the 'Yew-eater,' a pint of brandy with half a pint of water may be tried, subsequently a smart purgative. When placing horses or other herbivora out to pasture, a sharp outlook should be kept for the presence of obnoxious herbage in the grass, hedges, or overhanging branches.

CHAPTER XII

DISEASES AFFECTING THE FEET, ETC.

Brushing.

SOMETIMES brushing is a very troublesome matter to remedy, because defective conformation has much to do with its production, and the farrier cannot alter the relationship between one limb and another. All that he can do is to keep the hoof well rasped down on the inner face of the wall and to shoe very close. Sometimes the inner branch of the shoe is omitted.

Repeated brushing of the fetlock causes thickening, and very often a painful wound, so painful, sometimes, that the author has seen acute inflammation set in all round the joint from this cause.

One or both fetlocks may be struck, and it is a common practice for dealers having for sale a horse that 'brushes,' to bring it out with a boot or pad over the part.

When looking at a horse, or trying it, don't be misled by any excuses relating to the boot or piece of cloth.

Horses that have recently come up from grass often 'brush,' but this frequently disappears when the animal gets into full-working action.

If the fetlock is bruised, a boot can be worn, and the sore dressed with lead lotion twice a day.

Quittor.

This disease is denoted by the presence of one or more suppurating points on the coronet, and very often proves exceedingly intractable. Either the fore or the hind feet may be affected, usually only one of the feet.

In the majority of instances this disease is the result of either a suppurating corn, or a puncture (pricked foot), the injury having been overlooked at the time, or else neglected.

It also results, though less frequently, from a bruised coronet.

In some cases the lateral cartilage is diseased, and a cure is impossible until the decayed tissue has been removed, or obliterated. The sinuses will not heal until the source of the irritation has been removed. Injections of chloride of zinc, or coring out with the hot iron, sometimes effects a cure, but the latter is somewhat cruel surgery.

Diseases of the Wall—Sandcrack.

Sandcrack is a very common diseased condition of the hoof-wall, and one that constitutes unsoundness.

It commonly shows itself at the quarters when in the forefoot or feet, but, if in the hind, usually at the toe, though there are many exceptions to this rule.

Sandcrack depends upon either a defective secretion of horn, or else insufficient nutriment in the horn fibres to confer the necessary degree of continuity of structure.

Sandcrack begins at the top of the hoof, and may extend either a portion of the way, or from top to bottom; also, it can be either superficial or deep.

If sandcrack extends through the thickness of the wall, it is almost sure to cause lameness, because the sensitive laminæ will very likely become 'nipped up' in the tissue, and bleeding result.

It is needless to say that it is a criminal offence to work a horse in this condition.

TREATMENT.—If the crack extends through the wall and it is necessary to keep the animal at work, the crack can be bolted or riveted, as it is called. Almost any shoeing-smith will do this with an ordinary horse-nail. Notches are cut in

the wall on either side of the fissure, sufficiently deep to accommodate head and point of the nail when the latter is driven home and turned up. The nail is now driven in at one notch and out at the opposite one, taking care that its track traverses the wall only. It must not enter the hoof, otherwise serious damage will be the result.

Small sandcrack-bolts are sold—with nippers—by dealers in veterinary instruments, and these serve their purpose admirably, if properly adjusted.

Another method is that of isolating the crack by drawing the hot firing-iron across the hoof, below the level of the crack, or by forming a V-shaped area, placing oblique lines with the firing-iron on either side of the crack.

‘Taping’ the hoof is another method. It means binding up the crack with tape and pitch.

Grazing on marshy land and blistering the coronet sometimes proves beneficial, but sandcrack, though apparently so simple, frequently proves a most obstinate and troublesome disease of the foot. When shoeing, take pressure off the crack.

False Quarter.

By the term false quarter we mean that the wall of the hoof has a vertical channel or indentation in it, but the horn is not split, as in sandcrack.

It weakens the wall, predisposing it to split (sand-crack), if any extra pressure is brought to bear upon it; hence constitutes unsoundness. Use a bar shoe.

Pumiced or Collapsed Wall.

Frequently after an attack of laminitis, or founder of the feet, the wall of the hoof becomes malformed, assuming more of the horizontal form; in fact, a specimen that the author saw amongst the Agricultural College exhibits was one that had become perfectly flattened, almost as though the hoof-wall had been melted.

Pumiced feet are highly objectionable in any horse, and distinctly abnormal.

Seedy Toe.

This diseased condition of the horse is denoted by the mealy nature of it, and often causes a separation between the wall and sole (separated hoof), giving the wall a hollow sound when struck. As the name implies, it commonly begins at the toe, and from here it may gradually extend.

Just where the toe-clip goes, the horn crumbles away, so that there is no longer any support for the toe-clip.

Either the fore or the hind feet may be affected.

It constitutes unsoundness. In some cases the hollowed-out portion extends right to the coronet.

The best method of dealing with this disease of the foot is to blister the coronet; give a run, for (say) three months, on marshy land, and then fix on a bar shoe.

Contraction of the Feet.

In most diseases of the feet—also in lameness arising from other causes—the hoof-wall at the heels begins to shrink, causing the foot to become narrow behind. This is known as ‘contraction.’ It is not of itself a diseased condition, but it points to diminished functional power either in the foot (or feet), or in some other portion of the limb.

Diseases of the Sole—Corn.

The horse is a frequent sufferer from corn, but this complaint is quite different from that in the human subject. In the horse a corn consists of a bruise of the sensitive structures beneath the horny sole, producing beneath it an effusion of blood. A rather remarkable fact in connection with this bruise is that it should be nearly always upon the inner quarter of the sole, seldom upon the outer quarter. There is a difference between a recent corn and one that has been in existence

for any length of time. A recent corn has a bright red appearance, whereas an old corn has a blackish or greenish-black appearance. It is the rule for veterinary surgeons to reject horses having a corn; and rightly so, because horses so frequently go lame from this complaint. Sometimes a corn takes on suppurative action, and, unless exit be given to the pus, it may break out at the coronet and in this way form a quittor.

TREATMENT.—If the animal is going lame, the shoe must be removed at once and the seat of corn thoroughly pared out. This will relieve the pressure, and, if there is suppuration, give exit to any pus that has become locked up under the sole. The foot can now be put in a hot bran and linseed poultice—as hot as the animal can bear it.

Continue this treatment until an improvement takes place. See to the shoeing, because this appears to be one of the principal causes of corn. The pressure must be removed, otherwise a cure becomes an impossibility.

Canker.

This malady is exceedingly troublesome, and also very unpleasant, for the odour from the affected foot is of a most pestilential nature.

Most veterinary surgeons look upon canker as an incurable disease, and this is, to a large extent,

true, but many cases of cankered feet have been completely cured, though not without very drastic surgical measures.

It is not a difficult matter to keep the complaint in check, and this it is a general custom to do, owners being aware of the incurable nature of the disease.

In advanced cases the frog, sole, and wall are implicated in the morbid phenomena, but commonly the disease attacks the frog and sole only.

It is denoted by the presence of fungoid growths, bleeding when touched, and emitting a most disagreeable odour.

One or more of the feet may be affected. In all probability canker of the foot is due to a low form of vegetable life, whose existence is of a saprophytic nature, *i.e.* living upon decomposing organic matter.

When a horse is suffering from foot-canker, it is not fit for work, unless shod with a leather (or pressure) plate.

TREATMENT.—First of all, wash the foot with some disinfecting solution; dry, and then with the farrier's drawing-knife remove as much of the fungoid growth as possible.

Now paint the surface with the following mixture:—Formalin, 1 drachm; blue stone, 4

drachms; acetic acid, 2 drachms; verdigris, 2 drachms; water, 4 ounces.

After painting freely with the solution, soak a piece or two in it, and then pack sole and frog with tow so that, when an iron plate rests upon it, there shall be constant and firm pressure—the greater the pressure the better. Always keep plenty of pressure on the diseased growth.

Thrush.

This is not really a disease of the sole, but of the cleft of the frog, which it frequently undermines, destroying vitality, and even causing lameness.

In most instances thrush is the result of negligence, being brought on through decomposing matter being allowed to accumulate within the frog-cleft.

One or the whole of the feet may be affected. The hind feet are the most susceptible, but the disease is exceedingly common in the fore feet also. If the cleft of the frog is examined, it will be found suppurating and moist, emitting a disgusting odour.

TREATMENT.—Proper attention to the hygiene of the feet. Wash the feet with some disinfectants; dry, and then dust in a little calomel and pack up with tow. Repeat daily.

Laminitis, or Founder.

This is a very common complaint, and one with which most horsemen are familiar. The malady is also called fever in the feet; and all classes of horses are equally liable to suffer. It is an inflammation of the sensitive laminæ or leaves of the feet. A horse, when once it has had a well-marked attack of founder, is especially prone to have another. An attack necessarily renders a horse unsuitable for hard work on hard roads; in fact, a horse that has had this ailment (should it be compelled to do work of this nature) will, sooner or later, have a recurrence of the disease.

Concussion is perhaps the most common cause of founder, but it may arise in many ways. Feeding on wheat has very often brought on an attack. There is a form known as septic laminitis, due to the retention of the cleansing or after-birth. This septic form of the disease is usually of a very severe nature, and requires energetic treatment to effect a cure. Sometimes an overdose of aloes will bring on founder, and over-driving is not an uncommon cause. Doubtless there are other causes, but the foregoing are the principal ones.

SYMPTOMS AND TREATMENT.—There should not be much difficulty in making a diagnosis of this malady, for the signs are generally well marked. Both fore, or both hind feet, or all the feet, may be affected at one and the same time. If the fore feet are affected, then the animal will stand with its fore feet pushed out as far as possible. On the other hand, when the hind feet are affected, the animal will advance them as far as possible under the body, thus taking the pressure off the toe. If the pulse be taken, it will be found at first full and bounding, but it soon becomes of an oppressed nature. The breathing is quickened, and the internal temperature is increased several degrees. In some cases the mucous membrane lining the eyelids is greatly swollen; in fact, the eyes may be completely closed. The animal will very likely be sweating.

As soon as this disease is discovered the shoes should be removed at once, and the feet placed in poultices. Hot or cold bran poultices may be used, whichever it is most convenient to use; some vets. prefer hot, and others cold, poultices.

It does not matter much which be used, but the poultices must be persevered with. If hot water is used, then keep it hot; if cold water, keep it cold.

The poultices must be kept constantly wetted.

Follow this treatment up with a dose of physic, but don't give too big a dose of purgative medicine, otherwise more harm than good is likely to result. A moderate dose is all that is called for. The horse must be given a deep bed of sawdust or short straw, and encouraged to rest as much as possible. Some practitioners believe in allowing the animal all the exercise possible, but there is no doubt that this causes a good deal of suffering. In addition to the foregoing treatment it is advisable to allow a little fever medicine in the food or drinking-water. For this purpose there is nothing better than small doses (say four drachms) of chlorate of potash night and morning. Powdered nitre given in the same doses will do instead. If the disease has arisen through the retention of a decomposing placental membrane, the womb must be washed out immediately with a good strong solution of some disinfectant, such as chinosol, carbolic, etc.

Small doses of Epsom salts are very useful in this disease, and can be recommended as being a safe and efficient laxative. As soon as ever there are any signs of improvement having taken place, it is advisable to give gentle walking exercise. This will facilitate recovery. As a means of improving the condition of the feet, it is an excellent plan to turn the horse out to graze on

marshy land for two or three months. This generally does the feet a lot of good.

Bar shoes are often used in the treatment of laminitis.

Navicular-Arthritis.

INTRODUCTION.—Just behind, and articulating with, the coffin and coronet bones, there is a small ship-shaped bone (navicular bone) over the posterior surface of which the tendon of a muscle (flexor perforans) plays, this tendon being attached to the lower surface of the coffin bone, above which it expands, forming a sheath (navicular sheath), from which two pouches project, one upwards, the other downwards, containing a lubricating fluid, serving to facilitate the gliding of the tendon over the bone. When a horse becomes affected with navicular disease—vulgarly termed ‘groginess,’ and the horse itself a ‘grog’—the parts participating in the disease are:—(a) The navicular bone; (b) the tendon (perforans); (c) the lubricating sheath (bursa).

In which of these parts the disease begins is a disputed point. Some authorities think that it begins in the bone as a rheumatic inflammation, others in the cartilage (gristle) covering this, while others think it originates in the tendon or

else the lubricating sheath. Again, others assert that its origin is not constant. The author's experience is insufficient to enable him to speak with confidence upon its point of origin, but a very tenable view is that the disease has its starting-point upon the gliding surface (under surface) of the navicular bone. It is quite possible that the inflammation is of a rheumatic nature in some instances, but its occurrence, through injury, is against this theory.

Disease of the gliding surface of the navicular bone will soon be followed by that of the tendon, over which the latter glides. Brown spots of minute size are found upon the cartilage (gristle) covering this gliding (lower) surface of the bone, and subsequently the cartilage becomes rough and has an eroded (eaten) appearance. In course of time the disease advances into the substance of the bone, but it has been said that this may precede the changes in the cartilage covering the surface. The side of the tendon nearest the bone becomes diseased through contact, and sometimes the tendon becomes fixed to the bone. The first change to be seen is the formation of rusty-coloured spots, which become roughened. If the eroding process goes on and on, some of the minute fibres of the tendon are torn, until perhaps it completely gives way.

When the sheath (bursa) is inflamed, it appears thickened, or even blood-red.

CAUSES.—It has long been supposed that navicular disease is hereditary, but this is probably only true as regards peculiarity of conformation in connection with the feet. It almost always affects the fore feet, usually of the lighter breeds of horses, especially quick movers with high action. The explanation of its almost constant occurrence in the fore feet appears to be on account of the greater degree of concussion here.

A well-developed foot-pad (frog) seems to be the best preventive of this disease. An attenuated frog is a common accompaniment of navicular disease, and, there can be no doubt, is a powerful predisposing cause, one of the functions of the foot-pad (frog) being to protect the navicular arrangement.

Below, we give several likely causes of the disease:—1. Long pasterns, which cause excessive strain upon the tendons. 2. Small, narrow, upright feet, having arched soles. 3. Upright pasterns. 4. Leaving the toe too long. 5. A long period of rest, or resting upon one foot constantly. 6. Lowering of the heels, thus bringing greater strain upon the flexor tendons. 7. Rheumatic predisposition. 8. Standing 'over' on the fore feet. 9. Destruction of the frog (foot-pad) through

paring or disease. It must be borne in mind, however, that the *exciting* agent is concussion, compression, or some form of injury.

SYMPTOMS.—(a) Lameness, coming on gradually. (b) The animal is very lame when brought out of stable, but this may pass off after a little exercise, though it is quite possible that exercise will increase the lameness. The chest appears drawn together, and the animal, when moving, has a stilty look. When the horse is in stable the weight is taken off the heel, and the toe pointed, perhaps scraping the floor. The hoof may be smaller than its fellow. If both feet are affected, diminution in size will not be noticed. Upright pastern or pasterns, contracted hoof (heels), a shrunken, dry, and wasted frog (foot-pad), are other signs. Sometimes there is pain shown when the hollow of the heel is pressed. There is a short, cat-like step observed when both fore feet are affected. The whole limb has a shrunken look about it, especially if the disease is fairly advanced.

Although the foregoing symptoms are in the main characteristic of navicular disease, one or more of these may be present in other forms of lameness, such as fetlock-joint lameness, or that arising from sprain of the ligaments of the coronet-joint, or from contracted feet. Perhaps there is

pain, and a little thickening on the back of the coronet-joint. From fetlock-joint lameness it is distinguishable by the fact that flexion of this joint causes pain, and there may be heat, swelling, or knuckling over, through tendon shortening.

Treatment for Navicular Disease.

Very little can be done beyond that of keeping the toe short, and paying careful attention to the shoeing.

Neurectomy—*i.e.* the removal of a portion of the nerves of sensation supplying the diseased foot, is a good deal practised.

CHAPTER XIII

RECIPES—DRUGS : THEIR DOSES, USES, ETC.

INTRODUCTION.—Medicines can be given either by the mouth, beneath the skin, injected directly into a vein, or as clysters into the rectum, *i.e.* the lower end of the bowel. Absorption, to some extent, may take place through the skin. Inhalation is another method.

When medicines are injected beneath the skin, or into a vein, very powerful drugs (alkaloids) are employed, consequently minute doses are used. As a rule, the effects of giving drugs in this manner are well marked, the action being speedier than in other cases. Some medicines act locally, *i.e.* at a given part; others have a special action upon certain organs, heart, kidneys, liver, bowels, etc.; while the activity of certain other drugs is chiefly upon the system in a general way.

A *draught* should be quite up to half a pint of liquid, but never exceed a quart. The latter quantity should rarely be given.

A *bolus* or *ball* ought not to exceed an ounce in weight. It should be neither too hard nor too soft. As a rule, balls are wrapped in grease-proof paper—gelatine capsules—or ordinary white paper. They are generally about $2\frac{3}{4}$ inches in length, and somewhat the thickness of the first finger. In shape they may be conical (best) or cylindrical; less frequently egg-shaped (bad).

Powders can be mixed with the food, given in a bran mash, or as a drench. Soluble powders, such as powdered nitrate and chlorate of potash, can be added to the animal's drinking-water. Arsenic, in the form of Fowler's solution, may be given in the same manner. Mixtures generally require shaking before using.

Electuaries are semi-solid substances, intended for smearing inside the cheeks, or over the molar teeth.

Suppositories are intended for insertion into the rectum, and pessaries for the vagina.

Alterative Condition Powder.

Recipe.—Powdered capsicum, 1 drachm; bicarbonate of soda, 3 ounces; precipitated sulphur, 3 ounces; nitrate of potash, 6 drachms; powdered gentian, $4\frac{1}{2}$ ounces; mix and divide equally into one dozen powders. Directions: give one night and morning in food.

ANODYNES are medicines given to relieve pain.

NAME OF DRUG.	HOW TO BE GIVEN.	DOSE.
Laudanum (Tr. Opium).	In water or clyster.	1 to 3 ounces.
Powdered Opium.	In bolus or powder.	1 to 2 drachms.

ANTI-DIARRHŒA MIXTURE. — *Recipe.* — Laudanum, 3 ounces; tincture of catechu, 6 ounces; aromatic spirits of ammonia, $1\frac{1}{2}$ ounces; spirit of camphor, $1\frac{1}{2}$ ounces; spirit of chloroform, $1\frac{1}{2}$ ounces; chlorodyne, 3 ounces; peppermint-water added, $3\frac{1}{2}$ ounces; mix and make 1 pint of liquid. Dose, four tablespoonfuls every four or six hours in 1 pint of arrowroot or wheaten gruel.

ANTISEPTICS are drugs which prevent putrefaction. Carbolic acid, formalin, and chloride of zinc, as well as corrosive sublimate, are amongst the most important. They are used for keeping wounds sweet, as they destroy the germs causing decay. (See Liniments and Lotions.)

DIURETICS.—These are agents which act upon the kidneys, causing an increased discharge of urine.

The commonest diuretics are as follows:—

NAME OF DRUG.	HOW GIVEN.	DOSE.
Powdered nitre.	In water or ball.	$\frac{1}{2}$ ounce.
Sweet spirit of nitre.	In draught.	1 to 3 ounces.
Oil of turpentine.	In draught.	$\frac{1}{2}$ to 1 ounce.
Chlorate of potash.	In drinking-water.	$\frac{1}{2}$ ounce.

NAME OF DRUG.	HOW GIVEN.	DOSE.
Powdered foxglove.	In powder or ball.	10 to 30 grains.
Tincture of foxglove.	In the form of a draught.	2 to 4 drachms.
Powdered resin.	Powder or ball.	$\frac{1}{2}$ to 1 ounce.

LOTION FOR SPRAINS.—*Recipe.*—Powdered nitre and sal-ammoniac, $2\frac{1}{2}$ ounces of each; cold water, 1 pint.

Directions.—Dip cloths in the liquid, and apply to the inflamed or sprained part.

LOTION FOR COLLAR AND SADDLE GALLS.—*Recipe.*—Corrosive sublimate, 36 grains; water, 1 pint; mix and apply to the sores twice a day, using a piece of sponge.

LAXATIVES are medicines which act mildly upon the bowels.

NAME OF DRUG.	HOW TO BE GIVEN.	DOSE.
Castor-oil.	As a draught (warm).	$\frac{1}{2}$ to 1 pint.
Linseed-oil.	In a bran mash or draught.	2 ounces to $1\frac{1}{2}$ pints.
Barbadoes and Cape aloes.	In a bolus.	2 drachms.

This last oil acts very well as a laxative in fevers, if it is given in doses of six tablespoonfuls, with a nice soft bran mash, night and morning. It never purges, and is always extremely safe as a mild bowel-opener.

LAXATIVE BALL.—*Recipe.*—Powdered Barba-

does aloes, 1 drachm; powdered sulphate of iron, 1 drachm; powdered ginger, $\frac{1}{2}$ ounce; linseed meal, 2 drachms; treacle sufficient to form one ball; mix and give. Repeat when thought fit. A bran mash and warm water will help this ball to act more quickly.

LINIMENTS are intended for external use. As a rule, they require rubbing into the affected part.

Some are used for sprains, bruises, rheumatism, etc., and others for wounds.

WOUND LINIMENT.—*Recipe.*—Carbolic acid crystals, 1 ounce; Russian glycerine, 8 ounces. Mix or add the carbolic acid to the warm glycerine, and heat gently together in a jar surrounded by hot water.

Directions.—Apply a little, using tow and a bandage if possible.

STIMULANTS.—These are agents which excite the vital powers, increasing the beating of the heart, and giving an impulse to the circulation.

NAME OF DRUG.	HOW GIVEN.	DOSE.
Brandy.	In water or milk.	4 to 8 ounces.
Gin.	With ginger and water.	$\frac{1}{4}$ pint.
Whisky.	With ginger and water.	$\frac{1}{4}$ pint.
Rectified spirit of wine.	In water or mixture.	4 ounces.
Sweet spirit of nitre.	In water or mixture.	1 to 2 ounces.

NAME OF DRUG.	HOW GIVEN.	DOSE.
Sulphuric ether.	In water or mixture.	1 to 2 ounces.
Carbonate of ammonia (stone ammonia).	In water.	$\frac{1}{4}$ to $\frac{1}{2}$ ounce.
Aromatic spirit of ammonia (sal-volatile).	In water.	$\frac{1}{2}$ to 1 ounce.

STIMULATING DRAUGHT. — *Recipe.* — Powdered carbonate of ammonia, $\frac{1}{2}$ ounce; tincture of capsicum, tincture of ginger, of each $\frac{1}{2}$ ounce; sweet spirit of nitre, 1 ounce; water, 1 pint; mix and give the whole draught at once. Useful in slight chills.

TONICS.—Medicines which improve the appetite by quickening the vital powers. They are useful whenever an animal has been pulled down through disease, such as influenza, diarrhœa, etc. Quinine in 30-grain doses.

HOOF OINTMENT. — *Recipe.* — Russian tallow, turpentine, vaseline, yellow wax, olive-oil — of each equal parts; mix and melt.

Uses.—For contracted and brittle feet.

IODINE OINTMENT.—*Recipe.*—Powdered iodine, 2 drachms; powdered iodide of potash, 1 drachm; lanolin, 1 ounce; vaseline, 1 ounce; mix thoroughly.

Use.—To reduce chronic swellings.

DOMESTIC MEASURING UTENSILS.—A teaspoon-

ful=1 fluid drachm; a dessert-spoonful=2 fluid drachms; tablespoonful= $\frac{1}{2}$ ounce (fluid); a wine-glassful=from 2 to $2\frac{1}{2}$ ounces (fluid); teacupful =from 5 to 7 ounces (fluid); breakfast-cup=8 ounces (fluid); ordinary tumbler=8 to 10 fluid ounces; a pint bottle=13 fluid ounces; a quart bottle=27 fluid ounces.

It must be understood that these are merely approximations; therefore the writer recommends the use, whenever possible, of a graduated measuring glass, which may be had for a trifling cost.

List of Drugs and Useful Appliances.

Graduated quart glass jug.

A pint champagne bottle.

A quart champagne bottle.

A four-ounce graduated measuring glass.

A pair of scales, lancet, seton needle, mortar and pestle.

Tow. Three sets of flannel bandages.

A packet of assorted suture (sewing) needles, both curved and straight. A two-bladed fleam.

Metallic and silver suture wire. A pair of curved trimming scissors.

Some linen or cotton. Lint.

Thermometer and clinical thermometer.

Some bottles, plain and stoppered.

8 ounces of sweet spirit of nitre. 2 ounces of tincture of capsicums.

4 ounces of concentrated acetate of ammonia.

$\frac{1}{4}$ lb. of carbonate of ammonia.

4 ounces of carbolic acid.

6 ounces of laudanum. 6 ounces of chlorodyne.

$\frac{1}{2}$ lb. each of powdered gentian, calumba, and ginger.

6 ounces of powdered nitre. 6 ounces of aloes. Bottle of Jeye's fluid.

$\frac{1}{2}$ lb. of powdered Barbadoes aloes. 2 lbs. of powdered linseed.

A pint of brandy. A pint of turpentine.

8 ounces of sulphuric ether. 4 ounces of sugar of lead, and the same quantity of sulphate of zinc. $\frac{1}{2}$ lb. of powdered sulphate of iron. 2 quarts of linseed-oil.

$\frac{1}{2}$ lb. of bicarbonate of potash and soda.

Bottle of glycerine.

1 lb. tin of mustard.

CHAPTER XIV

WOUNDS AND THEIR TREATMENT

THE horse is a very frequent sufferer from injuries of this class, varying from mere excoriations to extensive lacerations, sometimes accompanied by the opening up of a joint, or, it may be, the penetration of some vital organ. It is usual to speak of wounds as 'incised' or clean cut, 'lacerated' or torn, 'contused,' *i.e.* a wound accompanied by considerable bruising of the surrounding tissue, 'punctured,' etc. The size of a wound is not necessarily any criterion as regards the ultimate issue, the situation often being of greater significance. Trifling wounds are just as likely to lead to an unfavourable issue as are those which are extensive; in fact, one often finds that an apparently trivial wound leads to a fatal issue. For instance, saddle and collar galls and punctured wounds in the region of the feet, are frequently followed by Tetanus, or lockjaw, the result of infection with the organisms of this disease. Speaking in a general sense, punctured wounds are those most to be dreaded, more

especially if in the neighbourhood of a joint or a cavity, such as the cranial, thorax or chest, abdomen, etc., there being a danger of injury to some important organ, or of laceration of blood-vessels, etc. Subcutaneous wounds are those in which there is a laceration beneath the skin, and these are occasionally accompanied by a fracture, so that a good deal of care is necessary in estimating the amount of damage which may have been done. All wounds in the region of the feet demand skilful treatment, so that any injuries of this kind should be left in the hands of a veterinary surgeon. Lacerations about the eyes require very careful adjustment and treatment, because inflammation of this part is generally an accompaniment, and, unless properly attended to, may lead to the sight becoming permanently damaged. Wounds at the back of the limbs below the knee and hock frequently lead to division of the tendons, but divided tendons may become reunited, provided that suitable treatment is adopted.

Treatment and General Management of Wounds.

As soon as possible after the infliction of the injury the wound should be carefully examined, with a view to ascertaining the extent of the

damage done, but it is not advisable, as a rule, to probe a wound, because this may increase the risk of infection or extend the injury. If there is severe bleeding, it must be controlled, and there are several methods of doing this: the application of cold water is excellent, and, if this fails, the application of hot and cold water alternately can be tried. Pressure, by the application of a bandage on the side nearest the heart, is another method of restraining bleeding; but if a large vessel is torn and accessible, it is advisable to tie a ligature above and below the tear, and then to divide the vessel between the ligature. In course of time collateral circulation is opened up, and the area supplied by the large vessel is restored by the substituted circulation. Mere division of the vessel is sometimes sufficient to stop hæmorrhage; this is brought about by contraction of the middle muscular coat of the artery. Bleeding from a vein is of less significance than that from an artery, still less from capillaries. It must be understood that a horse can stand the loss of a large amount of blood, a gallon or six quarts not being at all excessive. Strong Tincture of Steel applied to the wound will often serve to arrest the bleeding, or the part may be touched with the hot iron, and sealed up in this manner. In every case, however, it is not an advantage

to check the bleeding. The wound must be thoroughly cleansed, and all particles of sand, etc., removed from it, as such material not only serves to irritate the tissues, but is liable to act as a medium for the introduction of specific organisms. When washing a wound it is advisable to use some antiseptic, the principal ones being:—

Formalin.	Chinosol.
Creolin.	Corrosive sublimate,
Carbolic acid.	etc.

All these must, of course, be employed in solution with water, and sufficiently diluted not to irritate the wound. After a thorough cleansing, the hair at, and immediately around, the injury must be shaved off, and the wound, if it is of such a nature that it can be stitched, should be sewed up; but care must be taken not to adjust a wound too tightly, because the swelling that subsequently comes on may tear the stitches out; in fact, if swelling is already present it will be well to delay suturing the wound until the swelling has partially subsided. An ordinary needle can be employed for sewing up a wound, but special surgical needles are sold, straight, curved, or half-curved, and in various sizes. The best materials for suturing a wound are plated copper wire, chromic silk, catgut, carbolic silk, or even

ordinary twine; the last named should be well boiled before use. Each stitch must be taken separately and then tied off, continuous sewing being seldom employed for external wounds; the separated stitches are called 'interrupted' sutures. When a wound is situated where there is a mass of muscle (flesh), as upon the quarters, and it is deeply seated, ordinary stitches will not do, because the tension on them is too great. It is necessary, therefore, to employ a means of uniform pressure upon the sound tissue, say an inch or two on either side of the wound. This can be done by inserting the stitches and then fixing the free ends to pieces of wood or buttons resting on the sound tissues, the buttons being adjusted in accordance with circumstances. In every case it is expedient to leave for drainage an opening, which should be at the lowest part of the injury. Drainage tubes are not of much service in veterinary practice. If preferred, pins can be used instead of wire. They are passed through the sound skin on either side of the wound, and, when the points have been clipped off, retained in position by twisted horse-hair, or, what is still better, stout silk thread, wound in figures of eight around the free ends. The size of the pins will necessarily vary in accordance with the purposes for which they are required.

If a wound is so situated that the animal can either rub or bite the injured part, measures of restraint must be employed, to prevent further damage being done. If a wound is old, and putrefaction has begun, a powerful antiseptic must be used to bring the flesh back into a healthy condition; and for this purpose there is nothing superior to a strong alcoholic solution of zinc chloride, the strength of which should vary from twenty to forty grains to each ounce of methylated spirit. The terms 'indolent' or 'chronic' are applied to wounds when they are tardy in healing; and this is due to a defective granulating surface at the bottom of a wound, from which healing takes place. Deep-seated abscesses often discharge their contents by one or more small openings upon the surface; these channels are called 'sinuses,' but they are quite useless for effecting a cure, unless they have been converted into simple wounds. Such a state of affairs is present in fistula of the withers, quittor of the foot, and poll-evil.

The following wounds call for special methods of treatment, and, if it can be obtained, the services of a veterinary surgeon:—Broken knees; wounds over, or in the immediate vicinity of, joints; injuries to the withers, to the poll, to the breast, to the chest, etc. If professional aid

cannot be obtained, one should, in the case of broken knees or of wounds in joints, either place the animal in slings, or fasten it so that it cannot lie down, for flexion of the joint is most unfavourable towards healing, and the speedier the healing, the better the ultimate issue. Wounds of this kind must never be sewed up. After the parts have been cleansed they must be treated in accordance with the strictest antiseptic measures that can be adopted in veterinary practice. (The writer would like to remark that there is a vast difference between the application of antiseptic principles in the case of men and their application in the case of animals.) Following upon the cleansing of the wound and all parts surrounding it, it is advisable to apply a pad of antiseptic wool, dipped in a solution of corrosive sublimate, three grains to the ounce of water, or, what is equally useful, a solution of Chinosol. If the joint has been opened, the former antiseptic is preferable, because it will assist in coagulating the synovia or joint oil, at the same time rendering the parts aseptic; this dressing should then be surrounded with carbolic tow and a piece of gutta-percha silk, followed by a linen bandage, over which a flannel one is applied. The dressing should be removed once a day, say in the evening, and the skin bordering upon the wound washed,

but not the wound itself, it being a great mistake to be continually washing wounds. This delays their healing, and frequently leads to the destruction of a considerable amount of skin in the area of the injury. In the case of broken knees, etc., the wound should not be permanently uncovered until a granulating surface has reached to the level of the surrounding skin, when the bandages may be removed, and the drying action of the air will assist to complete the healing. In veterinary practice what may be termed the 'open-air treatment' of wounds is frequently employed, and the results are generally fairly satisfactory. The desiccation of the discharge upon the surface seals up the wound and acts as a barrier against the admission of septic organisms. One of the most objectionable results from deep-seated injuries to the knees is that of permanent stiffening or Anchylosis, but this does not occur in ordinary cases of broken knee, which vary from that of a mere blemish, to one producing fracture of the carpal bones.

CHAPTER XV

FRACTURES

THE horse is a frequent sufferer from injuries of this nature, both whilst at work and at pasture; in fact, a considerable proportion of fractures met with in practice are those occurring in horses turned out to graze; and, unless an agistor exercises discretion in turning horses out sent to graze, he will render himself liable, should an accident (such as that arising from one vicious horse kicking another) occur to any of the animals. Any bone may be fractured, or fractured and dislocated, but the commonest injuries are those in connection with the limbs. All fractures of the vertebræ, as in the neck, and along the back and loins, usually demand, if the injury is through the body of the bone, immediate destruction of the animal. Disease predisposes a bone to fracture.

A fracture is spoken of as being 'simple' when the bone is merely broken across, 'compound' when there is a wound leading down to the injury, 'comminuted' when the bone is broken into a number of fragments, and 'compound commin-

uted' when there is a wound as well as the last-named injury. A fracture may be either transverse, oblique, or longitudinal; frequently it is a combination of the three. An oblique fracture is the one that appears to be the most amenable to treatment in veterinary practice, but most fractures in the horse are very difficult to deal with, owing to the trouble there is in keeping the parts at rest. Fractures through joints call for immediate destruction of the animal. A very important feature in connection with many fractures in the horse is the total absence of one of the cardinal signs of a fractured bone, namely 'crepitation'; and this is the reason why the veterinarian so often experiences a difficulty in giving a positive opinion as to the presence or absence of fracture in a particular bone, although he may have had experience of similar injuries. This remark is particularly applicable when the bone is situated in a sheltered position, and manipulation is difficult or impossible to carry out. The pelvic bone, femur, etc., afford good examples. When there is a wound in addition to a fracture, the injury is necessarily more complicated to treat; and when a vital part, the brain or the lung, lies in juxtaposition to the fracture, the gravity of the injury is proportionately increased, for inflammation of the brain, or pleurisy, may set in.

The Positive Signs of Fracture

are crepitation, pain on manipulation, an alteration (due to displacement) in the shape of the part. As a rule, a considerable amount of swelling comes on immediately after the injury, but, if the part is freely fomented with hot water, swelling is kept back and diagnosis facilitated. In the horse, however, any, or the whole, of the foregoing signs may be absent. In fact, in the majority of instances they are. When crepitation can be detected the diagnosis becomes a certainty. A bone may be fractured, yet no displacement occur at the time; hence the reason why horses sometimes become suddenly lame, through the part becoming displaced weeks after the original injury occurred. It is usual to speak of such as a 'deferred' fracture.

In some cases of fracture in the horse displacement is an impossibility, as, for instance, when the pedal-bone is fractured, the hoof preventing displacement from taking place; and the same thing happens if the coronary-bone be broken. It is far more difficult to reunite a broken bone in a horse than in cattle, where fractures, however severe, will be found to mend readily under favourable circumstances.

The Union of a Fractured Bone.

When a bone is broken, it is soldered together by new bone formed around, within, and between the broken ends. The skin covering the bone, that is, the periosteum, plays a most important part in the reparatory process, assisting to lay down a permanent bond of union, termed the callus, which either encases the broken ends, or forms between them. In foals and young colts fractures are more easily mended than in horses, owing to the greater quantity of reparatory material. In ordinary cases, from six to eight weeks may be set down as the average period for the repair of a bone, but so much depends upon circumstances that no definite time can be fixed. The following are some of the commonest fractures met with in the horse:—

(a) The Fore-limb.

Fracture of the Shoulder-Blade or Scapula.—This injury, sometimes termed ‘Split Shoulder,’ though not frequent, occasionally happens, and, unless there is displacement, is somewhat difficult to diagnose. Any portion of the bone may be broken, but the parts most often broken are the coracoid process and the neck of the scapula, fracture on the latter part sometimes resulting

from decay of the bone. In other instances the spine or longitudinal dividing ridge has a portion broken off it at the lower end.

Fracture of the Humerus or Arm.—Unless crepitation can be detected, this is a very difficult injury to locate. The chief cause of it is impaction, such as may happen when a horse runs away and comes into collision with some object, such as a gate, etc. The shaft of the bone or its condyles are the parts usually injured, and treatment is seldom of much use.

Fracture of the Elbow.—The point of the elbow, being somewhat prominent, is occasionally fractured, the summit of the ulna being broken off, giving rise to symptoms very like those of the so-called ‘dropped’ elbow. The bone is usually broken completely across, and as a rule it is not a difficult matter to detect this injury, there being crepitation and severe lameness, with or without displacement. The owner should seek professional advice at once in an accident of this class, for, although the horse does well in some cases, in others it has to be destroyed.

Fracture of the Bones of the Knee.—It may be said that almost the sole cause of this is through falling upon the knee, but it is only in very severe injuries that the knee-bones are broken. The fracture is in every case accompanied by a so-called

'broken' knee, in which the skin and structures lying beneath are all torn. It is a difficult matter to detect a breakage in these small bones, and the best plan is to obtain professional advice in all injuries to the knees.

Fracture of the Canon or large Metacarpal Bone.—This injury is usually the result of a kick from another horse, and would appear to be the commonest among foals, the result of a kick from their dam. It is usually of a compound nature, and as there is no flesh beneath the skin, any attempt at repair is seldom of much use, and the writer always recommends immediate destruction, although union is said to have occurred in some cases.

Split Pastern, or Fracture of the First Phalanx.—This is by far the commonest fracture in the fore-limbs of a horse, and it is nearly always the result of concussion. It is surprising what an apparently trifling circumstance will lead to fracture of the pastern. An oblique split is the commonest, but it is frequently comminuted; if so, destruction is recommended, although not absolutely imperative, provided that the animal can be placed under favourable conditions for repair of injury. The signs are sudden lameness, increased heat, swelling, pain on manipulation, with or without crepitation. If a frac-

ture is suspected, although the diagnosis is uncertain, the best plan is to treat as if there were a fracture. This can be done, after the swelling has subsided, by putting on a plaster of Paris bandage, so as to maintain the parts in apposition, and then giving the animal three months' rest in the slings. Some practitioners simply blister the pastern, and then turn the animal out at pasture, but this is not a wise procedure; in fact, it would be quite wrong in a well-marked case of split pastern. It is impossible for the bone to unite if any movement is allowed to exist between the broken ends. This has been clearly demonstrated in numerous cases.

Fracture of the Coronary, Pedal, and Navicular Bones.—Sometimes, on examination after death, one or other of the foregoing bones is found to be fractured, but there is nothing to indicate the fracture during life. Disease of the bones is, doubtless, often a cause of the fracture. Navicular disease favours fracture of the navicular-bone—a small bone situated at the back of the coronopedal articulation—and a large side-bone may possibly predispose to a fracture through the wing of the pedal-bone. All these injuries are incurable, so that it is advisable to have the animal destroyed if their presence is suspected.

Fractures of the Hind Limb.

Owing to the severe strains thrown upon bones and joints of the hind-limbs, sprains and fractures, etc., are of frequent occurrence, but the commonest fracture, namely that of the tibia, or second thigh, is not produced in this manner, being nearly always the result of a kick from another horse. The hind canon and pastern, as well as the bones below, are very seldom broken, or certainly less often, than are corresponding parts in the fore-limb. The pelvis is occasionally fractured, but the signs of this are usually of an obscure nature, unless the fracture be one of the external angle of the ilium, or haunch. The point of this is occasionally knocked off, when the animal, in passing through the door, comes in contact with the door-post. In the language of horsemen, the hip is said to be 'down,' or the animal 'hip-shot.' The injury is marked by a flatness, or alteration in the shape of the haunch. In addition to this, there is lameness, which lasts from three to eight weeks. In other fractures of the pelvis, such as that of the shaft of the ilium, internal hæmorrhage occasionally results, the broken ends of the bones penetrating the iliac artery. The hæmorrhage is of a fatal character. As all pelvic fractures are difficult for

the amateur to understand, there is no need to enter into a description; moreover, their treatment is naturally based upon anatomical facts, with which it is impossible for the non-professional to become acquainted.

Fracture of Femur and Fracture of the Tibia.

The sheltered position of the femur and its enormous strength are to a large extent favourable towards its freedom from injury; nevertheless it is occasionally the seat of fracture, usually around the neck of the bone or in the projection called the trochanter. In most injuries of this nature there is marked shortening of the limb. The chief cause of such an injury is violent muscular contraction, as when a horse struggles to get its leg out of a hole. It may be regarded as a hopeless injury, hence the necessity for destruction.

Fracture of the tibia may or may not be accompanied by displacement. If there is displacement, the chances are that the fractured particles of bone will have pierced the skin; and the sooner the horse is destroyed the better. A transverse fracture is equally hopeless, but an oblique fracture, unaccompanied by a wound in the skin, and without displacement, makes a fairly hopeful

case; yet even in a case of this nature the majority of veterinary surgeons are in favour of destruction, and rightly so, if there is likely to be—as there generally is—difficulty experienced in keeping the parts adjusted. Of course, in every case it is necessary to sling the animal, and, should displacement occur after adjustment of the broken bone, it will be advisable to destroy. It is usually the lower end of the tibia, or second thigh, that is fractured, and, in the majority of cases, the kick is upon the inner aspect. If the bone is broken completely across, there is little beyond skin as a covering over it, and the limb, below the injury, swings about in a useless manner.

In all cases of 'suspected' fracture of the tibia, it is advisable to treat as though the diagnosis were a certainty, thus rendering the chances of displacement less likely to occur. The application of an adhesive bandage, or one composed of plaster of Paris, will be suitable for such purposes.

Fractures of the Bones of the Hock.

It is not often that these bones are the seat of fracture; the position and the compact nature of the joint rendering them comparatively free from such injury. The point of the hock is that

most liable to fracture, and crepitation may be present. Fracture of the astragalus, that is, the large screw-like bone of the hock, has been produced by an animal turning suddenly round, but the probabilities are, in this case, that the bone had become brittle through some inappreciable cause.

CHAPTER XVI

DISEASES AFFECTING THE BONES AND
JOINTS, ETC.

INTRODUCTION.—The horse, owing to the nature of his work, is particularly liable to suffer from diseases and injuries in connection with the bones and joints; the liability being greatest during the first two or three years of its life, because the various structures entering into formation of the joints, etc., have not become fully developed. Some parts of the osseous system, such as the hock-joint, the stifle-joint, fetlock-joint, etc., are particularly liable to become implicated in disease, and this, when once it is established, may destroy the future utility of the animal. The structures entering into the formation of a joint are bones, ligaments, and cartilage, together with the synovial membrane, or structure for lubricating the joint. Where tendons play over a joint, there is usually interposed between the joint a sheath or lubricating surface to facilitate free play of the tendon. Both the tendon sheaths and the capsular ligaments of a joint are very commonly im-

plicated in disease, their over-distension constituting the so-called bursal enlargements. These swellings are almost always of a painless nature, and their chief detriment is that of unsightliness. They are particularly common in the neighbourhood of the fetlock- and hock-joints, being popularly known to horsemen under the title of Wind-gall, Bog-spavin, etc. Horses that have done a considerable amount of hard work, and more especially those that have been prematurely worked, are particularly liable to develop these bursal enlargements. One of the most frequent swellings of this kind is that known under the title of

Thoropin.

This is a distension situated at the back of the hock immediately above the point of the latter, and the name is derived from the fact that when the swelling is pressed either on the outer or the inner side it bulges in the direction of the pressure; in other words, the swelling can be pressed through from side to side. Although it very rarely produces lameness, nearly all veterinary surgeons look upon it as constituting unsoundness, and most horsemen, recognising its presence, usually ask for a reduction in the purchase price of the animal. The writer does not attach a

great deal of importance to its presence, more especially if the animal has turned five years old, and has hocks of good conformation. One or both hocks may be affected with Thoropin, but if both are affected it certainly detracts more from the animal's value. A horse that has been purchased with a warranty of 'general' soundness can be returned to the vendor on the ground of unsoundness if this defect is discovered within, say, a few days, because Thoropin usually comes on gradually, its sudden development being certainly exceptional. As previously stated, it does not in any way interfere with the animal's utility, therefore any one contemplating the purchase of a horse, sound and useful in other respects, would, in my opinion, be ill-advised to reject the animal simply because Thoropin is present.

Regarding the treatment and measures to be adopted in this abnormal condition, very little of a satisfactory nature can be done beyond applying continuous pressure to the swelling, for which purpose an elastic bandage or a specially designed truss is employed. The chief objection to these is the long time that they have to be used before they do very much good.

The simplest method of dealing with the complaint is to blister the part, or—and this is quite

as efficacious—to fire it in lines and blister it afterwards. Another plan adopted is that of removing the contents of the swelling either by an aspirator, or by lancing. Aseptic precautions should be taken, and the cavity washed out with a solution of iodine, or some other substance capable of arresting excessive secretion, but this is the veterinary surgeon's work.

Bog-Spavin.

Most horsemen are familiar with this distended condition of the hock-joint. The swelling comes from an overfulness of the true hock-joint, and is most noticeable (especially in young horses) on the morning following a hard day's work. Although the term is rather ambiguous, implying, as it might, any swollen condition of the hock, either of an acute or chronic nature, it is mostly reserved for a soft, non-inflammatory, puffy condition of the hock-joint in general. A swelling of this nature hardly ever causes lameness, but if excessive, the tension it produces diminishes the proper flexion and extension of the hock-joint. Under these circumstances it, necessarily, constitutes unsoundness. The most economical method of dealing with swellings of this kind is to fire them, blister them, or to carry out a combination of these methods. Some veterinary

surgeons puncture the swelling and remove the contents with a specially designed aspirator.

Various other Bursal Enlargements.

Sometimes very large swellings of this nature are situated just above and in front of the knee, at the back of the knee, at the fetlock, either in the fore or the hind limbs, likewise at the point of the elbow. These swellings vary in their size, form, etc., in accordance with the tendon, sheath, bursa, etc., that is over-distended. In all the situations named they are exceedingly unsightly, and very few veterinary surgeons would think of passing as sound a horse thus affected. One of the most important swellings of this nature is that known under the term of

Capped Elbow,

which is exceedingly common, and situated at the point of the elbow, there being a bursa in this situation. It is the result of a bruise to this structure, and usually results from the heel of the shoe pressing upon it during lying and rising, but sometimes occurs from other causes. It is surprising how quickly capped elbow may be produced, a single night being sufficient, in some cases, to develop a large swelling. As a rule, this

abnormal condition is the outcome of direct and continuous pressure, and the result is the production of a tumour of a fibroid nature at the point of the elbow, varying in size from a walnut to that of a child's head. When once a growth of this nature becomes established, nothing short of surgical measures is of any service for its removal, and the writer advises any one valuing the appearance of his horse to consult a veterinary surgeon as soon as possible. Various methods of treatment have been adopted, but prevention is the most sensible that the owner can adopt. See to the shoeing of the horse, have the heels shortened, more especially the inner one. Pads to keep the shoe from pressing against the elbow are sold, and can be obtained from almost any saddler. When the skin becomes broken and the part has been infected, a suppurating sore results; the part should then be dressed daily with a lotion, composed of the following:—

Tincture of iodine,	.	.	1 oz.
Tincture of arnica,	.	.	1 oz.
Glycerine,	.	.	3 oz.
Pure carbolic acid,	.	.	1 oz.
Water,	.	.	1 pint.

Mix, and apply to the swelling two or three times a day.

Splint.

Amongst all the diseases affecting the bones of the horse, splint stands pre-eminent. Even the stable-boy acquires sufficient knowledge to point out the defect, and, as a rule, he is not slow to display his knowledge, more especially if the owner of a recently purchased animal shows himself to know little about the horse. However, sometimes a little knowledge becomes a dangerous thing, as the writer has frequently experienced. He remembers how a horsekeeper in charge of a district council's horses asked him whether he had ever seen a foal born with two large splints. Curiosity being aroused, the writer went to see the foal, and found that what the horsekeeper mistook for splints were the buttons or lower ends of the splint-bones, which in all foals are exceedingly prominent. This is by no means the first time that the uninitiated have been misled.

Splint may be defined as a variable-sized bony enlargement, situated upon the canon-bone, or between this and the splint-bones of the forelimbs. It is the result of a circumscribed inflammation of the bone and its covering (*Ostitis* and *Periostitis*). The splint deposit is the legacy of this inflammation. There may be a new

growth of bone no larger than that of a pea, or there may be a whole chain of growths, varying in their size and form, down the upper and posterior part of the canon-bone, usually in the upper third of it, but by no means confined to that part; in fact, splint sometimes appears on the inner or upon the outer side of the bone, more rarely upon the hind canon-bone. Its situation has an important bearing, in relation not only to the utility of the animal, but also to the commercial value. Strictly speaking, all forms of splint constitute unsoundness, but veterinary surgeons hold very different views regarding it; and many horse-dealers will buy a horse, provided that the splint is well down the canon-bone, and the animal good in other respects. The chief difficulty, however, is the uncertainty as to how long an animal may continue to go sound; hence it is a veterinary surgeon's duty to reject every horse having this defect, no matter where the splint be situated, high or low, large or small, or whether the horse is required for slow or for fast work. A remarkable feature in connection with splint is that it sometimes disappears spontaneously, and this reabsorption of new bony material is well known to many veterinarians, thus dispelling the erroneous maxim, 'Once bone, always bone.' A splint situated close

to the knee is the worst, because, being in juxtaposition to the tendons and ligaments, it frequently leads to intractable lameness. It is very difficult, and in a large number of cases impossible, to detect minute splints in this part, and there is no doubt that many obscure cases of lameness are ascribable to the disease.

CAUSES.—Among the many agencies through which splint may come, two stand out prominently. These are youth and unequal distribution of pressure. In youth the disease is favoured by hereditary predisposition. Almost every one knows that a young horse is much more likely to develop splint than is one that is fully matured; and when colts are allowed to run at grass, with their feet growing out of all shape and form, the pressure upon the upper part of the limb becomes unequally distributed, and undue strain is thrown upon parts below the knee, etc., predisposing them to inflammatory changes. Almost any form of external injury either directly or indirectly applied to the canon-bone will produce a local inflammation, and the chances are that splint will result, the deposition of bony material being Nature's method of repair, the weakened part being strengthened in this manner.

THE DETECTION OF SPLINT.—Ordinary forms of splint are readily detected by passing the hand

down the back of the leg, from the knee to the fetlock, close against the tendons and bones, when one or several bony prominences will be felt lying beneath the skin. Sometimes splint, especially when situated on the front or side of the canon, is so large that it can not only be felt, but seen. The commonest seat of the disease is three or four inches below the knee, in the channel formed by the splint-bones on either side. As previously stated, care must be taken not to confuse the lower ends or buttons of splint-bones with the diseased condition now under consideration. By comparing the inner and outer prominences one should be easily able to satisfy himself as to the presence or absence of splint.

SPLINT LAMENESS.—In the majority of instances splint does not produce lameness, unless situated close to the knee, constituting the so-called ‘knee-splints.’ During its formative stage, however, it may do so, and is then accompanied by increased heat and pain, and swelling, over the region implicated in the disease. As in other lamenesses, a horse trotted on soft ground usually gives little evidence of lameness, whereas on hard ground it becomes palpably lame. During the walk it may go fairly sound, the lameness increasing with the pace.

TREATMENT.—There are various methods

adopted for the relief or cure of splint-lameness, many of which are of no use at all. The first essential is rest, and, if the splint is forming, the following cooling lotion should be applied to the part:—

Ammonium chloride, . . .	2 oz.
Nitrate of potash, . . .	2 oz.
Tincture of arnica, . . .	1 oz.
Water,	1 pint.

A linen bandage to be soaked in this lotion three or four times a day, and a soft bandage applied over the first. If the splint has formed and the horse is lame, the best way is to fire the splint in points, and then to blister it, giving the horse six weeks' rest. If desired, the splint can be removed, but this is a matter resting with the veterinary surgeon. Intractable forms of splint-lameness are often curable by Median Neurotomy, *i.e.* division of the Median nerve, together with excision of about half an inch of the nerve. A simpler method of treatment is the daily application of blistering ointment, such as Red Blistering Ointment.

Sore Shins.

This diseased condition is chiefly seen in race-horses, and consists of an inflammation of the periosteum or fibrous membrane covering the

large metacarpal or canon-bone. One or both limbs may be affected, but usually only one, and the soreness is brought on by severe galloping. The symptoms indicative of this complaint are painful swelling over the canon-bone, causing a considerable degree of constitutional disturbance; sometimes the swelling runs on to suppuration and the skin breaks, whereas in other cases the inflammation gradually subsides, and the structures are restored to their former functional state. The disease is said never to occur in aged or old horses, but this is questionable, because there are other causes of sore shins than the severe galloping of young horses.

TREATMENT.—The leg should be placed in a pailful of warm water, and freely fomented several times a day; afterwards, the cooling lotion recommended under the heading of ‘Splint’ should be applied. Better still is the lotion below:—

Laudanum,	2 oz.
Goulard’s Water,	2 oz.
Water,	12 oz.

Soak a linen bandage in this fluid, and apply several times a day. As a rule, it will be much more economical and far more satisfactory to have professional aid.

Curb.

This disease, affecting the back and lower part of the hock, consists of a variably-sized swelling which makes its appearance about two or three inches below the point of the hock, lying in the same straight line. It is due to a sprain of the calcaneo-cuboid ligament, which passes from the back of the hock and becomes attached to the metatarsals, and to the cuboid and scaphoid bones. This sprained condition leads to a permanent thickening of the ligament, which shows itself as a convex swelling, particularly noticeable when viewed in profile. All classes of horses are liable to be affected with curb, but it is of much greater significance in horses required for fast work than in those required for slow draught. A curb varies considerably in size, some being so small as to be hardly noticeable, and one or both hocks may be the seat of this diseased condition. Hereditary predisposition is believed to play a part in the production of curb, and there is no doubt that it does so in the conformation of the hocks. Nearly all veterinary surgeons—to which there are many exceptions—are agreed that over-bent or stickle-shaped hocks are those most liable to become curby. In every instance curb constitutes unsoundness, but it does not often cause

lameness, unless during the formative stage. When lameness is present, it usually lasts for several weeks, and is observed mostly in young horses. As previously stated, the best method to detect a curb is to view the limb in profile, when, if curb be present, a convexity just below the point of the hock will be seen.

TREATMENT.—The best method of dealing with a curb is to give it a good firing, and then blister it afterwards. This usually reduces it considerably, and the operation may be repeated several times. Blistering of itself is seldom of much use. A curb, when it is forming, requires to be treated with cooling lotions, such as the lead and opium lotion recommended under the heading of ‘Sore Shins.’ Regarding the development of curb, it may be said that several days at least are necessary for the formation of even a very small curb, and that when a horse is sold as perfectly sound in all respects, one may take it that the curb was present at the time of sale, provided that there is neither lameness nor increased heat of the part.

Capped Hock.

The point of the hock is, owing to its prominence, very liable to become injured, the injury varying from a simple non-inflammatory swelling

to one accompanied by all the signs of acute inflammation and lameness. The skin, the bursa, the tendon, or the bone may be implicated in this abnormal condition. In every instance it is a blemish, but certainly not always an unsoundness, interfering with neither the present nor the future utility of the animal. These remarks are applicable only when the swelling is of a non-inflammatory nature.

CAUSES.—A variety of causes may produce capped hock, but in every case it is the result of either continued or intermittent pressure; hence the reason why many horses have the points of their hocks swollen through the pressure on them during lying or rising. Any kind of injury, such as a bruise in this region, may easily set up inflammation. Kicking in harness, during transit by train, or against the stall-post in the stable, is a common cause of the disease. A horse might be sold as perfectly sound, and the hock become capped in a single night; if so, there will be swelling, increased heat, pain, and lameness present, and this may be taken as the best positive evidence that the condition has arisen, say, within a few hours.

TREATMENT.—When the cardinal signs of inflammation are present, the treatment should be rest and the application of sedative and cooling

lotions. The lead and laudanum lotion (see 'Splint') can be used. In the author's experience, very useful treatment for capped hock and other bursal enlargements is the application of ordinary gas-tar, combined with a small amount of iodine, or, what is equally suitable, equal parts of compound iodine ointment and gas-tar, to be rubbed well into the part with a stiff brush; this should be repeated every four or five days. Dry pressure is of considerable service, and this can be applied through the medium of an elastic bandage, taking care to put a linen bandage beneath the elastic, in order to prevent destruction of the circulation beneath the bandage.

Bone-Spavin.

This is the commonest of the diseases affecting a horse's joints, and leads to more litigation than any other disease does. The term Bone-spavin has been in existence for generations, but there is no doubt that, by those who are unacquainted with the anatomy of the region, it is often confused with other diseases affecting the hock. Almost every horseman professes to be able to recognise this diseased condition, but, considering that it often puzzles the expert to decide whether a hock is, or is not, spavined, it is necessarily very difficult for the amateur to make a diagnosis. The

difficulty arises in the difference in the conformation of hocks, and in their frequent inequality in size. Sometimes one veterinary surgeon will pass a horse as perfectly free from bone-spavin, whereas the same animal may be rejected by another immediately afterwards for this very disease; and the only method of obtaining positive evidence upon the point is to use the Röntgen rays, but this cannot be done in everyday practice. When spavin is present, it is situated upon the lower and inner aspect of the hock-joint, in other words, just at the top of the canon-bone, its position varying but slightly. In every instance it constitutes unsoundness, but, just as in the case of splint, veterinary surgeons are not agreed as to the significance attachable to it. Thus, for instance, some practitioners will pass a horse as 'practically' sound provided that the animal is required for slow work, is over five years old, has well-formed hocks, and is free from lameness. In this case the examiner considers that the animal has a hundred-to-one chance of remaining sound. The large proportion of horses that have hocks spavined, though otherwise of good conformation, may in a measure explain the system adopted by many veterinary surgeons; but as a safeguard, both for the examiner and purchaser of a horse, it is always advisable to reject a horse having the

slightest suspicion of this disease. Qualifying statements made by a practitioner at the time of examination will not, legally, discharge his responsibility to the purchaser; hence it is expedient to act in accordance with the law relating to warranty. More significance is attached to spavin in a horse required for fast work than in a cart-horse. Bone-spavin may be defined as a chronic inflammation of the bones entering into the formation of the hock-joint, an inflammation in which the cartilage, ligaments, and synovial membranes may participate. In old horses, the disease usually runs on to destruction of the articular cartilages forming the joint, all attempts at repair being useless. In young horses, on the other hand, inflammation usually produces a salutary effect, the individual bones of the hock-joint becoming sealed together by deposition of inflammatory products, which serves to strengthen the joint, but diminishes the action of the hock. There is a form of disease attacking the hock, known as occult spavin, *i.e.* a disease attacking the individual bones of the hock. This disease, though it cannot be discovered by manipulation, is sometimes so severe as to produce a most intractable lameness, and, when once it is established, it may be regarded as incurable. There is another form of spavin spoken of as blood-spavin,

which consists of a distended condition of the vein as it courses over the inner aspect of the hock. It is not of any significance.

Bone-spavin may affect one or both hocks, and when both hocks are the seat of the disease, there is a difficulty, more especially if the enlargements are fairly uniform, in deciding whether it is the normal conformation of the hocks, or otherwise. Some horses are either continuously, or intermittently, lame from spavin, the lameness being denoted by its increase, following rest. For instance, a horse with spavin lameness will come out of a stable very lame and stiff about the hock, but, as soon as the animal gets warmed to its work, the lameness gradually disappears. There is a want of free flexion and extension about the joint, and, if the spavin is forming, there will be increased heat, pain, and swelling over the part. If the joint is forcibly flexed with the hand and held in this position for a minute or two, the animal evinces pain, but this test is not a very reliable one. The best method of detecting spavin is to view the hocks obliquely, standing in front of the horse, just behind the shoulders, when any difference in size is usually readily discernible. A method about as good is to compare the hocks with the fingers of the same hand, when any difference in size will

at once be apparent. It is thought that the so-called 'tied-in' hock, that is, narrow at its junction with the canon-bone, is predisposed to become affected with spavin, but in all probability the conformation of the hock has very little to do with production of spavin. Hocks that are over-bent or turned out are thought, by some, to be particularly liable to become spavined. External injuries, such as sprains and blows, may bring on spavin, and it is probable that rheumatism is another cause. The size of the spavin, *i.e.* the legacy of the previous inflammatory action, affords no evidence as to the degree of lameness which it may produce. For instance, a very large spavin may produce no lameness at all, whereas a small one will probably give rise to a severe degree of lameness; and it is, consequently, impossible to prognosticate whether lameness will or will not make its appearance.

TREATMENT.—One of the first essentials in the treatment of a horse going lame from spavin is absolute rest, say for three months; and in order to facilitate the requisite rest in the joint, it is advisable to try to excite a fresh reparatory inflammation, which can be done, in some cases at least, by the application of the hot iron, preferably in the form of points, pressing the fring-

iron deeply into the new growth, and in a course of forty-eight hours blistering it. Line-firing is very often employed, but it leaves more of a blemish than the other method. Blistering alone is seldom of much use. This, of course, is the work of the veterinary surgeon, and should never be attempted by an amateur. Firing beneath the skin has also been employed, and an operation sometimes resorted to is that of opening the bursa of the terminal tendon of the flexor metatarsi. The aim of this operation is to excite a fresh inflammation, and so to assist repair. Whatever method of treatment be pursued, rest is an indispensable factor, and, unless the proprietor is willing to give about three months for the horse's benefit, it is very little use to do anything, and recurrent attacks of lameness brought on through work will almost certainly lead to a permanently incurable condition.

Ringbone and other Exostoses in Connection with the Phalangeal Articulations.

The fetlock- and the pastern-joints are very commonly the seats of diseased activity, which usually shows itself in the form of a bony growth, at the front, back, inner, or outer sides, or all round either of the joints named or parts

adjacent thereto. The disease may occur in either the fore or the hind limbs, but most frequently in the former. The term Ringbone is applied when the new growth assumes a ring-like formation around the joint, and the prefix 'High' or 'Low' is applied when the ringbone is situated upon the upper or lower part of the pastern. All forms of ringbone constitute unsoundness and materially interfere with the integrity of the joint, though it must be understood that a horse may have a very large ringbone upon either or both of the fore-limbs, and yet go perfectly sound, the size of the growth having little or nothing to do with the presence or absence of lameness. In some cases the articular cartilage of the joints becomes destroyed, whereas in others the joint becomes sealed up with the products of inflammation, and lameness subsides. In the former case, the disease is progressively destructive. The causes of ringbone are many, but external injuries, such as a blow over a joint, more especially above the coronary-band, may produce it; in other cases, sprain of the joint may lead to it, the ligamentous structures first of all being the seat of the disease, followed by its extension to other parts.

Some authorities believe that upright or weak pasterns favour the development of the disease,

but a powerful predisposing factor, in young animals, is too much work, or work that demands excessive strain upon the joints below the fetlock. Hackneys, hunters, and steeplechase and race-horses, are not so liable to suffer from ringbone as are the heavier breeds, but its presence in the former class of animal is much more detrimental than in the case of heavy horses.

TREATMENT.—Very little can be done, and the results of firing and blistering are not, as a rule, satisfactory, though a good deal resorted to. Particular attention should be paid to the shoeing, and in young animals which have not been shod the hoof should be pared regularly, so as to give equal distribution of pressure. When the heels are too long they should be shortened, and the horse shod with plain shoes. If the heels are too low the shoes should be raised at the heels. In the early stages of ringbone formation rest and cooling applications are necessary, and when the acute signs of inflammation have subsided, it is advisable to shoe the horse with pads, thus diminishing the concussion. Neurectomy is sometimes resorted to in order to do away with the lameness, but it has no influence over the disease, and is merely an operation employed for the purpose of rendering an incurable disease obscure.

Rupture of the Flexor Metatarsi Muscle.

Numerous cases of this injury have been recorded by British and Continental veterinarians, and the symptoms are not the same in every case. In order to understand thoroughly the nature of the injury, it is necessary to explain that the tendon of this muscle arises on the front of the femur and passes over the stifle-joint in front of the tibia or second thigh, and is then inserted by three slips into the hock and canon-bone. It serves to unite the stifle and the hock-joints, and assists in the extension of the hock-joint. The chief cause of injury is over-extension of the hock-joint, such as may be caused by the foot becoming fixed and the animal struggling to free the limb; hence rupture of the flexor metatarsi occurs suddenly.

SYMPTOMS.—These are very striking. The flexor metatarsi muscle and the gastrocnemius are antagonistic muscles, so that when the former is ruptured the tendon of the latter, *i.e.* the tendon of Achilles, is thrown into folds from the point of the hock upwards when the limb is lifted from off the ground, and the stifle-joint at the same time is excessively flexed. Cases of this nature are uncertain as regards recovery, which sometimes takes place within a few weeks,

whereas at other times many months elapse before there is any improvement; and the only treatment that can be employed is blistering the muscle, and keeping the animal at rest for several months.

Dislocation of the Patella, or Slipped Knee-Cap.

The stifle-joint of the horse is formed by the union of three bones, namely the femur, or first thigh; the tibia, or second thigh; and the patella, or knee-cap. On the inner and outer side there are the so-called lateral ligaments, and in front the three straight ligaments. The action of the lateral ligaments is that of strengthening the capsular ligaments of the joint, the same remark being applicable to the straight ligaments. A frequent cause of the displacement arises through relaxation of the internal lateral ligament, and this is the principal cause in foals that are poorly developed; in such animals the accident is of very common occurrence, and nothing short of improvement in the general condition of the animal is likely to restore the joint to its normal condition. Dislocation of the patella is by no means confined to young animals, many fully-developed horses suffering from it, but it is frequently confused with cramp of the stifle, a con-

dition that usually leads to recovery in the course of a few days. The patella, or knee-cap, may be displaced upwards, but more frequently outwards. When the displacement is in an upward direction the bone becomes fixed over the outer articular surface of the femur, whereas in outward displacement of the bone it lies to the side of the joint, and this is its commonest position.

SIGNS.—As a rule, it is a very easy matter to detect this injury, the animal's gait being very characteristic; during the walk the limb is dragged, as it were, the point of the toe touching the ground, and the whole of the joints are flexed. If the hand is placed upon the patella and the animal compelled to move, the bone will be found slipping in and out during the movement, and, if it is replaced with the hand, a distinct sound can be heard. If the animal is allowed to be at exercise, the irritation induced by the abnormal position of the bone sets up a dropsical condition of the joint, easily detected by manipulation.

TREATMENT.—Regarding the treatment to be adopted, very little can be done beyond building up the constitution so as to strengthen the joint; in other words, a colt or foal should be fed most liberally, and at the same time be kept in the stable with the limb drawn forwards. This can be done by placing a hobble round the fetlock

and passing through the hobble a rope, which should be hitched around the neck. Care must be taken that the animal does not get entangled whilst lying down. It is surprising how soon a colt will become used to the restraint, and exercise care whilst lying. This treatment should be followed up by a severe blistering, for the swelling induced will assist to keep the parts in their normal position, and will also strengthen the structures composing the joint. It is a very good plan to re-blister as soon as the effects of the first application have passed off. There is a considerable percentage of recoveries when this treatment is adopted, but it must be borne in mind that there is a tendency to recurrence, more especially in aged horses; hence, as soon as a cure (or, it may be, an apparent cure) has been brought about, it is the most economical plan for the proprietor to dispose of the animal.

Inflammation of the Stifle-Joint.

The stifle-joint may be affected with either acute or chronic inflammation, and a frequent cause of the former is a kick or other injury, such as a stab, etc.; whereas chronic inflammation of the stifle-joint is common in cart-horses, and mostly due to ulceration of the articular cartilage. The disease may be confined to one or may attack

both joints, but as a rule only one joint is affected. In most cases the diseased cartilage is that between the femur and the tibia. When acutely inflamed, the joint is swollen, and the lameness severe, whereas in chronic inflammation there is marked lameness, but usually an absence of increased heat and swelling in the joint. The animal is constantly standing with the leg flexed, and lifting it intermittently, through the pain in the joint. If the joint is affected with acute inflammation, such as that resulting through puncture, there is in addition to the swelling and lameness a discharge of synovia or joint oil, associated with suppuration, as in an ordinary sore. In cases of chronic disease of the stifle-joint, it is best to destroy, whereas in the case of an acutely inflamed joint, if synovia is issuing from it, the best method is to blister, and then to place the animal in slings, so as to afford the joint all the rest possible. At the same time the wound can be dressed daily with a little oil of cloves and cotton-wool.

Open Joint.

The term 'open joint' is applied when the capsular ligament of the joint has been punctured, causing discharge of the joint oil or lubricating fluid. A distinction must be made between an open joint and an open tendon sheath or an

open bursa, the two last being more responsive to treatment. An open joint is not necessarily the result of direct injury to the joint, but often of a wound in the neighbourhood, from which sloughing takes place, causing the joint to open. In an open joint the synovial membrane becomes acutely inflamed. The hock-joint is most frequently the seat of this injury, but the stifle, knee, fetlock, etc., are occasionally affected. In every instance there is a discharge of joint oil, accompanied by swelling, lameness, and a variable degree of constitutional disturbance. If the joint has been infected with the organisms of suppuration, pus is mingled with the synovia that issues from the joint when the animal is made to move, or the joint manipulated in any way.

TREATMENT.—Strictly speaking, this is a matter for professional advice, because so much will depend upon the condition of the joint, and the time that the injury has been in existence. All wounds in the neighbourhood of joints demand particular attention to cleanliness, and the use of antiseptic agents to limit the discharge. If the injury has just been inflicted and the joint is acutely inflamed, cooling applications are indicated, such as a lotion composed of laudanum and Goulard's Water, about three ounces of each of these being added to a pint of water, and

applied with linen and flannel bandage. A small pad of lint, previously soaked in a solution of corrosive sublimate, should be placed over the wound before the application of the bandages and lotion, or the wound may be painted with colloidion two or three times daily. The animal must be kept in a sling, though this is difficult with a colt. If the injury has been done some time, it is advisable to blister the joint in order to create swelling, which assists to close the wound. At the same time oil of cloves and a particle of cotton-wool should be applied daily over the wound, or oftener if necessary. Blood with the discharge from the wound generally indicates disease of the bones, and if this is so, it would be better to destroy the animal. For the amelioration of the constitutional disturbance a dose of physic may be given, or a half-ounce dose of Epsom salts added to the drinking-water daily.

Hip-Joint Lameness.

This joint is formed by the articular head of the femur, or first thigh-bone, and the cotyloid, or articular cavity of the pelvis. Owing to its sheltered position the joint is not so liable to injury, yet obscure forms of lameness are often ascribed to this region, though in all probability the diagnosis is, in the majority of cases, a false

one. The joint is sometimes injured, or fractured, in combination with an injury to the ilium or shaft of the pelvis. Bruising of the muscles over the joint, disease of the bones (of the lumbar vertebræ, femur, or pelvis), as well as slipping of the limb in an outward direction, may be regarded as causes of hip lameness.

SYMPTOMS.—There are no definite signs indicative of lameness in this situation, unless manual examination reveals fracture, etc. Wasting of the muscles over the quarter, though significant of disease in this region, is not of sufficient diagnostic importance. As in all other lamenesses, signs of lameness in this joint are most evident during turning and backing movements, but reliance must be placed chiefly upon tenderness in the region of the joint.

TREATMENT.—Rest is most important, and in many cases it is advantageous to place the animal in slings, more especially if the injury is thought to have arisen suddenly, as the rest afforded by the slings is particularly suitable in all pelvic injuries. A blister applied over the joint will be beneficial, or, if preferred, the hip may be rubbed with some stimulating liniment, such as White Oil.

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