

A practical treatise on the diseases of the foot of the horse : containing a correct description of their nature, causes, and method of prevention : with suggestions of improved plans of treatment, founded on physiological principles : also, rules of shoeing, by which the ordinary evils attending this process may be in some measure prevented / by Richard Hayward Budd.

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A PRACTICAL TREATISE
ON THE
DISEASES
OF
THE FOOT OF THE HORSE.

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A
Practical Treatise
ON THE
DISEASES
OF
THE FOOT OF THE HORSE ;
CONTAINING
A CORRECT DESCRIPTION
OF
THEIR NATURE, CAUSES, AND METHODS OF
PREVENTION :

WITH
SUGGESTIONS OF IMPROVED PLANS OF TREATMENT, FOUNDED
ON PHYSIOLOGICAL PRINCIPLES.

ALSO,
RULES OF SHOEING,

BY WHICH
*THE ORDINARY EVILS ATTENDING THIS PROCESS MAY BE IN
SOME MEASURE PREVENTED.*

Dedicated, by Permission,
TO SAMPSON HANBURY, ESQ.

BY RICHARD HAYWARD BUDD,
VETERINARY SURGEON.

London :

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN,
PATERNOSTER ROW.

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Practical Treatise

DISEASES

THE FOOT OF THE HORSE;

A CORRECT DESCRIPTION

OF THEIR NATURE, CAUSES, AND METHODS OF PREVENTION.

WITH A DESCRIPTION OF THE PHYSIOLOGICAL STATE OF THE FOOT, AND THE EFFECTS OF THE SEVERAL DISEASES TO WHICH IT IS SUBJECT.

AND

RULES OF SHORING.

BY

TO RICHARD HAYWARD BUDD,

BY RICHARD HAYWARD BUDD,

London:

BARNARD AND FARLEY,
Stinner-Street, London.

1810
BARNARD AND FARLEY
STINNER-STREET, LONDON.

DEDICATION

TO

SAMPSON HANBURY, ESQ.

SIR,

IN the dedication of the following pages, the first-fruits of my literary labours, to you, I embrace the opportunity of acknowledging an obligation which, in common with my professional brethren, I owe to all

who have taken an interest in, and encouraged the progress of the Veterinary Science ; and, witnessing as I do, the constant and increasing solicitude you manifest in every thing connected with the welfare of the Horse, I look forward with confidence to the further extension of the advantages which that Science is capable of affording. Your example, Sir, can never be neglected by the extensive circle of Friends which the urbanity of your conduct and character will ever draw around you ; and upon those Friends, and such as those, necessarily men of superior talents and attainments, the Veteri-

nary Science must depend for its support and final establishment.

Independent of these considerations, however, Sir, I was anxious to select a Patron, whose name would at once be an honour to my Book, and whose knowledge of its subjects qualified him to be a judge of its contents. That I have been fortunate in each of these respects, in the liberty you have allowed me, every one who has the pleasure of your acquaintance will readily acknowledge; and that you may long live to enjoy that truly noble and benevolent feeling which prompts you to make

the most useful of our domestic animals an object of solicitude, is the wish of,

SIR,

Your most obliged

humble Servant,

R. H. BUDD.

72, *Curtain Road,*

Feb. 14, 1816.

INTRODUCTION.

SINCE my first entrance into the Veterinary Profession, I have not been an inattentive observer of the destructive effects of disease on the Foot of the Horse ; and it appeared to me that Veterinary Practitioners, however correct and minute they may have been in speaking of the constitutional diseases of the animal, and their treatment, had not bestowed even the necessary degree of attention on those occurring as the result of injuries sustained by this particular part. I was led to this

conclusion by observing how tedious and unsatisfactory was the usual progress of cure in such diseases of the Foot as were considered curable, and the great number of animals which were led to the slaughter-house in consequence of disease of this part originally produced by accidents of the most trifling nature. The immense number of horses of all kinds which were thus annually sacrificed, seemed to be a consideration sufficiently important to warrant a minute investigation; and, as a preparatory step towards the discovery of any thing connected with this subject, which may have previously not been very generally known, I was induced to refer to those writers who had bestowed attention on it: nothing satisfactory, however, was the result; and I was left almost entirely without assistance, to pursue the object I had in view. A series of experiments, comparative of the

effects of the most successful of the plans usually employed, with others, which a physiological view of the subject seemed to dictate, has clearly convinced me that the grand cause of the obstinacy which such diseases have manifested, has been, impropriety of treatment. It has long since, indeed, appeared to me, that such extremely severe and destructive applications as are commonly used, could not be generally necessary; but inquiry only could enable me to obtain that knowledge, of the disease in which they were employed, necessary to speak decisively of their effects; and I am now warranted in the assertion, that the most common methods of treatment adopted in many of the diseases of which I have spoken, instead of hastening the cure, tend diametrically to oppose the means which nature herself would, unrestricted, adopt for such a purpose.

Whole volumes have been written respecting the practice of shoeing, and the best methods of preventing contraction: new *fashions* of the shoe were successively produced, as calculated to effect this object; and these fashions were honoured by their inventors with the title of Principles; hence “Shoeing upon a *new* Principle” never failed to attract attention, as it held out a hope of escaping the mischiefs which were known to attend the preceding. None of these alterations in the shoe, however, realized the expectations of those who employed them; for they all seemed to have the same effect. The reason is obvious: these fanciful changes deserved, in no part of them, the name of Principles; but all agreed in that which is now known to be the cause of contraction; they were all inflexible, equally restraining the expansion of the hoof in its growth, and destroying the action of the quarters.

While so much attention, therefore, has been bestowed on this subject, it is a matter of surprize that those accidental diseases, which are the subjects of the present Work, should have obtained so small a share: that the Foot is more frequently the seat of disease than any other part; and that a knowledge of it is highly important every one seems to be sensible of: perhaps also, *more* attention is necessary in order to understand its diseases and their treatment; for it will be observed, that the majority of the constitutional diseases of the horse having something analogous in those of the human body are hence furnished with a sound principle on which their treatment may be founded. What will subdue inflammation in the human subject, will in the horse; and abstraction of blood is found equally effectual in both; but the Foot of the Horse has no resemblance to any part of the human subject, and

consequently its treatment under disease must be governed by considerations which are peculiar to it. That every part of it is destined to secrete horn is a fact which must always be borne in mind ; and this consideration will at once show, that a different plan from that at present in common use will be necessary ; for the present practice, to be brief, consists of little else than the indiscriminate application of caustics ; and a repetition of these, in the common manner, must necessarily debilitate the parts to which they are applied, and render them more and more incapable of performing their office.

It has been an object, in the present Work, to point out the plan of treatment in each disease which has been found most successful : the Rules which I myself have found it necessary to observe, are parti-

cularly noticed; and of a proper attention to these, I feel justified in the assertion, that uniform success will be the result.

The chief motive of my commission of the following pages to the press was, that I thought that they contained facts which would materially contribute to improve the Veterinary Science, so far as regards their particular subjects. While, however, I found it necessary, occasionally, to use expressions and language, connected rather deeply with the Science, I endeavoured, as much as possible, to avoid technical terms; and, where these were absolutely necessary, their explanation has been attempted. I was induced to follow this plan, from the conviction, that those who at present have the management of the majority of these cases consigned to them, will not be induced to adopt the treatment

I have ventured to recommend, or to depart, in a single instance, from the absurd practices of their predecessors, without the interference of authority; and, by rendering my meaning intelligible to all, I have given the unprofessional reader that opportunity of judging of the treatment he sees resorted to, which will enable him, in situations where the aid of a Veterinary Surgeon cannot easily be obtained, at least to protect the animal from the torture of improper applications.

If any of these objects have been accomplished in this Work, I shall be amply recompenced for the time and attention which it has occupied.

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OF SANDCRACK; OR,
consequently, if any thing we may ob-
serve, in speaking of it, may not be per-
fectly consistent with opinions founded on
more extensive observation, we shall at
PRACTICAL TREATISE,

&c. &c.

CHAP. I.

**OF SANDCRACK; OR, FISSURES OF THE
HOOF.**

IN commencing our labour, with the
above subject, we derive some degree of
confidence from the reflection, that it has
hitherto not obtained that share of atten-
tion from more experienced veterinary
writers which it seems to deserve, and,

consequently, if any thing we may advance, in speaking of it, may not be perfectly consistent with opinions founded on more extensive observation, we shall at least escape the charge of acting in opposition to rules which we had been previously taught, and the justice of which we had been compelled to acknowledge.

A fissure or crack in the hoof of the horse is an occurrence, which if unattended to at its commencement, or improperly treated, frequently establishes one of those protracted diseases which, whilst they destroy the advantage arising from the exertions of the animal, tend often, by the tediousness of their cure, to bring discredit on the veterinary science.

The situation of these affections is various. Sometimes they are produced at

the anterior part of the hoof, at others, near the heels: their direction is generally perpendicular, but they are occasionally found extending horizontally. In the latter case they are generally superficial, and seldom productive of lameness, and, consequently, often pass off in the regular growth of the hoof unobserved: in a few instances, however, they have been observed to extend completely through its substance, so as to affect the sensitive parts: the degree of irritation produced in such cases was so slight as to affect the step of the animal very triflingly; and as these horses were not of the draught kind, and, consequently, not accustomed to great exertion, no further bad consequences arose: it is probable, however, if they had been so, and subject to harder labour, the irritation and lameness would have been proportionably greater.

The most common appearance of what is termed Sandcrack, at its first commencement, is that of a very small fissure, scarcely sufficiently large to admit a horse hair, and most frequently situated between the coronet and base of the quarter, neither extremity, however, extending completely to those parts. Under this appearance, they are always found very superficial; it will be evident, therefore, that such a deviation from the natural state may exist without producing lameness, and in fact a very great number of horses are the subjects of it; but as the depth of the fissure is not such as to affect the sensitive parts, no lameness is produced, and the unsound portion is gradually brought down by the process of growth, and removed by the knife of the smith.

It is that state of the parts where the injury is more extensive, and where sur-

gical treatment is necessary, which requires our greatest attention. In such cases, instead of the slight superficial fissure described, a chasm is produced, extending through the substance of the hoof, and communicating with the sensitive parts within, there exciting a considerable degree of irritation and lameness, followed by the formation of matter, and the appearance of a small fungus shooting up within the fissure,

As the state of the disease, and perhaps even its existence, is not known till lameness occurs, an idea has arisen, that its production is instantaneous. On examination of the parts, when lameness is produced, the fissure is generally found filled with extraneous matter, as dirt, sand, &c.; and hence the disease has derived a name consistent with the usual short-sighted ideas of

those who have heretofore had the treatment of it consigned to them; as it is conjectured they entertained the idea, that the sand, &c. contained in the fissure was its original cause.

It has been confidently believed by some, that a sandcrack cannot be produced, but as the consequence of sudden violence sustained by the foot; on the other hand, it is said, that it often takes place, not only where nothing of this kind has occurred, but even where the horse has been standing by without being subject to the most trivial exertion, and hence they deduce the opinion, that it is solely produced by a preternaturally dry state of the hoof which causes it to contract. That such a state of the hoof is necessary to the production of many fissures we are ready to admit, but the same spirit of inquiry, which was the

original cause of the commission of the following pages to the press, induced us also to inquire a little farther with respect to this matter; for it is evident, that such a deviation from the natural state as changes a soft flexible body into a hard and brittle one, with a contraction of its substance, cannot happen without some cause.

We have heard a remark made by those, whose extensive opportunities of observation entitle them to credit, that horses which have suffered much by the disease termed Thrush, have been most liable to fissures in the hoof: what connexion these diseases can have with each other, may appear at first rather inexplicable, nor can we account for it in any other way than by supposing, that the pain and inflammation attending the former disease, contributes to produce that degree of brittleness of the

hoof, which is the particular characteristic of the latter.

The experiments made, and so ably detailed by Mr. Bracy Clark, prove, that a regular and progressive change, not only in the soft parts of the foot, but in the coffin-bone itself, is going on from the time the animal first receives the shoe; and it is quite inconsistent with physiological principles, that the cause of such a change should be continually in action, without exciting some degree of irritation in the parts to which it is applied; the inference, therefore, which we draw from this fact is, that the present method of shoeing, preventing the natural action of the quarters, proves a source of constant irritation and inflammation, which immediately produces the brittle state of the hoof in question, and its consequences. We also believe that the

pernicious custom of the smiths of rasping away the external cuticle of the hoof, (which they do to give it a new appearance,) contributes very much to the above effect, by exposing the hoof itself to the drying effects of the atmosphere.

For a proper description of the nature of the injury which the foot receives from the application of the iron, we must beg leave to refer the reader to the elegant and elaborate work on that subject, of the author before alluded to: without, however, a material change of the shape or make of the shoe at present in use, we think we can offer a few observations which, if attended to, may in some degree counteract the bad effects of shoeing, or rather render it less productive of injury to the foot, than it is generally found to be.

In the shoeing of draught-horses perhaps, so much attention is not necessary as in those whose feet are of a more delicate structure ; because, in the first place, their feet are not so liable to be affected by improper shoeing ; and secondly, from the greater exertion they are obliged to perform, they do not admit of the application of the following observations to so great an extent.

The grand principle to be attended to in the choice of a shoe, is to combine a firm and solid protection to the foot with as small a quantity of iron as is consistent with that protection, and at the same time to leave the quarters as little under the influence of the shoe and nails as possible, so as to allow of that free expansion which nature intended.

It is not here intended to enter into the merits or demerits of the different ingenious inventions which this age has produced, nor to consider the various methods of shoeing, which different circumstances may require. By an attention to the above principles, I am persuaded we shall attain all the advantages possible, consistent with the performance of those offices we are taught to expect from the horse. As a general rule, however, it may be observed, that the shoe should be light, and equally thick at the heel as at the toe; the nails as small as possible, consistent with the proper security of the shoe; the shoe to have a flat even bearing on the ground on its outer edge, bevelled on its inner surface, so as not to press on the sole; the nails to be driven no nearer the quarters than is absolutely necessary to confine it, and as it is found to wear principally at the toe, that

part, during progression, being the first coming in contact with the ground, and the last leaving it, it would be advisable, in all cases, to have it composed of steel.

The importance of the shoe being light is sufficiently obvious, particularly with respect to young blood horses ; as, if made thick and heavy, they are not merely an immediate inconvenience in themselves to the horse, but they require proportionably larger nails to retain them ; the disadvantages of which are so great, that we cannot pass this part of our subject over, without particularly noticing them.

It must be obvious to all, that a large nail driven into the hoof must occasion a proportionate separation of its fibres, and the internal parts being more succulent and flexible than the external, yield almost

entirely to the force of the nail; and to such an extent does this occur sometimes, as to press on the sensitive parts, and produce very severe lameness; which lameness is designated by the smiths, as the effect of being *bound by the nails*. We do not, however, mean to assert, that small nails never can be the cause of lameness in this way; but that they are much less liable to do so, if driven in properly, must be obvious, inasmuch as they do not occasion such a wide separation of the fibres of the hoof.

If the shoe be made in such a manner as to have its outer edge constantly and equally in contact with the ground, the horse will be enabled to attain a much firmer hold, and will be much less liable to slip, than if made so as to have its whole surface in contact with the ground at the same time: to horses accustomed to tra-

verse the streets, this observation is particularly applicable, from the slippery uneven footing which the stones afford ; in some instances, however, the sole of the foot is so low as not to admit of this ; but we are induced to think, that by proper attention in not cutting away more of the wall than is absolutely necessary, this objection may be in some cases removed. That the inner surface of the shoe should be bevelled, is at least equally important, inasmuch as it prevents the bad effects arising from pressure on the sole.

In attending to the rule before laid down, of driving the nails as far from the quarters as possible, we derive the greatest advantage which a difference in the mode of shoeing is capable of producing, because we avoid the grand cause of the most destructive of the diseases to which the

foot of the horse is subject; we avoid the ruinous consequences of restraining the natural action of the quarters: this, indeed, has been the stumbling-block of succeeding veterinarians, almost up to the present time; a want of knowledge of it has been uniformly destructive of the natural healthy state of the hoof, and veterinarians not being able to account rationally for such deviations from health, have, as is but too often the case in such instances, resorted to the delusive theories which the fertility of their imaginations abundantly suggested; the result of which has been the adoption of plans, and the invention of instruments, which have increased the torture of the animal in their application, and multiplied the causes of future disease.

The seat of Sandcrack in the hoofs of saddle-horses is much more frequently

about the middle of the inner quarters than in any other part ; and hence we deduce another proof, if proofs were wanting, that the application of the iron causes a contraction of the heels : for on the anterior, and all those parts of the hoof which are internally supported by the solid structure of the coffin-bone, the contraction bears no proportion to that of the quarters near the heels ; and those parts, from a want of the support which the coffin-bone gives to the hoof, sink unresistingly under the influence of the shoe. At that part, then, where the hoof first loses the support of the coffin-bone, we should naturally look for the first effects of the contraction, and here, accordingly, we find it ; according to the same rule, we should expect to see the weaker part affected first, and hence the fissures are more frequent on the inner, than on the outer quarter, that part being

considerably the weaker of the two, from the diminished thickness of the wall. It also receives a much greater proportion of the weight of the body than the outer.

It has been commonly remarked, that Sandcracks appear generally in the fore feet of saddle-horses, and in the quarters; whereas, in the draught-horse, they occur most frequently in the hind feet, and in the most anterior part of the hoof: we also have observed, that they occur much more frequently in the hoofs of those draught-horses used on the stones of London, than those of the country; the reason of which appears to be the increased hardness of their labour, and the occasional slipping of their feet on the stones; which, when it happens, as is frequently the case, under the most excessive muscular exertion, we

may easily imagine to be attended with severe concussion.

What induces us to believe that concussion is the most common immediate cause of the perpendicular fissures in the hoofs of draught-horses is, that we have more frequently observed them in horses which have been affected with some cutaneous affection of the hind extremities; which by the excessive itching sensation it excited, frequently inducing the animal to stamp his foot on the ground with great violence, thus produced the fissure; which, it may be observed, in such cases generally extends from the toe where it begins, upwards towards the coronet.

With respect to the treatment of Sandcracks, much difference of opinion has

existed ; for the reason before alluded to,* we shall be more particular in stating the principle of our practice, under its different states than the subject would otherwise seem to require.

As a different practice from that which we have been accustomed to follow, appears to have been adopted and recommended by many veterinary surgeons, and one more particularly, whose works seem to stand very high in public estimation, we should not do justice to ourselves by passing it over without notice.

The plan above alluded to chiefly consists of the application of the actual cautery to the fissure, after it has been a little

* Page 1st.

widened by the knife, in order to admit the iron ; and we are informed, that the immediate result of this is, a copious exudation of matter resembling glue: if it is expected that this glue-like matter is to be the means of union between the sides of the fissure, upon the same principle as the substance of that name is used by carpenters, to procure adhesion between two pieces of wood ; we have no hesitation in saying, that disappointment will be the immediate result to those who employ it, and an aggravated state of the disease to the horse ; for, on examining the part a few hours after, instead of the soft flexible substance described, as produced by the iron, a hard brittle body, having an exact resemblance to a piece of burnt horn, which in fact it is, will be found ; the irritation is increased to an excessive degree, and the horse will be, in most cases, unable to put

his foot to the ground. These are the immediate consequences of this application; but in the course of a few days after, matter will be formed in the bottom of the fissure, where the iron was applied, and, on removing the burnt portion of the hoof, fungous granulations appear springing up in great abundance, and resisting the most powerfully astringent remedies which can be applied.

We believe that the principal argument in favour of the cauterizing plan above alluded to, is said to be the protection which the burnt portion of the hoof gives to the sensitive parts beneath; but we will take the liberty to ask, what it protects them from? We shall probably be answered, the irritating effects of the application of extraneous bodies; but we certainly do not know any extraneous body which can

be more irritating than a piece of dry burnt horn, and especially when aided by the application of a hot iron.

The application of a hot iron, we should imagine, in all cases would produce a preternaturally brittle state of the hoof in the adjoining parts, by causing an evaporation of its moisture; and if applied in such a situation as to affect the sensitive parts, its effects must be doubled, as it would most certainly be attended with inflammation; under this impression, it might naturally be expected, that we should severely deprecate the absurd plan which farriers sometimes employ, of burning the hoof in a transverse direction, with the view of checking the extension of the fissure.

The plan which we have hitherto followed, with the utmost success, is extremely

simple. We have ever been convinced of the impossibility of a Sandcrack being cured in any other way, than by removal in the regular process of growth. If it is found extending into the coronet, we follow the same plan as when situated farther down, and which we shall now endeavour to describe.

In all cases, where the fissure has extended to the sensitive parts, the hoof should be rasped to a small extent on each side, till it is become pretty thin, the edges of the fissure should be then cut away, and in most cases, as we have before observed, a small fungus will be seen shooting up between; wherever this appears, we are to be the more particular in removing the edges; or the irritation they excite will cause a reproduction of the fungus, as often as it is

destroyed ; the fungus should be removed by the knife, or the application of caustic, and if the caution above alluded to be observed, nothing more than pressure will be necessary to keep it down ; the upper portion of the fissure is then to be explored, and as far as the crack can be ascertained to extend, the horn is to be removed ; even if it should extend completely up to the glandular structure, secreting the hoof, this rule is still applicable : we should be cautious, however, to injure that part, and the frog-band covering it, as little as possible, in our operations.

After this has been done, the excavation made by the removal of the horn, may be filled with a pledget of tow, covered with any simple ointment ; and the best method of applying pressure to the fungus, is by

means of a compact roll, large enough to fill the excavation, and calculated to compress the whole surface of the fungus at the same time, binding it down with a bandage of narrow tape, passed round the hoof; indeed in all cases where the portion of horn removed has been considerable, a bandage of this kind will be advisable, to give the necessary support to the hoof, on the sides of the fissure.

If these rules are attended to strictly, we have no hesitation in saying, that they will prove sufficient for the cure of the worst cases; more caution is, however, necessary, in those where the fissure extended quite up to the coronet, as the new-formed horn is more liable to crack, if the horse is suffered to rest his foot on the ground, unsupported by the bandage;

where due attention, however, is paid, the excavation will be observed to be gradually advancing farther from the coronet, as the growth of the hoof proceeds, till it is quite removed by the knife, in preparing the foot for the shoe.

In those cases where the horn has been removed entirely up to the coronet, the new-formed will be seen forming a protuberance, apparently thicker than the surrounding, and gradually growing down, as in the former case, till it is removed.

In the foregoing lines we have endeavoured to describe the usual course of this disease, under the strict attention to the mode of treatment before laid down; we have now to notice one of the inconveniences which arise from a want of the pro-

per degree of attention to the application of its rules.

By a neglect in not keeping up the pressure constantly on the fungous structure, which arises in the fissure, some part of it will be left unsubdued, which appears, after it has existed a short time, to take on a diseased action, producing a morbid secretion of horn, of a yellow colour, and of a structure not unaptly compared to those fungous substances often seen growing from the sides of trees, the external appearance of which resembles, in some degree, that of the mushroom; as the healthy horn grows down from the coronet, it grows over this morbid production, and excites immediate irritation and lameness, which is only relieved by the removal of that portion of healthy horn pressing on

the part: the appearance or nature of this diseased structure, seems perfectly incapable of alteration from any application which can be made ; it continues to grow down from the original point producing it, widening as it grows, proportionate to the degree of expansion, the hoof itself undergoes in its growth.

In one of two cases which have come under our observation, of this disease, we gave a fair trial to the use of the caustic applications, to endeavour to destroy that part of the lamellæ, which appeared to have been its original source, but without success ; and in both instances it was found necessary to resort to a complete excision, not only of the whole of the diseased horn, but of a small portion of that surrounding it, which was in an healthy state.

In all cases of fissure in the hoof, it is necessary to premise, that a bar shoe should be applied ; and which should be, what is termed by the smiths, *laid off the parts* ; by which is understood, that that part of the wall immediately on each side of the fissure should be so cut away, or removed by the rasp, as not to come in contact with the shoe ; in this way the part will be relieved from pressure, and will not be affected by the action of the foot.

An idea seems very much to prevail among those who have the making and application of the shoe, that they can effect the purpose of laying it off any particular part by an alteration in it ; and for this purpose, they sometimes bend it, so as to prevent its inner surface from coming in contact with the foot, under the diseased part ; though, at the same time,

they leave a prominence on the outer surface of the shoe, under the excavation thus made, which renders the weight imposed here, double what it would otherwise have been ; and which, consequently, increases the mischief, it was intended to prevent ; we would, therefore, strongly recommend an adherence to the simple plan of cutting or rasping away the bottom of the wall under the injured parts.

With respect to the use of greasy applications, as preventive of a disposition to crack in the hoofs, we are not inclined to place any confidence in them ; but we hold a different opinion with respect to the frequent use of cold water, or of cool moisture, in any shape ; and hence, we advise the frequent use of it, where the hoofs shew any disposition to crack.

Wherever a Sandcrack has existed, it will be highly proper to turn the horse out to grass, if the season of the year admits of it, till the new horn has gained the degree of strength necessary to the performance of its offices.

CHAP. II.

OF CORNS.

THE disease which has obtained this name, is one of the most common to which the foot of the horse is liable. It is generally the result of violence, and attended in most instances, with that degree of tenderness, not amounting to actual lameness, which distinguishes the affection of the same name in the human foot; in some instances, however, where the injury has been more extensive than common, a proportionate degree of lameness exists.

The effect of contusion of any part of the foot, if sufficiently great to extend beyond the horny substance of the hoof to the sensitive vascular parts within, is to produce a laceration of the vessels of these parts; from which, the blood becomes effused between the horn and sensitive parts; such, therefore, is precisely what happens in this affection. The extravasation of blood which is always observed on thinning the horn, at the injured part, is not to be considered as solely constituting the disease, but merely, as the usual attending consequence of contusion; its extent, therefore, enables us to ascertain the degree of injury which has taken place, and viewing it in this light, it is certainly a valuable criterion.

The most common manner in which this affection first makes its appearance, is by a

tenderness or lameness of one or other of the fore feet, which leads to an examination of the part. When, therefore, the shoe has been removed, and the sole and other parts to which it has been attached, or contiguous to, is carefully thinned by the knife, an examination of that part lying within the angle formed by the inflection of the hoof inwards, to form the bars, (or in other words, the base of the inner quarter,) will discover it to have a reddish blackened appearance, which becomes more distinct, as the horn is gradually removed: this appearance, then, marks the extent of the extravasation, as it is in fact the extravasated coagulated blood appearing through the substance of the horn; it will be found, therefore, of a greater or less extent, in proportion to the degree of injury which has been sustained.

From the foregoing statement of this affection, and the cause of its production, it must be at once apparent, that horses whose hoofs are of a more delicate structure than others, must be more frequently the subjects of it; because the hoof does not afford that protection to the sensitive parts against violence, which exists in stronger horses. The same observation will also shew the imprudence of thinning the horn of the sole of those horses in a more than necessary degree, whose feet are not abundantly supplied with that substance; such a proceeding would of course render the protection of the foot considerably weaker, and consequently much more exposed to the effects of violence.

With respect to the circumstances which favour the production of Corns, they are as follow:—Nature herself, in the forma-

tion of the foot of the horse, seems to have designed that the part which is their seat, should not possess an equal share of strength and solidity with the external quarter, and anterior part of the sole: no doubt some wise purpose must have been answered by such a contrivance, supposing the animal to be in a state of nature; but what that purpose may be, is probably reserved for the discovery of others, who have more extensive opportunities of observing it in such a state. It is, however, a fact now very generally understood, that the horn forming the inner quarter, and contiguous part of the sole, is considerably thinner and weaker than that of any other part of the foot: this, therefore, may be considered as a predisposing cause; but there are others, without which, probably, it would very rarely occur.

In the process of what is called *paring out the foot*, previous to nailing on the shoe, it is a custom with smiths to cut away very considerable quantities of the horn of the bottom of the foot, and in common with the other parts, some from the base of the inner quarter; it is, therefore, easy to conceive, that by carrying this process to a little farther extent than common, the sensitive parts will be robbed of their due degree of strength of protection, and consequent tenderness would be the result, even supposing the whole of the foot to be of an equal strength; but when we consider the comparative weakness of the inner quarter, and that it must have suffered in an equal degree with the other parts, from the indiscriminate use of the buttress and drawing knife, we shall not be at a loss to explain why the affection so constantly appears in this situation.

Supposing then the foot to have been prepared in this way, and the shoe applied in the usual manner, very accurately adapted to, and in contact with, the usual parts of the foot, it may be thought that they would hence derive sufficient protection from injury; such, however, is not the fact, for it has been found that the pressure of the shoe only was sufficient to produce it to a very considerable extent, where the horn had been previously thinned in a more than ordinary degree.

With respect to the manner in which the most common and immediate cause of the contusion and extravasation constituting this disease acts, we conceive it to be as follows:—The horse, with his foot prepared and shod in the before-described manner, (the inner quarter deprived of a portion of its necessary protection,) is put

to his usual labour, and sooner or later, depending on the hardness and irregularity of the ground, or the greater or less exertion to which he is subject, slips, and in endeavouring to save himself from falling, causes the contusion described; in most cases, however, a much smaller degree of violence is capable of producing it, and in many, the simple exertion of trotting has been found sufficient; the degree of violence, however, producing it, will always depend on the quantity and strength of the horn which has been left as a protection to the inner quarter.

If the degree of injury inflicted is trifling, and the extravasation consequently small, nothing more will be necessary in its treatment, than to remove the shoe, and let the horse rest for a few days; if, however, circumstances may render it necessary to

work him, the shoe may be what is termed laid off the part; this, however, is not to be done by removing the horn of the part, but by altering the shoe so as to protect it from pressure. We wish to be more particular in enjoining an attention to this observation, as we have frequently seen the plan of cutting away the horn followed with avidity, on account of the temporary relief it affords; such a plan, however, is deceitful, and dictated by too shallow an idea of the complaint; for, though it gives time for the removal of it when existing, still it leaves what may be termed an increased disposition to it, because it deprives the sensitive parts of the protection of which they already stood too much in need; and we have no hesitation in saying, that it is from this method of treatment solely that some horses are so frequently, and indeed almost constantly affected. The

best plan which can be followed, therefore, is to apply a bar shoe, instead of the common one, as this affords more ample means of throwing the pressure off the affected parts: no excision of the horn, we repeat, ought to be resorted to, unless there is reason to believe that suppuration has taken place.

In the application of the bar shoe it is necessary to state, that any pressure on the frog ought to be guarded against, for such pressure will be extended very frequently to the diseased parts on its side, there exciting irritation, retarding the cure, and in some instances even producing suppuration.

The foregoing observations, it will be seen, are applicable to the affection, only in its simple state, as it first attracts atten-

tion; but from a neglect of the proper treatment in this stage, and suffering the animal to continue his work under it, without the removal of the shoe, suppuration is at length produced; and the matter being incapable of making its escape through the sole, rises up, causing an absorption of the processes or lamellæ, in its course to the coronet, there forming an opening, by which it is discharged.

The widely different state of this case from the former will, of course, render different treatment necessary: the first indication, therefore, is to form a depending opening in the sole, from which the matter may be discharged, which is to be done by cutting the sole completely through to the sensitive parts. A probe may then be passed into the opening, in order to ascertain to what extent the burrowing of the

matter has separated the horn : wherever it is found to be separated, it should be entirely removed, however extensive the separation may be : this rule of practice, indeed, is not confined to the sole, for after such has been done in this part, the course of the matter is to be followed up to the coronet with the knife, and the separated horn treated in the same way ; for experience warrants the observation, that in no case where disease has once separated the horn from the sensitive parts, can it ever again unite.

After the separated horn has been thus removed, we have only to wait for its reproduction from the coronet, in order to re-establish the strength of the hoof ; the sensitive parts exposed by the operation, are of course to be protected by appropriate applications from irritating sub-

stances; these, however, need only to be attended to for a few days, as at the expiration of that time a thin shell of horn will be produced by the exposed parts themselves, which will be their best protection, till the solid horn comes down from the coronet, and replaces the foot in its original state, previous to the occurrence of disease.

A bar shoe in this, as in almost all other states of diseases of the feet, requiring the application of dressings, or protection from pressure, will be found the most advantageous.

It may not be improper to notice here, a very common inconvenience arising where the shoe has been retained a longer time than is usual on the foot. It will be recollected, that the base of the hoof gradu-

ally expands as it grows; in consequence of which, the shoe, after it has been on some time ceases to be equal in circumference to the foot, and a very considerable portion of the base of the quarter appears to be uncovered by and growing down posterior to it; the inner corner of the heel of the shoe, in this state, makes a very considerable degree of pressure on the posterior part of the sole, and is thus often productive of tenderness, and in some cases of actual lameness, attended by a slight degree of extravasation. It is generally found to disappear on the removal of the old shoes, and the usual preparation of the foot for the reception of new.

CHAP. III.

OF THRUSH.

THE derivation of the name of this disease appears to have been of a very absurd, though curious nature.

By the observations of an eminent author, to whom we have already had occasion to allude, we learn that it is a corruption of the French term originally applied to the part diseased; the Frog itself being designated by them Fourche, from its forked appearance. The discharge

taking place from that part, first gave rise to the use of the term *Running Fourche*; under which name the disease, it appears, continued to be known in England, till about the reign of Elizabeth: the writers on this subject at that time, having made a successful attempt to change it into a term more nearly resembling the English language, though much more destitute of sense; and hence after that period, it was called the *Running Frush*: about the latter part of the reign of James, however, when horse-racing was much practised, it underwent a further change, which was not merely absurd, but absolutely ludicrous; for it was then that it first obtained the name by which it is at present known.

In order to afford a clear idea of the seat and nature of this disease, some description of the parts concerned, becomes

necessary. We know not, however, any terms which can possibly convey so clear an idea, as an actual observance of the formation of the hoof itself, after the other parts of the foot has been separated from it by maceration.*

The base of the Frog is that part which is observed externally, lying between, and connecting together the two extremities of the hoof, at that part where it becomes inflected, to pass towards the centre of the foot to form the bars. In the middle of the base is situated a deep cleft or fissure, appearing to extend deeply into the foot; on each side of which, a thin plate of horn

* This is done by placing the foot in water for about the space of a month, or more readily, by boiling it; when the foot may easily be drawn out from the hoof.

takes its origin, extending in the same direction with the fissure itself; which plates or processes seem to converge and join each other, by an immediate union of substance within the foot, and forming, in fact, the boundaries of the fissure before described, known by the name of the Cleft of the Frog.

The union of the two plates before described, when examined internally, after the foot has been drawn from the hoof, presents to the eye, a projecting portion of horn, which is received in a cavity formed for the purpose, in the middle of the sensitive Frog. This projection has been very aptly compared to a cone, of which the cleft of the Frog forms the hollow base, and the sides of which become, in some degree, separated from each other by the natural expansion of the foot.

The advantages arising from this structure of the Frog are two-fold ; in the first place, serving by its insertion into the sensitive parts, to fix the hoof more firmly to the foot ; and secondly, by its being hollow, allowing, and partaking of, the alternate expansion and contraction of the heels or quarters ; which it could not have done, had it been of a perfectly solid structure.

From the outer and posterior part of the cleft of the Frog, two wings or processes go off, passing upwards, and enclosing the extremities of the hoof, where it begins to be inflected, as before described, to the coronet ; and there terminates in a small band, termed the Coronary Frog-band, of the same structure with the frog itself, and which is continued completely round the coronet.

The parts here described, under the name of the Cleft of the Frog, and the processes or plates of horn forming the sides of the projection received into the cavity in the middle of the sensitive frog, are those more particularly connected with the disease, of which we are now to speak. Any injury sustained by the latter of these, is capable of producing it, whether occasioned by the application of wet irritating substances, (which has been supposed by some to be its most common cause,) or by mechanical violence.

The differences of opinion which have existed with respect to the causes of Thrush, we are inclined to think, have arisen solely in consequence of the want of accurate observation of the disease, when formed: it is surely not sufficient to know that a discharge of a fetid highly disagreeable

nature takes place from the part, in order to establish a principle, by which we are to be guided in its treatment; yet such knowledge undoubtedly has been thought sufficient, even to justify men in communicating their ideas to the public: and hence we are obliged to hear of drying applications, astringent powders, &c. which, we are gravely told, are to have the effect of drying up the discharge.

The real nature of this disease has not, as yet, been sufficiently understood, or made public. It originates in a morbid state of the horny substance which form the sides of the cleft of the frog; which state is in the majority of cases, produced by the lodgment of extraneous bodies; a circumstance which the formation of this part particularly exposes it to, as it is easy to conceive, that small particles of gravel, &c.

may be taken up, when the foot is bearing on the ground, and in its expanded state, and be retained there when it is removed, and consequently contracted; thus situated, the foot will be again brought to the ground, and the extraneous body driven by the pressure further into the cleft; and it is by the repetition of this occurrence, that substances of this kind are at length carried completely up to the superior part of the cleft, when their ruinous effects begin to appear. The depth and narrowness of the cleft render it difficult to remove them; and, therefore, with the ordinary attention to this part, they remain—moisture is admitted, and assists their action by softening the horn, and rendering it more easily destroyed by the ragged edges and irregular surfaces which substances of this kind possess; in this way their action is continual and unobserved, till they have cut

through the substance of the horn, and get in contact with the sensitive parts, which generally happens at the upper part of the fissure, at the point where the union of the two plates of horn before described takes place. Then it is that the discharge begins to appear; and if the disease is not at this period attended to, and the cause removed, the destruction of horn continues, the discharge increases, and excessive tenderness or lameness is produced; and in those cases where the disease is still suffered to go on, the extraneous bodies insinuate themselves between the inner part of the sides of the cleft and the sensitive parts, cause a separation of these parts, and sink down into the inner side of the sole, there extending their irritation, and producing the disease termed Canker.

With respect to contraction of the quar-

ters being the common cause of this disease, we disbelieve it entirely; and we never have seen a single instance where it had a greater effect in inducing it, than by the altered state of the mechanism of the part, and consequent narrowness of the cleft, causing a firmer retention of the extraneous bodies which we have before mentioned, as its most common and immediate cause. In this point of view, however, we are inclined to allow it something of the character it has obtained, as we think we have observed it rather more frequently in highly contracted feet, than in feet which have not suffered much from contraction; but this does not go to disprove what we have before asserted, for horses whose feet are in the very last stage of contraction, are daily to be seen totally free from this disease.

We should wish, however, to place this matter in a light different from that of mere assertion; as assertions without proof, especially when they go to explode an established theory, are and ought to be very cautiously received. We think that every man should receive a new opinion, or an opinion which tends to disprove a theory which he has before received as a proposition merely, to which his own mind is to be directed; for in this way only, can conflicting theories be decided on, old ideas exploded, and new ones received in their stead. At a bar of this kind, we willingly place the few following observations we are about to offer.

We trust that it is an established fact that contraction may exist to the extent before mentioned, without the occurrence

of Thrush ; but as it may be advanced that such a circumstance is uncommon, and may be referred to some peculiarity in the foot of the horse, we think it necessary to observe, that it is sometimes seen in one only of the contracted feet to an extent producing extreme lameness, while the other remained perfectly healthy. Now, considering that the disease in the one foot would necessarily induce the animal to rest more on the opposite one, any influence which such a circumstance could have, would be admitted into full action ; again, if contraction really was the cause, why should we see it more frequently in the hind than in the fore feet, where the contraction is scarcely perceptible ; and why also in feet which have never undergone contraction, or even received the shoe.

In the formation and evolution of the

foot of the colt, that part, it appears, which we have described as the seat of the disease, is the last which becomes perfectly formed; and if the colt, during the period between one and three years of age, be exposed to continual, or frequent moisture, as often happens in the winter season, the application of such moisture will bring on a debilitated action of the part producing the horn; in consequence of which a discharge of precisely the same nature as in the disease we are speaking of occurs, which will be found to continue generally till the animal has passed its third year: when the powers of production become proportionately stronger, the part becomes perfectly formed, and the discharge ceases. It is true that the cause of this affection is not precisely of the same nature as that we have stated to be the most common cause of Thrush in horses which have been shod,

because there is in fact no destruction of solid horn ; but the wet and moisture, being applied to the imperfect part, prevents its attaining that degree of solidity which nature intended ; and the part intended to secrete the horn being irritated and thrown into diseased action by the application of such a cause, produces, instead of its natural secretion, a substance of a curdy appearance, with a discharge of a sanious matter, the same as we have before stated, as that occurring in the common Thrush of shod horses. The curdy substance alluded to, however, bears no proportion to the quantity of the fluid discharge, nor does it flow with that fluid from the cleft of the frog ; but if the foot of a colt, of the age we have mentioned, which is the subject of Thrush is examined, there will be found considerable portions of it adhering to the surface from whence the discharge flows :

we consider it to be merely the imperfect horn, the production of the soft parts under debilitated action, and which continues to be produced as long as that action remains.

Viewing this affection in its true light, we cannot but be convinced that it is the same disease as that occurring in shod horses; we give it, therefore, the importance of a proof that such disease can occur in horses which never have suffered from contraction in the slightest degree.

Contraction, however, when existing with Thrush, renders it much more difficult of cure, for as the cleft of the frog of course partakes of it, the proper application of the remedies are rendered more difficult. We have already said, that the horn in the cleft becomes destroyed; it

happens, therefore, that when the cleft is narrowed, the diseased surfaces come in contact with each other; and in such a case no healthy horn can ever be produced; it becomes, therefore, a matter of considerable difficulty to introduce any application to the diseased part; it is an object indeed not to be accomplished without considerable force, and that force, if frequently employed, generally produces great irritation.

The facts here laid down will afford at once a sufficient indication of the plan to be followed to prevent the occurrence of Thrush. It is simple, and admits of being followed up with ease, by every one entrusted with the care of horses. It is a duty which they ought to consider of the most imperious kind, they ought to reflect that we have been the cause of bringing

the animal from a state of nature, and rendering its exertions subordinate to our necessities and our pleasures, and that we have thereby exposed him to the risk of danger and disease. If this reflection should ever cross their minds, it must be a want of humanity, indeed, which will prevent that attention to the feet which they so obviously require.

If the proper degree of attention after the horse has been exercised, or returned from a journey, be paid to the feet, we believe this affection would never occur; this attention, however, does not merely consist of the application of a brush and water to the sole, as the seat of this disease can be little benefited by it; it is necessary that the part which is the seat of it should be more particularly attended to, and cleared from any foreign substances con-

tained therein ; which, we conceive, would be best done by a small brush made for the purpose, which may be easily introduced into the cleft.

The treatment of this disease, like all other of the feet which admit of relief, is simple. Nature herself, in the generality of cases, would be adequate to its cure, if not opposed by its original cause, or, as very frequently happens, by the ingenuity of a certain class of men who assume to themselves the liberty of treating the diseases of horses, with talents scarcely equal to the performance of the business from which they derive their name.

It becomes now our painful task to speak of the means in common use among farriers for the cure of this disease. It would, we are aware, be unreasonable to expect

that any medicine which they prescribe, should be administered on a principle; and it really appears that we should be equally deceived, were we to expect them to be guided by any feelings of humanity; if they were guided by the former, or possessed any of the latter, we surely should not hear of the application of the most destructive and painful caustics which the Pharmacopœia affords to a disease like that of which we are now speaking. They cannot either be guided by experience, for they certainly must see that such applications are never, under any circumstances, useful, but constantly productive of mischief, in many cases being followed by such a debilitated action of the parts, as renders the disease ever after incurable.

The foot of the horse is capable of reproducing horn for the protection of any

part whence it shall have been removed by accident or disease. The consideration of this simple fact will be sufficient to regulate our treatment of Thrush, and to furnish us with a principle on which such treatment may be founded. It may be needless to remark, that all extraneous bodies should be removed from the part; but it should be particularly enjoined that if on examination, any portion of the horn should be found separated from the sensitive parts, such should be removed by the knife.

Every person entrusted with the care of horses, knows that moisture is unfavourable to this affection, if admitted to the diseased part; it may be, therefore, useless to observe, that a seclusion from it is necessary.

Pressure, by the support it gives to the vessels secreting the horn, greatly favours

the production of that horn; and pressure, applied to the seat of this disease, gives the assistance to nature which she requires; that assistance, which we have no hesitation in saying, will be always adequate to its cure.

The method of applying this which we have been accustomed to employ, consists simply of the introduction of a pledget of tow into the cleft of a proportionate size, so that every part of it which is diseased, may have a firm and steady compression. In common cases, nothing farther is necessary; the cleft will retain the pledget without any assistance from other contrivances, and the horse may be generally suffered to work a little without any detriment to the cure; if, however, the case has been of long standing, and improperly treated by caustics, &c. it will not readily

yield to these means; in which case, the pledget, previous to its introduction, should be moistened with a strong solution of sulphate of zinc; which will constrict the vessels of the part, diminish the secretion of fluid, and in a short time establish a healthy action.

In those bad cases of Thrush, where the whole of the horn lining the cleft of the frog has been destroyed, and the disease extends down to its base, on each side the pressure which is applied to the cleft itself, must also be applied to the diseased part of the frog by its side; and this is only to be done by the use of a bar shoe, which will afford means of confining the applications to the part, and allow of pressure being applied to any extent which may be necessary.

With respect to the renewal of the application, it should never be neglected longer than twelve hours; and if circumstances admit of its being removed three times in the day, it will have its advantages, as the pledget will generally, if the discharge is great, by remaining much longer, become softened by it, and thereby cease to afford the necessary degree of compression to the parts.

CHAP. IV.

OF CANKER.

BY the term Canker, is understood an extensive ulceration of the sensitive parts, generally of the sole of the foot, from whence the horn has been separated by disease.

In that part of our work relating to the disease termed Thrush,* we have given an account of the most common manner of its production; and by referring the reader to which, we shall avoid an

* Page 54.

unnecessary repetition. From what, however, we are about to state, it will appear that it may be induced by many, and different circumstances.

The origin and cause of this affection is not like some others, attributable to any particular state of the foot, or peculiar to any species of horse; it may happen indiscriminately to all; either as the consequence of some other disease, or of some injury which has been sustained by the part.

In order to produce what is termed Canker, there must be a separation of the horn from the sensitive parts, with which it is in contact in the natural state; and such a separation may be produced in two ways; either as happens in Thrush, where that affection extends to the sole in the way we have before described, by extraneous

bodies insinuating themselves between those parts; or by the formation and confinement of matter produced by some injury which has been inflicted, as the prick of a nail, contusion, &c.; the latter of which is the case in the affection termed Corns, where it proceeds to suppuration, as described in the part appropriated to that subject. This disease, therefore, when formed, does not by any means merit a distinction by name from Thrush, as it is in reality the same affection, whatever may be its cause, existing in a different situation; and we have only adopted the term, and allotted it a place of its own, in order to avoid confusion, and in conformity with the plan of this work, to render every thing as nearly intelligible as possible.

When suppuration and a separation of the horn and sensitive parts takes place, in

consequence of the prick of a nail, it is only from neglect of that accident when it occurs; the lameness which is the immediate consequence, either passes unobserved or unattended to, the inflammation goes on to produce suppuration, and in many cases it at this time disappears. The orifice, however, made by the nail, is either closed by extraneous bodies, or too small to allow of the escape of the matter; which consequently becomes extended in the sole, undermining, as it were, the foot, till a great part, or the whole of the horn forming the sole, and even that of the lateral parts of the foot becomes separated from the sensitive parts, when lameness again recurs, and leads to an examination. In the generality of cases, however, the injury produced by the confinement of matter is not so great before it produces a second lameness, and attracts observation; and in

some, that which was at first produced never disappears till the proper plan has been adopted ; in which case, the separation of the parts may be supposed to be not so extensive, as its continuance would necessarily lead to an earlier examination of the foot.

When, therefore, suppuration has taken place in this manner, the nature of the case is soon ascertained ; the small opening made by the nail is easily observed, and in cutting the sole through at the part, the matter becomes discharged. The lameness, however, is but little altered by this circumstance, and if nothing further be done, it still continues, and by its continuance, generally leads to a repetition of the use of the drawing-knife ; and thus, if the separation is not very extensive, it may happen that the separated horn will be

entirely removed, and that it will be followed by the production of new. This, however, is not in general the case, for in the majority, a want of knowledge of the great necessity of removing the separated horn occasions a neglect of the proper use of the drawing-knife, and a substitution of caustic, or astringent applications: the edges of the separated horn being thus left surrounding the ulcerated surface, act as a constant cause of irritation; which irritation produces soft fungous granulations on the surface of the sore, rising generally far above the level of the surrounding healthy horn.

In this state of the disease, the appearance is truly disgusting, and has given rise to the idea in the minds of some who are very well informed on this subject, that it hence originally derived its name; and farriers

themselves, from the great obstinacy of its nature, and the constant re-production of the fungus as often as it is destroyed, seem to entertain the idea, that it is of a nature specifically poisonous.

The discharge which takes place from the sore is of a milky appearance; it appears to consist of flakes of imperfectly formed horn, mixed with a fluid of an highly fetid nature, in which it seems partially dissolved; the surface indeed is totally inadequate to the production of solid horn, though it retains a disposition to it, as is evident from the nature of the discharge.

In the common method of treating this disease, the applications of caustics and astringents seem to be the chief objects; and, as has been observed, "some use *Egyptiacum*, or apply dry powdered ver-

digris to the sore, others butter of antimony, and some touch the surface with lunar caustic ; others, again, use diluted nitrous acid, or marine acid, and some are fond of red lead, boiled down and mixed with *Egyptiacum*." Now, the effects of all these may be reduced simply to the destruction of the fungus, which many of them do most effectually ; but to what purpose should the animal be subjected to the torture of such applications, while the edge of the separated horn is constantly re-producing the fungus which they are meant to destroy. The impolicy of such a plan must be at once evident, on account of the effect which it certainly has of debilitating the part ; to such an extent, indeed, does this happen in long protracted cases, as apparently to destroy all disposition to form horn.

We do not mean to assert, that such applications are never necessary; on the contrary, we use them ourselves to destroy the fungus, after the separated horn has been carefully removed; and any further use of them than this, deserves to be deprecated in the severest terms. We have however, seen their effects under constant application; we have seen them produce slough after slough, till the coffin-bone itself has become exposed: their application has even been continued longer than this, and with the true feelings of the profoundest ignorance, exhilarated with the idea of having surmounted a great difficulty, have been told by the individual who was treating the disease, that he had succeeded, as he expressed himself, in "*rooting it out to the bone.*"

Whenever the coffin-bone has been in-

jured in this way, it would not be advisable to proceed any further in attempting the cure; for experience proves that an exfoliation of bone, to the extent which would here take place, a new formation of the soft parts, and a re-production of healthy horn upon these must be a work of more time and expence than the value of the animal itself in ordinary cases is equal to.

Those authors who have hitherto noticed this affection, seem to have had some idea that pressure was useful in the applications to the part; and having ourselves observed the same circumstance, we were led to consider its mode of action more particularly. It appeared to us, that the vessels of the part, debilitated and relaxed as they generally are, might have derived benefit from the support which pressure gave to their sides; with this idea, we determined

to give it a fair trial, and we have not been disappointed in our expectations.

In pursuance of the plan of this work, we proceed to describe the mode of treatment which we have followed in this disease, and which we may venture to say, has been attended with uniform success.

When Canker has arisen as a consequence of Thrush, the horn which is first separated from the sensitive parts, will be that of course at and near the base of the frog; the separated parts form a receptacle not only for the matter which is secreted by the part itself, but for that which is discharged from the sides of the cleft of the frog; which continually flowing down from that part, and being confined under the horn, increases the irritation, and sepa-

rates that substance to a greater or less extent in the sole, proportionate to the degree of irritation which is excited; in some cases, where the disease exists for a long time under neglect or improper treatment, the whole of the horn of the sole becomes separated in this way.

In such a case, then, we should commence with removing the horn of the frog where it is detached; and in general this will be found to peel off without the slightest difficulty to the whole extent of the separation; the better way of removing it, however, is gradually, by means of the knife; in doing which, it will be found in many places attached to the sensitive parts by small threads, apparently of an horny structure, which require to be cut through. And thus, after tracing out and removing

the separated horn to its fullest extent, we proceed to the application of pressure in the manner hereafter described.

When suppuration and a separation of parts has taken place, in consequence of the prick of a nail, the same rule of a total removal of the horn as far as it is separated, equally applies, and care should be taken to leave no small irregular projections of it at the edges, as such would excite irritation, and favour the production of that fungous structure, which is so common, where the horn and sensitive parts have been separated.

As affording means of the application of pressure, as we have before observed, a bar shoe is necessary; and if the sensitive parts have assumed a fungous appearance, the application of a small quantity of the

sulphate of zinc powdered will be of service. After the shoe has been applied, therefore, we proceed to lay pledgets of tow of an equal thickness, one upon another, on the diseased part, till we have brought it up to a level with the shoe, or something above it; a thin plate of iron, of about an inch and a half in breadth, is then to be introduced transversely under the shoe, which can generally be done with ease; another of the same kind of a proportionately greater length is to be introduced in the opposite direction upon it; the pressure will be thus nearly equally applied; but if the disease extends only over part of the sole, and a greater degree of pressure is necessary to that part, the pledgets of tow may be made proportionately of greater thickness. If the separation of horn has extended up the quarters or sides of the foot, as occasionally happens in this

disease, the pressure is to be applied in the manner described under the head of Sand-crack.

It is necessary to observe, that the application should be renewed twice a day, for the reason alluded to when speaking of Thrush. If this caution should be attended to, the parts will, in the course of a few days, become covered by a thin imperfect shell of horn, which, however, is not to be suffered to remain; it appears to be only partially attached, and the matter flows out from under it on the application of pressure; the vessels are of course not to be supposed to have regained their natural strength in so short a time; and, therefore, the suffering this portion of horn to remain, would only be to increase the irritation, and retard the progress of the cure. The same objection, in the generality of

cases, will apply to the second, third, fourth, and even fifth shell of horn which appears on the diseased part, and which ought, therefore, to be removed with the knife, as fast as they appear, and the pressure re-applied in the before-described manner.

By a repetition of this process, and a strict attention to the application of pressure, the diseased surface will gradually regain its power, the secretion of fluid will cease, and the sore will be at length covered with healthy horn. As a rule, however, when the removal of the thin plates of horn described is to be discontinued, we may observe, that so long as the secretion of fluid is profuse surrounding it, or is pressed out from under, by applying the finger to it, it should be removed; for while such a state remains the parts cannot,

for reasons we shall presently mention, be restored to their healthy action.

Considering the exposed state of the sole, when the animal is at work, it would evidently be imprudent to suffer the foot to go without some artificial protection, till the horn has regained nearly its original strength.

With respect to the difficulty of procuring the formation of healthy horn in this disease, we conceive it to be sufficiently explained as follows:—The sensitive parts being thrown into diseased action by the suppuration which has occurred, secrete instead of solid horn, a fluid of the nature before described; some of the vessels, however, and perhaps all, in some degree, retain their original disposition, by which small portions of horn are produced, but

which the fluid secreted with it possesses the power of dissolving.

The secretion of matter so different from healthy horn, we conceive to be the consequence of the irritation originally producing the separation of that substance and the sensitive parts, the effect of which irritation has been to debilitate the action of the vessels; and, as we have before stated, we were hence led to the adoption of pressure, as a means of curing the disease.

That the fluid in question possesses the power of dissolving the horn, is strongly evinced by examination of the frogs of those horses which are the subjects of Thrush, or the surface of the disease of which we are now speaking, at the time of removing the separated horn; where the small portions of new horn will be seen mixed with

it, and half converted by it into a milky fluid. The fact indeed has been more strongly ascertained by the test of experiment; and hence the reason will appear of our advising the removal of the thin plates of new horn, in the treatment of the disease: the short time which these appear after the application of pressure will not admit of the healthy vigorous action being restored to the part; and hence, we find that some of the vessels under it continue their diseased action, and the fluid which they secrete, acts as a solvent on the new horn, excites irritation in the neighbouring vessels, and again produces the disease. Thus it is, therefore, that the disease is found to be so tedious in its cure, if the new horn is suffered to grow, before there has been sufficient time elapsed to restore the power of the part.

It generally happens, that the last point on which the production of healthy horn takes place in this disease, where it has been occasioned by the prick of a nail, is that at which the injury has been inflicted, and which is very tedious in its re-production of that substance. It should, therefore seem that accidents of this kind very materially influence the action of the parts in forming horn, even though the deeper seated parts, as the bone or flexor tendon, may not have suffered from it.

It may not be improper to notice here, the other kinds of injury which may be sustained by the accidental wound of a nail, either from negligence in driving it at the time of the application of the shoe, or, as frequently happens, by the horse treading on them in the street; which latter is distinguished by smiths as the

prick of a *kennel nail*, and which no doubt often affords them a ready explanation of a lameness, really produced in the former manner.

Of Splinters of the Coffin-bone.

A small portion of the coffin-bone will be occasionally struck off by a little deviation from the proper course of the nail, in nailing on the shoe, which is sometimes found to be the case, at the time of the production of the latter disease, of which we have been speaking, and which, in some instances, very materially retards its cure.

Whoever examines the thin sharp edge of the coffin-bone, will see the possibility of such an occurrence, and for ourselves, we think it not an uncommon one; it is,

however, probable, that in the greater number of cases, it becomes again united; otherwise, it would be the cause, on account of the tedious process of exfoliation, and consequent irritation which must follow, of a very protracted disease; the high degree of vascularity of the lamellæ which are attached to the bone, renders the conjecture highly probable, and no doubt the parts are fully equal to the production of the cartilaginous substance which is the means of union between fractured portions of bone, when accident renders it necessary. Wherever nature, therefore, adopts this method of repairing the injury sustained, the lameness attendant would probably be little more than that occasioned simply by a wound of the soft parts.

The knowledge of this circumstance will direct us how to act, in cases where the

course of the puncture made by the nail affords reason to suspect that a piece of bone has been thus separated. It would, of course, be wrong to make use of the probe, in order to obtain conviction of the fact, as that would interrupt the process, which nature had set up to affect re-union; we ought rather to be content with any simple application which would protect the part from disturbance; for, if the process of re-union once commences, it will go on without any assistance which it is in the power of art to give; any interference, therefore, on our part, might be prejudicial, but could not be of service; we may venture, therefore, to lay it down as a rule, that the parts, in such a state, ought to be left to themselves, with the exception of removing a small portion of the horn surrounding the puncture.

In those cases of exfoliation of bone, which have come under our observation, we do not recollect any to have been the consequence of fracture, in the last described manner: in some cases, however, of Canker, which had been previously under the care of other persons, very large pieces of dead bone have come away, in consequence of being exposed to the action of some of the various kinds of caustics which are commonly used in the treatment of this disease; but the value of the animal, after the cure was complete, was by no means equal to the expence incurred.

It has happened to us, in two or three cases which have been subject to the application of caustics, that a re-production by granulation of the soft parts, and of new horn by these has taken place,

when a recurrence of the lameness has been observed ; and on examination, an opening surrounded by the usual fungous granulations, marking the existence of diseased bone, was found communicating with the diseased portion. The knowledge of the tediousness of these cases, induced us to advise the death of all which we have observed, with the exception of one ; on which we determined to try the plan, we believe first recommended by our late preceptor, Mr. B. Clark, of sawing out the diseased portion, and leaving the wound to heal by granulation : the experiment at length succeeded ; but candour obliges us to confess, that it is in a very great degree liable to the same objection, as that of suffering the exfoliation to take place, namely, the great length of time necessary to the cure. The necessary destruction of the soft parts having been very considerable,

required some time for the production of new ; and when these were formed, they were far from having that readiness to produce horn, which original parts possess. To add to this, the operation was performed, as indeed may be supposed, with the greatest possible difficulty, obstructed by the restlessness of the animal, and the constant and excessive flow of blood.

Wounds of the Flexor Tendon.

The next injury which the foot of the horse sustains by the puncture of a nail, or substance of that nature, is that of a wound of the tendon of the flexor muscle, at its insertion into the base of the coffin-bone ; generally more serious in its consequences than the former, and sometimes even destructive of the life of the animal.

The part into which the tendon is inserted, it will be observed, is directly under the point of the frog, or within a very short distance of that part; any deep wound inflicted there, will be, therefore, likely to affect it. The symptoms attending a wound of this nature are of the most violent kind; the lameness produced, is far beyond that attendant on the same accident in any other part of the foot; the animal raises his leg to a very considerable height, and seems terrified at the idea of extending it; constitutional irritation, in a greater or less degree, is a never failing attendant; the action of the heart and arteries is increased to double its natural quickness, the pulse is small, though excessively quick, and the horse appears insensible to every thing around him. In a fatal case which came under our observa-

tion, a locked jaw was the immediate forerunner of death.

The following case will best serve to illustrate the nature of the symptoms attending this injury, and its probable consequence.

In the month of January last, a valuable cart horse, the property of Messrs. Smith and Turnbridge, of Bell Wharf, Shadwell, was affected with a lameness, which was observed soon after the animal had been making some very considerable exertion; the person who drove it produced a nail of very considerable size, which he stated to have been drawn out from the side of the frog, when the lameness was first observed; the horse was quite unable to bring his foot to the ground, and seemed

in excessive pain ; on examining the foot, a considerable puncture was observed by the side of the frog, about midway between its point and base, which seemed to lead in a direction directly into the tendon, a little above its insertion. A portion of the horn was removed round the opening, with the hopes of being able to ascertain the extent of the injury ; but the parts were too deeply seated to admit of doing this satisfactorily, and any further interference with them would probably have been injurious, on account of the irritation it would have excited. Under these circumstances, therefore, nothing further could be done, than to employ blood-letting, with purgatives, and to have recourse to fomentations, in order to subdue the inflammation, which had begun to extend high up the leg.

On the following day, the violence of the symptoms were increased ; and a disposition to Tetanus manifested itself, by a curious distortion of the upper lip: Opium was given in considerable quantities, and the following day the irritation was diminished.

The pain seemed gradually to go off for the space of a fortnight ; in the course of which time, a portion of the tendon sloughed, and as there was a probability of the whole of its insertion not having been destroyed, it was thought advisable to make every exertion to render the animal again fit for service. A considerable time elapsed, however, before it was judged prudent to make the attempt, and the degree of lameness seemed gradually to decrease ; the horse, however, still remains

incapable of extending the leg to an equal distance with its fellow.

Viewing this accident in its proper light, we cannot but consider it as of the highest importance, not only to the veterinary science, and the animal itself, but to the public at large, that it should be well understood; a want of knowledge of its nature at the instant, and an inability to account for the violence of the symptoms; and as a necessary consequence of the latter, ignorance of the proper mode of treatment, might be at once destructive of the life of the animal, and perhaps a very serious loss to its owner. In many instances, the violent symptoms will come on with such rapidity as to allow little time for consideration; and, therefore, in all such cases, promptitude in the applica-

tion of our remedies is of the utmost importance.

Constitutional irritation in a greater or less degree, we have before stated, invariably follows the accident, though at some length of time after it has occurred; it would, therefore, be proper to endeavour to diminish the irritability of the system, and thereby render it less liable to be violently affected, as soon as the injury is received: and here it is to be lamented, that the only purgative medicine on which we can depend, is not quicker in its operation on the intestines; we allude to aloes; if dissolved, however, instead of being given in the common way, this inconvenience would be in some measure avoided.

Next to purgatives, the abstraction of

blood should be resorted to, which would be serviceable, not only as diminishing the tendency to irritation, but as preventive of the local inflammation which may ensue.

After these, then, have been had recourse to, and the aloes have produced an effect on the bowels, the administration of opium in small doses would be advisable; nor should the effect of the aloes be waited for an instant previous to its exhibition, if any tendency to spasm begins to appear; it is the only means we possess of combating the principal danger, and as such, of the highest possible importance; and though its effects on the intestines would be to counteract that of the preceding medicine, yet the immense importance of time will always be a strong argument in

the favour of its speedy use, and a sufficient one to overbalance this objection.

The influence of warm fomentations, in the treatment of inflammation, is so well known, as perhaps scarcely to need our mentioning it here; it may be, therefore, only necessary to enjoin their frequent, and even constant application to the foot and leg, as long as the inflammation continues.

After having, by these means, delivered the animal from the chief danger, it becomes a matter of important consideration, whether it has suffered in a degree by the consequence of the accident to incapacitate it to the performance of its work. If the tendon can be satisfactorily ascertained to have sloughed, the limb will consequently

be rendered almost useless, so far as concerns its exertions; and, in such a case, it would be the duty of the professional adviser to explain the occurrence to its owner, and advise the only remaining plan to be followed.

Wounds of tendons in the human subject were formerly considered extremely dangerous, though a different opinion is entertained by practical surgeons of the present day; still, however, the tendency to spasm very much prevails in such cases, and is observed, in general, to depend, with respect to its degree, on the state of the constitution; robust, and what are commonly denominated healthy habits, possessed of great muscular power, being most affected by it; an observation which seems to afford an explanation of the reason of the horse suffering so much from this

occurrence; as the muscular power of this animal, and its great susceptibility of irritation, must be evident to all who have an opportunity of observing it under disease.

CHAP. V.

ON RINGBONES.

AN anatomical description of the parts concerned in this disease, appears to be a necessary prelude to a description of the disease itself; as without a previous knowledge of such parts, the application of the necessary terms, would create confusion in the mind of the reader, and defeat the great object which we have constantly borne in mind, of rendering our language and meaning as clear and perspicuous as the subject permits.

The coffin-bone is contained within the hoof, and connected to its inner surface by the intervening lamellæ; its articulatory surface, where it is connected with what is termed the small pastern bone, is situated considerably below the coronet; so that, in fact, the joint itself is also contained within the hoof. The edge of the articulatory surface of the coffin-bone is marked by a ridge, to which the capsular ligament of the joint is attached, which encloses the extremity of the small pastern bone. The cartilages of the foot, the seat of Ringbone, are situated on the outside of this joint, and are seen on removing the hoof, and glandular structure of the coronet, spreading very extensively over its sides, rising considerably above the coronet, and appearing to protect the joint from the action of the upper edge of the hoof; filling up also nearly the whole space

between the integuments and the capsular ligament. They are attached by their inferior edge to an excavation in the coffin-bone, at the side of the joint; from which they are continued towards its anterior part, becoming thinner as they approach the sides of the extensor tendon, with which they appear continuous; so that the two cartilages, with that tendon, cover the whole of the anterior and lateral parts of the joint. From their attachment, before mentioned, they also extend backward; and, hence, has arisen their comparison to a fan; their superior edges, over the posterior corner, or heel of the coffin-bone, become turned inward, toward each other, forming a kind of arch over the sensitive frog; the elasticity of which may be easily felt in the living state: their posterior part sends off a small portion, denominated the stratiform process, which is turned round

the heel of the coffin-bone, and passing along by the side of the sensitive frog, is gradually lost in the adjoining parts.

The ossification of the above described cartilages, constitute the disease of which we are now to speak. The alteration in structure taking place in those parts, is that of the conversion of an elastic substance, whose peculiar property is necessary to the proper performance of its functions, into one, differing very little in general from originally formed bone. Viewing it in this light, therefore, we shall not be surprized at the frequent causes of lameness, which such a change is found to afford.

With respect to the circumstance originally causing the deposition of bony matter in the substance of the cartilages, it ap-

pears to us, to be the contraction of the quarters, produced by the application of the shoe; and though the correctness of such an idea does not admit of absolute proof, still it is rendered extremely probable, by the situation in which the ossification most commonly commences. As we have demonstrated, in that part relating to Sandcrack, that the alteration produced by contraction of the quarters, is most strongly felt at the corner or heel of the coffin-bone, it may be reasonably supposed, that the cartilage under that part would be very much exposed to pressure; and as pressure, here applied, to a degree beyond what the parts were originally destined to sustain, must be productive of pain and inflammation; we have been hence led to form the opinion before stated.

The indiscriminate occurrence of this

change of structure, in all the different species of horse, which have received the shoe, seems to favour this opinion, inasmuch as it excludes the probability of its occurrence, as a consequence of any peculiar state of the foot. It is true, however, that the gradual, though constant pressure produced by contraction on the cartilages, does not seem to afford a ready explanation of their ossification; still, as the means which nature has in store for the relief or cure of disease, are in many cases so effectual, and in all so admirably designed; and obvious as it is, that in almost every case which comes under the eye of the surgeon, she seems to have some appropriate means of relief, it would not, we presume, appear extraordinary, were she to adopt some method of liberating the parts from an evil of such a nature.

We believe it is generally admitted, that the tenderness attendant on contraction, is the effect of the pressure, and restraint of the natural action of the cartilages; and as such pressure and restraint are constant sources of irritation and inflammation, there must evidently be a sufficient necessity for the exertions of nature, if she possessed the means, to remove the cause of the affection, or render the parts incapable of being influenced by it. The only method of accomplishing such an object, therefore, seems to be that of ossification; the parts affected being thus rendered insensible, the lameness becomes considerably diminished.

The part at which the ossification first commences, is immediately above the heel of the coffin-bone; the portion of cartilage attached to that part, appearing first to

have a few small patches of earthy matter deposited in it, which gradually increase in size, intermix with each other, and become united ; the deposition still continues, and the ossification extends in a perpendicular direction to the upper edge of the cartilage, when its hard bony prominence may be very distinctly felt, rising above the coronet ; it does not indeed become obvious to the touch or sight, till it has attained this height ; so that the process of ossification must in all cases have been going on a considerable time, before it becomes manifest at that part.

The name which this affection has obtained, appears to have been derived from the idea that the ossification surrounded the joint ; and, consequently, that the whole of the cartilage on each side, was converted into bone. Such, however, is

far from being generally the case as regards its occurrence in saddle horses; as the ossification is, in the majority of these cases, confined to the space of an inch on either side the heel of the coffin-bone; and in many which have come under our observation, in dissection, and which had been existing during the greater part of the life of the animal, the ossification was found to be very inconsiderable. Still, however, the dissection of very old draught horses frequently shew the greater part of the cartilages to be thus affected.

The portion of the cartilages which become ossified, bear generally the same degree of obliquity in their direction with the coffin-bone and hoof; so that when the ossification is extensive on each side of the foot, any action of the parts, differing much from that of direct progression, would

be liable to bring the ossified cartilages, and small pastern-bone, in contact with each other, occasionally, with considerable force, and producing a contusion of the soft parts between; and this is, no doubt, what happens in those cases of lameness which appear in horses affected with Ringbone, after any sudden violence sustained in the attempts of the animal to prevent falling, in consequence of a slip or false step, which is sometimes made under great muscular exertion.

In the course of our researches, in the morbid anatomy of the foot, we have sometimes found an exostosis of the small pastern, and occasionally also of the shuttle bone; an ankylosis of the joint generally existed with these; and in one case, the preparation of which is now in our possession, the parts seem to have undergone a total change, no traces of the

joint, ligament, or cartilage remained, and the whole was converted into an irregular mass of bone. Never having ourselves had an opportunity of observing any disease which terminated in such a manner, we are somewhat at a loss to conjecture what could have been its cause; it is probable, however, that an improper treatment of disease, of the nature described under the head of Quittor, only could produce it: an opening being first made in the joint, and the animal possessing the power of resisting the irritation immediately following it, the common consequence of inflammation of joints where it does not prove fatal, was allowed time to take place: namely, an ulceration of the cartilaginous extremities of bone, and an union of them by ossific matter.

A case, which came under our obser-

vation sometime since, we may adduce as an instance of the great strength which the perfectly ossified cartilage possesses. The horse, which was the subject of it, was the property of Messrs. Wippell and Judson; and had been affected with Ringbones probably for some years. Having become extremely lame, in consequence, as was supposed, of an injury inflicted by the contact of the ossified cartilage and pastern-bone, in the before described manner, the existence of some other disease at the same time, together with its extreme old age, determined those gentlemen on its death; and, on examination of the foot, the coffin-bone was found fractured, about midway between its heel and centre. The appearance of contusion in the integuments covering the ossified cartilage, proved that the violence which caused the fracture was here received; and consequently,

that its strength must have been superior to that of the coffin-bone itself at the fractured part.

In our treatment of this affection we are necessarily confined to palliative means. We believe that no application which can be employed has hitherto been found to give to the absorbents the power of removing bone to such an extent as would be here necessary, if a radical cure was to be effected, though we are assured, by some very late writers on Veterinary Surgery, that blistering, or, as it is termed, firing, will generally be found equal to the production of such an effect. The fallibility of this and every other plan, with respect to the removal of Ringbone, seems however now to be so well and generally understood as to need no further comment; and when we are called to attend a case

where lameness has been produced by them, we are not expected to do more than remove it, nor to render it less liable to occur again.

The nature of the injury which is produced in consequence of Ringbones in the before-described manner, is simply a contusion of the soft parts, which generally disappears in a short time afterwards, by the adoption of appropriate measures. The bar-shoe, to which we have so often had occasion to revert, will be of material service, as affording means of removing the weight of the animal from that part of the foot; for the furtherance of which object the wall of the affected quarter may be rasped tolerably thin, and a small part of its base removed by the knife, so as to prevent its contact with the shoe.

It is generally observed, that horses af-

fectured with Ringbone, very extensively are subject to a degree of tenderness in their walk in dry weather, the cause of which, we believe, has not hitherto been satisfactorily accounted for.

It seems to be sufficiently explained, on account of the more dry and contracted state of the hoof at such periods, the effect of which contraction must be, to compress, in some small degree, the sensitive parts situated between the hoof and ossified cartilage; and though this contraction may be supposed to be too trifling to have a very powerful effect of this kind, yet it must be recollected, that the mechanical adaptation of the parts is so extremely nice as to be susceptible of the slightest change which can possibly occur in either one of them individually.

That this is really what happens in such a case, appears to be clearly proved by the effect of the plan which it at once seems to dictate; namely in the application of moisture. The use of clothes dipt in cold water, and kept constantly wrapt round the hoof, will generally be found to remove all appearance of tenderness, arising in the above manner, in a short time after they have been employed.

CHAP. VI.

OF QUITTOR.

THE amount of every thing which, we believe, has hitherto been laid before the public, with respect to this disease, is, that it consists of sinuses extending in different directions at the coronet, which, we are informed, are to be cured by the introduction of caustics.

It seems to have derived its name from the attending discharge; and all who have hitherto spoken of it, appear to agree in

imputing it to some violence done to the part, either by a blow received from the opposite foot, or by a tread from the caulking of another horse ; and such are no doubt the most common ways in which the injury originally producing the disease is inflicted.

The almost constant state of action of the parts in which it is seated, affords an explanation why injuries, even of the slightest kind, here sustained, are so tedious in their reparation ; the means which nature adopts for that purpose being opposed by such action, by the irritation thereby kept up in the diseased part.

The nature of the injury originally inflicted by this species of violence is that of contusion, the severity of which is such as completely to destroy the organization

of the part, and consequently its life. The means, therefore, to which nature resorts as a mode of cure in such a case, is not that of rendering the part again equal to the performance of its functions, but the getting rid of it entirely, and the supplying its place by the production of new substance; and hence, in the incipient state of this disease, a slough, or, what is termed by Farriers a *core*, is discharged, which leaves a clean ulcerated surface, to which the attention is afterwards to be directed.

With respect to the treatment of the ulcerated surface remaining after the separation of the slough, it ought to be that most tending to diminish the attending inflammation. Poultices and fomentations ought, therefore, to be resorted to; and the animal should be kept in a state of in-

action till the injury has been repaired, and the sore healed.

We have said such *ought* to be the plan of treatment; but we are far from meaning that such *is* generally adopted; if it were, indeed, we should never hear of injuries of this kind proving destructive of the life of the horse, which unfortunately is but too common an occurrence. What *is* the common method of treatment, then, is next to be considered. The Farrier, therefore, instead of the plan above recommended, proceeds to effect an object which he deems indispensably necessary, in all such cases, to the ultimate cure of the disease; namely, the bringing away a *core* from the part. Here, then is a subject which allows full scope for the exercise of ingenuity; the means by which this core is to be separated is selected

from a numerous list of cauterizing applications readily resorted to on all occasions, and which have each of them the title of specifics of an infallible nature in some one or other of the diseases of the foot.

As far as we have been able to observe, corrosive sublimate seems to be considered the most eligible for this complaint. A quantity of this active preparation is applied to the part, which of course answers the expectation of the prescriber; and probably by this time, if the injury is inflicted on the side of the foot, as it generally is, the smooth, shining surface of the lateral cartilage becomes exposed; then immediately this poisonous something,—this *core* which is so diligently sought for in the bottom of every sore, becomes at once obvious to the senses, and they proceed with re-

doubled efforts to extract it. For this purpose, they again fill the excavation with the same preparation, by which the cartilage is at length destroyed; or rather an opening made through it, which admits their applications into contact with the capsular ligament of the joint. It would be fortunate for the animal if their pernicious plan was discontinued here; but some are not even now satisfied; and cases have no doubt frequently occurred where that ligament was actually opened, and the bones observed moving upon each other, before the perseverance of these sons of Vulcan would suffer them to acknowledge the case incurable. Indeed, whenever this latter circumstance occurs, the poor animal generally very soon condescends to save them the degradation of such an acknowledgment, by its death.

When the cartilages have been injured in the above manner, a receptacle is formed on their inner side for the matter which is secreted by the part, and which being there retained, makes its way between the cartilages and ligament, and forms sinuses in various directions. The cartilages being less vascular, are not capable of bearing the inflammation like other parts, and being also in many parts denuded by the matter burrowing under them, become destroyed to a considerable extent. Those parts which are exposed, during the progress of sloughing, undergo a change of colour; become first yellow, then green, and finally separating, are discharged through the original opening. If, however, they become dead, as occasionally happens, under the adjoining healthy glandular structure secreting the hoof, they there excite irri-

tation, and cause the formation of several small sinuses through the superincumbent healthy structure, by which the dead part is at length discharged.

In the commencement of the foregoing description, we have mentioned the origin of the disease as a slough of the integuments; that the cartilages are affected secondarily, and in consequence of improper treatment. This, however, is not always, and perhaps not the most common manner of its occurrence.

The cartilages being less vascular, as we have before stated, and more easily destroyed by inflammatory action than the soft parts, would, it may be supposed, be incapable of resisting the same degree of injury. It therefore happens, that when a blow has been received upon them, though

protected by the integuments, a small portion will become destroyed, and a proportionally small fistulous orifice will be formed for its discharge through the integuments. This, therefore, is another form under which the disease first appears, and which, like the former, would probably be its termination, if properly treated. As, however, that is not generally the case, and as the animal is unrestrained from motion of the parts, the irritation is increased; further inflammation and consequent destruction of cartilage occurs, and more sinuses are formed. The irritation produced by simply allowing motion of the parts would itself be sufficient, eventually, for the destruction of the cartilage; but will it be believed, that it is a custom to cram the sinuses with corrosive sublimate! The bare mention of such a circumstance to a Physiologist would al-

most shock belief; and we ourselves would not hazard the assertion, did it not admit of frequent ocular demonstration.

The treatment of Quittor in its incipient state is the same, whether appearing as a slough of the integuments, or in the form of a sinus; the indication is evidently to diminish irritation; and though the appearance of a single sinus may at first warrant the supposition that an extensive injury of the cartilage had occurred, still, if this indication be attended to, it will be found, we may venture to assert, sufficient for the cure; for in the many cases of this nature which have come under our observation, we can conscientiously aver, that a strict attention to it never failed to prevent the appearance of a second sinus.

The constant application of poultices

to the coronet will be found to be a powerful means of subduing irritation, and therefore merits particular attention. An inactive state of the limb is absolutely necessary to be observed; and as the sinuses generally run in a direction likely to be very much influenced by pressure, it becomes a matter of consideration how such pressure can be best removed from the part.

If the disease occurs above the inner quarter, as is the case in the majority of instances, it is a practice with us to rasp that part sufficiently thin to render it incapable of communicating any pressure to the parts adjoining the coronet, when the foot is in contact with the ground. Whether existing, however, at the inner quarter, or any other part of the foot, the horn of the hoof, not only immediately under it, but to as great an extent as is admissible

on its sides, should be treated in the same way.

A bar shoe is of course to be employed, and if the sinuses should appear slow in closing, after the inflammation has been, by the above means subdued, they might be injected with a solution of sulphate of zinc in the proportion of one drachm to four ounces, with considerable advantage.

It happens not unfrequently that one of the sinuses is situated in the coronet immediately above what is termed the heel; and, on examining it with a probe, it will be found to extend downwards, between the hoof and sensitive parts, to the inner surface of the bars and frog, and causing a separation of the horn of those parts to a considerable extent. The treatment, therefore, in such a case, would be to fol-

low its course with the drawing knife, removing all the separated horn, and confining any simple application which may be thought necessary afterwards to the exposed surface, by means of bandages passed round the hoof. In the employment of these, however, in such a case, the means which are most effectual in producing horn in other parts are not admissible; for any pressure applied here must be communicated to the cartilage underneath; and if that substance were diseased in any part, it would occasion much mischief by the irritation it would not fail to excite. In preference, therefore, to risking an occurrence of this kind, it would be advisable to apply the bandages only sufficiently tight to retain the application on the part, till the cartilage had regained its healthy state, when, if pressure

be found necessary, it may be safely applied.

It has been recommended by some, and is probably extensively practised to dilate the various sinuses which may appear to their utmost extent: when, therefore, they are situated under the cartilages, between these and the capsular ligament, the former of these parts must necessarily be cut through. The division of the cartilage, however, is not all which is done in such cases; for, as it appears to have been a pretty generally received opinion, that the inner surface of the sinus is incapable of producing granulations, it becomes necessary that it should be completely removed by the knife before a cure can take place. In conformity, therefore, with this idea, a probe is introduced into the sinus, in order

to ascertain its direction; the operator then boldly carries his knife to a sufficient depth to reach it; and, by a semi-rotatory motion of the hand under it, brings the knife out on its opposite side; and thus he includes, as he imagines, the sinus in the incision, together with the superincumbent glandular structure of the coronet. We say *imagines*, because we think it improbable that any degree of certainty can exist with respect to the depth which the knife has gone at the time of turning it; an inconvenience which will be very much felt by a timid operator, as his fears, seldom suffering him to go deep enough at first to remove the diseased part, will give rise to a necessity for a repetition of the incision. In the hands of others, however, of a less cautious disposition, the knife may be carried too low; and thus an opening will be formed in the capsular ligament of

the joint. Nor is this an imaginary fear; for the small space between the cartilage and ligament, and consequent contiguity of the sinus to the latter part, would render an excision of it, without encroaching on the ligament, a matter of great difficulty. The cartilage and ligament indeed are so closely connected with each other at one part as to be inseparable; the operation, consequently, under any circumstances, will be extremely dangerous. To a person acquainted with these facts, the manner of performing it, supposing it were necessary, would be an insuperable objection to it: it is not merely to the manner of performing it, however, but to the operation itself, that we bring forward objections which we think merit, and should hope would obtain consideration from those whose interest and duty it is to be well-informed on this point.

Supposing, therefore, a sinus, extending down near the capsular ligament, is treated in this way, the horn immediately over it is first removed; in order to expose its course, the operation described is performed, and the cartilage divided: instead of healing, as a common wound, however, as is expected, the irritation occasioned by the divided edge of the cartilage, is observed in a little time to have produced fresh sinuses, extending more deeply down, and calling for a repetition of the operation; and thus the disease will continue extending, till the patience of the proprietor of the animal is quite exhausted; or, if recovery ever takes place, it will not be before the expence of medical attendance and support amount to more than its original value.

Another and equally important objection

to the operation, is the necessary extensive destruction of the glandular structure of the coronet, by means of which the hoof is produced. It may be readily supposed, that where this has been destroyed or injured, its functions cannot be properly carried on; and therefore, after an operation of this kind has been performed, a deficient formation of horn is the consequence, denominated a false quarter.

Of the nature of a false quarter it perhaps may be necessary to say but little; its inconveniences and deformity are too well known to require it. To say the least of it, it is an irremediable blemish, and as such, requiring our utmost exertion to prevent.

Unlike many of the plans adopted in the treatment of the diseases of the horse, we think we can trace this to something

like rationality. It seems to have taken its origin from a principle of human surgery, of reducing the disease to the nature of a simple incised wound. If this, however, really was the case, we should think it would have been advisable on the part of its original proposer, to have considered more fully the nature of the parts on which he was about to act, and the functions which those parts had to perform: if he had done this, he would have foreseen the obstacle which the cut edges of the cartilage afforded to the healing of the parts; he would have foreseen also, that a part like that destined to the formation of horn could never be produced in any thing like its original strength; and he would consequently have known that the horn produced hereafter by those parts, would be very inferior in strength to that produced

where no such operation had been performed.

It sometimes happens that a slight degree of violence, inflicted immediately at the anterior part of the coronet, will cause the formation of a small sinus between the hoof and soft parts covering the extensor tendon, exciting considerable irritation and lameness, and causing a separation of the horn from the soft parts.

The treatment of such a case would consist of a removal of the separated horn, and the application of pressure; it would also be advisable to rasp the hoof tolerably thin in the adjoining parts, and direct the employment of a bar shoe, in such a manner as to prevent any influence they might derive from the weight of the body.

From the foregoing description of this disease, and the plan of treatment which we have adopted, it will appear that our opinion, with respect to the extension of the sinuses, and the great difficulty of healing them, is, that these untoward circumstances are the effect of the irritation which is kept up in the parts by their action; and such, we think, will be the opinion of every one who fully considers the nature of this action and its effect on the sinuses, running, as they do, in directions which expose them to the influence of the slightest action of the joint and of pressure when the animal throws any part of its weight on the diseased foot. This opinion will also be strengthened by a consideration of the great power of reproduction of parts destroyed by accident or disease, which the horse possesses, and which would enable him, in all cases,

to recover from injuries of this kind, were not the means adopted by nature for such an effect, counteracted by some unnatural cause: what cause, therefore, of this kind can exist here, but that of the irritation produced by the action of the parts?

It would be improper to pass over, without notice here, the practice of blistering the coronet in cases where this disease has caused the production of horn which is unequal in strength to that of the other parts of the foot. It is well known that Veterinary Surgeons are sometimes very disagreeably situated in cases where a horse has recovered under their care, from any disease where the production of horn is concerned, on account of the anxiety of the owner, naturally produced by the long confinement of the horse in the stable, to place it at work before the horn has re-

gained the necessary degree of strength : and, as a blister applied here may be supposed to give rise to a necessity for the prolongation of its confinement, it would probably prove advantageous, by allowing more time for the attainment of this object. We cannot, however, yield our assent to the opinion, that the application of a blister contributes, in any degree, to strengthen the horn which is produced.

CHAP. VII.

ON THE EFFECTS OF THE APPLICATION
OF THE SHOE.

THE contraction of the quarters in the fore-feet of the horse, and the evils which it tends to produce, has long since attracted the attention of Veterinarians. Both research and theory, however, till within these few years, appears to have been exhausted and defeated in the discovery of its cause.

The existence of evils which are generally felt, will always become objects of

more extensive inquiry than those which are only partially so; for a greater number of individuals will be prompted by interest to the discovery of the source from whence they spring, in order to their removal: the contraction of the quarters above alluded to, affords ample proof of the truth of this observation; for since the revival of the Veterinary Science in this country; since the previously inexplicable habits of tripping or stumbling, of frequent or constant lameness in horses, which appeared to exhibit no other marks of disease, have been found to be referrible to this occurrence, it has become an object of universal interest.

Bad shoeing, previous to the time of Lafosse, was the only method which existed of accounting for it: to him however, and perhaps in some degree to the French

Academy, who appear to have greatly encouraged his attempts at improvement of the science, we are indebted for the first step towards the overthrow of those principles which taught us, in opposition to our better judgment, to consider the rules and practices of our predecessors as laws which could not be deviated from with propriety or justice: and however erroneous his doctrine may since have proved, we cannot deny him the merit of first opposing reasoning and inquiry to practices supported only by custom, and which neither of these faculties had any share in establishing. The theory of pressure on the frog, as a method of preventing contraction, which has been since revived, and still continues to be taught in this country, owes its origin to him; and, though not admitting of reduction to practice, exhibits traits of ingenuity, we have reason

to believe, not very common among Veterinary Practitioners at that period.

With respect to the causes of contraction much difference of opinion exists; nor is it to be expected that such will cease to exist, till prejudice, the most constant and important bar to every species of improvement in science, shall have yielded to habits of impartial inquiry and candid disquisition; for then only can the truth be fully understood and admitted.

That contraction is a deviation from the natural state of the foot, no one has for a moment presumed to doubt: it was evident, therefore, that its cause must be sought among those incidents which occur to the animal in its domesticated state. Hence the dry state of the stable, bad shoeing, and, at length, a want of pressure

on the frog, were adduced. That the former of these has any influence in producing it, admits of a doubt; and with respect to the second, it is a term too vague to convey any just idea; nor was it probably ever understood or defined by those who employed it; for, as they were ignorant of the mechanism of the foot, they could not possess any sound principle by which their shoeing might be regulated; and accordingly, what they might have termed good shoeing, would probably have been as subversive of the nature and action of the foot as the very worst of the present day.

That pressure on the frog would prevent contraction, appears, on superficial examination, extremely probable, because its mechanical influence directly opposes it; but, unfortunately for this theory, there

are two or three circumstances which go far towards proving that pressure on the frog never was by nature intended, in the slightest degree, much less that it should serve the purposes of a wedge to separate bodies of infinitely greater power than itself, and that so far from being necessary to health or the cure of disease, its influence is diametrically opposite in each of these respects; as will appear from the facts we are presently about to offer.

It is by accurate observation of animal bodies, in a state of health, that we are to become competent judges of the various changes they undergo from disease: the few opportunities which have occurred of observing the foot of the horse in its natural and fully evolved state, owing to the practice of shoeing them previous to their attaining it, has probably contributed

very materially to retard the progress of discovery and improvement in this part of the Veterinary Science; those who recollect the work of St. Bel, the first Professor of the Veterinary College on this subject, will readily agree with us in this opinion, as even the plate which he sent forth with it, as the pattern of a healthy foot, was certainly the delineation of one in a considerably advanced stage of contraction.

As the mechanism of the foot and its action are importantly concerned in this question, a few observations on it become necessary. Whoever considers the great sensibility and vascularity which its internal parts possess, and how susceptible they must be of the operation of external causes, cannot but be convinced, that if the foot had been surrounded by horn of

an equal thickness and strength with that of its anterior and lateral parts, the want of elasticity, and consequent sudden resistance with which it meets, when brought in contact with the ground, even with an ordinary degree of force, could not fail to be productive of severe concussion. The same inconvenience would be felt even as the foot is formed, were the quarters composed of hard and inelastic materials; and therefore nature has given to them the power of expansion when the foot is brought in contact with the ground: by the interruption to the circular figure of the hoof between the heels, and by the insertion of the frog at this part, a substance considerably more yielding and elastic, she has also given sufficient room for the exercise of this property. From this admirable contrivance the quarters derive the power of receding from each other when any weight

is imposed from above; of yielding gradually to it in proportion to its degree, and thereby effectually preventing the occurrence of any sudden shock which may prove injurious to the internal parts of the foot.

Besides the elastic properties which exist in the foot in its natural state, its conformation is materially different from those which have received the shoe. On viewing it with the sole turned upwards, one of the most striking instances of the combination of utility and beauty, existing perhaps in the animal economy, is manifested. So closely indeed are these properties connected in the foot of the horse, that the former cannot exist to the extent nature intended, without the latter; and the latter is an equally constant attendant on the former, the open luxuriance of the sole and frog, bounded posteriorly by the

uniform rotundity of the heels, proves how important a consideration beauty has obtained from nature in the formation of animals, where its employment is consistent with utility; and conveys to the mind a sensation of regret, that so exquisite a performance should become a sacrifice to the means which render the animal necessary to our service.

In the natural state of the foot, at the age when all its parts are become fully evolved, or about the fifth year, the proportion of the frog with the sole, and the open state of the heels is remarkable; the base of the frog is invariably found, on admeasurement, to be equal to one-sixth of the whole circumference of the foot; and the cleft, instead of the narrow fissure it appears in contracted feet, is open and expanded, and occupies a space equal to one-third of the base of the frog. The ob-

servation respecting the proportion of this latter part with the circumference of the foot has been justly said to be important, as it affords a probably accurate method of ascertaining the degree of contraction the foot may have undergone at any period after it has received the shoe. Other curious remarks have been made respecting this subject, which are of an highly interesting nature; as that the wearing points of the hoof are not as might be expected at the toe and extremity of each quarter, but chiefly on the outer side of the former part and external quarter, which appears to be the effect of a peculiar formation of the bones of the knee, by which the feet are at the same time prevented from interfering with each other in progression; the weight too of the fore quarters is thrown, by this construction, to a greater distance from the centre of gravity which falls between the legs: and this, or the prevention of inter-

ference of the fore extremities with each other, appears to be the primary object which nature has in view in thus forming the bones of the knee: the extensive bearing on the outer side of the foot is a necessary consequence of these, and perhaps the deficiency of strength of the inner quarter may be referred to them, as it may be readily supposed, that as this part is not destined to share the weight to an equal degree with others, it may not be of necessity so strong. Another, however, and a more important observation, so far as is connected with the question of the functions of the frog, is, that in the natural foot the wall of the hoof is not as in those which have been shod on a level with the sole, but projects below it to a distance equal to its thickness, so that if the foot be placed on smooth ground, no part of the frog, even in the expanded state of the foot,

comes in contact with it. It may be observed, in answer to this, that the horse is not destined to move only on level ground, and consequently the frog will not fail to receive pressure under opposite circumstances. Supposing the horse, however, bears this pressure with ease and convenience on irregular ground, it is certainly not hence to be said, that it was intended by nature to be constant and violent, and equally forcible, when the foot is off the ground, as in contact with it: yet such it certainly must be in the use of the patent frog. We have now to state a fact which will perhaps individually be sufficient to decide this question; and which admits of ocular demonstration: it is, that the horse placed on unequal ground, so as for the frog to sustain a portion of the weight, becomes restless and uneasy, and continues changing the

situation of his feet, till he succeeds in placing them where that part is left at liberty and free from compression.

To return from this digression to the description of the alteration taking place in the foot after it has received the shoe, we need not perhaps inform our readers that this subject has been submitted to the test of a series of experiments, satisfactory in their result, and clearly demonstrative of the fact they were originally set on foot to discover. The foot, which was their subject, answered the description given in the preceding pages :* “The horny heels, from one to the other, in the original state

* In order to render the matter as clear as possible, casts were regularly taken with plaster of Paris, the whole of which being preserved, served to show the gradual increase of the contraction in a very satisfactory manner.

of the part, measured somewhat more than four inches; in the second cast (taken after twelve months shoeing) scarcely three. The foot measured across its widest part, viz. at the greatest swell of the quarters, was in the original cast nearly five inches and a half; in the second it was four inches and seven-eighths." The frog too was materially altered: "the cleft at its base had become partly closed; forming a rounded ill-formed hole, and much deeper than the cleft of the natural foot. The base of the frog, which was in the natural foot of the width of two inches and a half, had now become hardly so much as two inches. The bars had considerably lost their sloping direction, and had become more perpendicular and encroaching on the sides of the frog, and consequently more disposed to compress it." Thus we see, in the space of so short a time, a material alteration in many parts of the foot

connected in any degree with that mobility of the quarters which was given by nature for the wisest of purposes, and which is doubtless absolutely necessary to the well-being of the foot; this elasticity is now in a great measure lost, because the wide, open state of the quarters and frog, which was necessary to its existence, is destroyed.

After a second year's shoeing of the same foot, the hoof appeared to become more stiff and inflexible: "the quarters more straitened, and a further reduction of its bulk, of near half an inch, had taken place. The cleft of the frog had become narrower; the foot had run out and increased at the toe, as though this part, from having no restraint, had increased at the expence, as it were, of the diminishing quarters and heels, being further in extent before the point of the frog." We now proceed to mention the further changes

which were exhibited in the following casts, taken annually in succession. “The area of the foot, in its transverse diameter, is seen further diminishing, and the condition into which the preceding reduction has brought the foot, will occasion lesser degrees of this change to be now more severely felt. The horn is every where in more close embrace to the sides and posterior parts of the foot: the sole, thickened and almost inactive, creates a resistance also in this direction; and a general want of elasticity will occasion the movement of the bones within the hoof, and the hoof itself to be diminished and constrained, the vascular organization uniting and attaching the hoof and bone together, becomes diminished, and its functions impaired,” &c. &c.

Another and very important observation, made by the author, from whom we have

taken the preceding quotations, is, that the frog makes a considerable descent in consequence of the application of the shoe; a circumstance which the favourers of the doctrine of pressure on this part may probably construe into a natural disposition to meet the ground, but which seems to be more satisfactorily explained as follows. If the nailing of the shoe to the foot fixes the quarters (of which there cannot possibly be a doubt), they must be equally incapable of possessing the two properties of elasticity, namely, that of yielding to pressure, and of regaining its original state previous to compression. The pressure from above, therefore, has the effect it may be supposed to have in the fixed state of the hoof; the frog is gradually forced down by it, while the want of power of contraction prevents its regaining its place; its mechanical influence,

is that which pressure always will have on bodies incapable of resisting it entirely, and yet sufficiently strong to yield to it only in a trifling degree.

To those not well acquainted with this subject, the foregoing relation of the changes which the foot undergoes will appear almost incredible. Not the slightest exaggeration, however, we are authorized in observing, has been permitted; for such changes certainly take place in every foot which is shod with iron in the common manner; and it is a matter of interesting inquiry to the physiologist, why they are not productive of more obvious consequences in the gait of the animal than are usually manifested. It is certain, that the horse very soon becomes sensible of the influence of the shoe after it is applied; for he gradually loses that freedom of action which he previously possessed, and

assumes a timid manner of using his fore legs, fearing to extend them so freely as he is found to do in a state of nature ; but as this habit is too common to be observed by those who have not had opportunities of seeing the animal previous to its receiving the shoe, its existence is not suspected. The usual effect of pressure, applied to living parts, is to cause an absorption, or wasting of those parts ; and this appears to be the only manner of accounting for the small degree of pain which the horse manifests while the process of contraction is going on ; for, as the pressure is not at first violent, but continues gradually to increase, the absorption of the soft parts between the coffin-bone and hoof is proportionate to it, and thus a gradual decrease, more particularly of those which are most compressed, gives room for the contraction to go on till their greater part is

taken up by the absorbents, and the hoof has but little more to embrace than the coffin-bone itself; and even it at length becomes affected by the contraction, the beautiful reticulated appearance of its external surface, near the heels, is obliterated, in consequence of the pressure it sustains, and its figure becomes materially altered.

If the nature of the action of the quarters requires farther elucidation than has been attempted in the preceding pages, we may remark, that it has been compared to that of a bow; and it will be found, on examination, that this comparison is not improperly applied, even as regards the functions of the frog; for, as instruments of this kind require limits for their expansion, the quarters, if their action is of the same nature, may be supposed to stand equally in need of them, and they

are accordingly provided, as we shall presently demonstrate in the formation of the frog, this organ having the power of yielding gradually to the expansion ; of checking it when it has taken place to a certain extent ; and of retraction of the quarters to their original state, previous to placing the foot on the ground. The readiness with which the quarters contract is satisfactorily explained by their want of that internal support which the coffin-bone affords to other parts of the hoof ; for it will be understood, that the heel of the coffin-bone does not extend to the posterior extremity of the quarters, and consequently, every part beyond this will be destitute of any resistance to contraction beyond what the soft, elastic matter, filling up the space between the heels of the coffin-bone and inner surface of the posterior part of the frog and quarters, is capable of affording.

No principle of practice, which is erroneous, can have its defects long concealed, because the test by which it is tried will ever be impartial: wrong principles lead to erroneous practices, and the effects of the practice will be the best means by which we can judge of the principle: but if it is not hence said, that a universal trial of the practice is necessary to the approval or condemnation of the principle, we shall be fully justified in making the few following observations, confident that those few who have, like ourselves, investigated the matter which is the subject of them, will afford us a ready concurrence.

Any principle by which the management of so important a part as the foot of the horse is regulated, ought not to be equivocal in the slightest particular; for,

as the diseases, and causes of disease of this particular part, are more numerous and more frequently occurring than those of any other, the more extensive will be the injury produced where the principle of practice is erroneous. It is this consideration which induces us to be more solicitous of submitting to the attention of the reader the observations alluded to on the doctrine of pressure on the frog.

If this part had been intended by nature to receive pressure (the only plea by which the employment of pressure can be justified), one should expect that she would have proportioned its solidity to the performance of this office; for it would be infinitely differing from the rest of her performances, had she assigned any particular office to a part, and not given that part properties which only could have enabled it to perform such office: yet this she certainly has done, if she

ever intended that the frog should receive the degree of pressure necessary to prevent contraction of the quarters; an observation, the truth of which will be evinced on examination of the natural foot: the horn of the frog will be here found so thin and yielding, as to be capable of alteration from the slightest impression of the finger, receding on pressure, and gradually regaining its original state after its removal, (a property which would rather seem to suggest the idea, that the application of force was injurious, since it seems to be a provision against the accidental occurrence of pressure of a pretty similar nature to that against concussion of the internal parts by the elasticity of the quarters): there is, besides, a medium through which the pressure must be conveyed, in order to have the effect of expansion of the quarters, and this medium is even of a more unre-sisting nature than the horn of the frog:

it is composed of the soft substance filling up the space between the inner surface of this part and the quarters and posterior part of the coffin-bone, commonly denominated the *fatty*, or *sensible* frog, and the lateral cartilages which have been described under the head of *ringbone*; thus the pressure must be first applied to a body, softer, and of less power than the parts it is intended to act on, and to be transmitted from this through others still softer, to its final destination, viz. the inner sides of the quarters.

It would be unnecessary to make any comment on this part of the subject, were it not a preparatory step towards ascertaining the bad effects which pressure on this part may have under circumstances of disease: it will have been already understood, that the immediate cause of the expansion of the quarters is the impulse of

weight from above: if pressure, therefore, be applied to the frog, it will be met by that of the weight of the animal from the bones of the foot; the soft parts, therefore, composing the *sensitive frog*, will be placed, by this plan, in a situation, better imagined perhaps than described, compressed, however, between two opposing bodies with considerable force. We have stated, in another page, that the effect of pressure, gradually applied and increased, would be the absorption or wasting of parts; but here it will be obvious, that the pressure is neither gradual or slight; the consequence of it, therefore, will be inflammation of the parts sustaining it, and hence arises that lameness which follows the use of the *patent artificial frog*. What, therefore, would be the influence of this plan in cases of thrush, in which disease the parts are constantly under considerable irritation: compressed as they are by two opposing powers, this

irritation is aggravated to such an extent as to render its discontinuance absolutely necessary; and yet there are those who have been sanguine enough to expect the removal of this disease from its employment.

The sensitive frog does not possess the power, very extensively, of expanding laterally, when pressed on above or below; the quarters, therefore, in horses, which have strong hoofs, would probably not be expanded in this way to the extent they would be, simply by the weight from above in the natural state of the foot.

The preceding remark* on the yielding nature of the frog will be seen to be only applicable in the natural state of the foot, the only state where a proper idea of the

* Page 168.

functions of its several parts can be obtained, and in which it will be sufficiently obvious, that pressure will be productive of mischief. The constant habit which has existed, of mistaking the foot, advanced in contraction, for that in a state of nature, perhaps in some degree tends to explain the origin of the idea of the frog being destined to receive pressure, for in contracted feet it loses its resemblance in almost every particular, and instead of the soft yielding horn existing in the natural frog, a hard, firmly resisting body is presented to the touch, of a degree of thickness bearing no proportion to that of the horn of the frog in the natural state. Its appearance, therefore, seems calculated to generate this idea of its functions, and it would probably, in some degree, if compressed, effect the expansion of the quarters; that is, if the quarters possessed their original degree of mobility: if subject

to continual compression in this state, it may also retard, in some measure, the further progress of contraction, not, however, by communicating the pressure to the sensitive frog, but solely by its own strength; for as the figure of the surfaces of the frog, as will be presently seen, is that of an inverted arch, the pressure on the centre of this arch, which takes place as applied in the common manner, is communicated to its sides, and thence directly to the bars and quarters. It will be obvious, indeed, that in all cases where the horn of the hoof is so thick as to be incapable of alteration of its arched figure, by compression, the sensitive frog will not be compressed in the slightest degree, but the pressure applied will be naturally transmitted to the sides of the arch, and thence to the quarters. Very few frogs, however, even of highly contracted feet, appear to

be capable of bearing this degree of pressure long, but, yielding gradually to it, at length convey it to the sensitive frog, and lameness, sooner or later, will be found to follow.

The system of thin heeled shoeing was, we believe, established with the intention of suffering the frog to come in contact with the ground, and thus to prevent contraction; but it will be seen that a very important rule in the application of this kind of shoe will much better explain, except in very advanced cases where the frog is so thick as described, the success it meets with in expanding the heels than the pressure thereby sustained by the frog: we allude to the distance which the nails are driven from the quarters: a rule established under the idea of giving liberty to the expansive power of the frog, which it was

thought could not produce the effect assigned to it if the nails were driven too near the quarters, because the fixed state of these parts would oppose it. That driving the nails near the quarters would prevent their expansion, we have mentioned, in a former page; but this observation is not in any degree connected with pressure on the frog, for it will be soon seen, if submitted to the test of experiment, that the same precaution will be equally effectual in preventing or retarding contraction, whether a thick or thin heeled shoe be employed; whether the frog receives pressure or is perfectly free from it: the knowledge of this circumstance, one should apprehend, will have a considerable influence with those who have hitherto employed the thin heeled shoe; for though this shoe, for the reason before alluded to, prevents contraction beyond a certain extent, it is not unknown

that its use is frequently attended, after a long journey or great exertion, on the part of the animal, with a degree of stiffness or tenderness which its owner is at a loss to explain, but which may generally be referred to the frequent and violent pressure which the frog has sustained, or to the greater force which is imposed on the flexor tendon or back sinew, in consequence of the disproportionate thickness of the toe and heel of the shoe ; inconveniences from which a shoe of equal thickness, in its various parts, is perfectly free.

The foregoing observations have enabled us to draw conclusions, which seem unfavourable to the opinion alluded to, respecting the functions of the frog ; and there are numerous other circumstances, which an anatomical detail would develop, tending to prove, that its offices are materially different

from those assigned to it by Lafosse and Mr. Coleman. Anatomical detail, however, when extending to minutiae, will ever be found dry and uninteresting; and, as in a work of this kind, an absolute necessity for its introduction very frequently occurs, it has been an object with us to avoid it as much as possible where it can be dispensed with with propriety. It is probable that what has been already said on this matter will be sufficient to enable the reader to form an opinion respecting it: we may, therefore, with propriety, dismiss it without further comment. Wherever practice and observation have succeeded in discovering and exposing an erroneous theory, they will, at the same time, generally be found to afford one more sound and rational in its stead; and such has been the case in the present instance. It was evident that a part so importantly situated as

the frog, and so different in its mechanism and structure from the other parts of the foot, must have at least some office to perform: inquiry and experiment, therefore, has done what theory could not accomplish; has demonstrated that the frog performs a very important part in that extensive action of the quarters which characterizes the natural foot.

We have already observed that the formation of the frog resembles, in some degree, that of an arch inverted. The truth of this observation will be manifested on examination of its inner surface, after the foot has been drawn out from the hoof; the frog stay is here observed dividing the general concavity into two parts, which division, however, is gradually lost as it approaches the anterior part of the hoof, and the concavity is found here extending completely

round the point of this part : the frog stay, it will be observed, is hollow, and its cavity seen externally, *i. e.* the cleft of the frog, admits of its sides separating from each other in the expansion of the foot, and thus contributes its share in making up this action : a comparison of the two surfaces of the frog will show that without the above part its arched figure would be uninterrupted, but, as a perfect arch, would not admit of the necessary extent of expansion, this fold of horn (for the frog stay is precisely such) is introduced to supply the deficiency, and there is no doubt that the cleft of the frog in the natural foot has a very extensive influence in its action. The internal concavity of the frog is bounded on its sides by a considerable projecting eminence, formed by the union of the sides of the frog and bars, and which has a corresponding channel or groove, observed

externally; the concavity continues extending posteriorly to the heels, becoming more superficial at this part than at any other.

On viewing the frog externally, its base seems to become united on each side to the extremities of the quarters, and to extend no farther than the base of these parts; such, however, is far from being really the case, for the base of the frog on each side the cleft becomes spread outwards, *passes round, and envelopes the posterior extremities of the quarters* or horny heels, is attached to their outer surface, and is continued in the form of a thin convex band, up to, and completely round the coronet; the quarters, therefore, it will be observed, are enclosed and bound down by this extension of the frog over them, and cannot expand beyond a certain extent dependent on the elasticity of this

part. That part of the base of the frog which first passes over the quarters is exceedingly thick and strong, and of a width sufficient to cover the upper half or more of the height of the horny heels ; as it passes towards the anterior part of the coronet, however, it becomes gradually thinner and narrower, and assumes the appearance of a small band, and hence has obtained from its discoverer, Mr. B. Clark, the name of the coronary frog band. The quarters, as has been already observed, being thus connected with the frog, must depend, for the extent of their action, on the power which this part possesses, of expanding laterally ; and without this latter property of the frog it would of course be entirely prevented.

As the action of the quarters is most extensive at their posterior extremities, that

of the frog will of course be the same; as its extent is gradually diminishing towards the anterior part of the foot, that of the action of the frog will be so likewise; and as the bars necessarily partake of the action of the quarters, their close connexion to the sides of the frog will be the cause of its expansion here. The influence of the quarters on the sides of the frog is therefore through the medium of the bars, while the quarters themselves act immediately on its more posterior parts. The frog band is observed to be considerably thicker and wider in the natural than in the contracted foot, and is found, in some which are far advanced in contraction, to be entirely wasted away. The explanation of this occurrence, which has been given, appears to be satisfactory. It is probable, that as the elasticity of the quarters is destroyed, this part has nothing to perform; for it

will appear in the natural foot to contribute materially, with the other parts, to restrain expansion beyond a certain extent.*

* The existence of the frog band has been denied, though we know not upon what grounds. Those who, like ourselves, know its discoverer, would not, however, be inclined to doubt his accuracy on this point, even if the part was less easily demonstrable than it is found to be. It may be seen, with the greatest facility, after the foot has been a short time exposed to moisture, making an appearance, almost perfectly white; on black hoofs, its appearance will of course be more distinct. It has also been said to be only the new formed horn, but an accurate dissection will prove the fallacy of this assertion. This is to be done by first macerating and separating the hoof from the foot: the frog is then to be removed from between the bars, and the line of separation between the quarters and frog band will become distinct, and is easily followed with the knife; when the band has been entirely removed, the parts, which have been said to be mistaken for it, *will be found under it*: it has been said again, that its want of strength is an argument against the probability of its

Having thus shown that the expansion of the heels is dependent upon the yielding elastic nature of the frog, it now only remains to be observed, that the same power is the chief instrument in bringing the foot into its original state previous to expansion: the impression of weight from above separates the heels, but lest this separation should prove too extensive, the posterior extremity of the frog is extended over the quarters, and firmly attached, as before described: the whole power of distention

having the office to perform which we have described. It may, however, be unnecessary to remind our readers how much its strength will be increased by being spread as it is on a smooth surface, and firmly attached at every part: its increased thickness and strength, where it first passes upon the quarters, will also materially strengthen our opinion of its offices; for its increased exertion here may be easily supposed to require an addition of strength.

is thus thrown upon the frog, which consequently expands; the foot being removed from the ground the impression of weight ceases, and the frog regains its original state. To limit the expansion of the quarters, therefore, and by its elasticity to yield gradually to it: by its contractile power, also to bring the foot to its original state when off the ground, and thus prepare it again for expansion, is the office of the frog; and not that of a wedge, to separate the quarters.

It will be observed in the preceding pages, that we have considered the application of the shoe as the real cause of contraction; and it therefore becomes an indispensable duty to state the circumstances from which such an opinion has been deduced. It is a subject, however, which, like almost the whole contents of

this chapter, has been already the task of abler hands ; and none of which we should on that account have spoken of, were it not necessary to the system, which it is a professed object of this work to observe : we entered on, and still pursue it with diffidence ; and while we acknowledge, with the profession at large, the importance of the obligation the author alluded to has laid us under, we solicit the most liberal construction which our observations will admit of : we are anxious to place, what we conceive to be truth, in the most favourable point of view. If, however, further research should prove any thing we have said to be incorrect, we shall at least be open to conviction, and willingly to acknowledge our error.

If the nature of the action of the quarters be fully understood, it will not be

difficult to explain the influence which the shoe has on the parts. It has been very properly observed, that the term shoe, as applied to the iron which is nailed to the foot, seems to convey an erroneous idea of its properties; and it certainly serves to conceal its real character, by reminding us of the comforts we derive from that necessary article of apparel among ourselves. Viewing it as protecting the foot solely, it may appear to have some claim to the title, but if we consider it in its true light, that of an inflexible iron ring, unyielding to, and consequently preventing the natural action of the quarters, all resemblance is lost.

It may be here necessary to recal the attention of our readers to the comparison of the action of the quarters to that of a bow; this action being most extensive at

the extremity of the quarters, and gradually diminishing towards their anterior parts, it will be obvious that the driving the nails into the hoof to fix the shoe, will prevent any expansion anterior to the last nail which is used: it will also very materially oppose it, even more posteriorly: the degree of restraint imposed will therefore depend on the distance between the last nail and extremity of the quarter, and at whatever distance this may be, the foot must become accommodated to it, and have lost a proportionate degree of its elasticity previous to the renewal of the shoe.

It will be observed, that the shoe is necessarily applied to the foot, when off the ground, and consequently in its most contracted state: the first, therefore, which is used, makes at once a considerable pro-

gress in the contraction ; for, so long as it remains, it prevents the expansion of the quarters when brought in contact with the ground ; and at the end of a month, the usual time of its remaining, has in fact moulded the foot, as it were, to its own figure. We have already remarked, that the hoof expands in its growth, so that its base becomes wider in diameter as it grows more distant from the coronet. It will be readily seen, therefore, that the shoe, fixed as it is by nails to its base, retains this expansion ; the hoof continues to grow, but as it is not permitted to expand proportionately to its growth, the softer and more yielding part of it must become altered in figure : the constriction is communicated through the medium of the wall of the hoof to the coronet, and the newly formed horn, yielding to its influence, assumes the appearance of an indented ring,

which gradually comes down in the growth of the hoof, and remains distinct till removed by the knife. Every successive set of shoes continue this effect, each indentation being more or less broad, according to the length of time which the shoe producing it remains; and hence arises that irregular appearance of the hoofs of shod horses, which has given rise to the idea of its being formed of a succession of rings of horn, from the coronet to the toe; the indentations will always be observed becoming more distinct towards the latter end of the month, each being deeper in a trifling degree than the preceding; and thus, by the time the original indentation or ring grows down to the base of the foot, the hoof is brought into near approximation with the coffin-bone at every part, and the quarters nearer to each other. When the coffin-bone becomes firmly com-

pressed, an absorption of its sides begins to take place ; but this process is so slow, as to be attended with no very manifest marks externally, by which it may be known to be going on; the quarters, however, still continue contracting with the repetition of the shoe, till at length lameness is produced, and a remedy is sought for in vain.

A practice, very frequently pursued, with the delusive idea of expanding the quarters, seems to need our attention here. It consists of an extensive removal of the horn of the quarters, at its most posterior part, where it becomes inflected ; a very considerable portion of the angle thus formed, being taken away with some portions of the frog, an appearance of width is given to the parts, attended, however, with no advantage, but tending very ma-

terially to bring on that utter destruction of the internal organization of the foot, which is the subject of the following chapter. This operation is well known among farriers by the familiar appellation of "throwing open the heels." It will be obvious, however, that nothing of what the term seems to imply is effected by it; for the heels are not more distant from each other than previous to its being performed.

All other attempts which have been hitherto made to remedy this evil, or to prevent its occurrence, have been equally futile. The barbarous practice of "scoring the hoof," as it is termed, appears also to demand notice, on account of its singularity: a number of perpendicular grooves are made through the substance of the hoof, nearly to the sensitive parts, though

not sufficiently deep to produce bleeding. The number of these grooves, and the situation in which they are made, are discretionary circumstances only: one at the anterior part, and the same in each quarter, is the smallest extent to which the plan is carried; and we once saw a case where double this number was thought only sufficient. Some have been content, however, with rasping the quarters, and the making one groove only in the anterior part of the hoof.

The "screw shoe" may not be an object entirely destitute of interest, as it serves to show how little the treatment of the foot has, till within these few years, attracted the attention of men of science, and to what lengths ignorance will go if unrestrained by authority. To be brief in the description of this instrument of tor-

ture; for the enlightened point of view in which almost every thing connected with the foot of the horse is now placed, induces us to look with a mixture of horror and contempt on inventions of this kind; it consists of a shoe of the common shape, furnished with a joint at the toe: the nails are driven in the usual places; the heels are turned up, and have perforations in them to receive the screw, by the turning of which the heels can be forcibly separated from each other at pleasure.*

All these practices are now, fortunately

* The practice of *drawing the sole* was probably followed as a remedy for the lameness attendant on contraction, even before the cause of such lameness was known. It consists of the formation of a groove with the knife, between the base of the wall and edge of the sole, the latter part is then laid hold of with the pincers and forcibly torn from its attachments!

for the animal, on the decline; and as the propagation of knowledge on this point must become gradually more extensive, we may hope eventually to see them entirely given up. It will be seen that the influence of them all will be to weaken the quarters, and take away the support which they previously gave to the bones of the foot, thus preventing their descent; for though the quarters may be ever so much dilated or expanded, they do not obtain their original elasticity from them, nor are they found to remedy the tenderness or lameness which existed previous to their trial.

It is a matter of regret that this destructive change admits of no real or permanent benefit. If we could give to the quarters their original share of elasticity;

if the elastic functions of the frog could be restored, and the coffin-bone be made to resume its original state, we might hope for success; but it will be obvious, that the expansion of the heels, by the means alluded to, effects none of these objects; and we are therefore warranted in the conclusion, that contraction, with its attendant lameness, admits of no relief.

It may be asked, if no alteration of the shoe at present most commonly used, or any of the different *principles* of shoeing, as they have been erroneously called, of different persons, are capable of preventing it? Without being influenced by any consideration but that of truth, we can venture to assert our firm belief of the negative. What have been at various times produced as different principles of shoeing, all agree in that which is productive of contraction: they are all

inflexible iron rings, equally restraining the action of the quarters, and tending, in the before-described manner, to contract the hoof in its growth. We know that the brightest talents and most laborious investigation have been employed to find a substitute for the iron shoe, hitherto at least, without effect; nor is it probable that success will ever crown the attempt: it does not appear that the animal or vegetable kingdom affords a substance, which, if nailed to the bottom of the foot, will at once yield to its action, and afford it a sufficient protection; and, without these combined, we must be content to follow our old plan, and bear with evils which we cannot remove,

Though no plan with which we are yet acquainted is capable of preventing contraction, or of removing it, there is

one caution which we have already had occasion to mention, the observance of which will materially retard its progress, or even prevent its occurrence beyond a certain extent. We allude to the distance which the nails are driven from the posterior extremity of the quarters. Upon the degree of attention paid to this rule depends, as far as we have been able to judge, the chief difference between good and bad shoeing, setting aside the more trivial circumstances of the weight of the shoe, its adaptation to the foot, &c. That contraction of the more anterior parts of the quarters will ever be produced by the iron shoe seems obvious, but it is to be recollected that such cannot go on longer, except very slowly, than the hoof is brought to compress pretty firmly the coffin-bone; for after this period its progress will be scarcely perceptible on external observa-

tion of the foot, though it certainly does not entirely cease. After it has arrived at this state, then, no part but the posterior extremity of the quarter will continue its alteration; let but the nails be driven sufficiently distant, however, and even this will cease; and though the action of the quarters is almost entirely destroyed by the first use of the shoe, still we shall be enabled to prevent that excessive contraction which is in the end productive of lameness, and a condemnation of the animal to a change of masters, with its attending consequences, cruelty and ill treatment; the observation of such a rule is therefore not only as regards our interest, but, in a moral point of view, of the utmost importance.

With regard to the precise point into which the last nail may be driven, to pre-

vent the increase of contraction, no rule can be laid down; much will depend on the manner in which the foot is prepared: if the shoe is equally in contact with every part of the base of the wall to which it is nailed, no danger will arise of the imposition of the weight on the toe acting as a lever to draw the posterior nails, and in such a case we may apply this rule to its greatest extent. To compensate for the small space which we are thus allowed for driving the nails, these may with advantage be made smaller, and driven more closely to each other.

CHAP. VIII.

ON FOUNDER.

THE alteration which the foot undergoes, from the use of the shoe, has been detailed in the preceding chapter, and the usual methods which are resorted to for the restoration of it to its original state; their effects have also been alluded to; and it will be the object of this to point them out more distinctly.

The displacement of the internal parts of the foot taking place in the affection, termed *Founder*, is demonstrated by its

external appearances, which are so extremely common and well known as to enable the most superficial observer to ascertain its existence, though we believe that hitherto they have not very extensively served such a purpose. The first of these, the descent or convexity of the sole, has obtained the name of the *pom* foot, and given occasion for much critical distinction in the application of the shoe. The second, and never-failing attendant of the former, is the altered relative position of the foot with respect to the leg, as in the *pom* foot the angle between the bones of the leg and anterior part of the hoof becomes considerably more acute, though in fact the bones internally retain nearly their original position with respect to each other.

In no subject which concerns the veterinary science could the interest of that

science be better served than in the study of the morbid anatomy of the foot: the affection of which we are now speaking leads us to this observation; for had its nature and causes been discovered a century since, the memory only, of the screw shoe, the scoring the hoof, and turning the horse out to grass as a remedy for contraction, would have remained; and it is to be hoped that the discoveries which this age has produced will baffle the attempts of prejudice to prevent their more extensive knowledge, when such practices, with all the sophistry by which their support has been attempted, will be consigned to utter oblivion.

The circumstances in which the foundered or pom foot differs from the natural and healthy one, and which are plainly shown in a perpendicular section, are as

follow. The coffin-bone, instead of having its external surface regularly attached to, and at an equal distance in every part from the inner surface of the hoof, has what may be termed its toe, in some cases, more than an inch and a half from the corresponding part of the hoof, the intermediate space by which it should have been occupied, being filled up by a substance which has been considered of a *corneo-cartilaginous* nature, probably produced by the gradual elongation of the lamellæ which attach the bone to the hoof. The point or toe of the coffin-bone is, at the same time, pressing on the sole, and causing the projection alluded to, while its under surface continues the pressure posteriorly, as far as the sensitive frog.

Such are the general appearances manifested on the examination of foundered

feet, varying, however, very much in degree, from a scarcely visible alteration, to one more extensive than that we have described, the extent of projection of the sole bearing of course a proportionate alteration in appearance. There are however, differences from the natural state produced by the same cause, where the relative position of parts is changed in the opposite direction: the point of the coffin-bone, in such cases, is something elevated from its natural position, while the posterior part, or heel, is considerably depressed; its anterior surface is closely embraced by the hoof, while a more than usual concavity of the sole brings that part in close contact with its under surface: all the internal parts, therefore, seem to be more closely compressed by those enclosing them than in the natural state; and so far the contraction solely might

have been supposed to be the cause ; but contraction, existing to such a degree as to affect the anterior and lateral parts of the foot, in the way we have described, would also have tended to raise the heel of the coffin-bone rather than depress it: the depressed state of that part, therefore, is to be considered the effect of some attempt which has been made to relieve the contraction by separating the heels, the posterior parts of the foot being thus weakened, while the sole at the anterior part retained more than its original strength, naturally yielded most readily, and thus the heel of the coffin-bone was suffered to sink, while its anterior part retained the position in which it had been left by the contraction.

It will be sufficiently obvious why attempts to relieve the animal from the constant tenderness and lameness of con-

traction, are productive of founder, if we consider, that in contraction the coffin-bone internally, as well as the soft parts lying under its heel, are closely surrounded and compressed by the hoof, and that the slow progress of contraction allows of the soft parts, and even the coffin-bone itself in a very considerable degree, accommodating themselves to it by their gradual absorption in consequence of pressure; the parts are therefore to be considered in contraction as mechanically adapted to each other, every part of the concavity of the hoof and sole being completely filled up: it must consequently be evident, that the separation of the heels would create a vacancy in some part which would be filled up by the falling of the coffin-bone, or at least render them more hollow and incapable of resistance, and thus take away the support which, in their contracted state, they af-

ford to the superincumbent parts: consequently, in either case, the heel of the coffin-bone would sink from the usual impression of weight from above. Thus it is that the common method of removing the shoes, and turning the animal out to grass, always fails to relieve the lameness of contraction, and so often is found to have produced a convex sole.

We are inclined to believe, that those cases of founder, in which the toe of the coffin-bone only causes the sole to protrude, are produced more commonly by the barbarous practice of scoring the hoof, as this operation gives at once equal liberty to all the parts to descend in an equal degree, whereas in rasping the quarters or removing shoes, the support is only removed from the posterior part, and the strong attachment of the bone to the inner surface of the au-

terior part of the hoof preventing its descent: hence the posterior part only becomes depressed, and the change here is consequently most distinct.

It were improper to pass over, without further notice than that we have already taken, of the too common practice of turning the horse out to grass without shoes. The animal is not perhaps so treated in the generality of cases for the express purpose of widening the feet, but with a vague idea of invigorating the constitution; and as those who have the management of these matters think two good purposes may be as well effected as one, they remove the shoe in order to allow of the expansion of the foot. It would be to the interest of the owners of such horses, however, to reflect on the danger incurred by such a practice of bringing on Founder. It is highly improbable, that if the horse,

for some time previous, has been accustomed to the shoe, some degree of contraction of the quarters has not taken place, and therefore the removal of the shoe allows of their regaining their original position, though not their elasticity, and removes the support which the altered state of the parts from contraction renders necessary. We say, the parts do not regain their elastic properties by expansion effected in this way, however great may be its degree. The change effected by it, therefore, is simply the substitution of a weak and uncertain foundation of the foot for one which, with all its faults, would effectually have prevented the occurrence of Founder, which is endangered by thus exposing the foot.

It will appear, from the foregoing observation, that after the foot has been a long time shod, and undergone the usual

share of contraction, the removal of the shoe would probably be attended with the serious consequences already spoken of; for after it has so totally destroyed the elasticity of the quarters, as happens in the advanced stage of contraction, the continuance of its application becomes absolutely necessary, in order to prevent a descent of the coffin-bone, and consequent convexity of the sole.

Considering the close attachment existing between the internal surface of the hoof and coffin-bone, through the medium of the lamellæ, it is evident that these latter parts must become elongated or the hoof drawn down by the descent of the bone: supposing the hoof to be drawn down without any elongation of the lamellæ, the appearance externally will be that described near the commencement of this

subject; the angle between the leg and anterior part of the hoof becomes considerably more acute. On the other hand, if the lamellæ elongate only partially, while some portion of them remain perfectly unyielding, the hoof at these latter parts must give way, and an irregular incurvation of it will be the result; a state which is not uncommonly observed in old horses, whose lives have been spent in the service of a succession of masters, and who, consequently, have been much exposed to improper treatment.

The observation of the hoof not only shows the existence of this affection, but also generally affords means of ascertaining, pretty exactly, the degree of displacement of the internal parts: as its position with respect to the leg, will be proportionately more or less widely differing from

that of nature according to such degree. If, therefore, it has not attained such an extent, as to make any great alteration in the sole, and thus be deficient of the most positive proof of its existence, still a reference to the angle, between the hoof and leg, will enable us to ascertain the occurrence, even of a very simple deviation from the natural state. The degree of displacement, which is thought inconsistent with the performance of the work of the animal, is marked by an excessive convexity, with a general extremely thin state of the sole; such circumstances preventing the use of the shoe, unless made so extremely thick as to be too heavy for the animal to sustain. In one of such cases as have come under our observation, after death, the toe of the coffin-bone was exposed and in a diseased state,

Besides the marks of Founder manifested on examination of the foot, there are others which appear in the action of the animal, and which, though not of themselves sufficient to enable us to decide on its existence, still combined with the before-mentioned, will materially contribute to eradicate any doubts which may exist on the subject. The first of these is a perpetual nodding motion of the head in moving along, more particularly observable in a gentle trot: in the next place, the animal appears to impose the whole of the weight on the heels; probably unavoidably so; for the state of the foot is such as to leave the toe turned up, as it were in front, when the weight rests on the fore-quarters, and consequently the heels only are in close contact with the ground.

With respect to the first of these symp-

toms, it seems to be solely the effect of the disturbed state of the foot; for as the animal has to bring the heels in contact with the ground before he can renew the step, and as the fallen state of the parts certainly shortens the limb, so also their alteration prevents his using his toe: the transference of the weight to the heels is consequently rapid and sudden, and the fall of the fore-quarters, before the resistance is felt, being greater, for the reason above alluded to, the nodding appearance is thus unavoidably produced.

The convex state of the sole of the cart-horse is not to be accounted for in the before-described manner, but is to be considered the gradual effect of the great exertion to which they are subject, and the consequently greater imposition of weight on the bones of the foot. It does not,

however, appear very probable, that this circumstance, individually, would be a sufficient explanation of its occurrence, had nothing previously happened to weaken the sole and quarters, and hence the great destruction of the horn of those parts in some of the diseases of which we have spoken, as Canker, Sandcrack, &c. may be supposed to have a considerable share in exposing the animal to the danger of its occurrence; for it will be readily seen, that the very considerable time necessary for the reproduction of horn of original strength, will prevent its being retained in the stable till such an effect is fully produced: great exertions, therefore, under such circumstances, would be very likely to bring on a descent of the sole.

We have somewhere read some vague and unsatisfactory accounts of the pro-

duction of Founder, from mortification of the vascular parts within the hoof, but cannot assert that such a case has ever come under our observation: supposing, however, that mortification could be produced to so great an extent as to separate the hoof, at every part, from the coffin-bone, Founder, or the falling off of the hoof, would be the result; but the occurrence of such a circumstance is extremely rare.*

With respect to the application of the shoe to the convex foot, little need be ob-

* One or two instances of this kind have been published, but they do not seem to be well authenticated: we are told, however, that in the celebrated march of Hannibal, through the marshes of Etruria, the hoofs of the horses came off; but the cause of this will be seen to be of no common occurrence.

served. It will be at once obvious that the deformity renders it impossible to employ one of a common description; and a question seems to have arisen, whether a narrow and sufficiently thick one, to raise the sole a proper height from the ground, is not preferable to that which has hitherto been most commonly used. The under surface of the latter is necessarily formed more or less convex, proportionate to the degree of convexity of the sole, while it is as necessarily concave on its opposite, in order to avoid pressure on that part. The wearing part of the shoe, formed in this way, would therefore be its inner edge; and hence has been said to arise one of its principal objections. Another, however, and, if just, a more important one, is, that the thin state of the sole exposes it to injury from the collection of gravel or dirt, which this formation of the shoe is supposed

to favour; but we believe all who have had extensive opportunities of observing this method of shoeing, will think us justified in the assertion, that inconvenience is rarely felt from such an occurrence.

The great weight of shoes of the above kind, we are inclined to believe, is the only reasonable objection to their use; but even this is perhaps not applicable when used for heavy draught horses: if, however, it existed to its fullest extent, it would be more than counterbalanced by the protection which their broad surfaces give to the sole.

The introduction of any improved method of practice, in any particular subject connected with the veterinary science, will always meet with obstacles, as by far the greater number of those who practice it

are regulated by the customs of their forefathers, and will generally be found to value an old recipe, handed down from one generation to another, beyond all the improvements which science can afford. The proposition of an improvement, then, to the class of men to whom the province of shoeing more immediately belongs, must be seconded by arguments at once clear and convincing, in order to have their full effect; and certainly by arguments infinitely stronger than those adduced in support of the narrow shoe, in opposition to that at present most commonly employed.

It will be sufficient for the reader to picture to his imagination the wide convex foot of the cart horse, with a shoe attached to it of only the breadth of the wall, or, as it is more commonly termed, *crust*, and to consider the nature of the work

which such animals have to perform, to obtain an idea of its merits. It will be at once obvious, that the unprotected state of the sole will frequently expose it to pressure; and if the horse is employed on the stones of London, or any irregular ground, scarce a step can be taken where the sole will not receive it: the tender state of this part, therefore, in foundered feet, and the consideration of the great exertion which the draught horse is under the necessity of making, and the consequently great degree of pressure the sole must receive in such cases, will be objections which the narrow shoe never can surmount.

The same observations apply, though not perhaps in an equal degree, to the application of the narrow shoe to the convex foot of the saddle horse; and we apprehend

that they will naturally suggest themselves to the minds of all who make this matter the subject of their consideration.

An altered appearance of the chest of animals subject to this disease has been noticed by some veterinary writers, and obtains the name of "Founder of the Chest:" the confused method in which it is spoken of, renders it difficult to understand precisely the nature of their ideas respecting it. It appears, however, that some affected to consider it an inflammation of the pleura; and hence blisters were recommended as a method of cure. It is now, however, pretty well known, that this formidable disease is nothing more than the habitual contraction of the muscles of the part, the object of which is to remove the weight as much as possible from the fore-

feet; a measure which the poor animal resorts to in order to alleviate his pain; and hence, few horses, whose heels are contracted, or whose feet, in fact, are in any other way diseased, are to be seen without some appearance of this habit.

After the above description, it would be absurd to talk of a remedy; for as long as the animal feels pain in the feet, no alteration can ever be produced. Any attempts to alter the state of the foot must also be equally futile. The observation may by some perhaps be considered superfluous; but the natural disposition in the human mind to profit by discovery might possibly have made it hereafter the subject of experiment; and as such experiments are, as in the cases of contraction, attended with an useless infliction of pain,

we shall deem no apology necessary, if, in a single instance, it may have contributed to protect the animal from such an attempt.

THE END.

ERRATA.

Page 11, line 10 and 11, for as a general rule read as general rules.

— 189, — 12, for retains read restrains.

— 130, — 3, for ocular read ocular.



