Disorders of the foot of the horse

DISORDERS OF THE FOOT

OF

THE HORSE.

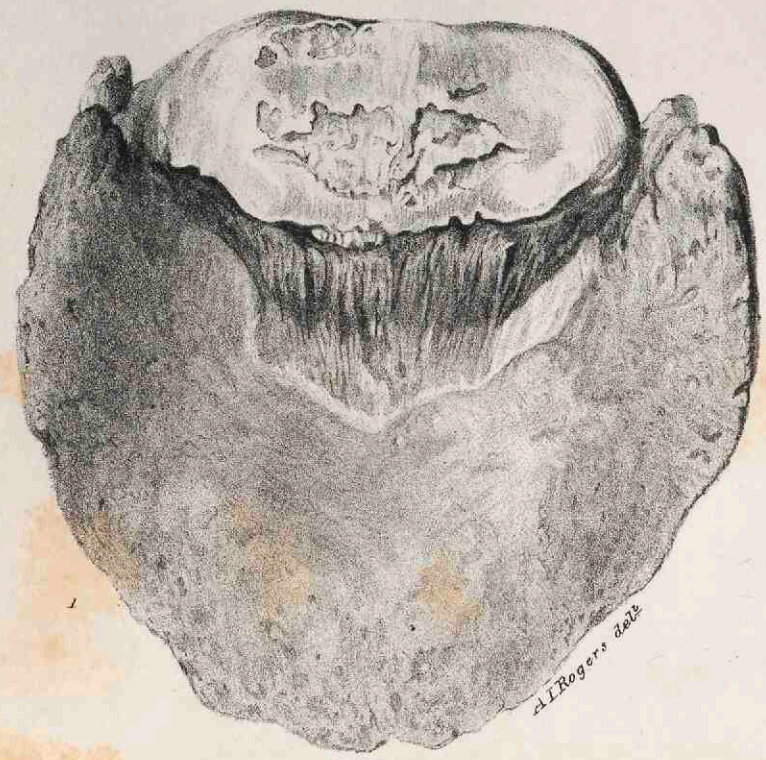
BY BRACY CLARK, F.L.S.

Member of the Royal Institute of France, École de Médecine, &c.

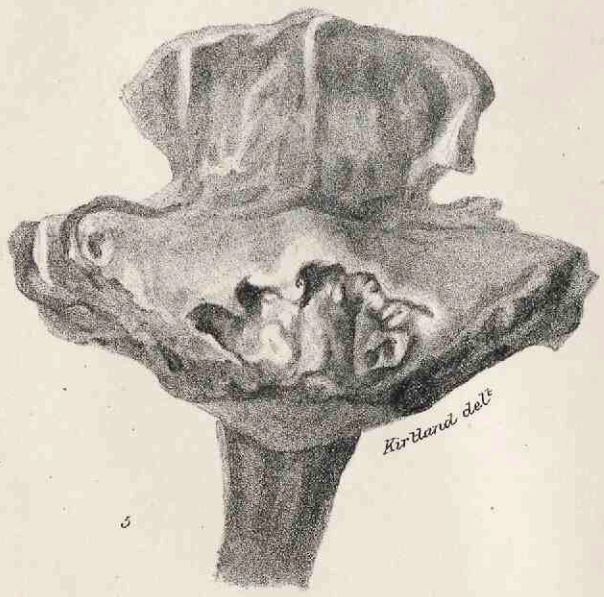
LONDON:

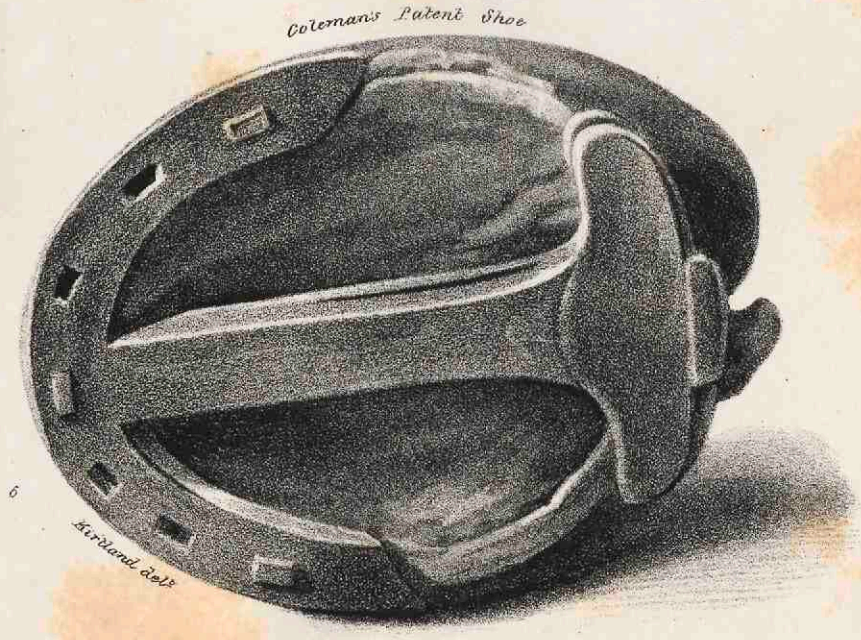
1839.

Plate 1.



Colemans Patent Shoe





I. Miller lithog 6 Bridge Road Lambeth.

Having, at different periods, formerly, as experience and opportunity afforded the way, published an Account of several of the Diseases of the Horse's Foot; I now propose, for the greater facility of reference to them, and for the convenience of being consulted, to bring them all together in juxtaposition, in One Volume, adding thereto a few that were wanting to complete the series. Some little irregularity will accrue from their being published in parts formerly, and with no view to alphabetic order, not so much, however, as to preclude the adoption of that very simple mode of arrangement. And it is a sorrowful matter to be remarked, that nearly the whole series of these disorders proceeds from, and is the effect of, that abomination of the poor animal, and pest of the public, the shoeing, as it is called.

Although the words disease and disorder are often used indiscriminately, and as being perfectly synonymous; yet on this occasion, the derangements being of a truly mechanical kind, we have preferred, whether justly or not others must determine, to use the latter word in expressing the complaints of the feet of the horse, in preference to the former.

As the most frequent in its occurrence, and, therefore, of the most consequence to the public, we shall begin with the Contraction of the Foot.

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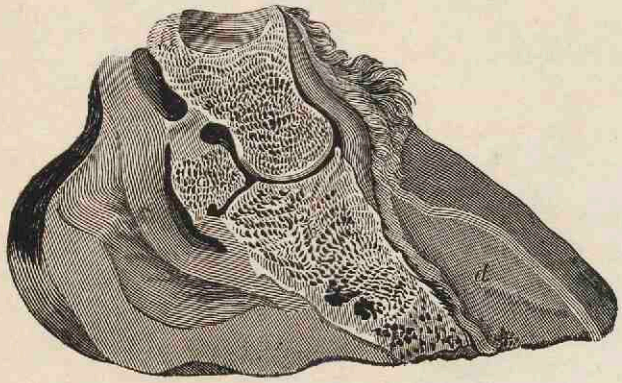

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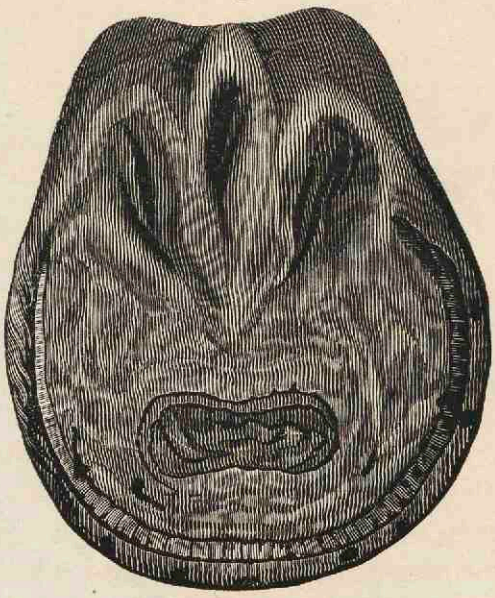

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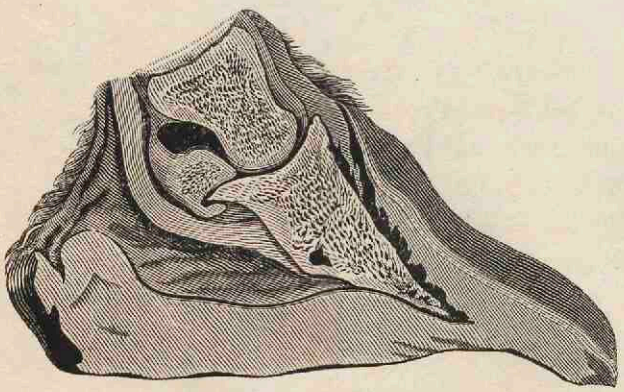

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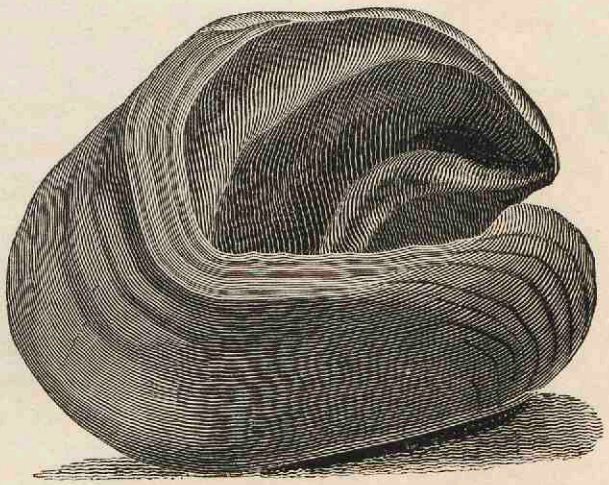

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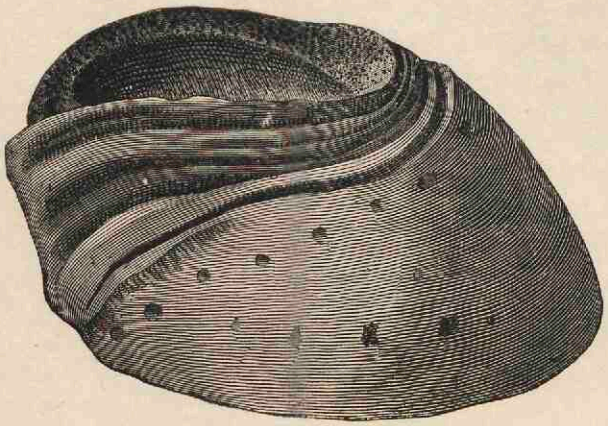

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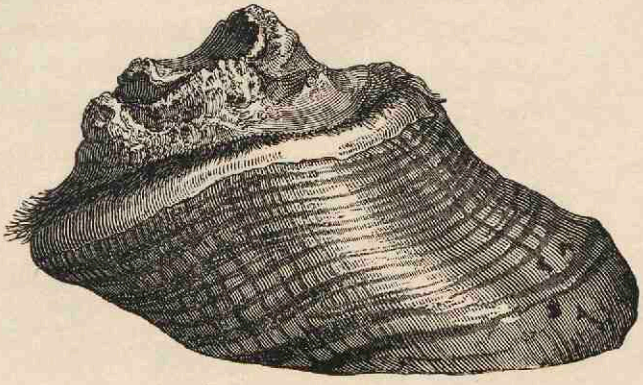

No. 1.

ON THE CONTRACTED FOOT.——*Coarctipes.*

As the shoeing of the horse with an iron ring fixed on by nails has been in use for many centuries, without its principles being much attended to, or understood at least, so, it is clear that very few horses indeed could have escaped entirely, the consequences of its erroneous principle, if shod for any length of time. Since the retaining an highly elastic organ, such as the foot now turns out to be, in an immoveable barrier of iron, with nails on each side, and constituting together nearly a solid box, must inevitably produce lamentable effects upon the constitution of such a foot. And that such has been the case will be fully understood by considering the rapid destruction of the animals themselves that has taken place when so used, few comparatively reaching, or advancing beyond, the middle period of life, many not even attaining to this; also the numerous accidents, some of the most grievous character, which have been daily, aye and oftener than the day, accruing from it, but being seen through a mist of terms, and disguised almost from public scrutiny, by a tricksy, specious language about it, strangely not obtain that serious attention they deserved, as to the real source of it. And it was also a circumstance most unfortunate for the public, as is usual indeed with abuses of nearly all kinds, that they were bringing grist to the mill of the artificer who was occasioning it, by the profit attending his pretended remedies, and his preventive measures, every one pretending to an exclusive knowledge in this respect. Although it is now clear that these artificers themselves had no true apprehension of the real source of the mischiefs they were occasioning. The affair affords us a most remarkable example of apathetic public indifference, extending through many centuries, concerning a flagrant abuse which interested in a primary degree, their pleasures, their property, and their lives.

The disease of contracted foot appears to be produced in the following way:— That the external iron circle of the shoe being nailed on the opposite sides of the foot, resists all motion of the hoof in these directions, the consequence of which is, that as the foot is deeply cleft interiorly at the sole, and extensively divided there, especially posteriorly, which cleft is extending beyond the middle of its arch, and has its vacuity filled in with an highly elastic organ of soft horn, the furch, so there being no extension or motion of the foot permitted outwardly, the whole action of elastic yielding is taking place inwardly on these soft parts; that is, when the sole, pressed upon by the weight of the animal's body, flattens, and obliterates in part this cleft, which action, if not bounded and confined by the iron ring, would take place outwardly throughout the whole extent of the hoof, and thus we get contraction of the foot, with a condensation and diminishing of the whole volume of the hoof, and of all its contents.

It will not be necessary here to enter more fully into this reasoning, as we have formerly devoted an entire volume to this all important service, and in the *Podopthora* will be found the exact quantum of annual diminution that a foot actually sustains when so treated, and that in a good, first-rate, blood horse's foot. By consulting the plates 9, 10, 11, of the last mentioned work, excellent examples may be seen of this disorder, and by comparing these feet with Plate I, or the frontispiece, being a view of that same foot as it first appeared at five years old, fresh from its Almighty Creator's hand, before it had been touched by the workers in iron, we shall discover the astounding difference. Also the very term contraction does not appear fully to meet the case, since it is not merely a simple diminishing of the foot, as any body may be seen to diminish by waste, or by drying up, but is a real, as the Latin term expresses it, *coarctation* of the foot,* or forcing together of all its parts; and not only so, but there is also an upward pressure of the shoe from the violent ramming on and clenching the nails, which, in some feet, produces an erosion and ulceration of the nut-bone, a little moveable bone, placed above the sole, and immediately over the furch; and this erosion takes place apparently, from the natural movements of this bone being prevented by the general condensation of all the matters of the foot, impeding the performing of its functions; see *Erosion* of the nut-bone, with examples, at the conclusion of the present series of disorders. Also, the arch of the sole, contracted in its dimensions by the exterior resistance of the nails, is driven up at its centre; the furcal margins, or ridges of the sole are thus made to approach each other, and to ascend nearer to the nut-bone, and hence is discovered the true cause of nut-bone disease, or of the above erosion, not before properly understood, but which cause appears to have escaped the notice of those who have written upon it.

Now, as to the remedy for the contracted foot, where this has gone on to the absorption of the coffin-bone, there never can be an entire restoration; however, such feet can be greatly relieved by a shoe that does not compress the foot, but leaves it with a good degree of liberty; and many examples of which relief, even with old feet, may be seen testified of by able and honest witnesses, in the book of testimonies appended to the work on *The Expansion Shoe*. And, in regard to prevention altogether, the *Stereoplea* may be consulted with advantage, which takes into consideration that part of the subject.

And if this art, as it is, must be ever continued, it ought to be practised only by men well instructed in the economy of the foot, and by a proper attention to science and rule, and not at random, as at present, by every blockhead, according to his simple notions, vastly to the detriment of the animal, and of the public security.

* From *con* and *arceo*, to force together.

ON

CANKER OF HORSES FEET. *Ulceratio Pedis.*

By BRACY CLARK, F.L.S., &c. Second Edition. London, 1851.

The Canker as it is called, is a dreadful disease incident to the feet of horses, and of not unfrequent occurrence, being of unsightly appearance, and very difficult to cure, exciting the same sensations in the mind of horror and dislike as do the loathsome animals whose names have been applied to it; hence the term *Cancer* or *Canker*, the Crab and the French term *Crapand*, or *Toad*; and at other times, *Lupus*, or the *Wolf*.

We venture, however, to assert that there is nothing specifically poisonous generated in sores of this description, as in the human cancer, though it has been so imagined by many; for having ourselves been frequently inoculated with the secretion from these sores (as have, no doubt, thousands of others) without perhaps an instance of any infection arising from it; nor in the cure is there any specific necessary as in the cancerous, rabid, or venereal poisonous ulcers.

It may be defined, perhaps, as a simple ulceration of the *corniferous*, or horn-bearing parts of the foot attended with more or less weakness of the parts in forming horn, and generally of irritation from the sharp horny edges surrounding the sore. Nor in the cure is there any specific necessary, as we have already observed, but the greatest diligence and attention are necessary in destroying those causes of irritation, and in procuring and encouraging the natural growth of the horn over the exposed parts, which in old cases is found difficult enough.

In describing the situation and appearance of this disorder, we may observe, that all parts of the hoof that are covered with horn may become the seat of this complaint, and its appearance will vary indefinitely depending on the greater or less degree of weakness of the sore, or irritation from the surrounding horn.

The most usual appearance, however, is a light, puffy fungus, easily bleeding when touched, and rising higher than the edges of the surrounding horn, giving out a thin, watery discharge, with a disposition in the Ulcer to spread and run under the contiguous horn, and if not timely checked, it will extend itself over the whole foot, when the hoof falling off, the horse is necessarily lost. On the other hand, where the proper means of correcting this ulceration are used, the irritating edges are removed, the fungus is reduced, the parts become dry, horn again extends itself over the diseased surface, and the foot becomes as perfect as it was before.

The time often required to correct the morbid disposition in the part itself, and afterwards in procuring the growth of the horn upon it, is so truly tedious, as in very many cases to make the expenses of keep and cure more than overbalance the value of the horse, and it would be to the disadvantage of his proprietor to attempt it: in other cases it is so easily subdued as to be well worth the time and expense of curing.

The narration of a case or two will be a more impressive way of describing the treatment of this complaint than any exposition in general terms; and for this purpose we shall select a successful, and an unsuccessful case, such as they occurred to us, and here let me remark, in doing that justice, I wish to hold an example of, to every one in these matters, that among the shoeing-smiths there are many who take great pride in the cure of this disorder, and whose practice, pretty much confined to this object, has rendered very expert, and as much depends on the expert use of the drawing knife in removing the horn from the ulcerated parts, they have vastly the advantage over a young practitioner in this respect, though in other respects their treatment would be the same, though these have sometimes failed in bad cases, or the long protracted cure has rendered it of no real advantage to the proprietor. The disease, we may observe is almost always artificially induced, and may easily be prevented, which is vastly more advantageous to know than the mode of its cure. The too great activity of the smiths in abrading and denuding the foot with their drawing knives and buttrises exposing the quick, or by leaving the horn so thin that it ruptures or cracks through, and lets in wet and is the cause of nine tenths of these deplorable cases.

The foot of the horse may be considered as partaking somewhat of the nature of a gland, which is giving out and secreting horn, and whose ulceration will be attended with other phenomena than occur in the ulceration of fleshy, or other parts of animal structure, and this peculiarity will render rather a different treatment necessary.

The following is a statement of the treatment of a successful case of this disorder, with some observations as the case proceeds.

A black draft horse that had been under the care of a shoeing-smith about nine or ten months to be cured, without success, was put under our care in a truly deplorable condition. The sole and frog were almost one

extended surface of disease, secreting a white curdy fluid, which was poured out in great abundance, about the sides of the frog; this fluid was probably formed of the union of lymph, and the vessels throwing out imperfect horn, which became partially dissolved in it; the same appears to be secreted in running frush, and if allowed to remain long on the part becomes highly fetid.

The edges of the horn encircling the sore were found to be detached, undermined, and black within, these were removed by thinning away the horn with a sharp drawing-knife, and when pared so thin and soft that the drawing-knife would no longer lay hold of it, a lancet blade, made rather stronger than those usually are for bleeding, and stuck in a handle, was used for thinning away the remaining part, and to dissect small bits of horn in situations where the drawing-knife would not conveniently reach. This tedious process was pursued on every side of the sore which was found to extend to the wall of the foot, and took up a considerable time, the effusion of the least blood being cautiously avoided, as thiswould flow over and obscure the parts next to be cut. The foot was then smeared over with Egyptiac, or the cupreous acetite and honey, boiled together though we found it equally, or superiorly efficacious for this purpose when made of blue vitriol and treacle, at a much less expence, which may be acceptable information to those who may have to use a large quantity of it; over this dressing, pledgets of tow dipped in tar, and plentifully soaked with it, are laid on, till they cover it to a considerable depth. A hollow shoe having been previously tacked on by a few nails, an iron plate is passed under it, and this is fastened in by iron splents between it and the shoe, and then driven moderately tight with a hammer: similar dressings are applied to the heels and sides of the foot if requisite, and then bound on tight with tar cords. These dressings require to be removed every 48 hours, or when the disease is very virulent, every day; if on removing the dressings they appear tolerably free from moisture, it is a favourable sign, if the foot reeks, and the dressings appear drenched with seaous fluids, little or no permanent horn will be found to have formed; if on the contrary the parts are going on well, the ulcer will appear almost dry, with a brown scale of horn formed upon its surface, which will generally shell off of itself, if not removed, and is best removed, and this for several successive times, till the parts acquire the requisite strength for supporting the horn that is formed which should however be kept as thin as possible for a considerable time, that it may not irritate and exfoliate again. The surface that was undermined, and from whence the horn had been recently removed will have swelled very much into a sort of more healthy fungus, and on the surface of which, horn will begin to form; this being removed, another layer beneath this takes place, and so on till it reaches the natural foot. By this curious process nature seems to acquire room, and avoids that compression which the immediate formation of horn on the ulcer would occasion. The parts of the sore that were subject to irritation may be known by the thin discharge, and the rising soft bleeding fungus, and the points of horn irritating them must be carefully removed and thinned to a considerable distance.

The first horn that forms, especially of the sole and furch, readily peels off, and exhibits underneath small white fibres, by which it adhered; the second coat is more firmly attached, and in recent cases where the powers of the foot are not weakened, will adhere and become perfect horn; but in old cases, it is requisite

often to remove it, or thin it down with the knife, and to keep it soft and pliant with tar dressings to prevent irritation and exfoliation.

Some, instead of Egyptiac, apply dry powdered verdigrease to the sore; others, butter of antimony; and some touch the surface with lunar caustic; others again, use dilute nitrous acid, or marine acid; and some are fond of red lead boiled down, and mixed with the Egyptiac, as making it more drying: these irritating measures, though appearing of good effect at first, may be carried too far, and do mischief and weaken the parts too much: it is of more consequence to carefully remove all external irritation from the surrounding horn, and the employing of uniform, regular, and strong, but not excessive pressure, which, if assiduously followed with the milder application of tar, are equal to the cure of most cases, except such as from long disease have become so destroyed and weak, as not to be capable of forming, or afterwards of holding the horn upon them, or, as is sometimes, that the coffin-bone has been injured, and an exfoliating portion of it keeps up the sore, in spite of every endeavour to heal it, till this is removed, as we have met with in two instances. This injury of the coffin-bone may arise from a nail driven by accident out of its course into the side of the foot, and which, entering the bone, splinters and destroys a portion of it; or from the remedies used being of too corrosive a nature, or a too violent pressure, that shall have destroyed the surface of it, which dying, acts as an extraneous body in preventing the parts from healing; or the horse, from stamping violently on the unprotected bone, from pain or otherwise, shall fracture its thin edges, and thus keeping up an irritation which shall defy every attempt of cure till these are removed, each of which we have seen cases of in the course of our practice; we may just remark, that where there is an exfoliating portion, it is best to remove it as early as possible, without waiting the tedious process of natural exfoliation; the wound thus formed being then of the nature of a fresh wound, will more readily heal, a practice, we believe, first recommended by that truly great character John Hunter. The above remedies also may be sometimes changed for each other with advantage, as the long continued application of one thing occasions it to lose its effect; and one agrees best with one subject, another with another, for which there can be no rule laid down.

By pursuing the above means steadily and uniformly for about nine months, the above tedious and desperate case was cured, and every part of the foot covered with horn: the horse was then turned to grass to encourage the more rapid growth of the horn. On his return from grass he was put to work, but suddenly died in a few months after of a liver complaint, which afforded an opportunity we had much sought for, of examining the condition of the coffin-bone after a long existence of this complaint, and also whether nature would restore the lost foliated substance of the hoof; and on examination, the foliated horn had been in a great measure repaired, and was growing down quite perfect; having covered two-thirds of the inside of the hoof where the canker had existed, and where it terminated there was seen a smooth sort of cartilaginous surface on the inside of the hoof, and a similar one attached to the foot, so that these laid in contact with each other without the presence of processes. These are the Podophylla become ossified.

The sole which is less richly organized in its structure than the wall of the hoof, had no perceptible dif-

ference from the original sole. If however the coronary ring and origin of the Podophylla had been destroyed, we should doubt in that case the possibility of their reproduction; but in this instance, the coronary ring and cutidura had been carefully preserved. The coffin-bone had suffered greatly by the disease, being considerably diminished on the side on which the sore had existed, and was become very porous, rough, and uneaven; on its upper part near the coronary ring a rough elevation of bone had been thrown out, of the size of a pea, such as is deposited in splints and spavins, being whiter and of not so dense a texture as the natural bone. The channel of the artery had also a thin white osseous deposit running to the inside of the heels of the coffin-bone, even where no sore had existed.

In the course of the treatment of this disease, we have had recourse to many different measures in different subjects, for keeping on the dressings to the foot; among others for this purpose we had made a leather boot, laced on its sides with a wooden sole, defended at the bottom by a thin ring of iron; this boot afforded the requisite pressure, but kept the foot, as we found by experience, too hot and moist, so that the horn as no sooner formed than it again exfoliated. Flannel bandages were found to be subject to the same inconvenience. Shoes made with small inverted hooks to the sides, passing the bands over the coronet, could not be used for any length of time, from the skin of the coronet ulcerating from the pressure: we found on the whole, nothing surpass the application of pledgets of tow rolled up, dipped in tar and simply tied round the foot with tar cord. The last point is generally by far the most difficult to heal on the side of the foot, and it will be found in general to be about opposite the lateral artery of the coffin-bone, or its foramen; in the sole the most difficult point is the heel, and the junction of the point of the furch with the inflected wall: to get at these sores most conveniently, tow rolled up pretty tight between the hands, then immersed in the dressing, and thrust into the cavity, will be found the most convenient way; another roll being laid over this, and another till we arrive at the level of the sole, when a general pledget is applied over the whole. At other times we thought it more convenient and advantageous, in sole cases, to pass the iron plate under the shoe, and then ram it full by pushing in the dressings through the openings of the heels.

If there be much moisture or reeking in the dressings the case rarely goes on well. The plentiful use of tar seems to have the power however of suppressing this transudation, and cannot be too much attended to, as it serves also to keep the wet from it, if the horse be used on the road.

A dry loose place is better in the cure of this complaint for the horse, than standing constantly in one position in a stall, where especially if it be in the hind legs, the blood accumulates with too much force from the declivity of the stall, their position being much lower than the rest of the body, and their distance from the source of circulation makes it there less powerful. Exercise, if the lameness is not so great as to forbid it, is much to be recommended, and the occasional use of purging physic, especially where the horse stands still; a rowel, also may be had recourse to with advantage, especially if there be any disposition to grease.

The furch, we have thought, appeared to be weaker in its powers of forming horn than the sole, and this than the wall; and the first horn is more apt to be undermined and exfoliate from this part than the others

though it may appear fair to the eye: cells also containing a white semifluid matter rise upon it and on that of the sole, and is often the attendant of these exfoliations.

The cooler the foot can be kept the more progress is made in the cure; therefore, much dressing or much covering is not so well, and water, though highly prejudicial, if applied for a constancy, yet may be used to wash the foot with, and afterwards being well wiped dry the dressings are applied, as we have thought, with good effect. In some cases, where the fungus rises higher than the horn, and it may be an object to save the horn, it will be better to attack the fungus by carefully paring it with a knife till blood almost appears, and then use the desiccatives and pressure; at any rate by this means, less of the horn need be removed as we get at it closer to the fungus than in the other case; and it is always of consequence where it can be done, to save all the horn possible, on account of its slow growth.

In dissecting away the offending points and edges of horn, we have found it useful to observe the rule of beginning first in the most depending parts of the foot, that if the blood starts, it shall not obscure the parts above, you are next to come to, as it would do if you commenced differently. If inadventently a vessel is opened that is troublesome, it is most readily stopped by the point of the cautery, cautiously however, and without affecting the other parts.

A kind of canker that is truly difficult of cure is the following—A large draft horse that had occasionally been dressed by the smiths for more than a twelvemonth, had a canker of the near hind foot, with the following appearances: the denuded frog was large and fleshy, with a smooth red surface (from the effects of corrosives ignorantly applied previously) forming a hard shell of horn, loosely attached and quickly exfoliating; the sole everywhere bare of horn, having threads or fibres of considerable length, and hardened only at their extremity, their roots being inundated with a white milky secretion. After endeavouring ineffectually to harden these into horn, we cut them close off with a pair of scissors, and found that we made more progress upon the disorder: the parts, however, were so weak, that they appeared unable to retain the horn they had formed, and after several exfoliations of this sort, finding that little ground had been made from the vicious disposition of the animal, probably made so by the long pain he had been exposed to, and from the time it consumed as well as the assistance it required, we determined to abandon the case. Two or three such cases have we seen, out of about twenty, some of which having been not previously so ill-treated were easily cured in a few weeks.

Having given some account of the disease itself, it will now be right to consider what is its cause, and if it can be prevented, for we fully concur in the words of Vegetius: (lib. 2. c. 58.) "*prestantius concilium est pedum tueri sanitatem quam passionem curare;*" preventive means are certainly the most wise, and aftert such a description of this disorder, there is no one, we should apprehend, that would not be anxious to aver it. We consider the most prevailing cause of this complaint to be the running frush, which first only affects the cleft of the frog but becoming aggravated, it gradually undermines the horn of the frog and spreads to its sides, from, ence to the sole, and so on to the wall and whole foot.

We remember one case where it appeared brought on by the grease, the discharge from which running down upon the frog, at length destroyed the horn, and brought on canker. Shaving the frog too close with the buttress would also occasion this part to dry and crack, and wet getting into the cracks, and lodging there, would rot the furch and induce canker. Any wound of the furch or sole not healing kindly at first by the blood, such as a kennel nail wound, or any other description of wound, becoming irritated by the surrounding horn, would form a canker; however, these are rare causes compared with the one we have mentioned, viz., the running Frush, and notching the inflexion with the buttress under the pretence of widening the heels, the commonest source of this mischief which is certainly increased by the furch being squeezed together by the contraction of the heels, and this again arises from the nailing on of an iron ring for a shoe permanently to the foot.

A small space of the sheet remaining unoccupied with print, I think I cannot employ it better than making some further observations in respect to one, and not by any means the least, source of this terrible complaint; and that is, the detestable and abominable, and perfectly gratuitous practice of cutting, slicing, and hacking the furches of horses' feet, for which there can no sound reason or excuse be given—a foolish and intolerable proceeding, the result of ignorance and a vicious habit, fallen into in days of darkness, and now continued in spite of a general admission of its folly. There is one source, also, of this abominable proceeding which I have lately come to the knowledge of, and which, beggarly as it is, is nevertheless, strongly, I believe, leading to it; and that is, that every slice of the horn scalped away from the frog, under pretence of keeping it in due bounds,—though there is no more reason for suspecting its getting beyond the dimensions the Almighty assigned it than are the noses of these people who hack and slice it under this affected pretence,—every slice so removed, with other horn of the foot, is, after work is over, swept up and basketted; and when of all this murderous clippings and cuttings enough is collected to fill a moderate sized basket, it is sold for a few pence, and is made the perquisite of the workmen; and the master is blinking all the while at the act instead of forbidding the baneful practice, and of taking to himself anything arising from this source, to prevent its being made a seduction, silly as the amount is. for any such destructive and most cruel practice; and such goings on I know in forges that ought to set a better example. The excuse of the men often is that the people owning the horse will have it done. This is generally a perfect falsehood; but when true, is proceeding only from the interested and misinformation to servants of these very men themselves. The frog thus sliced and denuded, easily breaks up the thin remaining plate of horn, lets in the wet, and so becomes undermined and cankered, and is the most common and fruitful source of this complaint—and commonly enough of the ruin and destruction, and most painful suffering of the animal.

ON CORNS, OR THE BRUISED SOLE.—*Contusiones.*

THIS is a troublesome disease in the feet of horses, most generally occurring in the fore feet, and in the inside heel, within the angle or inflexion of the quarter within the bar; though these bruises are sometimes found in both quarters or sides of the foot.

Terms improperly used in any art or science render its access more difficult, obscure our views of it, and retard its advancement: so the term *corns* is, in this case, a gross misapplication of words, creating perplexity and misconception, and which actual experience even in the disease is hardly sufficient to do away.

When the skin of the human foot is gradually compressed or rubbed, without any sudden or violent irritation that shall raise the cuticle, or create a sore, it thickens first, then becomes horny, and is rightly enough termed a corn, from *cornu*, Lat., or *corne*, Fr., *horn*.

In the horse, on the contrary, whose foot is everywhere thickly clothed with natural horn, such an occurrence, if it were possible, could not be a disease; but if a bruise takes place in the foot, at the point above described, it is called a *corn*, though agreeing in nothing with the former disease, but in the common circumstance of its affecting the foot with pain and lameness, and is simply a bruise from the iron.

Where a corn, as it is called, exists in the foot, it is known by a redness, more or less intense, in the angle formed by the union of the bar with the sides of the foot, or the intertortional point of the sole, and is most generally observed, as we have already stated, in the inner quarter; it is tender if pressed upon, producing lameness; and if the irritation is carried far enough, it festers, and the pus, being prevented escaping below by the sole, it forms a passage inside the hoof upwards, through the foliated substance or elastic processes, to the coronet; and if a shoe, pressing too hard upon the part, continues to be used, the irritation being kept up for a long time, the part becomes weakened in its functions, not forming good sound horn, and a painful disease is created, which is eradicated with difficulty, and is liable to return after relief has been obtained by the slightest renewal of pressure, especially if permanent.

Having briefly described the disease, as it commonly appears, we proceed to consider its cause, and the cure.

As it is the unequal pressure that produces corns in strong feet, from the shoe bearing too hard upon the point of the foot above indicated; so, in feet naturally weak, a slighter degree of pressure, if the pressure be permanent, shall be sufficient to induce it: so that the disease may be observed in all sorts of feet, but by far more frequently in weak ones, or in low heeled feet, or where the heels project and are very full, and the horn turns under, and is thin.

The horse's foot, we may remark, by being continually bound by the nails which attach the shoe to the foot, is ever hardening and diminishing in its volume, under their influence and pressure, and especially all the elastic parts of the foot, which, not being then called into much action, become inert and rigid, or are absorbed. The posterior parts of the foot, in particular, are deranged by it, and, in its contracting, the hoof often forms waving lines of horn, which turn under at the heels, so that the shoe will take its bearing on the parts in a direction tending inwards, and bring on bruises and weakness, of the more tender and confined parts of the foot.

The inflammation occasioned by the bruise or pressure causes an increase, and

sometimes rupture of the blood-vessels of the part pressed upon, so that instead of lymph, the red parts of the blood flow into them: and hence that redness in the horn of the bruised part, the external indication of this disease.

If the pressure be speedily and effectually removed, and all external irritation kept away, healthy horn will soon form again, and the disease disappear; but if the irritation be kept up for any length of time, or has been attended with much violence of pressure, the vascular parts go on to suppurate, and the pus, as we have observed, forces its way with great pain to the coronet. Its frequent recurrence leaves the parts very weak, and the smiths are then apt to imagine it is natural to them, and convey this idea to others, and seldom admit the real cause of the disease.

One circumstance, we believe not much understood, is of importance to disclose here, in the production of this disorder, and which cannot be too much known and considered, as it may be the means of warning those whose experience has not yet informed them of it, of the cause of danger: it is this, that if we make a perpendicular section of the horse's foot, across the two points of the heels or inflections, where the corns usually are found, it will be observed that the outside and inside heels exhibit different appearances, the vascular parts lying much lower on the inside than on the outside heel; so much so, that any one holding the foot from the ground, and levelling the sole to his eye with his drawing-knife or buttress, would meet with the blood of the inside heel before he had brought it to what he would conceive the proper level of the outer heel, and before he at all suspects it; for the horse's foot, no doubt for the wisest purposes, is not alike in both heels, as on a careless inspection we should apprehend it to be, but is placed inclining to the ground, with the inside the highest, forming an elevation which throws the bearing to the outside, as explained more fully in my description of the foot; the inner parts being thinner in horn, are more elastic and fleshy, while the outer are stouter in horn, and with less vascular matter, and more adapted for receiving the wear, which, we may observe, takes place primarily on the outer side of the toe or pince, as may be seen by looking at the shoes when taken off, or by observing the wear of the natural foot unshod; and thus compression and uneasiness are prevented by the greater yielding and elasticity of the inner quarter and the heels: for had the foot been on every side equally unyielding, resistance, compression, and pain, under heavy burdens, or great or long-continued exertions of the animal, would have been produced.

It is this difference which deceives the smith, and makes him bring the shoe nearer the quick on this heel than he intends: and it is the superior elasticity and vascularity of the fore feet that occasions them to be more subject to this disease than the hind, where corns rarely occur, and which we have heard the smiths attribute to their standing with their hind feet in the dung of the stable.

The position, also, in which the smith is obliged to hold the foot between his thighs, turned upwards, and drawn away from the horse outwards, will tend to increase his deception, in regard to these circumstances, of the apparent levelling of the hoof; and where there is a weak, low, fleshy heel, as it is termed, a slight mistake is sufficient to produce a bruised heel, or corn, which in stouter feet it would be more difficult to do; though in these we sometimes find it to be done.

A shoe too narrow for the foot, or with the heels made too full and thick, and not sufficiently sloping inwards, will induce a bruise of these parts, by pressing on the bar; and we see, by the brightness of the shoe at this part, after it has been removed, that the nails do not entirely prevent the motion of the heels on this surface.

Finally, a shoe not equally fitted to bear alike on all parts of the foot, but bearing

on the toe and heels only, a lazy way of preventing its rocking, especially the inner heel, and not taking sufficient pressure at the quarters, where the chief pressure should be, would, by this partiality of pressure, induce inflammation, pain, and bruises. Clinching the nails too forcibly near the heel, so as to induce more pressure there than at the toe, would also do the same thing.

If this reasoning, therefore, be true, the corn arises from the weakness and insufficiency of the foot to bear the pressure of a nailed shoe, or from partial and ill disposed pressure in the strong feet, or improper and too close paring: therefore, the ancients, who, we believe, knew nothing of this nail shoeing, had not their horses subject to this disease; and such, on examining their writings, turns out to be the fact, though they have described, and often most truly, the other diseases of the horse. The "*Pulmunculus ad aperturam*" of Vegetius, lib. ii. cap. 56, has some of the characters of the corn; but it is not clear whether oxen or horses were the objects of it, and he recommends unsoleing for it: whatever it is, it was probably a disease arising from a weak heel, which, by long journeys and rough roads, might be so bruised as to bring on similar consequences.

Having described the appearance of the corn and its causes, we have now to consider the remedy, first observing that prevention, which is ever the wisest line of conduct, should be our especial aim; and this I should propose to be done by always keeping the inner heel easy, by the shoe being forced downwards by a blow of the hammer out of the plane of the rest of the upper surface of the shoe.

Where the bruised heel has taken place, the first and most natural suggestion is to remove the shoe, and take away all the red diseased horn with the drawing-knife, and make the shoe so that on the re-application of it there shall be no pressure at all upon this part, and admitting of a new growth not subject to external pressure. If the horse is turned to grass during its growth, it will in general grow down quite perfect: if the disease, however, has been of any duration, it is apt to return, if the smith brings only the ordinary pressure of a shoe upon it; and this takes place sometimes by degrees, and not perhaps at the first shoeing, which encourages him to go on till the effect is felt, and first tenderness, and afterwards lameness ensue, or the parts fester if more severe pressure has been applied, according to the degree of it. The bar-shoe, on this account, is often resorted to by the smiths with good success; any pressure to the bruised point is done away with, by the parts of the shoe opposite to it being beat out of the line or plane of the shoe. If it has festered, and pus formed, which very soon happens, a free opening must be made through this point of the sole, and the matter be encouraged to discharge itself below,—for if it forces its way to the coronet, it disturbs the podophylla, which are never perfectly restored,—then to the foot a light stopping of dressings of rosin, softened with oil, and applied on tow, and bound on with tar cord. This, which is seldom persisted in long, restores the horse to soundness, which being then left off, and the ordinary shoe applied, again induces the consequences, sooner or later, that we have described, and thus the disorder is deemed incurable. A shoe may be beat or filed out opposite the corn or bruise; but we find it more easy and certain after the parts have been injured in this way, to make a shoe rather thicker than the ordinary shoe, and to cut off entirely that extremity of it that comes opposite the corn, and to such a distance from it as to be assured that no pressure, even remote, can arise from it; for if the shoe be left long, however managed, by much wear, it is apt to play and become relaxed, from the parts of the hoof and of the shoe giving way to each other, and thus creating a degree of looseness; when the shoe coming upon the part, is sure to reproduce the disease.

It will be objected by the inexperienced, that the corn is thus left unprotected, which is true; but the thickness of the shoe will protect it sufficiently, and it will be found of little consequence, for it is much better of two evils to contend with the occurrence of casual pressure from irregularities in the road, than with the perpetual pressure of an iron shoe. In slight cases, after the shoe has been nailed on pretty firmly, we have taken a small saw and sawed away the horn resting on the shoe at this part, so as to make it press less forcibly there than on any other part of the foot; but even then, if the shoe be allowed to stay on too long, the nails, as we have before stated, becoming relaxed by the horn giving way, pressure will again take place on the bruised and tender part; so that it is much the safest way to remove the iron to a considerable distance entirely away from it. We have lately observed that Lafosse, in France, had recommended the same measure of shortening the shoe.

In feet disposed to flatness, it is better to shoe them very long or very short, as the middle course is sure almost to bring pressure on the tender point.

This shoe, though simple, is figured in the Stereoplea, pl. I, fig. 9, and after very extensive opportunities of using it, we found it in practice beneficial beyond our expectation. We cannot too much enforce the removal of the iron with boldness, and that a considerable piece be taken off, otherwise the shoe, by approaching even the tender part, will convey an unpleasant impression, and half measures be more injurious than not shortening the shoe at all; for if it should rest solidly on the intertortional column, or strong angle formed by the duplication of the hoof at its inflection inwards, it would be better than if the shoe was a little shorter, when it might burrow in and bruise the sole; for where the hoof is strong this may be done with safety, especially if the hoof does not much turn under at the heel, or inflection rather.

We have fully ascertained, by unfortunate experience, that the bar itself will bear no upward pressure whatever, and therefore the shoe should be always beveled off inwardly and well clear this part. At Bristol, a man, in a newly constructed forge of ours, and going on well with the expansion shoe, in our absence, turned up the heel to rest against the bar, and keep thus, as he said, the foot open. Finding a general complaint that our horses were all getting lame, and going badly, I was sent for down to Bristol, and found, to my deep chagrin, that this foolish trick had been done upon Coleman's patent principle of an internal clip to the bar; and I may say, such was the effect of it on the forge, that its reputation was never after properly re-established. I am disposed to believe that the reason the bar will bear no pressure is, from there being no proper *cutidura* beyond the inflection. As the prevention of disease is more important and generally more simple than the cure, so we believe the turning downwards a little the internal heel out of the general level of the shoe should take place generally, as the heel is more prominent on this inner side, which is hardly known, or attended to, at any rate, by the common shoeing smiths. I have remarked if the heel suffers by undue pressure, the horse has a disagreeable nodding way of going, and that he takes an undue degree of leaning and pressure upon the bit, as in a journey to Bath I once grievously experienced. Calling at a smith's at Turnham Green, I took the shoes off and turned them down from the heel, and it proved a perfect remedy, to my great delight, for the rest of the journey.

RING-BONES OR OSSIFIED CARTILAGES.

[*Second Edition, London*, 1842.]

The ossification of the lateral cartilages of the foot of the horse, has appeared to us to proceed generally, from a too fixed and motionless state, into which the hoof has been brought by the application of the common iron shoe, nailed both sides the foot.

We have however Ring-bones not unfrequently occurring in cart horses, and especially dray-horses, naturally, and which in them appear to take place independently of the shoeing, which led us to imagine that in this case the vast magnitude and rigidity of the hoof itself, (for these animals are a sort of monster among horses), were producing the same effects, as the iron bound foot in the case of nag-horses; hence the explanation of this apparent anomaly.

We have often had occasion to observe, that the ossification did not commence in the middle of the cartilage and extend thence to its extremities, but was commencing usually at its insertion in the bone, and extended thence to nearly all parts of them.

These lateral bodies of the foot which we call cartilages, do not appear precisely of a similar organization to the parts so called in the joints and other parts of the animal system, and might without impropriety receive a name distinct and peculiar to them, since they are vastly more diversified and elaborately formed in the different parts of the horse's foot, than are these other cartilages. And since cartilages in general are the grand modellers of bone and preceding it, but here they are lasting in this state for life, that is if perfectly healthy. A word therefore to express them by, would we apprehend be useful to us in this case.

These remarkable bodies are in fact modeling the frame work of all the posterior parts of the horse's foot, as a substitute for bone, and affording that yielding and elasticity, that this extraordinary organ requires. But for a more particular description of these singular structures, we refer our reader to page 111 of the Hipponomia, and their appearance pl. xii, (a supplementary plate), where for distinction they are called the *great podal cartilages*, or *podochondria*. *Marmora* appears indeed from Vegetius, Lib. ii. c. 48, to have been applied to them by the ancients, no doubt from their hardness when ossified, and from affording the impression of their being like to *marble*. Their *mallones* also were, we believe, what we denominate *wind-galls*, and *thorough pins*, but with less elegance or of truth indeed.

These cartilages in their ossification, appear to spread from the point of their insertion in the coffin bone, gradually indurating through their whole extent, till the hardness rising above the hoof it can be felt by the fingers, and this part above the hoof obtaining the name of the

circle or ring of the coronet, hence the name of Ring-bone has followed as a natural consequence. Now the structure and offices of these remarkable parts having been particularly alluded to in our anatomy of this organ, it need not here be further dwelt upon. And it only remains for us to consider their relief, for their total extirpation and cure seems out of the question; still much may be done by a proper knowledge of them in the way of their prevention, and which may be achieved, in part or wholly, by our not embracing the foot too early and too permanently with a fixed inflexible shoe, that is to the Nag-horses; and as to the cart-horses, a reducing perhaps in some cases the inordinate strength and thickness of this *monster of a hoof*, might be of use in defeating their formation, and not resorting too early to the iron bond.

Further, for their relief, for they are very common, and a very great annoyance to the generous animal, wholly incapacitating him at times from service, we should recommend a light blister, or two, to the coronet generally, and in very desperate cases, perhaps a slight firing may be resorted to, or in lighter cases emollient fomentations of herbs, and with these a bleeding or two from the jugular and from the coronary veins, and other vessels of the foot, with rest and a soft bed, and a dose of purging medicine: these anti-inflammatory means will most generally subdue the present inflammation, soreness, and pain; for we have found when they occasion sudden lameness, and are most troublesome, it is from some sudden twist or wrench of the foot in their work, that has called up the inflammation of the parts, by the resistance the ossified portion of the cartilage makes, and which will most often yield to such measures.

And we think we have observed these ossifications to be more frequent on the outside, than inside of the foot. And we also think we have seen great relief given by deeply scoring with a drawing-knife longitudinally, the hoof itself, in three or four places, by which it is rendered less binding upon the parts within, and together with the expansion shoe to aid it, it has produced the most agreeable and beneficial effects, and this in an old horse, who after these measures soon returned to his work again. And so little has the elasticity of the foot been known or understood, that I apprehend this is the first time this simple means has been proposed. See Testimonies, p. 12, in favour of the *expansion shoe* in these cases.

This disease has also been strangely called, *chest-founder* by the smiths, merely apparently from its often causing a considerable retraction of the muscles of the chest, from the severe pains of the feet.

After what has been said as to the causes of this complaint, and of the inherent property of elasticity in these and all other feet, no man will, without well considering it, put the foot in irons, in the young growing animal, but on some very pressing emergency, and then only to remove it again on the first opportunity.

RICHARDS, PRINTER, 100, ST MARTIN'S LANE.

No. 5.

ON FOUNDER.——*Pedicida.*

This singular disorder has hardly ever been intelligibly described, and certainly has never obtained that attention that its importance merited.

It is by no means infrequent in this country, and still more frequent I believe in France. This I am disposed to believe, from what I observed of their treatment of the foot in shoeing, and from the immense heaps of these foundered feet collected in their veterinary colleges, and the great interest which appeared in what I had to communicate on this subject. What I am speaking of was about the year 1828; how it may be in this respect at present I know not, as many changes were daily taking place every where in the management of the feet.

The English name *founder* for this disease appears to us to have been obtained from a very ancient French word, brought to us from Normandy, viz. *morfondre*, signifying a melting down or sinking away, as a ship sinks in the waves of the ocean: *mor* being an ancient Gaulish word for the sea, and in British also, it signifies the same thing. We have in this country retained the name without much alteration, except the omission of the *mor*, whilst the French themselves, appear to have got, as in other instances, into another designation for this disorder, calling it *La fourbure*, of which expression I hardly quite understand the sense or intention.

As the ancients, both Greeks and Romans, do not appear to have been near so great sufferers from this complaint as are the moderns; being ignorant, most fortunately, of this ironing art, and of all its baneful accompaniments; so that Vegetius has hardly made mention of such a disorder. Now these ancients, very wisely as it appears to us, suited the road to the foot, by forming a hard, level, smooth causeway, upon which the hoofs would suffer very little, and on which the horses tabbered away at a great rate, they changing their animals frequently, as at every six miles, their stations being placed at this distance along these roads, with relays for government service of forty horses each. We moderns, on the contrary, try to suit the foot to the road, of whatever description it may be, and in so doing by an iron band nailed round the foot, have fallen into a black catalogue of disasters, diseases, and difficulties, little dreamt of or intended. Among the ancients, we hardly hear of any such thing as

tumble-down horses, or of broken knees, or of people killed by the falling of their horses, while such is happening to us daily, and among the killed we show at the head of the list two kings of Britain, and those of the most renowned and important character, destroyed by the stumbling of their horses, as we have elsewhere also observed; so that neither royal nor noble birth, wealth nor station, can exempt its possessors from the fatal effects of the practice.

With the Greek veterinary writers of Constantinople, or of the eastern empire of Rome, is found, however, a disorder of the feet mentioned by them, which appears to have been attended with the loss of, or shedding, of the hoofs.

This disorder was called by the name κριθίασις, *Crithiasis*,—translated *Hordeatio*, or the *Barley disease*, the usual food at that period of their horses, and it is described as originating in the stomach.* And there can be no doubt that a mass of undigested food of any kind, weighing on the stomach, would paralyse its actions, and derange the whole system. We see at times cachectic and strumous children, that eat voraciously, losing the use of their lower extremities, apparently, from an oppression of the nerves going to those parts, which nerves are situated below the stomach, and are proceeding from the loins. Also after a severe attack of typhus, or low nervous fever, we often see, if the patient recovers, a peeling off of the cuticle, a loss of the hair, and even of the nails; that it is not therefore much to be wondered at, that the hoofs of animals should be similarly affected, from any deficiency obviously of nervous energy. In nerving horses also, as it is called, the paralytic state into which the feet are brought, by the loss of their nerves by this vile operation, will occasion the arteries going to these parts for their supply, to lose their energy, for the action between nerves and arteries is mutual and reciprocal, and either will become benumbed by the absence of the other. So that the arteries in the above case becoming paralyzed, and losing in degree their powers of secretion, an insufficient support causes a separation to take place, and, finally, a falling off, as we have on several occasions ourselves witnessed, with deplorable consequences, indeed no less than the death of the animal.

I formerly apprehended the very ancient writer, Simon, the earliest we know of on horses, and quoted by Xenophon, was alluding to the foundered foot, when, in his recommendation in the choice of a horse, he warned them against a soft footed one, and to prefer rather "one whose foot, when struck upon, resounded like a cymbal." I now however believe, that he merely meant a flat-foot, where the furch, from being low, met the ground, as being of too tender a character to bear much battering upon the road. And Horace also, we now believe, only meant the same thing in his *molli fultâ pede*, for this disorder, we think, might probably have been somewhat of a rarity with them.

* See Scriptores Græci Veterin. p. 33. Ruellii Latine reddita. fol. 14.

From a gentleman of my acquaintance, and who is well versed in horses, I learn that, in America at this day, they are subject to a disorder very similar to our founder, and which they also call by that name, accompanied as I understand at times, with a decadence of the hoofs.

He remarks that it usually takes place on a journey, after sharp travelling, and where the animal has been fed with *maize*, or *Indian corn*, *(Zea mays Lin.)* The meal in this case had perhaps been hastily made, and was not well masticated, and without the proper supply of water that was necessary for its solution; since this grain, has an exceedingly strong, heavy, glutinous body, and is requiring great care therefore in its exhibition, and the consequences of such a mass on the tender stomach of undigested food, we have above described.

It may also be remarked that maize, or Indian corn, has been in all periods the usual food of the eastern world, extending into the west also, certainly into Syria and Palestine, and as far as Greece, and which was certainly the corn spoken of in the Holy Scriptures, that our Saviour's disciples "plucked and did eat of on the Sabbath." So general indeed was its use in these countries, that we are by no means assured it was not at times the cause of this Crithiasis, the disorder above spoken of; being eaten perhaps when the more common food of barley, from scarcity was difficult to be had; still calling it by the name of the food usually eaten. All we wish here is, to draw a more exact attention to it, and to warn people against the administration of it in a slovenly and careless way, lest, in destroying the hoofs, they destroy their animals also, for a succedaneous hoof is not worth much, as we shall presently see.

We are now compelled, in further prosecuting our account of this disorder, to borrow or draw upon our own stores or materials, having in our publication on the foot formerly, been obliged to describe this disease, in order to its not being mistaken and confounded with the simple contracted foot, or any other disorder that distressed or incapacitated the animal from good going, well knowing at the time we furnished the description, that it was out of place there, and that at some future period it should be arranged with the other diseases of the foot, and where, in the next edition, if such should ever be required, we intend to affix it, so that, at present, to save expense to our readers and to ourselves, we shall refer only to the pages in those works, where these details are to be found, viz.: in the *Podora* at p. 32, 3, 4, 5, as far as line 12, ending with "parts inflame, and derangement is the consequence;" also, page 36 to line 23, ending, "in this direction." Next we are obliged to resort to the *Stereoplea*, at p. 43, 4, 5, 6, 7, to line 13, "too soon." And the very expensive assemblage of wood-cuts also of foundered feet we bring from that work, to place it in this. Therefore, in future editions of the work just alluded to, this disorder of founder will be mentioned only in general terms, referring for particulars to the present collection.

That the present publication, however, may not be too sterile, and destitute of interest, we copy, from the above works, the leading circumstances, containing a short description of the disease, and some references to the plate of foundered feet.

"*A description of true Founder.*—The foot of the horse, not unfrequently, is subject to have its connection with the hoof weakened, or wholly detached. The coffin bone in this case dislodged, or its adherence impaired, is pressed down by the natural operation of the weight of the body, and sinking till it meets the sole, it there rests, with its front parts bearing upon the front parts of the horn of the sole, forcing it downwards and sometimes outwards, in such a way as that from being a concave, it becomes of a flat, or of a convex form. The horse is then, truly enough, said to be foundered, or *pom-footed.**—See Fig. 1 and 2.

"In order to afford a name, and of a cast somewhat more classical, for professional use, for this disorder, than the one vulgarly employed, and that would bear also the inflexions of language, I instituted the name of *Pedicida* for it, derived from *pes*, a foot, and *cado*, to fall, and to its congeners, where the bone was not so totally detached, the following, viz.: *Pedimota*, or the imperfect or partial founder, where certain deformities, or a partial sinking only of the bone has taken place, as an example see Fig. 3. Sometimes we have seen certain *bullæ*, or *bladders*, or *galls*, take place in this case at the coronet, filled with bloody serum, which, being opened, and the part freely let blood, a timely relief has been afforded, and the total disunion of the bone with the hoof has been prevented. These bladders after subsiding, disfigure sometimes the skin with the appearance of horny knots and of warts. The next affection I call the *Pediturba*, or wrinkled foot, by which I understand, &c."

* From *pomme*. Fr. an apple—not *pomet*, *pomed*, or *pumice*, as we sometimes see it written. One writer has endeavoured to make the *pumiced* foot, as he calls it, a distinct disorder, from founder, but certainly erroneously, since the state of the hoof he so designates and describes, is neither more nor less than the foundered foot after a considerable lapse of time, the hoof then assuming that spongy, thick, and shapeless appearance. Cut 1, Fig. 5.

ON RUNNING FRUSH OF HORSES' FEET.

[*Third Edition, London*, 1842.]

As there appears to be no sufficient reason for continuing the absurd and barbarous appellation of *Thrush* to this disorder, I take the liberty of restoring again to its proper place in our language the real old English term *Frush*, as the continuation of the former can only perpetuate confusion and error which has but too long prevailed in these things. The above corruption appears to have proceeded from the Jockeys and Smiths, and perhaps Amateurs of the turf, who have too blindly followed them, for it has existed only since the commencement of the racing for Plates, which introduced a new era in horse affairs, and not much to their advantage or advancement at least in knowledge, as during the three hundred years it has been in vogue, no light on these matters has proceeded from this school. One can only attribute this error to the want of attention to the spelling and also to the source and origin of the Word which has no analogy with any such name or thing as a *Thrush*, that similarity of sound alone has probably been the cause of their being so misled, for the term is wholly erroneous and perfectly inapplicable in any way to this complaint. I restore the original word therefore for two reasons, first because the word Thrush is equivocal and conveys no idea of the complaint, meaning a singing bird or a disease of children; and secondly, because we enrich the British language by adding to it a definite term for a specific object, the present disorder of horses, and which has no analogy with any other, by which we are enabled readily to think, speak, or write upon it without any confusion, for names or epithets for distinct objects when well chosen are of no mean importance in conveying correct ideas and reasonings, but, on the other hand, if ambiguous or incorrect, only serve to embarrass, disturb, and often falsify them.

We may remark that the term *Frush* is originally derived from the Latin *Furca*, signifying a fork, and was probably more immediately obtained by us from the French word *Fourche*, also signifying the same thing, and its diminutive *Fourchette*, we see, is the appellation in this language of the frog or furch, at this day. Hence formerly we obtained *Running Fourche*, for this disease, and afterwards by an easy transition, *Running Frush*, which word actually occurs in our old English writers, as in *Blundeville*, *De Grey*, and others, and is therefore there is no doubt the true word. The epithet, *Furca*, in French *Fourche*, or *Fork*, was given it by the Romans and French in allusion there is no

doubt, to the forked base or cleft of the Furch, this part branching off laterally to cover over the sharp inflected ends of the hoof and forming there a denser coat, which we have called the *bulbs* of the Furch, and the French have called these parts the *Glomes*, at my suggestion, the former term not being admissible in their language.* That *Frog* could not be the original name appears evident from there being no analogous word for this part in meaning, or of similarity in sound, indeed, in any of the languages from whence the English language is derived. I therefore recommend, in speaking of it or its conditions and qualities, adjectively, to use the word *Furcaceous*, as the word frog does not admit of any adjective whatever, that is at all applicable to the organ in question, as such would ever relate to the animal itself, but the true origin of these corruptions is more fully explained and how they arose at p. 89 of the Hipponomia, to which we particularly wish to refer the reader's attention.

The disorder itself is truly a troublesome one, and often rendered still more so by the want of a proper management. Much weakness and soreness of the part appears to attend it, which is productive of great inconvenience, and sometimes of serious accidents; for when the horse treads upon a stone or flint in the road, and with his whole weight it may be, resting upon this tender point, he drops from excessive pain, with the limb, or perhaps falls down. A disease so painful and frequent is therefore well worth the labor of an essay, in which what I have to advance is for the most part new, at least differing from the views generally entertained of it. For contracted heels have been hitherto generally considered the chief cause of this disease, but which we shall show is by no means the case; and for the treatment, pressure on the frog, and even cutting away the horn of the part itself, has been recommended, which we shall exhibit as quite unnecessary, or something worse.

It appears to be necessary, in order to set this complaint in a more clear light, to give some account of the formation growth and structure of the part itself, by which *the natural Frush* will be best understood; and then afterwards to consider *the secondary* or *acquired Frush*, which distinction appears to be of value in estimating them, and afterwards we propose to treat of the cure.

The part diseased, and which in my Treatise on the Foot of the Horse published in 1809, I called the Furch-stay, as being the part that held the base of the Furch together, and observed, that feet when even in the most contracted state often were without any appearance of frush, and further that one foot might be frushed and the other not, of the same horse, though both were equally contracted, that this pointed out clearly some other cause was producing it than mere contraction of the foot; and again, that the feet of young horses which had never been shod, consequently could not, in the proper sense of the word, be contracted, had Frushes often, and very bad ones, so that it was most evident that some other cause than mere contraction, must be the source of it.

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* The Greeks appear also, like the other nations, to have given it an appellation which referred to the forked nature of its base, for they called it χελιδων, or *the Swallow*, the forked tail of this bird being most probably the object here alluded to.

In the above work the *Frog-stay* or which is better, Furch-stay, is thus described. "In the base of the Frog, or posteriorly at its widest part, there is seen a deep oval cavity or depression, (see Frontispiece to Hippodonomia) and which hollow cavity is called the *Cleft of the Frog* or *Furch*, and whose edges or margins are surrounded by rising lips of a more polished, denser, and harder horn, apparently to secure it from rupture by external violence, and the sides of this cavity sloping pretty suddenly, meet and form a longitudinal line at the bottom of it, thus closing and terminating it. In the offices and business of the foot this cavity appears to be useful in many ways. By its closing when strong pressure comes upon the base of the Furch, it saves it from a too severe condensation of its horn, which would be inconvenient by inducing an inordinate pressure to the tender parts immediately under it, as the principal flexor tendons and the joint of the foot. And in soils of a looser nature, as in sandy deserts, this cavity in the base of the Furch, can be farther useful by receiving them within in, thus rendering the foot more stable and firm upon such loose kind of ground. This cavity assists also by the unoccupied space it affords in conferring a degree of liberty to all the posterior parts of the foot, by its permission of a yielding on all occasions, and which freedom, liberty and elasticity of these parts is highly essential to the health and well-being of the foot, and of the due performance of all its functions.

But what we wish more particularly to impress upon the reader's attention is, that this cell, or cleft, is prevented from being ruptured inwards, or towards the quick, by a stout cone of horn, which is passing upwards from it into the Sensitive Frog, and of which cone this cleft is merely the hollowed base. And it is somewhat remarkable, that this solid cone of horn, although passing within the sanguiferous and sensitive parts of the foot, is nearly or quite as hard as is the external horn exposed to the air, in order apparently to give it the more efficiency in resisting rupture from external assault; and this cone, we may observe, commences nearly opposite to the point where the terminations of the coffin bone are found, assisting in strengthening and consolidating these posterior parts of the foot in the absence of bone. The sides of this remarkable cone are somewhat compressed or flattened, and in contracting as it rises upwards, it terminates superiorly in a rounded, bluntish edge or ridge, and posteriorly enlarging, and becoming wider, it is presenting a broad flat surface for adherence to the Curtain of the Furch. This remarkable part was without any name and very little noticed, till I gave it the epithet *Frog-stay* or *Furch-stay*, from its holding together the cleft base of the Furch, and the French have followed the example in calling it *L'arrette Fourchette*, for the same reason.

It is to be observed that the horse's foot is not exactly a *solidungula*, as the ancients called it, but is more properly a *semifissipes*, or half-cloven foot, for the hoof, though entire in front, has two terminations posteriorly, formed by its inflected extremities, and between which the Furch is inserted to fill up the large vacuity and with soft readily-yielding matter to obey the impulses and distensions of the wall; and the Furch again being nearly cleft asunder at its base, has given to it this singular nucleus, or centre-piece, the Furch-stay, in order to consolidate it, and to present a firm barrier to its separation at this part by external violence. And this barrier it is, when broken down, that is the real cause of *Frush*, or when during

the formation and growth of the young foot, it is not properly closed and consolidated, of the *natural Frush.*

Since there could not exist in nature such an anomaly as a really solid foot, that is of one continued circle of horn without any break or interruption, as the power of yielding and extending under the impression of the weight, which is an indispensable condition, would then be removed. Much less objectionable therefore, for this sort of foot, is the Greek term *monungular*, or *monuchal*, as not implying solidity, and is more consonant and agreeable to truth and nature.*

And the Furch-stay, like an inserted tooth, firmly holds the horny to the sensitive Furch; for whilst the sensitive Furch falls into the reverted arch of the horny Furch, this part entering in the opposite direction into the sensitive Furch, serves reciprocally to fix and confirm these parts together, and preserve them from external injury or dislocation." "And this part will also essentially co-operate with the coronary frog-band, in keeping the whole posterior structure of these parts together, and especially under circumstances that might tend to disunite them, as in the suction of strong clays or in swampy ground, &c."

Now this part, the Furch-stay, also appears to be the last part of the foot in obtaining its perfect growth and consolidation, and if opposed by natural weakness, or by externally destructive agents of the horn, such as wet, dirt, urine, and filth, &c. then the Frog will never be properly closed, and a Frush be the consequence through life. On casually visiting the Stud of the East India Company, Sept. 8, 1807, upon the borders of Epping Forest, I was surprised to see several young Colts whose Furches were broken, and with terrible Frushes, and the inflexions of the hoof were actually pressing in upon the base of the Furch. Now these Colts were most of them the offspring of the famous horse *Worthy*, and he also was foundered from violent racing, and perhaps from having naturally weak feet, having been a favourite. The man who looked after them, assured me, that as the Colts grew older, some of their feet became perfectly sound and free from Frush, but not all. The place where they were confined, was particularly wet, and most unsuited to any, but especially to horses in their peculiar condition. Observing these facts, I was led to reflect upon them as I returned home, and thence to perceive for the first time that it was not by the condensation of the foot, or by contracted heels, as it was called, that this frushing took place, but in fact from an imperfectly formed, or a ruptured Furch-stay. At an early stage of the growth therefore, there appears to be an opportunity of doing much good, by a sedulous attention to the breeding yards, and places for rearing these young Colts, which should be kept as free as may be from any unnecessary wet or dampness, more especially where there is a tendency or disposition to this disease. But these measures neglected, or not understood, the Furch would remain weak and unclosed, and be tender perhaps through life, and if imperfectly united, would easily disunite again on the slightest cause. Great care and attention therefore, we believe to be necessary to this part with young horses. Where, however, the Frog-stay is naturally large, healthy,

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* The French often use *monodactyle* instead, but as *dactulon* is properly a finger, it seems not to apply so happily as the other.

and of firm texture, and early well consolidated, it may be able to resist all these opposing agents, and even the mal-practices of the smiths in cutting it, and shall continue through life, sound and free from rupture or disease.

The Furch-stay is subject to vary in different individuals, as to its dimensions and figure, and the period of its completion, being in some very small, in others large, in some perfected at two years and a half, and in others, not till three and a half, or four. And I once observed that the front part of the margin of the cleft, began to form and consolidate before the other parts of it, and the growth appeared to extend backwards. I mention it also as rather a singular circumstance, that a very large number of horses have one foot of the four with the furcaceous parts weak, and this I have so often remarked, that I am led to record it, sometimes happening to one of the fore, and sometimes to one of the hind feet.

I may also just mention, that it has appeared to me from some casual opportunities I have had of seeing it, that the Furch-stay is composed or made up of concentric coats, or layers of horn, or somewhat as the coats of an onion, for I have seen it to come away or exfoliate in pieces of this figure, though in a healthy sound state, a section of this part does not discover such a structure, so intimately are the coats united. I have thought also, that this part was often larger in proportion to the foot, in blood horses, than in horses of the coarser breeds. See further particulars in the Hippodonomy, p. 55.

There is a further circumstance in the structure of these parts which appears to be worth noticing, that on carefully dissecting the internal frog, I observed that the skin passes down and is every where continued under the horn of the furch; which horn begins by a fine edge at the line or precise point where the hair ceases to grow upon the skin, then passing outside or beneath the cutaneous furch, the organ secreting it, it thickens as it goes on to the middle, and then thins away from this centre to the point of the furch, the skin running distinctly under it the whole way; till reaching the point of the furch it is lost in the sole.

The breaking up of the Furch-stay therefore, brings this same skin into contact or exposure to extraneous bodies, and it is made and becomes the seat of irritation and tenderness. A sort of cuticle also is seen covering the horn above described, and seems to run between the two halves of the furch; though whether it be so or not, is not readily decided.

The skin appears to thicken considerably, flowing irregularly under the middle of the furch, and becomes more vascular and contains a streaky ligament which covers its surface within, and is again containing or involving it; the middle mass has a sort of granular ligament in it, for when you cut it, it starts out in elastic granular points, more so than any other of the coverings of the foot. These circumstances are best seen by laying open the frog longitudinally with a sharp scalpel, and by reflecting and turning back the divided edges.

Having described the part diseased, and the way that the natural frush is generated, I proceed now to consider the *secondary* or *acquired Frush*, which I have so called, because it is formed in feet that have been previously well closed and consolidated in this part; the secondary frush is usually generated by the mal-practices of the shoeing smiths, in unduly cutting away the horn of the furch and leaving it often in so weak a state, as to have even barely a covering of horn, or even sometimes they cut it so unmercifully that the blood flows,

and then the first stone it encounters is sufficient to break it up and rupture it, when wet and dirt insinuate themselves, and a general undermining, and ulceration of these parts of the foot ensue, with a tenderness endangering both horse and rider; and then you will perhaps be told, that it is a cankered foot, and adding with an accent which implores your acquiescence and commendation of his measures, "*that in spite of all his care and trouble with the foot, nothing could save it,*" though if simply let alone, nothing would have ailed it; so injurious is ill-judged officiousness, that there is much merit even in knowing how to let well alone.

As the ruptured Furch-stay gradually rots away, in its place is presented an ugly longitudinal slit or fissure, discharging a stinking watery humor, or sometimes pus, and the two sides of the cavity in this case, meet each other somewhat as two toes would do if their outer skin were removed; and being pressed and rubbed against each other, are producing excessive tenderness, constituting all the characters of a genuine Frush.*

Of the Cure.—As the disease consists in the rupture and destruction of the Furch-stay, so the cure will consist in restoring again and rendering solid and entire this very necessary part. The first aim or indication, as it is called, appears to be, to dry up and destroy all morbid discharges of the part, which will prevent the formation of horn, and so to procure by a salutary growth, a new and entire Furch-stay. The best desiccatives in these cases, are the metallic sulphats, as a strong solution of the sulphat of zinc, or white vitriol, in the proportion of two drams of the salt to an ounce of water; or still more powerful, but perhaps rarely or never necessary, the sulphuric acid, diluted with four parts water; but this, if applied too frequently, will become a caustic and do harm, and the other will scarcely ever fail of effecting our purpose. The oxymellate of copper, or Aegyptiac,† is an excellent preparation of this sort, made by boiling treacle and blue vitriol (sulphat of copper) together, till they assume a red colour, which appears to be equally as efficacious as honey and verdigris, at a much less expense. These desiccatives should be applied to the bottom of the cleft with a spatula, or which is better, with a stick cut thin and flat, not sharp, introducing these applications with a bit of soft herds or tow, not distending the Cleft with any force, but as little as may be, and diminishing the quantity of the tow every time, afterwards smearing the Furch and parts adjacent to the fissure with tar, by means of a painter's tool, or small brush, which is very convenient for this purpose: these dressings applied every other day will be sufficient. I have known even tar alone sufficient, regularly applied, to suppress these discharges, and to induce the formation of healthy horn. We need not have the least fear or apprehension in drying up the discharge, for it behoves us so to do whenever we can, since its continuance only serves to weaken the parts and render the cure more difficult; for there is an idle notion among the

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* The French term for this disease is *Fourchette pourrie*, and *Fourchette échauffée*, the former, according to the definition given in *The Dictionnaire Encylopédique*, is used when the frog is very badly undermined, p. 39, ART. *Medecine Veterinaire;* the ingenious writer has however, by a *contre sens* (which is no uncommon thing with the French) exactly reversed the statement of my opinion of this disease as to its being the consequence of contracted heels as he calls them.

† Probably from this medicine having originated in Egypt.

grooms, that the suppression of a Frush, "*throws humours into the body*," though no one, perhaps, ever saw such an effect, that it is the miserable logic of smiths and stable-boys, and not worth the smallest attention. It is however, to be remarked particularly, that the suppression of the discharge may be opposed by a heated, feverish, and inflamed state of the body, from stable confinement, air, and food, and which perhaps may have given rise to this notion, and which febrile action falling upon the weak part, shall keep up the discharge, and even if dried up, shall occasion its frequent return; this circumstance must therefore be attended to, and this disposition of body be removed by a bleeding, a dose or two of physic, or the prohibition of corn for a time, by a cooler stable, or even, if necessary, a run at grass. Nature determines very often her morbid actions to the feet and legs, perhaps as being in a more dependent position, as well as being farther removed from the source of the circulation, and to the weakest parts of them. The grass therefore has a double effect in removing it by cooling the body and also cooling the feet.

We may add with considerable confidence, from an experience of its effects, to the above local application, the use of a shoe with a joint at the toe, the application of which gives liberty to the foot, and an opportunity to the hoof to open and dilate itself, and thus releases the sides of the Frog from the violent squeezing and pressure which it acquires from the use of the common shoe, and never fails to refresh and cool the foot, inducing also more healthy actions in the Furch itself, and is attended with the most signally beneficial effects.

To cut away the horn of this part, even though ragged, is only to bare the sore to its enemies, and render it subject to painful collision with the objects of the road. A small rag of horn can only be injurious when it prevents the wash or lotion from getting to the part, which it rarely or never can do, if properly applied; and although as a defence, but an indifferent one, it is useful as far as it goes, in rendering more obtuse and less felt any blows it may receive; it is, therefore, much the safer way to forbid cutting these rags altogether, and to let such wear away upon the road, than to permit under any pretence of removing them, to have the furch and furch-stay unmercifully sliced away, scalped, and denuded.

A very impoverished and wasted appearance of the heels and furch, does a bad frush occasion, and in this case, often one side is affected more than the other, depending on the internal mischief and ravages that the disorder has made; sometimes I believe the white ligamentous, or rather cartilaginous capsule which envelopes the internal frog, and sustains it, is corroded through by the discharge, or by too violent applications, and then the *resilient ligament* escapes from between the substrated layers of the part* of which the internal furch

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* This part indeed often does not begin to close till the fifth year, in others it is strongly formed soon after birth, and closes at the second or third year. It was not closed in the greatest number of Lord Heathfield's young horses, sold at Tattersall's in April 1813; out of thirty it was not closed in twenty of them. (See Hippod. p. 98, pl. vi.) My chesnut mare did not well close this part till her fifth year, when it unexpectedly closed after my having despaired of seeing it. It is highly necessary to the full strength and good constitution of the foot,—and in buying, the condition of this part should be particularly attended to.

is composed, and which perhaps, as it cannot ever be renewed, is the occasion of this very wasted appearance. For an account of this most curious structure, the reader is referred to Hippod. 2nd Ed. p. 63; and for the figure of a frog so emaciated, to Podoph. pl. v. fig. 3.

Where the furch is extremely denuded, weak, and tender, a bar shoe is highly useful and necessary in protecting it from the road, and in preventing the breaking up of the newly-formed horn, afterwards a shoe with calkings will be sufficient; but, in applying the bar-shoe, it must not be permitted on any account to rest upon the frog, as has been recommended, since this part ill bears much pressure when well, much less therefore when sore and diseased.

Whilst making experiments on horses' feet some years ago, by taking the shoes off and using them without, to observe their going, and if they could be restored from the effects of the iron band and nails, as had often been asserted, but which I found from strong causes not to be true; so on one of these occasions I saw a frush generated by the foot and inflexions expanding, and the furch-stay opening in the middle and forming first, a dry cleft, which in time began to discharge, and at last became a complete running frush, though during all this time there was no want of pressure to the furch, but the contrary, which according to the doctrine of Coleman, should not only have prevented but have cured such a disease when formed.

After all discharge from the cleft has been suppressed by the measures pointed out, and the furch has become dry, horn will then form, and though the horn of the furch is remarkably slow in its growth, it gradually advances on the part until it becomes a solid cone, which will obliterate the frush entirely, and if properly encouraged and attended to afterwards, will remain entire for the lifetime of the animal; but proper care should be taken after it is so formed, to prevent the access of those causes which led to its original formation, especially if it be a natural frush and the parts extremely weak, indeed then a bar-shoe may be necessary to defend the part through life, and though with us there is often a dislike to this kind of shoe, perhaps as implying a disease, yet it is nevertheless extremely useful and necessary in protecting the part, and in making the horse when tender from these causes to go much better than by any other mode of inelastic shoeing.

Having described what much observation and experience have led me into, with this complaint, I now conclude my Essay; hoping it may prove a useful accession to Veterinary science, and advantageous to the animal himself and all those who are possessing or enquiring after knowledge in these invaluable animals.

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7--ON CRACKT-HOOF AND ITS CURE, *2d Ed. Lond.* 1834.

By BRACY CLARK, *F.L.S., and Member of the Royal Institute of France, &c.*

THESE Cracks, or Splits, in the Hoofs of Horses are often cantly termed by the smiths *Sand Cracks,* and these fissures can happen to any part of the hoof, but it is the toe and sides of the hoof that they are seen more frequently to invade than the other parts.

In their commencement they are often very slight and superficial, not penetrating deeply into the substance of the hoof, in which case as they do not occasion lameness, or any ill consequences, they pass unheeded and scarcely are regarded, and may grow out of themselves; at other times, passing entirely through the thickness of the hoof, they permit the access of sand and dirt to the quick, and then produce grievous irritation, pain, and lameness. They are, on this account, usually called by stable-men, and others, *sand-cracks,* which, however, serves to convey a false notion, since the sand is in no respect the cause of the crack, but is simply occupying it after it has been formed by other causes. Some again affect to call those sand-cracks only, which happen to the pince, or front parts of the hoof, denying that appellation to those on the sides or quarters. As, however, such distinction appears to be frivolous and without any use, we shall consider all cracks of the hoof whatever as of the same nature, and arising from the same causes, and requiring the same general principles of treatment, and any such distinction, as it would only create unnecessary embarrassment and confusion, as best avoided. The French also in the same way appear to have called those in front of the hoof *La Soie,* and those on the sides *la seime.*

When these cracks have been injudiciously cut out and proper precautions not used to prevent their recurrence, they return with aggravated effects each time, and with a greater weakness of the part, and an increased difficulty of cure; their depth becomes greater, and the powers of union in the divided portions of the hoof less, and many then consider them almost or quite incurable. In cutting out the crack also with the drawing knife the quick is very subject to get injured by dips of the knife; in this case blood flows and obscures the operation, and fungous risings of the quick start up; and these, pinched in the crack by the working of the hoof, become troublesome to manage, and often create excessive pain and lameness. There is, however, a method of treating even these cases, that without much risk or trouble, ensures their cure, and also the perfect restoration of the hoof; and is recommended also by its simplicity, which we shall presently describe, first making a few remarks on the origin, nature, and appearance, of these cracks of the hoof.

It may be almost ever observed, that the nearer the crack is to the front of the hoof, the more direct and perpendicular its direction, and the more readily it penetrates the thickness of the hoof, following at this part the exact longitudinal direction of the fibre of the hoof; at least, such is its general appearance before it has been disturbed by the knife of the operator, the two broken surfaces meeting each other in equal union; whilst those on the quarters or sides of the hoof, which are generally about the middle or nearer to the heels than this, are more irregular in their course, sometimes oblique, transverse, or waving; and, at other times shelving under in such a way, as to meet the quick at a considerable distance from the external opening, or as though the hoof had been made of two tables, or layers, which had been separated.

The cause of this difference appears to be, that the horn at the quarters is more elastic and flexible than at the toe, and especially where it approaches the inflections: and again, that these posterior parts lie more under the perpendicular pressure of the body than the toe does, receiving the weight obliquely. Hence if the horn of this part, from any cause,

becomes too dry and brittle it is subject to crack, and to be rent irregularly merely by the weight; hence we see these kinds of cracks most frequently in blood-horses, whose hoofs are thin and hard, whilst the other kind of crack, that is, the front crack, is more often seen with the cart and heavy draft-horses; the fibre of the hoof also towards the heels, being nearly in the transverse direction of the pressure, which is not the case at the toe, is the chief cause of the oblique irregularity of the crack.

Such things occur, though rarely, as horizontal or transverse cracks, both in front and sides of the hoof; the growth alone, however, is more apt to remove these, which makes them to pass almost unnoticed, whilst the longitudinal crack will continue to extend itself in spite of the growth in both directions.

The strongest hoofs of the cart horses are sometimes found split up in front, which one should be at a loss to account for from any natural cause. It almost always happens near the middle of the toe, as we have stated, and one should apprehend either that the strain in draft did this; or that the foot unevenly pared, or the shoe unevenly fitted to the wall of the foot, occasions one half of the hoof to take but a partial bearing upon it, the other wanting support, the violence of this partial exertion rends the hoof asunder, following the course of the fibre, we can also readily conceive, that the violence of the nailing and clenching up of the nails might also sometimes be a cause of this accident, by drawing the two halves of the hoof in opposite directions upon an ill fitted shoe: and although the strongest hoofs are sometimes seen thus divided, yet the weaker, wrinkled, thin, and as the smiths call them, *shelly hoofs*, are the most frequent sufferers from this cause. A clip to the shoe at the pince, such as is very usually given to draft-horse shoes, hammered down too violently upon the hoof in front, and which is ordinarily done without any measure or guide in respect to its degree, will also press upon and split the hoof in some cases. We have indeed often seen the coffin-bone, after death, fairly impressed with a concave mark, the effect of this undue pressure from the clip, and which could not but have been attended with more or less pain, according to the degree of violence that had induced it.

A tread also upon the coronet from the caulkin of another horse, or from another foot of the same horse, by disordering the coronet, will produce a weakness in the horn growing from that part, and thus induce a sand-crack in any part whatever of the hoof, and which also is not a very unfrequent cause of them.

There is yet another and more simple source of these cracks than any we have yet described, and which is, perhaps, the most frequent of any, viz. that a natural want of moisture or succulence in the hoof; or the same deficiency artificially induced by the fever which is constantly attending the shoeing, shall occasion a small cracking of the external shell or cuticle of the hoof; a minute and almost imperceptible fissure is thus formed which gradually admiting air to the interior of the hoof; and from this part of the hoof being more succulent in its nature than the external hard shell, dries, consequently contracts, and in contracting extends the crack in both directions till it meets the quick. The dryness of the stable also, the summer heats, or the winds of March, will especially facilitate this process. And as these small cracks extend, they in more or less time, as they happen to be favoured by these circumstances, will at last reach the quick, and the consequences ensue which we have above described. The weight also and movements of the horse, after a certain time, the hoof becoming too weak to sustain them, will tend to complete the fissure and carry it to the quick.

If the fissure at its commencement has been low down the hoof, or has been retarded in its extension by the opposite circumstances to the above, as by the wet seasons, or the application of moisture, &c., it may be carried out by the growth naturally, and no ill consequences ensue, and which may be called the simplest state of the disorder.

In respect to the cure, it is at present usual to cut out these cracks with a drawing knife, and then to fire them afterwards with a red-hot iron; this certainly melts the hoof together, and closes for a time the crack; it however generally rends again, for the scorched and burnt horn is much more brittle afterwards, and disposed to rend, and the crack to return, especially if left to the air uncovered, which it too often is. The violent inflammation also, in the parts beneath, induced by the firing, cannot be attended with any very beneficial conse-

quences in these firings; and the parts shrink afterwards, and render the cure much more tedious and difficult, and this, according to the degree of heat that has been employed, which is ever attended with a loss of substance and an absorption in the vascular parts.

Now the most perfect exclusion of the air from the crack in incipcint cases, is all that is really necessary for a perfect cure, and a restoration of the hoof; that is, the crack, unable under these circumstances to extend itself, grows out: it is necessary therefore for us to continue and persevere in this measure till it be near or quite at the bottom of the hoof, and three months or four will generally be sufficient to renew any hoof from top to bottom.

The ointment which we have used with the greatest success in these cases for excluding the air, is made of tallow, wax, and tar; to equal parts of the two former ingredients, a sufficiency of tar is added to give it a tenacious consistence: this smeared over the hoof forms a good defence against the drying effects of the air, and is infinitely better than oils, which appear to sink in and to inflame the foot. This ointment should be well pressed into the crack, and also be spread on leather or on linen, or on pledgets of tow, and tied over it. In other cases, where the application of ties might be inconvenient, or might not be desirable on account of the appearance, we have formed a very adhesive, tenacious mass to fill up a channel or vacuity in the hoof, by melting together equal parts of common turpentine and of bees wax, with a sixth part of tar to colour it; and for dealers or others who may wish to conceal small defects such is particularly well suited.

From the simplest manner of a crack, we shall now proceed to consider the treatment of a worse case, where the quick is exposed to the irritation of foreign bodies. Here the crack must be fully exposed with a drawing knife till these particles can be reached and washed out; washing afterwards the wound with tincture of myrrh, and then applying a pledget of *turpentine* or *rather of resinous digestive* over it for a few days, perfectly to exclude the air as above described till the hoof has grown out entire, or has formed so strong a shoot of horn at the coronet that it shall remove any suspicion about its future security.

In a very old crack, ill treated by firing, it will be found, that an impression or channel has been made in the coffin-bone itself, which may be observed by macerating the bone after death; and the crack being deeper therefore, is with much more difficulty got at without wounding the quick rising on either side, and the effusion of blood serves to obscure and prevent the operation. The best proceeding in such a case is, to rasp the hoof under the coronary ring, crosswise, with a broad half-round wood rasp as deep as possible without actually inducing a flow of blood, which in all operations of the hoof should be carefully avoided, as it obscures the parts to be cut, and makes the process more difficult and uncertain; and then as the quick on either side is higher than the bottom of the crack, when the rasp can no longer, be used a fine small drawing knife best completes the excision of the fissure, applying the dressing and a bandage, and keeping it covered as above described. But if, however, as is sometimes the case, it be so deep and so surrounded with living parts that it is next to impossible to obliterate it without wounding these parts by dips of the knife, it is then best to cover up the foot in the dressings, and to wait for a week or more, under these circumstances, when it will be found that the growth has now rendered the perfect excision of the fissure a matter of no great difficulty. After a time a knob of horn usually proceeds from the coronet following this operation, and which effectually prevents the return of the crack, if it be kept thoroughly moist, and smeared continually with the unguent during the whole time of its growth downwards.

Where the crack, from being of a very long standing, and much fired, has no powers left of union, or when united it breaks up again, as when also they persist in using the horse, then, under such untoward circumstances, it will be necessary to thin and remove the hoof to a considerable distance from either side the crack, so as to render all as thin as possible; that the play of the hoof, that is, the unequal movement of its two portions, shall not in any manner interrupt, break up, or disturb, the new growth that is forming entire at the coronet, taking care to keep the parts all the time well covered up from the air.

And in the very worst cases that can well occur, as where by long neglect, firing, and other means, the parts have been so much injured by bad operating that numerous funguses have arisen in the crack with extreme pain, it is then preferable to operate in the following way:

Clear away the horn to a certain distance on each side of the crack, reducing it as thin as possible with the rasp and the drawing knife, then pass a scalpel longitudinally through to the elastic processes, and with a pincers elevate the thin strip of horn and draw or tear it off upwards, at the coronet. By this means we sever the old and diseased part from the new forming horn, and then the new shoot being entirely separated from the old connexion makes a more vigorous push, and being well sustained and kept from drying it grows out entire and pushes the crack out: this being done on either side the crack, the funguses being no longer irritated by the contact of hard edges of horn are easily managed, and the growth soon fills up the space with new horn. In lesser cases this, although a certain and ready way, is not advised, being not only extremely painful, but the elastic processes so disturbed are never afterwards, we believe, perfectly re-produced; we should however have left this account of sand-crack very imperfect if we had omitted to speak of these fungous elevations of the quick, which to manage are often much more troublesome and difficult, and requiring more address, than the crack itself. Compression in some cases will do, but excision in general is best, with moderate compression afterwards; the edges of the horn surrounding and irritating them being carefully removed and kept away.

If these funguses are not well removed or brought to a correspondent state to the horn that is growing over them, they do not kindly unite with it, and a disease of the most singular kind is produced, and which has hitherto, we apprehend, never been named or described. It is a morbid kind of horn that is formed, of a yellower cast than the natural horn, and is partaking of the structure and appearance very much of the funguses growing from trees or the boletus; now the natural horn grows over this, and presses down against the quick, and will occasion if neglected severe lameness.

Pricks by nails injuring the coffin-bone will also occasion formations of the same sort; and this *Rib of bastard horn*, as it grows down along with the other horn, widening as it descends, sometimes forms a cone whose apex is the point of the original injury. The cure of this, which if not understood, as was the case in our earlier practice, is truly troublesome; and nothing less than the total extirpation and removal of all the horn above and about the morbid rib, and the plucking it out entirely will effect the cure, for it will return again and again if the smallest portion of it be left. The horn also that first forms after a bad injury of the coffin bone will often produce this sort of bastard growth which should be carefully removed, and it is also necessary to pare away the first growth of the new horn, and to keep it from being too rapidly covered and carried down by the growth from the coronet. The French have since described this disease under the term *Kera-phyllocele*! It is not, however, often attended with a *kele*, or sac, or abscess, as far as we have observed.

If the horn be much thinned opposite the ramification of an artery, at its egress from the coffin bone, of which there are several that pass through the bone, even without the fetching blood, the artery shall push through, and so dilate its thin casing as to become a troublesome fungus. An iron moderately hot, and pressure after it by a knot of tow smeared with tar, will generally reduce this, and keep it from being mischievous till a growth of thicker horn covers it; some discretion may however be necessary, not to employ the iron too hot, so as to open the vessel or inflame the parts beneath, and precise directions are difficult in a point requiring some delicacy and judgment, where not burning so much as extreme dryness is wanted. When, however, a sound knob of horn is once formed at the coronet, care should be taken that the crack be fairly obliterated below, otherwise in growing down it may grow over it falsely, and form it into a *bastard rib*, and it may again break out: the management of it is somewhat tedious, and requires care; but by often thinning the horn, and using gentle pressure till the crack is wholly obliterated, avoiding blood or drying it by the iron, and keeping all covered, it will get well.

In concluding, it may not be useless advice also, as a prevention, to forbid the smith to rasp away or touch even the external covering or cuticle of the hoof after shoeing, which they are very apt to do, to give it a clean and new appearance, and thereby to remove its natural coat and best defence, exposing it to dryness and to cracking. Also the groom should often wet the feet if too dry and feverish, and keep them clothed with wet

rags, or apply some sebaceous unguent, to prevent the atmosphere from robbing them too rapidly of their moisture. The oil-can is commonly resorted to by the grooms for this purpose, using the rancid oil they clean their bits and harness with; and though this may be better than nothing at all, yet it is, however, subject to the strong objection we formerly mentioned, of sinking into the horn instead of remaining upon it, and of thus producing heat and inflammation of the foot, which the animal fats or wax are not, we believe, nearly so subject to do.

The shoeing also is greatly facilitated when the hoof is kept of a proper degree of flexibility and toughness, instead of that dry, hard, and brittle condition in which it is so often found, and which renders it the more apt to split with the nails, and to produce other mischiefs by turning and obstructing them.

The perspiration, we may remark also, is passing off in surprising abundance and rapidity, even through the dryest hoofs, as may be seen by letting a horse place his foot on a cold metal plate, the perspiration is soon collected in drops upon the plate, so that its quantity in a given time can be readily ascertained; and also whether these artificial coverings increase or diminish the quantity, and what other circumstances it is attended with in respect to the feet and their condition.

For the conveniently operating on the hoof, a half-round wood rasp is of primary necessity, also a case of drawing knives kept sharp, and a pen knife blade in a handle, are useful tools, and will render the process of the excision of cracks and fungi much more pleasant and effectual. It is, however, singular that in France to this day (1818, 1st. ed) they have not adopted our useful instrument the drawing knife, as my friend, Professor Huzard, informs me, but constantly use a straight edged knife. Of late, however, they have resorted to it, and do most cruelly cut and denude the furch with it.

Turning to grass during the outgrowing of a sand-crack has been much and justly extolled; it is, however, only beneficial from the rest and moisture it brings to the hoof; which wetting artificially, by plunging the foot with its dressings in a bucket of water occasionally, will, when the above precautions are used, serve pretty much the same purpose; since it often happens that the horse cannot, without great inconvenience, be spared to go out to grass, or the time of the year may also forbid it.

Now as the well-being of the feet is of the first importance to horses, and as nothing can go on well if they are amiss, so we shall hardly apologise for the length which this narrative of the disease has drawn us into: for these matters have never yet, we believe, been very clearly stated to the public, and length of narrative does not always infer prolixity; we may also safely aver, that no crack we ever met with, however difficult, but has yielded to the above measures. Yet how many thousands are, even now, continually lost with this complaint here, and especially on the continent?

In conclusion, we also observe that this Account of the Crackt Hoof was originally written for Rees' Cyclopædia.

8—ON QUITTOR, AND ITS TREATMENT.

Second Edition. London, 1834.

Having had considerable experience in this severe and painful disorder, I have been induced to add some account of it to the others on the foot, which, perhaps, may tendt o save the animal much unnecessary suffering, for it is often treated in the most cruel and bungling manner by the shoeing smiths, and months, nay whole years, have been sometimes consumed in attempting the cure, and in vain, after the most excruciating tortures have been inflicted to no purpose, destroying the organization of the foot, and rendering the cure impossible, even in the most intelligent hands. They have often by corrosive sublimate laid open the joint, when the animal must necessarily die of irritation; Crude Oil of Vitriol also and butter of antimony were among their favorite nostrums, and sometimes, with better reason, if cautiously employed, the actual cautery.

Their practice has served to remind me of Vegetius's language in the fourth century, when the knowledge of medicine was indeed very low, and a metaphor often supplied the place of fact and observation, where he says, "Bitter disorders require bitter remedies," *morbi quoque, quos superius nominavimus amari sunt, et non nisi amaris portionibus superantur.*" Lib. 3. p. 164, thus endeavouring to illustrate the matter by abstract and inapplicable allusions instead of adhering to the real facts of the case.

The most frequent source of this disease of quittor is the horse treading himself with the sharp calkins of his shoes, or, perhaps, from the tread of another horse by injudicious and over hasty turning and not letting him have time to place his feet, also his being too rudely and hastily backed, this relates however chiefly to the hind feet, though in frosty weather the fore shoes being turned up, it may then happen to them. The Calkins should never be made otherwise than very obtuse and blunt on this account, for they are too useful to the animal to be omitted, and are rarely dangerous if properly made and used. To those who may have any alarm on their account we would recommend attention to the caulkin curled round, seen in plate 6, fig. 3, of the work on Expansion Shoes, which can do no harm even with the most indiscreet.

Another frequent cause of these affections is, the prick of a nail in the shoeing, which may reach the cartilage primarily, or by a subsequent process of abscess, will injure the cartilage and produce the disorder.

Also a crackt-hoof ill treated shall be a source of it. For the disease consists in the injured cartilage, which part possessing only a very low degree of vascularity, and of the powers of life or of resuscitation, successive pieces die, and slough away, which requiring considerable time for such process makes the cases ofetn very tedious. A discoloration of the cartilage from white to a green color precedes the sloughing, and the dying or dead portions acting as foreign bodies, the healing if the sore is thus prevented, till these be removed; a small irregular sinus, often of considerable depth and very tortuous, is leading down to the diseased portion, and the opening externally is oozing forth a limpid, or sometimes a thick white pus.

The French call this disease the *Javart cartilagineux*; and when the injury only extends to the integuments, it is called by them *Javart encornée*; and by us simply *a Tread*, which the shoeing smiths in curing often make their boast of having cured a Quittor, and at one dressing. It is worthy of remark, that this disease is not to be found among the diseases enumerated by the Ancients, and is evidently therefore one of the multifarious evils which has been introduced by the modern shoe.

The Farriers to cure it, ram the sinus full of sublimate, or other corrosive matter, which destroying all the parts adjacent, they slough out in a round mass or button, and this they call "*coreing it*;" but the sinus being often very deep, narrow, and irregular, their remedy fails of coming at the diseased part, and if it did, it was uncertain of having the full effect,

and not succeding, the animal was put to the excruciating pain of frequent repetitions of this proceeding often till the side of the foot was nearly eaten away and destroyed, and the consequences which have ensued we have before described.

After many a distressing conflict with this disorder, I have to state from late experience, in several bad cases which I have cured, that if all the circumstances here about to be recommended are judiciously complied with, it may generally be cured in a few weeks. For this purpose, the animal must be cast upon some straw and the foot be properly secured with a spare cord, then with a rasp first, and afterwards a sharp drawing knife, remove the horn very extensively to perfect thinness, from all the parts adjacent to the injury; for the pressure of these it is that aggravates and keeps up the irritation, and occasions the death of so many successive portions of the cartilage, and renews the disorder; but the horn being thinned, so that a scalpel can freely pass through it, remove at once by a rapid cut, not by shaving thin slices, which in pain is equal to so many successive operations, a dense piece of the hoof, cutidura, and skin of the coronet, as large as a crown piece, which parts with the subjacent cellular membrane will be found enlarged and thickened over the abscess; the sinus will then distinctly appear, and a probe shows its direction and depth: take out as much of it as a scalpel can conveniently command, then slit up the remainder with a crooked bistoury, next inject it with a strong solution of Sulphat of Zinc, (two drams of the salt to an ounce of water,) afterwards apply to the wound a pledget of tow thickly smeared with resinous digestive,* the tow being previously dipt in water, and this is to be kept on with a calico bandage, and then over the whole a large potatoe or bran poultice kept soft by grease. A copious flow of blood generally takes place on releasing the foot, but it coagulates after awhile and stops of itself, and the loss of a little blood from the coronary vessels is not at all injurious, we have thought, but, on the contrary, rather beneficial to its healing.

The poultice, may be thought by the inexperienced slightingly of, but should with great care be especially continued the whole time of the cure; it keeps the foot moist, and the horn supple and easy, and free from irritation and pressure so inimical to the cure; in this way much pain will be saved, and the cure be ensured in a general way in a short time.

That I may render justice to those from whom I have derived any hint, I may here observe, that the utility of white vitriol in Quittor cases was first pointed out to me by my friend Charles Newport, of Gray's Inn Lane, London, whose father, he informed me, was in the habit of employing it. I extended its use to other cases of Sinuses, and to broken surfaces and abscesses where union was desirable, and find it a medicine of inestimable value; and I have thought the use of a poultice over it after its exhibition has increased its good effects. In some cases, I have used the *Conglutinum*, for so I call it, without any operation with the knife, and it has succeeded, if well forced in; in others, a great swelling and heat of the foot has taken place on the closing up of the sinus, and it has burst out in two or three new places, but by continuing the poultice and injection, these have perfectly healed: in others again, the use of the knife has become necessary, perhaps from the injury being more tortuous and deep, and situated nearer to the thickened insertion of the cartilage into the bone.

Some may be curious to know the origin of the term, Quittor, which I apprehend to be a barbarous corruption of the word *Twitter*—a disease of the human nail; but as the name appears in this corrupted state to afford us a useful and distinct specific name, I retain it. *Chondromalum* or *Chondromal*, would be a more scientific and proper term for it, for technical use, from *Chondros, cartilage*, and *Malum, disease*, or *mischief*.

A stout nob of horn generally follows the growth, where the *cutidura* has been much disturbed, which requires sometimes to be kept thinned, to prevent too much pressure on the subjacent parts, and its surface also smeared with hoof-ointment, to render it more supple and prevent its getting too dry and hard; the advancing edges of horn leading into the sore also require sometimes to be kept thinned in order to their union, and to prevent irritation upon the sore.

* See Pharmacopoiea Equina, 3rd ed. p. 36.

A most beautiful provision of nature that as far as I know has not before been noticed, takes place on the removal of the horn of the hoof and exposure of the parts beneath, which will then swell up and become tumid, and assume the appearance of a fungus, sometimes dry, and at others oozing out a sort of milky serum if neglected.

This swelled part appears to be the *reticulum* chiefly and the *podophylla*, which in thus rising, often meet the edges of the surrounding horn, and the laxity of the parts appears to prevent a ready healing of the sore, but if pressure be applied to this fungoid appearance it is partially reduced to its natural dimensions, and then a healthy secretion of horn soon covers it, but if the edges of it any where meet the old horn, or that they are not brought as nearly as may be into the same state of thinness, they will not unite kindly, for this effect it is necessary at times as in old cases to reduce the old horn to a soft flexible state all round the sore.

In recent cases after the fungoid reticulum has extended itself it will quickly cover with a thin coat of horn, sufficient to keep down the rising fungus, and confine it within due bounds, and by a little preparation of the old horn they may be made readily to unite, and the horn from the cutidura coming down of its full depth and force from the coronet will carry every thing out before it, and renew the hoof entire.

It appears therefore that this singular mode of procedure in these parts by swelling, prevents, in a wonderful manner any pinching or severe compression which would have taken place had the new horn formed at once on these tender parts unenlarged, and have subjected them to restraint and irritation, but by this means room is obtained, and this effect is obviated. Perhaps, the *reticulum* is constantly exerting some degree of elastic force against the inclosing horn, at least it evidently assumes this action when exposed, and perhaps, especially when inflamed, thus usefully creating full room and a freedom from restraint during the new growth.

The first shoe that is put on after, or during the cure, should have a vacuity made in its upper bearing surface, opposite the quarter diseased, that no pressure should take place there, or near it, to incommode the cartilage. In this way these dreadful cases may be in a general way cured, and without very much suffering; in the last age they were often deemed perfectly incurable, and, indeed, in many parts of England they are so considered at this day.

IX. REMARKS with Illustrations of the ERODED SHUTTLE, or NUT-BONE, (*os nuciforme*) of the Horse's Foot. (*Nucimalum.*)

FIG. 1. gives a representation of the Shuttle, or Nut-bone of the Horse's foot, in a state of erosion. This example was carefully drawn from the natural bone, by my esteemed friend, A. S. Rogers, of Knightsbridge, veterinary surgeon, and affords an admirable view of the ravages upon this bone, made by this disorder.

The ulceration is seen to occupy nearly all the middle space of the inferior surface of the bone, where the perforans tendon is passing beneath it, in order to be inserted in the hollow space, or triangular recess provided for it in the coffin bone beneath. In the more smooth and elevated parts, surrounding the ulcers, were seen, the draughtsman observed, in the recent subject, many small freckled points, or elevations of bone, of a white pulverulent character, which very much disappeared on the drying of the bone, and make but little or no appearance in the representation. These points, we are led to suspect, were irritated portions of the surface of the bone, which had only commenced their first step towards becoming ulcers; or they might be earthy osseous deposits from the discharges of the ulcers themselves. The larger ulcers are at present but superficial, not extending deeply into the bone, and are exceedingly ragged and irregular in their external margins, or edges, and assuming no determinate figure; and appear to consist of the removal of the smooth cartilaginous external covering of the bone, together with a thin portion also of the osseous part. This representation is highly characteristic of the disease in its recent state, and as being the work of a young self-taught artist, has been deservedly admired. It is evidently the bone of a pretty large foot; and we believe cart-horses, and others of the larger order of feet, are the most subject to be so disordered.

The coffin-bone, it may be remarked, although exposed to the operation of the same causes as the above bone, does not appear to partake of the disease, which may arise, perhaps, from the extensiveness of its surface, and, possibly from its being defended by a thick spongy vascular sole; the vessels intersecting each other, and anastomosing in all directions, and yielding consequently, to the smallest compression; and thus the bone beneath is perhaps saved from the cruel oppression of the shoe, when rammed violently on, and clenched with great force, which, I have been led to conjecture, is the real source of this terrible disease. Whilst the above bone, the Shuttle or Nut-bone being in itself of a less spongeous and harder nature, and withal having a considerable share of motion in performing its office, that of allowing the main flexor tendon to work upon it, as over a pulley, diminishing friction, and moving also slightly in accordance with such demands, so it prevents that resistance, friction, and jar, which would otherwise take place at this important part. Its pressure is however considerable naturally, from the Nut-bone being projected backwards. The tendon itself, which is of a tolerably hard and unyielding substance, being driven by such forcible measures as nails, hammering, and clenching can give, against the surfaces of this bone, an undue degree and severity of pressure take place, and friction also between the bone and tendon is the consequence; and in some cases, where from certain circumstances attending the structure of the particular feet operated upon, there is cause to believe it will arrest all motion of the tendon, and a violent inflammation ensues, and adhesion of the two bodies sometimes, at others ulceration only; or, indeed, both can take place at once: and in the present case, the ulcers would seem to indicate that it had been attended with a previous adhesion of the tendon, which, torn up by some sudden effort, exhibits the ulcers beneath, as we now see them. The internal surface of the tendon, in contact with this bone, is also of a hard and almost cartilaginous, or ligamentous, surface rather.

FIG. 2. is also a representation of the same disease, but here the coffin-bone is thrown downward, and forward, and inverted; the sole being uppermost, and behind the tendon, which is torn up from its situation and bent back, the better to expose the disease in question: the condyloid cavities, with their elevated middle ridge, are exposed in the lowest part of the figure. The tendon above appears ragged and enlarged, as though it had been broken and united by callous; it was found adherent to its coverings. Much dark-coloured grumous blood was stated to have been found about this enlarged part of the tendon. The ulceration of the Nut-bone is here confined pretty much to one side of the bone, and exhibits great irregularity in the figure of the ulcers.

Fig 3. we selected as exhibiting what may be supposed the very earliest visible derangement of the parts from the effects of the disorder, or first stage of the disease; there being as yet, no positive ulceration, but only a brown oblong patch, commencing disease, composed very much of brownish lines or patches, as though the articular cartilage was breaking up, or as though a morbid acrimonious fluid was irritating and dissolving the surfaces, and attacking the osseous part also. White patches of a similar nature may be also seen scattered upon the tendon, whose internal surface is here exposed by its being detached from the nut bone, and bent back; and by this reflection discovers to advantage the disorder.

Fig. 4. The tendon here also has been disengaged and bent back, in a similar manner to the preceding; and a good view of the posterior surface of the os nuciforme is thus obtained; and, with the succeeding figures, was procured and prepared by my esteemed friend, Charles Wallis, veterinary surgeon, and formerly the intelligent apprentice of my nephew, Charles Clark, of Giltspur-street. In these three figures the lowest part, which is of a somewhat oblong triangular appearance represents, by this manner of exhibiting them, that surface of articulation of the Shuttle-bone, which comes into contact, or uniform apposition at least, with the upper posterior surface of the coffin-bone; presenting a flattish, narrow, oblong surface to that bone, rounded however above, for a slight motion on it.

This bone represents a much more suffering state than the preceding examples, and the ulcers appear to be deeper, and especially those which occupy the middle parts of the bone. It appears to us not improbable that the depth of these ulcers will depend not only on the degree of force, or of compression and fixation of the tendon, but also on the more or less facility of escape of the acrid fluids generated by the inflammation, and which would cause perhaps, the central ones, more especially, to be deeper generally than the lateral ones. Blood appears to have escaped also in this case, from the corroded and exposed vessels of the bone, and has communicated a darker tinge to the representation; and the bone itself was reddened also in patches, apparently from the extravasated and congested blood; and stripes, or streams, and clouds of a dead whitish matter appear to be deposited upon the internal surface of the tendon; arising probably, from abraded bone imperfectly dissolved in the secretions, or discharges, of the part, which, in drying, became still whiter; and these drawings were taken from the dried specimens. Neither can we help adverting here to the miserable state of suffering an animal must experience, with an ulceration of this kind going on in a point so peculiarly exposed to friction and pressure, which must be almost intolerable! Such defects as these, with others we have formerly exhibited, would go nigh to shew a necessity for revising the whole line of these proceedings, and of changing the system to something of a less inimical character to the feet; not only on account of the worthy animals themselves, and their sufferings, but the precarious tenure of this kind of property when so subject to damage; the lives also, and injuries to which the public are ever exposed through it. To which may be added the severe bitings and whippings they receive, independently of the pains of their feet from such ulcerations, in order to overcome and to conceal, as much as may be, those sufferings.

Fig. 5. Here the ulceration is almost wholly confined to the central parts of the bone, and appear to be excessively deep; having much of the white deposit lodged about it, and which is also seen on the inner surface of the tendon, exposed by being disengaged and turned up. Numerous other examples of bones only, without the tendons being prepared along with them, have we seen; but as they had been much boiled, and perhaps changed, so we have preferred the present more recent specimens for representation.

Having described and exhibited the appearances the disease makes in the foot of the horse, when attacked with this disorder, we now take a glance at the probable causes of its taking place; which do not appear, by those formerly engaged in describing it, to have been much perceived.

At the time of my writing the Podopthora, where I described the more common and usual disasters attending feet under common shoeing, an example of this complaint had not then occurred to me, and my first searches after it were so unfruitful, that I believed it a truly rare mischief; as did also the researches after it of my friends, lead to the same conclusion. Now,

however, I am sorry to say, that I find it not so unfrequent as I had imagined; and cases of it, in sufficient abundance, have been brought me of late, procured without the trouble of unhoofing the foot, or of macerating it, or of any troublesome dissection of it; this can be done by simply introducing the scalpel between the tendon and bone, carrying it down to the foot within the cartilages, to the joint formed between the nut and coffin-bone, and then detaching the former, and along with it the dilated termination of the *perforans* tendon, inserted in the hollow recess of the coffin-bone.

We may then perceive that the above tendon is sending off from its anterior surface a broad lax ligament, which, passing forwards, is strongly attached to the whole transverse upper edge or summit of the nut bone, adhering to its roughened surface; this ligament, however, does not itself adhere to the bone, but is forming a smooth strip of nearly cartilaginous consistence, which is attaching it to the bone, not only perhaps for greater strength, but, as we apprehend, to prevent this lax ligament form getting entangled in the joint.

This important ligament then advancing, surrounds both extremities of the bone, and becomes the immediately enclosing or capsular ligament of the joint; and having great power of extension backwards, can accommodate any movement of the shuttle bone in this direction, or of any quantity of synovia, which undue use of the animal may at times induce.

We have now to consider farther an important circumstance that also has not, that we know of, been noticed of this same ligament, viz. that it is passing below, in surrounding the extremities of the nut-bone, and so adheres to them as to make the tendon with the bone form a sort of flat pocket or pouch, apparently for enclosing the synovia more securely, and strengthening and restraining their combined action. Now, by slitting-up these lateral attachments we get at the posterior superficies of the nut-bone, which is not flat to the horizon, but is making an angle of about 40°; adapting itself to the inflexure of the tendon surrounding it, which is immediately passing for insertion into the angular recess of the coffin-bone.

The surface of this tendon, exposed to the superficies of the nut-bone, is of a hardish texture and thready, or fibrous, the fibres longitudinally disposed, and its surface of contact is of a glossy or silky appearance, and its action or motion upon the surface of the opposed bone, must be constantly regulated and limited by the laxity of the above ligament; so that in fact it would appear that this nut-bone, and its loose ligament, is dividing the capsular ligament into two parts, or an upper and lower chamber,—a structure, we believe, not righly perceived or understood before.

A remarkable structure is also seen with the front parts of the nut-bone; viz. a longitudinal depression extending the whole length nearly of the bone, having cells and columns of bone within it. The use of such structure was not at once obvious to us; but on further reflection we believe it to be a necessary protection in regard to the attachment of this bone with the coffin-bone, permitting, by this provision, a wider gaping or separation of this bone from the coffin-bone, on any violent exertion of the animal, throwing the condyles of the coronet bone backwards towards the heels, or upon this separated bone, and which a stricter union would have denied, or at least rendered dangerous. A projecting lip for attachment, beneath this provision, is very well seen in Pl. XII, a supplementary plate to the Podonomia, in a transverse section of these parts: and above the lax ligament above described, on the front surface of the perforans, may be observed two lighter-coloured bodies with a longitudinal depressed line between them, which appear to act as cushions in saving the tendon from the friction of the posterior condyles of the coronet bone, and which, passing into the hollow space between them, regulate in some degree its actions. We call them the *eminentes cordiformes* of the perforans tendon.

The bone of the sole, one might suppose, would be also subject to similar affections from this upward pressure of the shoe, but at present we do not know of any examples of it; and certainly, we may remark, this part would be less liable to be injured, from being, as we have stated, very thickly covered over with an highly elastic yielding membrane, spongy, and everywhere filled with fluid blood, the vessels of which ramifying and anastomosing in all directions, enable these fluids to recede on receiving pressure. We think, however, we have witnessed some changes to have been also wrought in this part, by its becoming more cupped, thinner, and

more concave from this violent upward pressure, than they ought to be in their perfectly natural state; the lower surface of the coffin-bone also, that is to say, the solear superficies is particularly of a hard flinty character, so as to resist any change much more so than would any soft and more porous bone.

That the Shuttle-bone becomes diseased with ulcers from the upward pressure of the shoe, we entertain but little doubt; since there appears no other cause at all adequate to such a grievous effect.

In our description of the above supplementary plate, we urged that, as the commissures of the hoof were the most prominent parts in the upwards direction of it, so these might be expected to make the first impression upon the parts above, and would account for the more lateral injuries. And as the more central ones would be more under the direct influence and pressure of the body of the furch, they would also be pushed up along with the sole; and since this body of horn gets wofully sliced, cut, and nearly denuded, so the remainder of its horn, rendered unable to resist the drying of the atmosphere, and of hot close stables, becomes of a hardness almost equal to the wall of the hoof; and in this state, if driven, at every step, or on meeting a convex body in the road, against these suffering parts, will become a chief cause of those deeper ulcerations in the middle parts of the bone, as seen in Figures 1, 4, 5. Or it may happen, and which we think not by any means improbable, that in some cases it might be occasioned, or exasperated at least, by the animal, from the various pains inflicted on the sides and posteriors of the foot by nails, would be induced, as much as possibly he could, to go on his toe, and make that perform nearly the whole business of the foot. This would throw a strain upon the back sinew, or flexor perforans tendon, occasioning a strong compression of it against these tender and exposed parts; for the nuciform bone is working by means of the lax ligament as a sort of pulley against the tendon, giving it thereby a greater purchase upon the parts to which it is finally attached. By raising the heels they certainly are less subject to pressure and shocks from the ground upon these tender parts, still by so doing, the strain on the tendon and bone will be much greater.

It may be also matter of inquiry whether strong pressure on the frog, such as that, for instance, recommended at the Veterinary College, under Coleman, would not induce such a complaint: such would be the case, we are convinced, with his frog bar machine, if attached and strongly nailed to the horse's foot: and that this lesson of early folly in the art should not be lost sight of, or be ever again repeated, to the annoyance of the horses or of the public, we have procured one of his patent shoes, according to his latest refinements upon it, and have had a figure of it most faithfully drawn by our friend George Kirtland, and which is seen at fig. 6 of the present lithograph; and displays such powers of inflicting pressure on this tender part, as must make one shudder to think of; and so thoroughly was this doctrine inculcated, that I incurred no small displeasure from the master and his very numerous pupils, for daring to call in question this now admitted absurdity.

Now, if such a solid bar of iron as is here seen was operating against a furch, hardened, perhaps, and cut, as we have described above,—and which practice of cutting was, to my certain knowledge, carried on at the College, and that till very lately,—if interdicted at present, of which I am not certain,—then I should hardly hesitate to say that such pressure would be fully adequate to produce an ulceration of these parts. I shall not here revert to my arguments, formerly used in the Hipponomia, respecting frog-pressure, as I would rather avoid than lengthen my paper on this subject, so heavy a loss is their publication to me; but this opinion I should not fear to undertake to maintain, if called upon so to do, before the whole world. And from what I know of the nature of these parts, the furch and all above it, I should doubt if such bar of solid iron if pressing upon them, they could endure it many hours. The only two cases of this vile machine being actually employed, that have come to my accurate knowledge, was, one of them, a horse of —— Mangnal, Esq., an attorney, the under-sheriff of Middlesex, whose young horse was so shod, and stood at Mathieu's stables, in Moorfields. I declared it impossible he could long go in such shoes, if I knew aught of the horse's foot; and on inquiry, a few days after, found he had been down, and terribly cut his knees, and was taken away to Cranford-bridge, where he finally died in the field there, or enclosure, in which he was turned out. He was a very promising fine likely young horse.

The other case was described to me by my friend Cherry, veterinary surgeon of the Second Life Guards. This horse had been shod under Coleman's own direction also, at the Veterinary College, with his spit-bar patent shoe; and, afterwards, being rode, he made his way with difficulty enough, and many dangerous blunderings, carrying his owner, to my friend Cherry's forge, near Clapham Common, where they were finally removed from his feet, never more to be replaced.

Notwithstanding the absurdity of his views, physiologically considered, of the foot, and of the almost daily monitions of the unsuitableness of such shoes, yet were they still persisted in, although clearly demonstrated, years before, to be inconsistent with nature's purposes in the structure of the foot: still was this monstrous frog-squeezing doctrine constantly broached at the College; nor, that I know of, did the egregious folly of it excite much reprobation among the spectators or pupils, but on the contrary, there was a wonderful acquiescence in it, and a zealous propagation of the doctrine among them. In order, if possible, to prevent the recurrence of the folly, we here give, as a memento, a figure of this favourite shoe, of which there is not, I believe, any extant; and the following may serve as a brief description of it to future times. St. Bel, the first professor's, ideas of shoeing, and the figures of his shoes, are before the public already, and their incompetence pretty well understood; and we now add to it the second professor's, as a sort of historical record of the advances of the art by Colleges.

A flat solid bar of iron is seen (Fig. 6.) proceeding from the inside front arch of the shoe, of considerable thickness and weight, being rivetted to it, increasing in width at its posterior termination, where it receives another piece of iron, laid across it and welded, being of the width of the base of the furch, and rounded at either extremity. This part is obviously intended to carry pressure to the frog, as they called it; but finding perhaps, in former trials, the unsuitableness of such pressure, and in order to moderate it we suppose, a steel spring is seen beneath this bar in contact with the furch, and which shows the vast profundity of its proposer's plans; for, supposing such to act, the first two or three steps the horse took, must, in the course of going on the road, quickly clog it with stones and dirt, entirely preventing its action, and rendering its operation nugatory, or as one solid piece. And it must be obvious also, that the weight alone of this bungling machine would have been objection sufficient to prevent its general use, and especially towards its hind parts; for it has been formerly observed by us, that if we follow Nature's indications in the foot itself, which is lighter behind, or posteriorly, and weightier before, we must lighten and thin the shoe backwards, so as for this part to be less ponderous than the fore parts, at least in order to secure the light and pleasant going of the animal, and affording ease and elasticity to his movements. See Unilateral Shoe, Pl. VI., in our account of Expansion Shoes.

In all his former works, the necessity of a very particularly firm and secure nailing, by heads of a particular figure, was insisted on by him; but here, taught by others' labours, without the candour of an acknowledgement, the nailing is confined alone to the front parts of the foot, still backward enough to coerce and restrain the quarters of the foot, and yet not secure enough for a shoe of this length, figure, and weight. The shoe itself, also, is a pitiable defence, with evident deficiency of bearing surface—a mere appendage to the above apparatus.

Now, if the object intended by this infatuation had really been attained, what would it have produced? Only excessive pain from a too severe pressure on the furch, a part by nature comparatively soft and tender, and retired within the other environing parts of the hoof; but neither the failure of all such attempts formerly in France or in England lately, nor his daily monitions from his own experience, nor the clearest evidence laid before him, in a physiological view of the foot, by us, which has never been in the least invalidated, could open his eyes to the absurdity of his notions, or prevent his multiplied patents, to grasp, being so badly paid, any advantages that might accrue from it. Nor was this the worst of it; for this silly doctrine was carried about and spread most assiduously, not only over the whole of this kingdom, but in our colonies also —east and west—with consequences much to be deplored. The doctrine was also made an indispensable condition of those youths receiving that vile bit of paper from this abused institution, called a diploma; and one or two, who a little wavered in acquiescing in this delusion, were, to our knowledge, much persecuted, and sent back time after time through mere spite;—so very early can tyranny seize upon an infant inexperienced institution, and exert its baneful qualities under the name, forsooth, of a College.

And lately, in looking over Lafosse's works, we were very much struck with the number of broken-bone cases he describes; that is, of the coffin-bone and coronet-bones, such as are to be seen in no other work; and the explication of which appears to be, that the strong unnatural pressure he was led to bring upon these lower parts of the foot, did so irritate and inflame them, that they became more easily susceptible of fracture than would be natural to them, and easy fracture is well known to be the case with all inflamed bones, such being often experienced and seen in cases of acute rheumatism.

I well remember, about the year 1796, whilst living with my brother at East Moulsey, near Hampton Court, being sent for to a gentleman living a few miles farther up the river, at Walton-on-Thames, who, one morning, sent me a note requesting to consult me on what he called a bad strain of the leg, which he had got the day before in walking on Sunbury Common, by simply tripping his toe against a small tump in the ground. On examination, I told him his leg was fractured—the main bone of the leg—the tibia. He could not, however, from my representation, be made to believe it, till Boon, the surgeon, was sent for and confirmed it, without knowing my sentiments. This gentleman was subject to attacks of inflammatory rheumatism, which probably caused the brittleness and easy fracture of the bone. So it is probable that considerable inflammation may attend all the parts concerned in this nucimalous disease, ere actual ulceration takes place; and in which state, there is no question fracture of the bone would be rendered more easy.

Lafosse has given also some obscure accounts of this erosive disease, but, what is singular, inverts in every case, the order of the parts and their appearances. (See the translated edition, 8vo. London 1751, from p. 20 to p. 25. His descriptions are truly rude and coarse, but evidently relate to this complaint, and exhibit, with the rest of his book, a most woeful state of the art in France at this time, and, no doubt, everywhere else not much better. The cruel abomination of unsoling the horse's foot, was also very much resorted to by him at this period.

And as to the scandalous cruelty of unsoleing the horse's foot, we are much inclined to believe that every object obtained by it, can equally well be obtained by reducing the sole to extreme thinness and flexibility, so as to have little or no resistance, especially if kept moist after; and such, we have thought, might have very good effects in the treatment of this insidious complaint, by much diminishing the force of pressure upon the diseased parts; and in such case it may be well also to excavate deeply, and almost to remove the inflexions too, as they are exhibiting perhaps, a more severe disposition to carry pressure to this bone than the sole; and that a considerable relief might result from such abstraction, in recovering the parts and healing the ulcers. Perhaps some slight kind of strut, or bar, should also be inserted, though very cautiously, to prevent the wall from collapsing upon and confining the exposed parts; for it has a natural tendency, when all obstacles are removed, to a collapse. Mild, soothing ointments should also be used to all the parts concerned, to prevent their getting at all dry and hard. In this way, we apprehend, a greater progress may be made in the healing of these sores.

Such treatment as this, with the other propositions we have formerly recommended, (see Pod. pl. xii.) we believe to be far preferable to running knives and seton-needles through the body of the frog, and inserting corrosives therein. But the worst circumstance attending this complaint at the present day is, that we possess no positive and certain indication or symptom by which it can clearly be known to exist; so that it leaves a miserable door open for the pretences and practices of the less honorable part of the profession.

And it is truly marvellous often to see how people will implicitly trust their horses in the hands of the most unskilful and ignorant of Farriers, with the utmost indifference and carelessness as to what they are going to do to them; aye, with more confidence than they would to men better qualified: as though ignorance was a recommendation, and grossness a qualification, for the art of horses, which would appear to come from old prejudices in favour of the mysteriousness of this art, and of the superior skill of bold, and ignorant, and more noisy pretenders, which by long habit has obtained a sort of prescriptive right. Aye, and what is as singular, when, by the grossest practices, they have ruined them too, they seem quite quietly to acquiesce in it, and without making much, or any complaint, or showing any resentment.

And not only is it certain that fractures result more easily to inflamed parts, which will help us to explain the frequency of their occurrence to Lafosse more than other practitioners, from his inflaming the parts by an unnatural degree of pressure brought upon them; but also from the animal, under painful suffering in the parts, not permitting such to come fairly to the ground, and into their respective intentions and offices,—the animal averting the pain, and trying to avoid a portion of it by a shifting, oblique, and irregular action of the limb and foot, thus inducing the fracture of the bone; as we see any awkwardness in walking, or dancing, will also do it: as is not unfrequently the case of the Tendo Achilles, when, not used harmoniously with the other parts, has been often snapped.

Further, on this subject, it may be well here to notice that in the fixing on of a bar-shoe, if it should rest strongly on the furch, it will be very liable to irritate and inflame the parts above; and more especially so, if the horn has been previously cut, disfigured and dried, and become hard, so that, instead of being a defence, it will act as a solid hard body thrust against these very tender parts, and which circumstance would seem well to deserve due care and attention.

XI. STREET, OR KENNEL-NAIL CASES, &c.

For our views respecting these lamentable cases, the reader is referred to the "Podonomia," p. 135, 2nd edition.

XII. ON CHIPPINGS, AND FRACTURE OF THE COFFIN-BONE.

By chippings I understand small injuries to the fine exterior edge of the coffin bone by nails driven too close, or into the bone itself. On examining coffin bones after death, indentations from the pressure of nails and injuries of this sort, are often seen. A free exposure, by removal of the hoof from the parts offended, and resinous digestive, appears to be all that is required.

On a fracture of the coffin bone itself it is usual at the present time to kill the animal; yet we believe means might be resorted to for preserving life, and effecting a cure, especially when the horse is of great value, or estimation.

In attempting this it would appear to be necessary that the more elevated and leading practitioners of the veterinary art in great towns, and especially cities, should always be provided with a convenient sledge for the removal of a horse having the misfortune of a fracture of any kind; and on being conveyed home, for they are at present obliged to be killed on the spot, there being no power of removing them; and for the accommodation of such when arrived, there should be a stall, or proper place, set aside and prepared ready for slinging him, and putting the case in a proper state for recovery.

In a coffin bone fracture it would appear advisable that all necessary care should be taken to keep the parts easy, and to fully allow of the swelling that attends all fractured bones, by the thinning, and in some places dividing the hoof down to the quick, and the applying poultices and unctuous matters to keep the parts as free from restraint and irritation as possible, in order to form a healthy callus. And it is not impossible that a coffin bone case might be cured without slinging at all, by having a stout splint carried round the leg and attached also to the muscular parts above, and descending a little below the foot, it might then serve him for any momentary resting upon, at other times standing on three legs.

The greatest difficulty in these cases however is, to know the nature and extent of the fracture; in ascertaining, or conjecturing rather, upon which, the circumstances and manner of its happening will afford as good a clue as any, on which must greatly depend the hopes of a useful cure.
