**Lameness in the horse : with coloured lithographic plates, illustrative of the different species of lameness. / By William Percivall, M.R.C.S.**


**Contributors**

Percivall, William, 1792-1854.
University of Glasgow. Library

**Publication/Creation**

London : Longman, Brown, Green, and Longmans, 1849.

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PL. I.

W.H. Kearney, del. et lith.

Printed by C.H. Fairland.

Rheumatic Lameness of the Hock.

# PLATE I,

## *(FORMING THE FRONTISPIECE).*

### RHEUMATIC INFLAMMATION OF THE HOCK JOINT.

PLATE I, represents one of the hocks, with its joint laid open, of the mare that died of disease of the valves of the heart, whose case (so far as it has reference to this disease of joint) is given at page 43. The joint contained one ounce and a half, *by measure*, of synovia, of a deep amber colour. And the synovial membrane (as seen in the Plate) in every part, save where it was reflected upon the bones, presented a coating of coagulated lymph, one-fourth of an inch in thickness, having the same (amber) tinge as the synovial fluid; by which, indeed, it appeared to be saturated. Here and there, streaks and patches of red were to be seen upon this adventitious lining of the joint, marking the commencement of vascular action within its substance. By comparing this diseased joint with a hock, in these respects, healthy (such as is represented in PLATE II), the difference in aspect will at once become manifest.

# LAMENESS

IN

# THE HORSE:

## WITH COLOURED LITHOGRAPHIC PLATES,

ILLUSTRATIVE OF THE DIFFERENT SPECIES OF LAMENESS.

---

BY WILLIAM PERCIVALL, M.R.C.S.;

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MEMBER OF THE APOTHECARIES' COMPANY;
AUTHOR OF "VETERINARY LECTURES;" "THE ANATOMY OF THE HORSE," &c.

---

BEING PART I, VOL. IV, OF THE AUTHOR'S "HIPPOPATHOLOGY."

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"LAMENESS KEPT ME AT HOME".
*Sir Kenelm Digby's Answer to Pope.*

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LONDON:

LONGMAN, BROWN, GREEN, AND LONGMANS,
PATERNOSTER ROW.

1849.

COMPTON AND RITCHIE, PRINTERS, MIDDLE STREET, CLOTH FAIR, LONDON.

# PREFACE.

WHILE the frequency of the occurrence of LAMENESS, the consultations professional men are continually receiving concerning it, coupled with the obscurity in which its seat or nature, or both, are occasionally veiled, stamp its importance in a veterinary point of view, it is a subject in which every man who keeps a horse will take more or less interest, if not before, assuredly from the moment the unwelcome visitor has entered his own stable. And yet, strange as it may appear, with the exception of some three or four excellent works on individual lamenesses, hardly has any department of veterinary science, of late years, received less profound consideration. Feeling this, and feeling at the same time that I should be but needlessly augmenting a catalogue I complain of, were I, in the present work, to content myself with superficial and common-place descriptions, I have been induced to deviate some little from the original plan of my "Hippopathology"—in this, the Fourth Volume of it—and introduce, in illustration of my text, coloured (lithographic) plates, representative of the seat and nature of the several species of lameness: of the latter, at least, as much as the condition of the parts affected could recently after death be expected to exhibit. The Plates have added heavily to the expenses of publication. It is, however, hoped that this increased cost—which has necessarily augmented the price of the work—will be found compensated for in the advantages the reader will derive from such illustrations. Faithfulness of representation I can myself vouch for; while the name of the Artist—Mr. Kearney—by whom the drawings have been made from post-mortem specimens of disease, selected and prepared for the purpose, will, I trust, be a sufficient guarantee for their execution.

Any of my readers who may be subscribers to "THE VETERINARIAN," will not need to be informed that the text matter of the present work—which is here re-published in a connected as well as corrected form, with the addition of the plates—has already appeared, in detached sections, in that Journal.

THE AUTHOR.

Hyde Park Barracks,
1849.

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# HIPPOPATHOLOGY.

## SECTION XIX.

### LAMENESS.

THE diseases of horses admit of being ranged into two classes, under the denominations of SICKNESS and LAMENESS; the former comprehending such disorders as affect the animal system generally, or any of the various organs concerned in the functions of digestion, respiration, sensation, &c.; the latter, such as have for their especial seat the organs of support and locomotion: those parts of the nervous system which regulate voluntary motion being also often either directly or indirectly implicated. However painful and dangerous to the horse sickness may prove to be, lameness can hardly be said, so far as his owner is concerned, to be a state less vexatious: through it he loses the labours of a valued servant, from habit rendered so indispensably useful to him that he feels at a loss to find a substitute in whom he can place equal confidence. "No foot, No horse," was the quaint title of an old work on lameness; and an expressive one enough it must be admitted to be, when we come to consider how valueless a horse is whose feet are in an unsound condition. Above half the horses brought to the veterinary surgeon for medical treatment present cases of lameness. Let any person conversant with horses walk but for a day through the streets and parks of our overgrown metropolis, and note down how many lame horses he encounters—too many of them in gentlemen's carriages—and the numbers he will not fail to have observed will, on reflection, bring three facts strikingly before him:—one being, the prevalence

of lameness in one form or another; a second, the ability lame horses possess to perform work; the third, the little heed people in general take of lame horses—or rather, the little or nothing they know about their animals' being lame, unless informed thereof by their faithful (or faithless) servants. All this shews the great importance of the subject we are about to engage in; and it is one, we may affirm without fear of contradiction, which oftentimes in practice calls for all the sagacity and penetration the veterinarian of experience even can summons to his assistance.

THE DERIVATION of the word *lame*, on the authority of our best lexicographers, is from the Anglo-Saxon word *lam*, weak; or else from the analogous German verb *læmen*, to weaken.

DEFINITION.—Lameness is the manifestation in the act of progression, by one or more of the limbs, of pain or weakness, inability or impediment.

LAMENESS IS BUT A SYMPTOM OF DISEASE, not of itself disease. It is the expression either of pain or inability, the result of disease, malformation, or accident, in the limb or limbs by which it is manifested: it may, however, arise from disease in the *trunk* of the animal, as is exemplified in injury or disease of the spine, in cerebral and nervous disease; and as has, on some rare occasions, been instanced in the case of acute hepatitis. But lameness may exist independently of disease: it may be caused by a stone getting into the foot or by a tight shoe. And when it has originated in disease it does not always quit the animal on the cessation of that disease, but frequently continues after all disease—in an acute form at least—has passed away. Disease in a limb, however, oftener exists without lameness than lameness without disease: a horse may have a tumour, a wound, or an ulcer in any of his limbs without evincing lameness; or he may have, and indeed commonly does have, a windgall, a splent, or frush, without lameness; nay, it is possible for him to have a spavin or a curb, and still shew no lameness. The diseases and accidents of which lameness is commonly a symptom or result are, inflammation and ulceration of the joints, inflammation and ossification of the periosteal and cartilago-ligamentous tissues, sprain and inflammation of the ligaments and tendons, laceration

and inflammation of muscular fibre, disease of the structures peculiar to the foot, faults or accidents in shoeing, contusions, wounds of all sorts, tumours, ulcerations, fractures, dislocations, spasm, paralysis, &c. A catalogue sufficient to shew that the causes of lameness are many in number, and equally various in kind as well as degree, some being altogether as simple in their character as others are complex and obscure.

IT IS PAIN THAT COMMONLY PRODUCES THE LAMENESS.—The animal feels the pain either when he moves his lame limb or when he bears weight or presses upon it, and he uses his endeavour in the course of progression to avoid giving himself pain, or to mitigate it as much as possible; and it is this endeavour that accounts for his stepping short, or treading light, or for using his limb in such manner that the bearing comes most upon the heel or upon the toe, upon the outer or upon the inner side of the foot;—that accounts, in short, for his flinching, and thereby evincing lameness. Pain being the natural product of inflammation, acute disease of any kind attacking one of the limbs can hardly fail to be attended with lameness. This accounts for disease being the ordinary cause of lameness, at the same time that it lessens any surprise we might entertain at the great variety there exists in the degrees of intensity of lameness manifested, setting at one end of the scale the lameness which is so slight or transitory that the acutest veterinarians will dispute about its existence, and at the other end that which has characteristically received the denomination of *dead lameness*. Pain, though commonly the result of inflammation, may however, exist, occasioning lameness of a most unbearable character, without it; the cases of the stone in the foot and the tight shoe being, as was before observed, examples of this. Another illustration is likewise afforded by the kick one horse every now and then receives from another horse upon his cannon bone; than which, as every body knows, nothing for the time causes more exquisite pain or produces greater lameness.

INABILITY, in one form or another, in the absence of pain, will be found to be the proximate cause of lameness. The dislocation of the patella occasions no pain, and yet the horse is too lame even to move. The partial or complete anchylosis of a joint may cease to

be attended with pain, and yet there may be permanent and irremoveable lameness. Parts in their natural condition possessing elasticity or motion one upon the other may from the effects of inflammation become glued together, or converted from soft into hard unyielding tissues, and the result be lameness continuing long after all inflammatory action and pain has departed: examples of this daily meet our eyes, amongst the numberless horses—hunters especially—there are, lame from "bunged," "round," or solidified legs. A horse may have a tumour of a magnitude or in a situation that interferes with progression, and so causes lameness; and yet the tumour itself may be altogether of a painless description. A form inability now and then assumes is that of

*Weakness in the Limbs;* by which is to be understood, diminished power or tone in their muscular or ligamentous parts. This "weakness," as it is called, may be the result either of disease or of hard work, or, on the other hand, it may proceed from long-continued inaction. A horse suddenly stricken with influenza manifests such weakness in his limbs as hardly to be able to walk. Here the debility is a *direct* effect of disease; but it may be an *indirect* effect, and in this way:—A horse dislocates his stifle: the power and tone of the muscles of the dislocated limb remain for the time undiminished, as indeed would speedily be evinced were the patella pushed into its place again; suffer the bone, however, to remain in a state of dislocation for a length of time, the limb continuing through necessity all the while in inaction, and the result will be shrinking and atrophy of its muscles, and consequent manifestation of weakness and lameness. Indeed, a horse may be kept in a stall tied up to his crib for so long a time that when led out again he will be found to have all but lost the use of his limbs. The weakness engendered in the limbs by over-work every body recognizes. The windgalls, the swollen and round sinews, the knuckling-over, the bent and tremulous joints, all evince weakness from hard work; and this is commonly accompanied by more or less "grogginess" and lameness.

The Presence of Lameness, regarded simply as a bare fact to be determined, might by many persons be supposed to be a matter uncreative of doubt or difficulty; and yet too frequently does

it happen that the horse one person, one veterinary surgeon even, calls lame, another will declare to be sound. Discreditable as this may appear to be to our profession, it is not always to be avoided. From a variety of causes and circumstances, now and then it happens that a horse will at one time go lame, at another sound; or his lameness may be of that slight or transient character that it is but by the narrowest and most critical observation perceptible, or only manifested, perhaps, when the animal happens to step upon a stone or some other hard substance, or on his being turned or stopped in some sharp and unexpected manner. A great difficulty with which we have to contend in some of these doubtful cases is the distinguishing between what seems to be lameness and what may in reality be only some peculiarity in the gait of the horse, with which the examiner, for want of knowing the animal better, is unacquainted. Some horses, from bad riding or driving, acquire a sort of *hitch* or *lift* in their trot; and though this in general is by a professional eye readily distinguished from actual lameness, it may still exist in a form that, in a suspected case of lameness, might lead to a difficulty in discrimination. The dealer in horses is very apt to avail himself of the benefit of any dubious point of this kind, and say—"In my opinion, sir, that which you suspect to be lameness is nothing more than the horse's *manner of going!*"

But it may happen that a horse may go lame at one time and not at another. That horses are subject to rheumatic affections I feel no hesitation in asserting, and hope to be able on some future occasion to prove; and that such a disease is of that fleeting character that comes and causes excessive lameness at one time, and on a sudden departs and leaves the horse sound, I also believe to be able to shew. Again, spasm or cramp may seize a horse, and render him for the time dead lame: in another minute or two, the horse may go as though nothing had ailed him. When I say, however, "a horse may go lame at one time and not at another," I am not making mention of this fact so much in allusion to any disease of a fleeting or transient character, as in regard to those cases of lameness which either manifest themselves on first emerging from the stable, or else only become developed through work or some extraordinary effort: one horse will come lame out of his stable, and

after having gone awhile and waxed warm, will become sound; another will commence his work going sound, and at the end of it prove decidedly lame.

Again, it is not a very uncommon thing for a horse—in particular for a young horse—to manifest a gait resembling lameness whenever he happens to be put out of his ordinary or natural way of going. In my army practice I have had several instances of young horses having been brought to me for shewing lameness in the longe, who on being run in hand in a straight line have evinced nothing like lameness,—demonstrating, that what was taken for lameness was a peculiar gait produced by the muscles, of one limb in particular, being called on to perform actions for which they had been uneducated, but which gait, as the muscles gained aptitude for such motions, would gradually disappear.

After this, no one ought to wonder that, on occasions, the best judges may differ in opinion concerning even the *presence* of lameness, to say nothing about the seat and cause of it. So various are the degrees of intensity in which lameness may shew itself—so faint the line of demarcation to be drawn between lameness and soundness, what one person declares to be but *stiffness* or *tenderness*, another affirming to be lameness, while a third contends that the animal is sound—so indefinite, be it repeated, does all this render the presence of lameness in certain cases, that for every examiner of the horse in question to come to the same conclusion is hardly possible. One or other of the circumstances stated, it is that commonly proves the occasion of so much professional counter-allegation and counter-swearing in horse causes, in courts of justice; the legal gentlemen and others wondering how veterinary surgeons can so strangely *on matter-of-fact points* hold contrary opinions: if, however, these learned characters would but reflect on the fluctuating and transitory nature of all vital properties, how Nature in her vital operations at one minute ebbs, at another flows, and that neither man nor beast, nor any other living creature, is the same to-day he was yesterday, they would be more sparing in their denunciations of those who, for some such reasons as have been detailed, conscientiously too often find reason to disagree in opinion on cases of lameness, one with another.

THE SIGNS OR INDICATIONS OF LAMENESS are of two kinds:—

One kind being those manifested through action; the other such as are discoverable by examination in a state of rest: by the first we determine the limb or limbs shewing the lameness; by the second, the seat and nature of that which gives rise to the lameness.

THE DETERMINATION OF THE LAME LEG must be a settled point before any step be taken to relieve the lameness. The application of remedies to the sound instead of to the unsound limb has more than once exposed to ridicule the too-confident master or the cunning groom; but, for a professional man to commit such a mistake, would expose him to something worse than ridicule—would place him in the situation of the farrier who "cured" horses lame from pricks in the feet by applying his dressings to the *nail* which had inflicted the injury, instead of administering to the wounded foot. A horse suffering acute pain in one of his legs will—if it be a fore limb—as the phrase goes "point" the lame foot, *i. e.* place it in an extended position in advance of its fellow, and in this manner himself inform us, by such silent supplication for relief, whereabouts he feels his pain. The animal will do this (point) while standing in his stall even; so that a person going into his stable may, from this circumstance alone, not only discover a lame horse, but also foretel the leg of which he will go lame. In qualification of this remark, however, it must be added, that *pointing* does not invariably denote lameness: some horses will point from a habit they have contracted during some previous lameness; others will for the sake of ease or repose point, and thus rest first one fore foot and then the other. Should the pain be in a hind limb, the animal will either stand with it flexed, treading gingerly upon the tip of the toe, or else carry the foot quite off the ground, and thus, "cocked up"—as the saying is—go hopping along upon three legs. A horse with acute pain in both fore feet will stand with his hind feet advanced underneath his belly, resting first one fore foot then the other, and every time he moves will rear up his head and stretch out his neck, in expression of the pain he suffers: on the other hand, should his hind feet be in pain, he will stand with his fore limbs extended backward, towards the central line of gravity, with his head hung down, lifting first one hind leg and then the other.

Such cases of lameness as have been just described are in general obvious enough in their character: the chief question for our consideration is, by what signs or indications are we to determine which of the four legs is the lame one in cases where a run of the horse becomes absolutely necessary for its manifestation. The generality of persons, in their notions about lameness, are apt to commit two blunders:—One is, that, because a horse does not shew lameness in his *walk* he cannot ail much; the other, that in trotting, the limb upon which he "drops" is the lame one.

For a horse to "walk lame," he must be lame indeed—limpingly lame—feel sharp pain every time he sets his foot to the ground. The erroneous notion that lameness of every degree must be evinced at a walking pace, appears to have originated in the circumstance of a *man* shewing any lameness he may have in his walk: it not being borne in mind that the cases of the biped and the quadruped are widely different. A lame man, with his two legs, is compelled at every alternate step he takes to throw his weight upon his ailing limb; the instant, however, he has done so the pain occasioned by it makes him flinch from the pressure, and he instinctively brings forward, with all the celerity he can, his sound limb to the relief of the infirm one, and upon that reposes his weight, as it were, with a sort of satisfaction for the moment at the ease thereby afforded himself. Not so, however, with the animal that has four legs. In the quadruped's walk there is that rapid succession of movement in the limbs, and consequent rapid succession of bearing upon them, that the weight of the body thrown upon the lame leg is too light and transient to cause him to flinch or evince lameness, unless the pressure, light and transient as it is, gives him actual pain. But in the *trot*, the weight he is obliged to throw upon the leg may cause the animal pain, notwithstanding, as I said before, he evinced no pain in his walk, and on this account;—because the limbs in the accelerated pace, being elevated and projected with additional force, come to the ground with more weight and more concussion. In the gallop, the legs stride and come to the ground with more force still; and, therefore, a person might suppose that this is a pace in which a horse would most of all manifest his lameness. Such, however, is not the fact; and the reason why it is not, is, that the two fore and two hind

limbs act with that simultaneousness and velocity that—the sound leg taking the greatest share of the weight, and thereby saving the infirm one—no perceptible flinching or dropping takes place: none, at least, so long as the horse is *capable* of galloping.

In respect to the leg upon which a horse "drops," any man who has been lame himself—who has had (and who has not had?) a painful corn—and has noted his own limping action, will not need to be informed that every time pressure upon his corned foot gives him pain, instantly flinching from it, by a momentary elevation of his body, he lifts his weight as much as he can off his ailing foot, to let it down or "drop" upon his sound foot. The same thing happens in the lame horse. Flinching from the pressure or concussion of the lame leg or foot against the ground, he suddenly lifts the lame side of his body to "drop" the weight of it upon the sound side. Should the lameness be in one of his fore limbs, the *head* with the body is elevated and depressed, the latter motion giving to the head that significant "nod" by which we distinguish at once which is the lame leg; on the other hand, if the lameness be in a hind limb, the *croup* will ascend and descend, the head being kept steady the while, or else jerked up every time acute pain is experienced. It is by observing the elevation and declination or "nodding of the head," and the raising and sinking of the croup, that we in general are enabled to say at once which is the lame leg: we watch the rise and the fall or "drop," sometimes nodding our own head in concert with the nod of that of the lame horse, by way of setting up a sort of memorandum or note in our own mind to guide us to a surer diagnosis. I remember the late Professor Coleman was in the habit of doing this; and so are many excellent veterinary practitioners of our own day.

THE TROT IS THE PACE IN WHICH LAMENESS IS BEST SHEWN, in which, indeed, it is shewn when the walk discloses no sign of it, and while the horse still retains the power of galloping as though nothing ailed him: the explanation of which has already been given. On this account the trot may emphatically be denominated the *trial pace*—the *test* of soundness or unsoundness, so far, at least, as action is concerned. Such being the importance of the

trot as the discloser of lameness, it is of consequence that the pace, to render the trial efficient, be conducted in a manner that promises to afford the most information, the simple and ordinary rules for which are as follow :—

I. Let the horse to be examined for lameness be led out of the stable in a snaffle bridle, the rein of which is already carried over his head; and let the man who is to run the horse hold the bridle-rein at that distance from his mouth that will permit the animal to trot without any check or restraint whatever of his head, the object being to suffer or induce him to shew, by the up and down motions either of his head or of his croup, as well as by his manner of going altogether, any limping or lameness he may have to complain of, and thereby to put the examiner in possession of the locality or seat, if not of the nature, of his complaint.

II. The horse ought to be run the moment he has quitted his stable. By so doing we shall, probably, obtain a steady run before the commencement of those gambols which a high-fed horse coming fresh out of the stable is almost sure to display, and which too often continue, much to our annoyance, if not to the defeat of our purpose. Another reason for the run being given immediately is, that any stiffness or indication of lameness the animal may happen to manifest in his first movements, and which on occasions it is of so much consequence we should take cognizance of, may not through previous walking or jumping about be diminished or dissipated. Should the animal already have commenced his frolics, he may often be steadied down by being mounted. Indeed, there are some examiners who prefer having the horse under examination for lameness ridden, to his being run in hand; and on occasions the practice is a commendable one, the weight telling to the manifestation of the lameness: the objections to riding, in a general way, being, that the circumstance of being mounted has a tendency to raise the metal of a horse otherwise quiet, and so dispose him less to shew lameness; and that the restriction his head is put under by the bridle-hand of the rider is apt to check or prevent his "dropping" to the extent he otherwise would. There are, however, lamenesses which require for their development that the limbs be thrown into sharp work, or be made to perform some

extraordinary feats of trotting or galloping. In such cases as these it is imperative that the horse be either ridden or driven until he break out into a sweat, and afterwards that he be tied up in his stall and left at rest for an hour or so, until he has become quite cool, and then seen again in the trial trot: in this manner lameness, not discoverable through ordinary running, is often made manifest.

III. The horse under examination for lameness should be run or ridden for the distance of thirty yards or so in a direct line from and back to the examiner. We have already seen that any material deviation from the way in which a horse—and in particular a young horse—has been accustomed to go is apt to create some difficulty or peculiarity in the gait that might be mistaken for lameness; therefore the animal under examination should not, at all events in the first instance, be put out of his usual or natural mode of trotting. Should this trial fail upon ordinary ground to elicit lameness, trotting upon a surface of a different kind, upon hard ground or pavement, or upon soft ground into which the foot sinks under the weight of the tread, and making these transitions suddenly, may possibly cause the animal to divulge it. Or it may be requisite to essay what some forced or unaccustomed movement will do towards eliciting the secret; though, while this experiment is making, care must be taken, as was said before, that any difficulty in the action created thereby is not mistaken for lameness. The retrograde movement or *backing*, the circular or *longeing*, the lateral or *passaging*, or running or riding the animal at a sharp trot for a short distance, and then as suddenly as possible arresting him in his course, and the same instant turning him sharply round upon his hind quarters, may each or all of them in turn be put into practice, and, with the foregoing reservation, taken as tests of the presence of lameness. The sudden arrest of the trot, and the simultaneous turning about upon the hind limbs as upon a pivot, especially tend to elicit lameness in those limbs: not unfrequently a horse will hardly shew his lameness behind until he comes to be suddenly arrested, and then he instantly drops his croup upon the sound side.

THE ERROR MOST APT TO BE COMMITTED IN DETERMINING

THE LAME LIMB, and one that now and then, without proper attention, will be committed even by professional persons, and therefore one against falling into which it behoves us all to be upon our guard, is pronouncing lameness to be in a *fore* leg when it is in the *reverse hind*, or in a hind when it is in the reverse fore limb. Simply observing upon which side or limb a lame horse drops will point out to us whether his lameness exist in the off or the near leg; such, however, is the sympathetic effect of this dropping or lurch of the body upon the reverse hind or reverse fore limb to that of which the animal goes lame, arising from the synchronous action of these limbs in the trot, that, without attention to whereabouts the dropping is especially taking place, we shall be apt to assign a false locality to the lameness. For example, if lame in a fore limb the animal's *head* will rise and fall, or "nod," as he limps along; whereas, when the lameness is seated in a hind limb, the *croup* will be the part which will manifest these risings and fallings, or "droppings." For the young—very often for the more experienced—practitioner, it is a good rule to withhold any opinion about the lameness until the horse has been run both from and to the observer; the return trot serving either to confirm the impression made in his mind by the first run, or else to shew him that such notion—fortunately for him unexpressed—was an erroneous one. Should any doubt continue after the return trot, the run should be repeated, it being far better for the examiner to bear the imputation of slowness of judgment, or of indecision even, than to risk being detected in so flagrant and serious an error as that of hitting upon a sound limb for the lame one.

THE SEAT OF LAMENESS, by which is meant the situation of the disease, injury, or deformity giving rise to it, is the inquiry called for as soon as the determination of the lame limb is settled; and a most important inquiry it is, though one not in every instance pursued with that success and satisfactoriness that could be desired.

To set about the treatment of lameness upon any scientific or rational grounds three points require ascertainment: the first is, *the lame limb;* the second, the *seat* of what causes the lameness; the third, the *nature* of that cause: without these three pieces of

information it must be obvious that any treatment instituted can be nothing better than guesswork and empiricism.

Lameness occurs much oftener in the fore than in the hind limbs, perhaps in the ratio of three or four cases to one; the proportion, however, will a good deal depend upon the breed and make of the horse, and upon the kind of work to which he is put. The majority of lamenesses occurring in the hind limbs are located in the hock; the hind fetlock and flexor sinews occasionally fail; the joints of the hind foot very rarely shew disease. Of the fore limb, on the other hand, the foot-joints are the parts which more frequently than others harbour lameness; the flexor sinews, and fetlock, and knee-joints, being the next disposed to fail; the shoulder-joint comparatively rarely. The fore feet become very often diseased in light blood horses used as hackneys upon hard roads; the sinews, hock, knee, and fetlock joints are very apt to fail in hunters and racers. From such-like established facts we learn that it is *concussion* which is the grand cause of joint-lamenesses, and *sprain* or *over-work* which occasions sinew and ligamentary lamenesses.

An observant practitioner will often be able to derive a good deal of information concerning the locality or seat of lameness while he is watching the action of the horse with the view of ascertaining the lame leg. The *tread* or *stepping* of a horse is sometimes found very characteristic, at other times his *gait* or *mode of projecting* his lame limb is an indicative symptom. How different, for example, will be the going of a horse lame in the foot from one that is lame in the shoulder: in one instance the animal will boldly advance his limb, but fearfully place his foot upon the ground; while in the other case he will shew impediment or difficulty in projecting the same limb. It will be observed whether he turns his toe unnaturally inward or outward, or whether in going he treads most upon the heel or upon the toe of the foot: on which last circumstance further and more correct information may be obtained by inspection of the shoe of the lame foot, the parts worn indicating the greatest pressure or habitual tread of the foot.

With the information, then, of how the horse contracted his lameness, when and where he contracted it, whether he *points*

the lame foot or not (supposing it to be a fore one) in his stall, or rests it if it be a hind one, whether his lameness abates after rest, or whether the lameness increases much or little after work, or, as is not infrequently the case, whether it proves less perceptible while the horse is at work, and is most manifest on his first egress from his stable; I repeat, with this information, and with all that can be learnt besides from the horse's manner of going and putting down his foot, the veterinarian, as the horse stands before him, sets about inspecting the lame limb, and examining it in every part with his hand. Some lamenesses* are perceptible to the eye, and discoverable by the eye better than by the hand; others are detectible by the hand alone; while, again, there are others that elude detection by either eye or hand, and which can be judged of through the action alone, aided by the horse's manner of standing. A quick eye, judging from the general appearance of the lame horse and from his mode of going, even in the absence of any manifest disease or defect to account for the lameness, will very often discover at once the seat and nature of it: on the other hand, a man accustomed to the feel of legs and feet will, in the dark, be able to detect the seat of ordinary lameness as well as if he had actually been looking at the parts he has been feeling. I remember hearing the present Profesor, Sewell, at the Veterinary College of London, say, he was able, could he but *hear* a lame horse trot, without seeing him, to pronounce which was the lame leg. It is, therefore, possible for a blind man—and more possible, from the well-known acuteness of his faculties, for him than for a man who blinds or excludes himself from view of the lame horse—to say of what leg a horse goes lame, and afterwards to ascertain with the best of judgment the seat and nature of the lameness.

NATURE OF LAMENESS.—The *disease, defect,* or *deformity,* giving rise to lameness often becomes to the veterinary surgeon apparent so soon as its locality or seat is satisfactorily ascertained. He knows that foot lameness, in the absence of *laminitis* and such diseases as shew themselves externally, commonly proceeds either from inflammation or ulceration of synovial tissues; he knows

* Used here and in other places for that which *causes* the lameness.

that a splent consists in a conversion of fibro-cartilage into osseous matter, the same as happens in bone spavin; he understands what is the pathological interpretation of the phrases "broken down," "sprung sinews," &c.; he is acquainted with the nature of *curb*, of *ringbone*, of *quittor*, &c.; in fine, generally speaking, when any mystery hangs about a case of lameness, it has reference to its *seat:* when that is discovered, the nature of the ailment is commonly either palpable to demonstration, or from certain symptoms and appearances fairly and safely deducible.

A COMPARISON BETWEEN THE FORE AND HIND LIMBS, made with a view of exhibiting the kind or nature, as well as the number, of lamenesses they are respectively obnoxious to, and of shewing what parts in limbs so differently constructed and circumstanced are commonly the first to fail, will, perhaps, be well prefaced by a sketch of the advantages the quadruped from his two additional legs possesses over the biped. While standing, the quadruped's limbs support him after the manner of a form or four-legged stool: they call for little or no assistance from muscle—receive what aid they require to maintain themselves extended almost exclusively from *elastic* powers. This allows to the quadruped a degree of repose and of recruitment of strength in the standing posture of which the biped—with his two limbs—is insusceptible. And no sooner does the time arrive for progression than a still greater difference is observable. The fore limbs perform one office in progression, the hind limbs another. While the latter are exerting themselves, after the manner of two powerful levers, to propel the animal machine onward, the former have little else to do but, while they are keeping pace with the hind limbs, to carry the fore parts of the body, together with the head and neck, in their elevated position—support them lest they fall to the ground. Thus, while the hind limbs have to sustain the force of great muscular efforts, the fore have to sustain a repetition of shocks from concussion of a nature injurious or not, depending upon the pace or act of exertion the horse is put to, as well as upon the surface of the ground, hard or soft, even or uneven, upon which he has to perform the said pace or act. Of the hind limb, the hock is, of all others, the joint most employed

in working the machine forward; while of the fore limbs the foot-joints, being those placed lowermost, and being the first to receive the shock of concussion, are those that suffer the most. This at once explains the notorious facts, that in horses lame behind, the *hock* is the most frequent seat of lameness; while in such as are lame before, no joints are so often found failing as those of the *foot*.

## SOUNDNESS, AS OPPOSED TO LAMENESS.

RELUCTANTLY as we enter on this difficult and much-debated question, we feel it our duty, in a work on lameness, to make some observations on the subject, though these observations will be rather of a general than of a particular nature, and have especial reference to soundness regarded as the converse of or opposite state to lameness. No person buys or sells a horse without feeling some concern as to the soundness of the animal: the purchaser is apprehensive lest his new horse should from any cause turn out unserviceable or unequal to that for the performance of which he has bought him; the vender is apprehensive, either lest the animal, in other hands, should not prove that sound and effective servant he conceived or represented him to be, or lest some unrepresented or concealed fault or defect he is aware the animal possesses may now, in his new master's hands, be brought to light. Soundness, as opposed to actual or decided lameness (or as synonimous with good health), is a state too well understood to need any definition or description: when we come, however, to draw a line between soundness and lameness in their less distinguishable forms—to mark the point at which one ends and the other begins—we meet a difficulty, and this difficulty increases when we find ourselves called on to include under our denomination of unsoundness that which is *likely* or *has a tendency* to bring forth lameness.

The number of "horse causes," as they are commonly called, that have engaged the attention of our courts of law, have brought eminent persons of the legal profession to our aid in the solution of this intricate question. Lord Mansfield, years ago, made an

attempt to settle the point according to an *ad valorum* scale; setting every horse down as sound in the eye of the law whose cost or value amounted to a certain sum. This, of course, was law that never could hold in horse transactions. Lord Ellenborough legislated with a great deal more knowledge of horseflesh. The law he laid down was, that "any *infirmity* which rendered a horse less *fit* for present use or convenience constituted unsoundness:" a law which, though it admitted of great latitude of construction, and to some especial cases did not prove applicable at all, was still a wholesome and practicable one in a majority of cases of dispute. Lord Tenterden made but little improvement on it when he pronounced every horse unsound that "that could not go through the same labour as before the existence of the defect or blemish in dispute, and with the same degrees of facility."

Professor Coleman's notion was, that "every horse ought to be considered sound that could perform the ordinary duties of an ordinary horse." This definition is open to the same objections as the judicial laws of Lords Mansfield and Tenterden: mange, diseases of the eye (so long as they are confined to one eye), nay, glanders* and farcy even, in certain stages, and some other diseases, do not incapacitate a horse, and yet they all amount to palpable unsoundness. On the other hand, many a horse, from age or want of condition, or from possessing a constitution naturally weak or washy, is unfitted for what might be considered "the ordinary duties of an ordinary horse," and yet cannot be called *unsound*. Then, again, comes for explanation, what are to be regarded as the *ordinary duties*, and what we are to look upon as an *ordinary horse:* both presumptions equally indefinable with Lord Ellenborough's standard of *fitness*, and with Lord Tenterden's *statu quo* "before the existence of the defect or blemish."

The late Mr. Castley, veterinary surgeon to the 12th Lancers—whose opinions on this subject, as well as on every other, his habits

* A large carrying firm on the western road had, many years since, a great number of glandered horses working in entire teams: these horses were bought in young, at high prices, but from neglect and mismanagement soon became infected with the disease, and in this state worked on, in some instances, for many years.

of acute and accurate observation rendered of peculiar value to us—felt inclined, to use his own words, "to steer a middle course;" in accordance with which he "ventured on the following propositions:"—"1st. That all recognised disease constitutes unsoundness *for the time being*." "2dly. That changes of structure or an altered condition of parts, and derangement or impairment of function, are allowed by all to be our two great landmarks in conducting examinations for soundness." The first of these "propositions" is fairly inclusible in the second; all disease consisting either in change of structure or change of function, and most disease involving both these changes. And in regard to the second rule for our guidance, obvious and decisive as are changes of structure combined with deranged or impaired function of parts in general, there are still some of that trifling or uninfluential nature that can hardly, when they do exist, be looked upon as unsoundness: such are chronic or partial diseases of certain parts or organs, the obliteration of a vein* or artery for example, the conversion of fibro-cartilage into bone, as in splent, chronic or partial disease of such an organ as the liver, &c. &c.

Our present inquiry into the nature of soundness being restricted to its relation to *lameness*, and it being our intention here to deal with broad principles, leaving the nicer shades of distinction for consideration until such time as we come to treat of particular lamenesses, we may safely say that—

1. Every horse shewing lameness must be pronounced unsound. Although the converse of this, as a fundamental principle, will by no means hold good; every horse *not* shewing lameness not necessarily being (considered as) a sound horse. For instance, a horse shall have a spavin, or a curb, or a swollen back sinew, and still evince no lameness, even though he may shew marks of having been fired or blistered for the same, and so give us every reason to believe that formerly he has experienced actual lameness from one or other of these defects. Would, however, any veterinary surgeon, under such circumstances, give a certificate of *soundness?* If he did, it must be qualified in a manner that would little induce

* It has happened, however, that a horse has been returned after purchase as "unsound" in consequence of a *lost* (jugular) *vein*.

any person to purchase such a horse, unless at a price consonant with the evident reduction of his value. It will be requisite, therefore, for us to say, not simply, that every *lame* horse is unsound, but to add the words, *or who has that about him which is likely on work to render him lame.* This will, it is true, open the door to difference of opinion and equivocation. There may, as we have seen, spring up two opinions concerning the *presence* even of lameness. There will in more cases be two opinions concerning that which is accounted to be the precursor of lameness, or have a tendency at some period, proximate or remote, to produce lameness; all which differences are best got rid of by reference to the ablest veterinary advice. There will be less diversity of opinion among professional men than among others, and the more skilful and respectable the professional persons are, the greater will be the probability of a happy unison in their views of the case. To lay down any statute law which shall meet such cases as these is, from the very nature of vital structures and functions, totally an impossible matter.

We ought to be able to establish it as an axiom, although it may prove one not unassailable by argument, that *a lame horse is an unsound horse.* It might be objected, for example, that a horse having a stone in his foot—than which nothing, for the time, renders a horse more lame—should be regarded as unsound; and yet by this rule he must be so considered so long as he continues to go lame, though as sound from the moment that the stone is removed. The shoe "nailed on too tight" furnishes another similar example. A horse, quite sound, enters a forge to be shod, and comes out going, as grooms call it, "scrambling," *i. e.* lame; he is, in fact, no longer a sound horse: take him back, however, into the forge and remove his shoes, nail them on "easy," and, if not completely restored to soundness, he is thereby evidently so much relieved as to give pretty fair earnest of his becoming well or as sound as ever by the next or the following day. It may be said, and we quite agree in the reply, that such trivial points as these are not likely to come before us for decision, or to cause us any trouble if they do: still it is right we should be armed on all sides to defend that law which we, as professional men, deem it wholesome and just to lay down: viz.

that every horse *going* lame—no matter from what cause—ought to be pronounced unsound.

If any real objection can be urged to the institution of such a law, one presents itself in the case of a horse who is lame at one time and sound at another. For instance, a horse shall have a frush, of which he shall flinch or go palpably lame every time he happens to tread upon a stone, or whenever he goes upon hard uneven surfaces; though at other times, upon soft ground or upon turf, he shall appear quite sound. This horse, we think, stands, in respect to the question of soundness, altogether in a different position from either the stone-in-the-foot or the tight-shoe case : here is *disease*—demonstrable disease; and although it gives rise but occasionally to lameness, still. as lameness is at times the result, we hold that the horse ought to be accounted unsound. The spavin —in certain forms—affords another example of temporary or transitory lameness. A spavined horse shall come excessively lame out of his stable in the morning, but after having gone awhile and waxed warm shall no longer exhibit lameness, or even stiffness of his hock. In accordance with the laws of the judges, and with that of our late Professor (Coleman), such a horse being *not* " less fit for *present* use or convenience," being " able to go through the same labour as before the defect or blemish," able to perform the " ordinary duties of an ordinary horse,"—such a horse, we repeat, must be pronounced, so long as he continues in this aptitude, to be sound; whereas, however much we may differ concerning other points, we believe all veterinarians will concur with us in opinion in declaring the occasionally lame spavined—if not the lame frushed—horse to be *unsound*, notwithstanding his redeeming quality of becoming sound on work, and of continuing so to the end of that work.

However strong we may feel ourselves in our axiom—that a lame horse must be accounted unsound—the moment, as we observed before, we attempt the converse of it, viz., that every horse free from lameness is (as respects the question of lameness) to be held as sound, we change into a position most infirm and untenable. All sorts of diseases and defects stare us in the face, which, though not the immediate producers of lameness, too surely, in our minds, betoken its approach, waiting only for work or other

exciting cause for its development; and with such betokenment before us, it is quite impossible we can, with any shew of reason or equity, pronounce the horse having them, notwithstanding he at the time goes free from lameness, to be virtually a sound horse. For, how can we in conscience call that horse sound who we know has that about him which will probably—nay, certainly—cause him to become lame the first long or heavy day's work he is put to perform? As well might we call an apple or a pear sound which we know to be rotten at the core. And yet, strictly and literally speaking, the animal *goes* sound—is as sound in *action* to *appearance* as is the rotten apple or pear. In cases where so much difficulty, nay, impossibility, presents itself to the drawing of a distinction between the two opposite and (as we may call them) abhorrent states of soundness and unsoundness, it has struck us some good might arise from

A DIVISION OF UNSOUNDNESS into *actual* and *prospective;* the latter denomination indicating a state of *transient* or *trustless* soundness. Notwithstanding a horse may be free from lameness, may *go* sound, yet, so long as he has that about him which will probably or surely render him lame the first time he is put to hard work, is he *virtually* an unsound horse, in honesty *unwarrantable;* and the best denomination we are able to find for such a failable condition—a sort of intermediate state between soundness and unsoundness—is *prospective unsoundness.* So far as abstract action is concerned, the horse, it is true, must be regarded as sound; although that which he has upon him, making him liable or certain to become lame whenever he is put to excess of action or work, certainly stands in the way of any *warranty* of soundness being given.

PROSPECTIVE UNSOUNDNESS, however, although it relieves us from the necessity of doing that which no professional man conscientiously can do in very many of the subjects brought before him, viz., of pronouncing the horse either actually sound or unsound, yet unfortunately it opens a door through which crowds of cases, really doubtful in their character or rendered so by the variety of opinions given on them, are ready to be forced in, and made to perplex us in coming to any proper or judicious selection

of them. One horse has manifest *disease*, in some form or another, as the cause of his being pronounced likely or certain to go lame at no very remote period: his case admits of no question. But another horse has—no disease,—only a *malformation*, a *deformity*, or *misshapenness*, the result of which is weakness of limb, and consequent liability to failure—to lameness, in fact. A third horse has neither disease nor deformity, nothing but a "bad habit," and that is said to amount to unsoundness. And it is the cases that come under one or other of these latter denominations—which are the offspring either of natural defect, of use or wear, or of habit—that, for the most part, puzzle veterinary practitioners in coming to judicious decisions on soundness.

To elucidate these observations by example:—A horse shall have a spavin or a curb, or a swollen or fired back sinew, any disease, in short, from which on exertion he is likely, as our experience tells us, to become lame: such a horse is *prospectively* unsound. But, suppose he have a club-foot, a parrot mouth, bent limbs, curved or curby looking hocks, weak joints, narrow or flat feet, a hip down, &c.—all *natural* deformities or malformations, none of them coming fairly or popularly under the category of disease—what is to be done in passing judgment upon them? The equitable adjudication appears to be, as in the case of disease, to declare that such of them constitute unsoundness as are probable or certain to give rise on work to lameness; but, then, we shall experience difficulty in some of the cases in drawing the line between actual lameness and natural failing or weakness. A horse foaled with evident deficiency of physical power, partial or general, can hardly be called unsound; though, should he have that about him which renders it likely he will, when put to work, become actually *lame*, he ought, assuredly, to be pronounced *prospectively* so. "CUTTING," as the striking of one foot against its fellow leg is called, arise from whatever cause it may, is apt to produce occasional lameness, and, when it does so, is fairly regarded as a species of prospective unsoundness. STRINGHALT is action so unnatural that some do not hesitate to affirm it to be a species of unsoundness, though it is a well-known fact that many horses so affected will do the same amount of work as it is reasonable to suppose they would or could

do were they free from it. After all, as the foregoing observations will abundantly testify, a good deal, in the decisions between soundness and unsoundness, must be left to the skill and judgment of the professional man: he alone can unriddle the true nature of the case, and form a just estimate of the probabilities of lameness; and, if he be but trustworthy and honest in his opinions, he is, beyond question, the preferable authority in such cases of appeal for advice.

When we, as men acquainted with the animal economy, consider the multiplicity of evils even *quadruped* "flesh is heir to," and reflect in how many ways its health and action may become impaired, and how graduated down those impairments may be into states of indisputable soundness, we have no right to feel surprise at the intricacy in which we find the subject before us involved, no more than we have, in a strictly pathological point of view, at the comparative paucity of sound horses coming under our observation. The separation of monomania in man from oddity or eccentricity is hardly more difficult than resolving the question of soundness in its dubious or transitory form is in horses; a great deal, after all, must be matter of opinion, and those opinions will ever prove best worthy our reliance which are founded on the widest experience, coupled with the best character for honesty. No more responsible duty attaches to a professional man than that of giving a *certificate of soundness:* by it the warranty of the dealer or vender is either confirmed or falsified, the purchase completed or set on one side, the value of the animal either established or destroyed; on all which accounts is the veterinarian pledged, not only to use his "hundred eyes" in making the examination, but also his maturest judgment in diving into the nature of any unsoundness he may discover, as well as into its positive or probable effect on the action or capabilities of the animal, both present and to come. This leads us, before we close the subject, to say a few words on

WARRANTY; by which is meant an indemnity against any unsoundness, or a pledge given—commonly in *writing*—by the vender to the purchaser, that the horse is sound and quiet, and possesses such and such qualifications. Without such indemnification or pledge, the law says *caveat emptor*—let the purchaser take the consequences: the rule at law being, that every body who pur-

chases a horse takes him at his own judgment, and has no remedy against the seller, supposing the horse to turn out upon a future trial or a more considerate inspection after the purchase, to be worth less than the sum given; unless he (the purchaser) can *prove* he was induced to purchase by representations false within the knowledge of the seller; to fasten a fraud of which nature upon an experienced dealer in horses is, however, a difficult matter*. Warranties are of different kinds—*express* or *implied, general* or *special.* An express warranty speaks for itself. And as for an implied warranty, such a thing is hardly known, or, at least, rarely taken advantage of in *horse-dealing*, the price paid, however high, not being legally held to be any guarantee of the soundness of the animal; and any thing that might transpire between seller and buyer, *implying* warranty, being worth nothing without *proof*, which, being procured, would render the transaction, in law, tantamount to an *express* warranty. A general warranty extends to *all* defects and faults known and unknown to the seller; but a special warranty is confined in its operation to the parts or particulars specifically pointed out. A horse may be warranted of such an age; or, having some defect visible upon his limbs, such as a spavin, or a curb, or a fired leg, of which he does not go lame at the time, that defect may be specified, and the horse warranted not (within any reasonable or prescribed period) to become lame in consequence of it. A general warranty, however, affords no protection against such defects as are "plain and obvious" to every body, and, consequently, to the purchaser; no more than a special warranty does against any which are not included or named in the specification. "But if on the sale of a horse the seller agree to deliver it sound and free from blemish *at the expiration of a specified period,* the warranty is broken by a fault in the horse when delivered, *although such defect was obvious at the time of sale;* and as some splints cause lameness and others do not, a splint is not one of those plain defects against which a warranty will not indemnify; and when a seller warrants a horse sound *at the time of sale,* and the horse afterwards becomes lame from the effects of a splint, visible when the horse was bought, it

* Tomlin's Popular Law Dictionary, 1838.

is certain that the warranty is broken." This rule will apply to spavin, or to curb, or to windgall, or, in fact, to any other defect "visible at the time of sale." For all warranties can only undertake for the animal's qualifications *at the time of sale:* none can extend to any subsequent period unless there be a special clause "to *deliver* the horse free from blemish," and that delivery be by mutual agreement delayed*.

The form in which a receipt including warranty is generally written is—

"Received, the 16th of July, 1845, of A. B., Esquire, the sum of Ninety Pounds, for a grey gelding (stallion or mare) warranted sound, and quiet to ride and to drive."

Or "Warranted free from vice and blemish, except ————."

Or "Warranted in every respect, except ————."

Or "Warranted to have been constantly driven both in single and double harness, to have carried a lady, to have been regularly hunted, to be a good hunter or hackney, &c. &c."

Following the word "except" there being every opportunity afforded the (honest) vender of stating what he may know invalidating the warranty, and thereby saving his reputation as well as screening himself from the probability of litigation afterwards.

"With respect to what (oral) declarations of the seller will amount to a warranty, the primary rule for the interpretation of contracts in general is applicable. It depends upon the *intention* of the parties. A simple affirmation of the goodness of an article is a warranty, provided it (a warranty) *appear to have been intended:* whereas, the sublimest epithets that seller ever employed to recommend his goods to a credulous buyer will be regarded as the idle phraseology of the market, unless an *intention to warrant* actually appear." In fine, "it is from the *intention* of the parties, as collected from the whole transaction, and from the meaning they appear to have attached to particular expressions, that the existence or non-existence of a warranty is to be inferred†."

"Let us now consider how the rights of the parties are affected by the horse being unsound at the time of the warranty. The

* Tomlin's Law Dictionary, 1838.

† Law Magazine for October, 1838.

contract being thus broken on the part of the seller, it is at the buyer's option either to treat it as a nullity, and return the horse, or to retain him, notwithstanding, and bring an action on the warranty. In the former case, the price paid is the measure of the damages he will be entitled to recover in an action; in the latter, the difference between that price and his real value. If he offer to rescind the contract and return the horse, he may also recover the expences of his keep; but in order to do this a positive tender is said to be necessary. No notice of the unsoundness need be given to the vender to entitle the vendee to maintain the action; nor is it necessary to bring the action immediately on discovering the unsoundness."—" But, although such a notice be not essential, yet it is always advisable to give it, as the omitting to do so will furnish at the trial strong presumption that the horse, at the time of sale, was free from the defect complained of, thus rendering the proof of a breach of warranty more difficult. Common justice and honesty require that the commodity should be returned at the earliest period, and before it has been so changed by lapse of time as to make it impossible to ascertain, by proper tests, what were its original properties*."

Having made these observations on lameness *in general*, we proceed to the consideration of lameness *in detail;* the various kinds and forms of which, in order that our descriptions may be conducted methodically, we have thrown into three classes.

Class I, comprising lamenesses arising from disease of joints or bursæ mucosæ.

Class II, Lamenesses arising from disease or disordered function of muscles, or from disease of tendons or ligaments (unconnected with joints).

Class III, Lamenesses arising from diseases *peculiar* to the feet.

* Law Magazine for October, 1838.

# CLASS I.

## LAMENESSES ARISING FROM DISEASES OF JOINTS AND BURSÆ MUCOSÆ.

### *General Observations on the Diseases of Joints.*

In a pathological sense, we might define lameness to be, disease or derangement of some part or other of the apparatus of locomotion. The organs of locomotion are the *bones* and *muscles:* the one constituting that framework of figure and support to which the other are attached for the purposes of motion. Very many bones, of different shapes and sizes, enter into the composition of this framework; but, divided and subdivided as it is, such is the harmony of arrangement, and complete adaptation and secure fastening of one bone to another, through the media of joints, that, with all the strength of an entire structure, the framework possesses every necessary capability and variety of motion.

A joint may be said to be an union, by means of ligaments, of two—in some instances of three—bones, whose opponent ends or surfaces are shaped so as to fit into each other, are covered by cartilage, and inclosed within a capsular ligament, forming a shut cavity, which is lined throughout by a sort of internal capsule, to which, from its secreting the *synovia* or joint-oil, the name of *synovial membrane* is given. Of this, which constitutes the most perfect description of joint, the best examples are to be found in the limbs, the main bones whereof are articulated together in a manner that fits them for every required variety of movement: two of them, the shoulder and hip-joints, have ball-and-socket articulations, conferring upon them circumductive and rotatory moving faculties; the others, for the most part, are of the *ginglymoid* or hinge-kind, possessing great extent of motion, though that motion is limited to flexion and extension.

There is, however, a description of joint which has neither cavity nor joint-oil, and yet, within certain limits, admits of motion: this is *the fibro-cartilaginous joint.* The splent bones, as

an instance, are attached to the cannon bone by an elastic substance, found to be a fibrous or ligamentous cartilage; and, through its India-rubber sort of elasticity, these bones yield to the impression of weight, and, in a manner more conceivable than demonstrable, descend, and spring up again into their places the instant the pressure is taken off them. The sesamoid bones, through their ligamentous attachments, have a similar and more palpable descending and ascending movement; a movement, indeed, that is perfectly demonstrable in horses with long, oblique, bending pasterns. The navicular bone affords another example of the same sort of mechanism.

In considering the diseases of the first or more perfect class of joints, the part we shall find it of most importance to make ourselves well acquainted with, is the synovial or lining membrane. It is a tissue similar in its composition to a serous membrane—to the peritoneum, the pleura, and the pericardium: like them, it is thin and very vascular, and is furnished with the means of secretion. The joint-oil or synovia, however, is a very different secretion from that poured out by the serous tissue: this, as its name implies, is serous or aqueous in its nature; whereas the synovia has a good deal of albumen in its composition—is, in fact, very like white of egg. The synovial membrane being in itself, as was before observed, a complete sac, having no opening into it, any wound admitting air into the cavity of the joint and giving escape to the synovia, we find, as might be anticipated, to be attended with serious consequences: inflammation, intense in its character and destructive in its tendency, is ever ready to follow such exposure, and that treatment proves the best which most speedily seals up again the cavity of the joint. But, seeing the synovial membrane—which gives a complete lining to the interior of the joint, leaving no part therein uncovered by it—is not the same kind of tissue in every part (being, where it is reflected over the cartilaginous ends of the bones, so extremely thin and pellucid that for many years its existence upon the cartilage was matter of dispute) inflammation in *it*, as might be expected, is not attended with the same effects in one part as in another. Augmented secretion, suppuration, thickening, effusion of lymph, ulceration, may, one or other, or all in succession,

supervene on inflammation; but, while the first four of these phenomena are observable more particularly upon the loose or capsular portion, the last—ulceration—is almost peculiar to the reflected or cartilaginous portion of the membrane. The best examples we have of increased secretion of synovia are furnished by the disease known under the vulgar and incorrect appellation of *wind-gall;* which is, in fact, a distention of a *bursa mucosa,* with (not *wind,* but) *synovia.* The capped hock, puffy and fluctuating to the feel and tap of the finger, is another illustration of synovia collected in undue quantity, and one in which the augmented secretion is commonly the sequel of inflammation or increased vascular action, originating in some contusion from a kick or blow of some kind. Likewise, the soft undulating tumour so frequently seen growing from the point of the elbow—and which might be called a *capped elbow*—from the enormous size which it now and then acquires, affords an excellent specimen of synovial tumefaction. Indeed, there is hardly a bursal cavity in the body but what has been known, on one occasion or another, to shew disease of this kind; and we find the same redundance of joint-oil pouring out of open joints, and now and then may detect collections in closed joints. Inflammation excited in a joint from an ordinary sprain, no doubt, commonly gives rise to some augmentation of its secretion, though it is not always detectible by us, perhaps seldomer, from its not being so much sought after as other effects of the sprain: that, however, which we call *fulness* of the joint, though it arises, in part, from infiltration exterior to the cavity, is also commonly ascribable, in some measure, to this inward cause.

The best illustration we have, however, in hippiatric practice, of such accumulated synovial secretion, occurs in the disease to which the joints are occasionally subject from *constitutional* disease or derangement; that which we would call the *rheumatic* inflammation of the joints of horses. All veterinarians are now in the habit of noting, when they occur, cases of metastasis of inflammation from the thoracic viscera into the joints and sheaths of the tendons, and well know what swelling, from collected synovia, and what heat and tenderness and excessive lameness, such inflammation occasions. So long ago as the year 1829 I drew attention to this sub-

ject in a case I sent to *The Veterinarian*; and the year following I had the gratification to learn that my lamented friend, Mr Castley, confirmed my observations in a paper containing a fuller and more graphic account of the same*. That there occurs, under certain circumstances, the opposite morbid condition, viz. a *dry* state of joint from a lack of synovia, is a view both theory and observation would lead us to entertain, though it may be difficult to adduce examples of it.

Of suppuration, we have the best examples afforded by open joints. Along with the flux of synovia we often have purulent matter discharging, and in some cases the purulent will gain the ascendancy over the synovial secretion. And when, from negligent or improper treatment, or from the severity of the injury, inflammation runs intensely high, we shall not only have pus, but lymph as well, poured out into the cavity of the joint; ending in thickening of the membrane, or else in ulceration and ultimate destruction of it. Ulceration, however, is much more commonly seen in the reflected portion of the membrane—that part which is delicately thin and, comparatively, little endowed with vitality, and consequently the more prone to take on the ulcerative process. We shall probably find, in addition to this one of organization, a cause for this propensity to ulceration connected with the situation the reflected membrane occupies in the joint; it being, while the capsular part of the membrane is loose and free from pressure, subject to constant compression and occasional contusion.

The joints and sinews of horses become the especial seats of lameness. If a horse fails in his work, or gets sprained by accident, we look to his joints or to his sinews as the parts that have suffered, knowing that they sustain the brunt of the wear and tear. Thence it is that we think it of so much consequence to possess a horse with large well-formed joints, and wiry well-knit sinews. The custom of racing horses at such tender ages as two and three years old, and of backing half-breds before they have come to their strength, has proved fruitful sources of failure in these structures. For a horse to acquire maximum strength of joint and

* For these accounts see vols. ii and iii of *The Veterinarian*.

sinew, it is indispensable that the animal, up to a certain period of growth, should not be over-weighted or strained beyond his powers: Nature will make him fit for what he is intended, if not blighted in her operations by the chilling and destructive hand of Art. It is lamentable to behold the number of horses there are in this sporting country of ours ruined by premature work.

Although joint lamenesses are, when they arise from sprains or blows, in general perceptible enough, yet are they frequently obscure in their nature, and difficult of detection, in cases in which their origin is spontaneous, i. e. not traceable to sprain or blow or other external injury. The horse is brought to us lame, very lame, perhaps, and the account of his lameness is accompanied with the emphatic reminder, that there is "nothing to be seen," "nothing to be felt," in the lame limb: in fact, the case is such as has put to confusion all the veterinary knowledge possessed by both the groom and his master. Science, however, has taught the veterinarian that, from the very nature of joint lameness, in many—in most—instances, such signs as would attract outward notice are not to be sought after. How is a joint incased within the hoof to shew swelling, or even heat such as unprofessional touch would detect? nay, it is not likely even that *any* joint whose disease has originated and is seated in the synovial membrane would evince any such external changes as would enable inexperienced hands to detect the disease; and therefore we are not to feel dismayed or discouraged by any such report as commonly accompanies these *mysterious* cases, but, on the contrary, the more scrupulously apply our art to the unravelment of them.

The first inquiry we ought to make, is into the *history* of the case presented to us for examination. How long since the lameness occurred; in what manner, or from what supposed cause, it happened; whether it came on suddenly or by degrees, getting one day better, another day worse; and what attitude the horse is in the habit of assuming in his stall, whether he *points* or rests the foot of his lame limb or not. These and any other requisite particulars being obtained, the next observation to be made is, as regards the horse's action with his lame leg—in what manner he lifts and projects it, and sets it down upon the ground. Finally,

we proceed to the manual examination of the affected leg and foot, in doing which we must bear in mind we are searching for two (out of the four) signs of inflammation, *heat* and *swelling:* the pain felt being evinced by the action and by the standing, and the redness being through the hair imperceptible. The inflammation taking its rise in the synovial membrane being, generally speaking, *sub-acute* or *chronic* in its character, we are not to expect any very striking increase of temperature; neither are we to look for any thing beyond *fulness*, by way of swelling, seeing that the increase of synovial fluid is but very moderate, and that, unless the case be one of combined sprain, there is no very remarkable infiltration into the surrounding integument. A careful and deliberate examination, however, will seldom fail to detect heat, if not swelling, of the joint affected, or in its immediate vicinity; and there is no better way of arriving at this ascertainment—one of the utmost importance to us in determining the nature of the case—than that of repeatedly comparing the grasp and feel of the supposed lame joint with the correspondent joint of the sound limb: one feels warmer and rounder or fuller than the other; the perception of its natural prominences being obscured or obliterated by this fulness. Should the joint be one of those incased within the hoof, out of the reach of the hand, though no fulness be perceptible upon the coronet, still heat may be felt there or within the hollow of the heel, to a greater amount in one foot than the other: added to which, in a case of foot lameness, it is of great importance that we should pay every attention to the form and condition of the hoof. It is possible that, by compression or some artificial motion given to the supposed lame joint, we may succeed in eliciting some further indications of tenderness in it: these are signs, however, upon which we cannot often rely. When we come to talk about the animal's "flinching" from this or that twist or squeeze of the hand, there is apt to be so much deception from some unusual sensitiveness or nervousness or fear the horse may evince under examination, or else from lack of these attributes, that it is difficult, in most cases perhaps impossible, to come to any safe conclusions from such manipulations.

The inspection after death of joints from disease of which horses during life have been known for a length of time to have gone lame, has brought to view worm-eaten like excavations in those parts of the articular surfaces of the bones which appear to have undergone the greatest compression, and to have been the most likely to have sustained injury from concussion or contusion. In the hock joint such ragged excavations have been discovered upon the central or prominent part of the convexity of the astragalus, and upon the opponent surface of the concavity of the tibia: in the diseased navicular joint the same has appeared upon the convexity encircling the body of the navicular bone, and upon the correspondent concave part of the flexor tendon; and so in other joints.

THE TREATMENT joint lamenesses require must be somewhat varied according to the particular joint affected, and to the circumstances of the individual case: there are, however, certain general principles of therapeutics applicable to all such cases, and it is with them our business at present lies. Inflammation being commonly detectible, though that is oftener sub-acute or chronic in its kind than acute, our treatment must in general, at the beginning, be of an antiphlogistic or cooling description. Blood-letting, topical when such can be practised, is not to be dispensed with except in slight cases, and in them even the neglect of it oftentimes turns out matter of regret. Bleeding from the toe, in all lamenesses arising from disease of any of the lower joints, is an excellent practice. The pastern veins are not so much worth notice, from the inconsiderable quantity of blood they too often emit, and from the time they are apt to take in emitting it; but the plat and femoral veins may, in case of lameness in any of the upper joints, often be opened with great advantage. A brisk purge—such a one as will take good effect without the aid of exercise—is highly recommendable; it will clear out the bowels, set the system in better order, and at the same time have some effect in abating the inflammation in the joint. As an application to the inflamed joint, nothing is so good, I believe, as some cold or refrigerant lotion, used with a linen bandage: water, cold from the pump, or made cold by ice, is in general to be preferred to

warm water; and the bandage made use of should be one of proper length and breadth, and of suitable material. Those we use are two yards in length, three-and-a-half inches in breadth, and made of Russia duck. Pains also should be taken in the application of the bandage. Every stable-boy thinks he can put on a bandage. There is a great deal of difference, however, in simply rolling a bandage round a horse's leg as a man would roll a hay-band round it, and applying one in a proper manner.

As soon as all signs of inflammation have departed, should lameness continue, the best of all applications is a blister upon the joint: indeed, in cases wherein the blister is not, or cannot be, applied immediately upon the diseased joint, but is to be put on at a distance from it, as in foot-joint lameness, it may be had recourse to *prior* to the cessation of the inflammation, nay, early in the complaint, so long as a good blood-letting or two has had the precedence. A blister we have much predilection for in these and many other cases is the *acetum cantharidum:* it can be neatly and cleanly applied with a paint-brush, and being, with warm water, four-and-twenty hours afterwards, sponged off, the sponging from day to day being continued, providing care be taken, little or no loss of hair will be sustained. Liniments, such as the ammonia, turpentine, &c., are by some practitioners employed: for our own part, we have not seen such benefit derived from their use as from that of the sweating blister. Indeed, when the case is of long standing, or one of relapse, nothing short of a full-strength blister need be applied.

One part, and that the most essential, nay, indispensable part of the treatment, still calls for mention, and that is, the *repose* of the affected limb; and the only way in which to such a patient as a horse we can secure this is, to put him into a state of absolute rest; to the carrying of which most desirable object into effect, a stall is to be preferred to a loose box.

Further; all we have to say is, that, in the treatment of joint lamenesses, both the owner of the lame horse and the veterinary practitioner in attendance upon him, ought to be in possession of the virtue yclept *patience:* they oftentimes turning out protracted and troublesome cases; and, moreover, such cases as will to a

certainty relapse into their former state of lameness, should the patient be taken too soon after convalescence to work, or even to exercise: therefore, let his state of repose be rather prolonged than abridged; for, should relapse be brought on, the second course of treatment can hardly be expected to prove so effectual, or at all events so effectual within a given space of time, as the first turned out.

## RHEUMATIC LAMENESS.

WE have asserted on the authority of our own observation and experience, confirmed by that of others, that the synovial membranes in the limbs of the horse occasionally become the seat of inflammation referrible to a *constitutional* source, the same as they are known to become diseased in man from gout and rheumatism; and from the ambulatory or erratic character of this inflammation, from the suddenness of its attack, and equal suddenness either of its departure or of its translation to another joint, we cannot find an epithet that appears to us so suitable for it as that of *rheumatic*. We were once asked by the colonel of a regiment of cavalry, if it were our opinion that horses were ever the subjects of "rheumatism;" for, added he, my veterinary surgeon is eternally saying that the lame horses brought to him are *rheumatic!* That our professional colleague—now, poor fellow, resting with his forefathers—was a little in error in pronouncing so many cases "rheumatic," we are afraid was not to be denied; but that horses are on occasions the subjects of rheumatism, or of some disorder too resemblant of it to so appropriately go by any other appellation, has long been our own opinion, and one, we hope to be able to shew, in the course of this discussion of the question, we have had tolerably good grounds for entertaining.

In the second volume of THE VETERINARIAN—that journal which has been the means of bringing to light so many facts before its time either in concealment or unknown—it was noted by myself, as has been already remarked, that a singular circumstance had occurred in the course of a case of pleurisy, and mention was made of it as follows:—

"On the 9th February (1829), on seeing her (the mare) walk

out, I found her halting exceedingly with the off fore leg: I examined it, and it proved to be *precisely similar to a sprain*, so that, had I been ignorant of its *spontaneous origin*, I should have called it 'a sprain in the back sinews'. I could not at the time, nor have I been able since to, account for it*." In the year following, viz. 1830, the late Mr. Castley sent a paper expressly on the subject of "metastasis of inflammation," to THE VETERINARIAN†, wherein, after observing, "we have all of us occasionally witnessed instances of what is called acute founder, or inflammation of the feet, occurring as a supervening consequence of severe or long-continued attacks of pneumonia," he goes on to say—"But I think I have more frequently observed a painful inflammatory affection of the tendons and bursæ about the back of the large pastern joint, appearing as a subsequent consequence in cases of this kind, and which is often confined to one leg only, but sometimes shifts from one limb to another. I am not aware that this circumstance has yet been noticed by any veterinary writer." The fact, however, had been noticed and recorded by myself, as I have already shewn, in the foregoing year.

Two interesting cases are brought forward by Mr. Castley in the paper alluded to; one well calculated to shew the erratic or metastatic, or, as we have regarded it, the *rheumatic* character of the disease; the other worthy our notice from the circumstance of its passing out of hand uncured. The cases are these:—

CASE 1. "A young horse belonging to the regiment (the 12th Lancers, stationed at the time at Brighton) had been suffering under a very severe and long-protracted attack of inflammation of the lungs: the case was for some time doubtful: ultimately, however, it seemed to be doing well, when, all of a sudden, the patient was seized with lameness in two legs (the near-fore and off-hind), but more especially the near-fore, where he evinced much pain, on the slightest pressure, over the back part of the pastern joint. Local bleeding and the warm bath were the remedies employed; and, on the third or fourth day, this affection as suddenly shifted into the two opposite legs; appearing, however, in a less violent form. A few days afterwards it seemed to leave the fore extremities altogether, and to fix itself in the two hind ones; then, in a few days more, it changed back again into the near-fore leg, where it first began, and there it ultimately ended; leaving, however, no bad effects behind. The horse perfectly recovered."

* VETERINARIAN, vol. ii, p. 283. † Vol. iii, p. 159, *et seq.*

Case 2. "A brown mare, six years old, and in fat condition, was admitted into the infirmary stables, Piers-hill Barracks, on the 16th of July last, with what might be called a smart attack of pneumonia, but which appeared speedily to give way to bleeding, &c.: the pulse and breathing had become tranquil, and there seemed to be nothing to fear. When horses are thus speedily relieved from an attack of this sort, I have observed they usually recover their appetite and spirits; and then those who have the care of them are extremely apt to indulge them with food too soon; the consequence of which is, sometimes, a relapse. I suspect this was the case here; for, on the third day after admission, we found the patient labouring under a very severe relapse, distressed breathing, quick pulse, cold extremities, great dejection of spirits, and total loss of appetite. Bleeding was repeated, rowels were inserted, the sides extensively blistered, laxative and diaphoretic medicines administered, and under this treatment the symptoms again subsided to a certain degree; still, at the end of a week, we had a quick, irritable pulse, almost total loss of appetite, and much constitutional disturbance. The patient continued in this state, with but little abatement, until about the fourteenth day, when we found her complaining very much of the off fore leg, resting the foot forward, or only pointing the toe to the ground, and sometimes holding it up altogether: she expressed much pain on being handled about the fetlock, but, as yet, there was no swelling in the part. We employed bathing, fomentations, and local bleeding, laxative medicines, &c.; but the leg seemed to get rapidly worse, and much swelling ensued, extending from the pastern to the knee. The mare now never put her foot to the ground, but absolutely hopped about the box. A quantity of blood was taken from the axilla, and large poultices ordered to be kept over the whole extent of the leg. The pulse now dropped to about 40, and the patient began to feed. Yet, notwithstanding an active treatment, the swelling and inflammation continued in the limb, with little abatement, until the middle of August, when it began slowly to subside.

"The treatment was often varied: cold applications, evaporating lotions, and, lastly, stimulants. By the end of August the inflammatory swelling was gone, leaving only a slight thickening of the leg, and a callous enlargement, of no very great size, over the tendons at the back of the large pastern joint; yet the mare seemed to make little or no use of the limb, walking, or rather hopping, upon the toe, and never putting the heel to the ground. During the month of September we had recourse to repeated blistering, with comp. tinct. of cantharides, essence of mustard, &c. &c. and with considerable relief to the lameness. The mare was then allowed to hobble about at liberty in the daytime, and certainly got a good deal better; but, being still very lame, at the half-yearly inspection, which took place on the 20th of October, was cast and sold, being considered unfit for further service."

In the course of the late influenza—which has, for the most part, assumed the form of *pleuro-pneumonia*, and in that form has proved most destructive to horses—during the concluding months of 1844, and the earlier ones of 1845, several cases of this erratic or rheumatic description have occurred. The lameness in general makes its appearance during convalescence, and is to be regarded rather as a favourable symptom than otherwise, no case having happened to us of death from the constitutional disease *after* its manifestation. The lameness, which is commonly both sudden and excessive, comes oftener in one of the *fore* limbs than in the hind: occasionally, however, it appears first in one of the hind legs; rarely, very rarely, in two legs at the same time. The part in which the local disease shews itself, accounting for the lameness, is either the sheath of the flexor tendon or the fetlock joint: we have never seen the disease in any other part; at the same time, we cannot give any good reason why these parts, to the exclusion of their fellows, should prove the seat of it. A puffy circumscribed tumour is felt upon the flexor tendons, about midway between the knee and fetlock, which, shewn to a veterinarian unacquainted with the history of the case, might, from its appearance, be pronounced to be the effect of sprain, or by any unprofessional person called "broken down in the flexor sinews." The tumour evidently contains fluid—is, in fact, a collection of synovia between the tendons, confined there, seemingly, by adhesion of the investing cellular tissue. When the fetlock joint is the seat of the disease, there is perceptible heat and fulness of the whole joint, with tumefaction and fluctuation of the sesamoid bursæ—evident *windgalls*, in fact. In either case, the disease assumes the appearance of what we are in the habit of calling *sprain* of those parts; nor should we, as we have before said, setting aside the knowledge of their history, be able by manual examination to distinguish one affection from the other. The ordinary duration of the disease, or of the lameness—for they come and go together—is from one to three weeks; rarely is its duration less than a week or so long as a month, and its common termination is in translation into another leg; from one fore leg into the other, or into a hind leg, or from one hind leg into the other hind leg.

Fever in the feet is another disease having on occasions a metastatic origin, and in this form its ordinary forerunner is pneumonia. It has, however, supervened on both bowel and brain affections, of which my father has made mention in a paper he sent to THE VETERINARIAN in 1829. And yet inflammation does not so frequently, I believe, fall from the thoracic organs into the feet as into the joints or bursal structures; and if fever in the feet may arise, as we have shewn it can, from other than pulmonary disease, the probability is that rheumatic inflammation may have other than pleuritic or pulmonary origin—may have, in fact, bowel or cerebral origin: though we must confess, for our own part, we have no cases of the kind to bring forward. Rheumatic lameness has, however, occurred under our observation at so remote a period after influenza or pleuro-pneumonia that we have felt at a loss to say whether the lameness was to be referred to the foregoing constitutional affection or not—whether, in point of fact, it might not sometimes have spontaneous origin, be a disease *sui generis*, or of an idiopathic nature. The following cases, of late occurrence*, will probably throw some light on the subject:—

Mr. T——w's charger, five years old, was seized on the 4th of February, 1845, with sore throat and fever, which in a few days proved to be but the precursors of a severe pleuro-pneumonia, at that time so prevalent. The horse suffered a good deal; but about the twelfth day experienced a change for the better, and a day or two afterwards commenced a course of tonic medicine to recruit his lost strength. One morning, a fortnight after the commencement of tonics, the horse was found halting exceedingly upon the off hind leg, the fetlock of which was swollen, and hot, and tender to pressure, and gave him so much pain in using it that when he was down it was with difficulty he arose upon his legs. Some aperient medicine was ordered, and a warm bath, and afterwards a bandage wetted with refrigerant lotion. Ten days after the appearance of this lameness, the horse was found as suddenly and unexpectedly to have become as lame in the near hind leg,

* We could find in our case-book several similar ones of old date; but prefer giving the above recent cases, conceiving these will prove sufficient to answer the end we have in view.

the off one having become completely restored, and the same appearances were visible upon it as had shewn themselves upon the former. In another fortnight the horse had become sound again, and as soon as his strength permitted him returned to his work, and is now in a stable close to my own at work daily, never having ailed any thing since*.

B 17, Troop mare, five years old, was taken ill with the same disease as Mr. T.'s horse, on the 23d December, 1844, and had the disease so sharply that for some days her life was considered in danger. On the 28th January, 1845, she being at the time in a state of convalescence, she fell lame of the off fore leg, evidently from rheumatic inflammation of the theca of the flexor tendon. Some aperient and diuretic medicine were given her, and she had a bandage and cooling lotion ordered for her leg. In about ten days afterwards she was found lame in the near hind leg, but now from inflammation of the fetlock, and remained so for another ten days or so, and then fell lame in the near fore leg. On the 1st of June she was admitted into the hospital again on account of similar lameness in the near hind leg, thus completing the round of all four legs, for which she continued under treatment for three weeks, and was again sent to duty. A week afterwards, on the 26th June, she came back, lame in the same leg, and was cured July 4th. A third time she fell lame in the same leg on the 12th August last, and went to duty August 18th, since which she has remained sound. There was no reason to suspect sprain or injury in this mare's case, from which circumstance, and from having had cases similar to her's, we ascribed the mare's lameness on every occasion to the same (constitutional) cause.

C 13, troop mare, five years old, was attacked with the pleuro-pneumonic epidemic on the 22d January, 1845; had the disease less severe than the foregoing two, and was discharged on the 24th February, apparently cured: was admitted again on the

* Four months afterwards, and this horse has returned to us, again lame, but now in the off fore fetlock joint, which is swollen much, and is hot and tender. Whether this has arisen from injury or from some remnant of his former complaints we cannot positively say: we suspect the latter. At all events he is now—14th Sept.—sound again.

12th March, for a relapse of her pulmonary disease, and went out, convalescent, on the 25th of the same month. On the 14th April she came under treatment for lameness in the off leg, looking like an attack of rheumatic inflammation in the fetlock joint, which was in three days afterwards removed, and she went out again. On the 15th July she fell lame in the near hind leg, apparently from a similar cause, and was again cured on the 21st July. She, however, had a relapse in the same joint on the 26th proximo, but which was removed by the 29th. Again, on the 16th August she was attacked with lameness in the off hind leg, evidently attributable to inflammation of the fetlock joint, in my opinion, of a rheumatic character, for which she continues at this time (the 21st August) under treatment, though so much better as to afford every prospect of her leaving the infirmary stable at the expiration of a few days hence.

C 24, troop mare, six years old, was attacked with the same (epidemic) disease on the 26th April, and left the veterinary surgeon's list May 28th, 1845. On the 3d June she fell lame in the near hind leg, and was cured 28th June. Again she fell lame on the 5th August; but now in the off hind leg, the fetlock joints, on both occasions, evidently being the seat of her complaint. She is also (at the time this is being written) still under treatment.

The following case, kindly furnished me by Mr. W. A. Cherry, will throw more light still upon this uninvestigated though highly interesting subject:—

"In the autumn of 1841, I was requested to see a chestnut gelding, five years old, belonging to a gentleman-farmer, who, two days before, had ridden the horse to a fair, a distance of twenty-five miles, and, after standing about, had ridden him home at night in a drizzling rain. It appeared that the horse had had a cold for a few days before this, but which was not considered sufficiently severe to prevent his being ridden as before stated. When I saw the horse he was evidently labouring under an attack of rheumatic fever. The general affection yielded to mild antiphlogistic treatment; but in the off hind limb the disease seemed to become aggravated, and was evidently seated in the hock joint, indicated

by the increased heat as well as by the manner of progression. The near limb was also similarly affected, but in a considerably less degree. I should have observed, that from the commencement these limbs shewed symptoms of being affected. In the course of a few days the disease in the off hock decreased, but became aggravated in the near; the symptoms now being, tumefaction, principally on the inner side, heat, tenderness on pressure, and diminished mobility of the joints. By degrees, the hind limbs, which had originally been rather straight than otherwise, became bent, and the croup of course drooped. Rest, physic, fomentations, bleedings from the feet, blisters, were all tried, with but slight benefit. The joints were now evidently organically diseased, and nothing short of the most violent counter-irritants promised mitigation. In this state the animal was disposed of to a party in the neighbourhood, and he again became a patient of mine. After giving the same opinion to the new as I had done to the former owner, viz. that I must consider that there was little, if any, chance of useful recovery, it was decided that strong measures should be adopted. Accordingly, I passed three long setons around each hock joint, which produced an enormous discharge, and very considerable mitigation of the lameness: these were kept in as long as possible. When the hocks had sufficiently recovered, I proceeded to the use of the actual cautery with as great a degree of severity as I considered justifiable, and of the strongest blisters, and which were repeated several times. The hocks were, of course, very much blemished; but from this time a very slow improvement went on: at the end of about a year from this very violent treatment, and more than a year and a half from the commencement, the animal was so far improved as to be fit for some kinds of work. The external enlargement of the joints had subsided, but they never recovered their original uprightness. The horse continued under my observation for a few months after this period, but I did not perceive any great change; and I doubt if the disease of the hock joints would not return if put to fair work. I consider this to have been a disease dependent upon a rheumatic diathesis, evolved by over-riding. I have met with a few

instances of a similar nature, but not going to the same violent extent: perhaps, because the animals were not exposed to such a violent exciting cause."

METASTASIS OF RHEUMATIC INFLAMMATION ON THE HEART. A striking instance of this occurred in my own practice; had it not been for which, so rare must the occurrence be considered, that I hardly know where I should have looked for a parallel case, to establish this point in hippopathology, had I possessed any reason to suppose such a translation of disease ever took place in the horse. The mare died of disease of the valves of the heart, and her case would have been set down as one of *primary* cardiac disease, had not, quite by accident, her hock joints been subjected to dissection. Both the joints were found to be highly diseased. Their cavities were distended with synovia of a deep amber-yellow colour, the fluid from one of them, actually collected, measuring an ounce and a half. As it stood in the glass, the synovia appeared loaded with flocculi of albumen; a redundance of which substance was fully demonstrated by addition of nitric acid, that throwing down a copious creamy-white precipitate. The internal surface of the capsule of the joint was covered with effused lymph, which presented the same tinge of colour as the amber-coloured synovia. And not only were the hock joints in a state of disease—though they were most so—but other joints were found exhibiting similar aspects; even the synovial sheaths shewed marks of it. And there existed no doubt, pondering on all the circumstances of the case, that the arthritic disease was consequent on an attack of influenza, and that the morbid changes in the heart, which proved the occasion of the mare's death, had occurred through metastasis. The full particulars of this very interesting case will be found related in THE VETERINARIAN for January, 1846.

*Inflammation of the Joints in Sucking Foals.*

There is a paper in the RECUEIL DE MÉDECINE VÉTÉRINAIRE for March 1828, by a M. Benand, then a veterinary surgeon at Boulogne, giving an account of a disease of the joints of foals, consisting in a sudden attack of inflammation, soon after their dams are taken again to plough; the joints commonly affected being the knee and fetlock before, the hock and fetlock behind, and the disease in some cases proving fatal. M. Benand ascribes it to some change the milk of the dam undergoes through her being taken to hard work. "For the first day or two," says M. Benand, "there is nothing to be seen or felt; but about the third day both heat and tumefaction become apparent. And now the animal is constantly lying down, being unable to bear any weight upon its limbs. Loss of appetite, fever, and dyspnœa, follow. And although about the fourth or fifth day the local inflammatory signs abate, it frequently happens that about the sixth day the colt dies from metastasis of inflammation either upon the lungs or bowels."—"The disease," adds M. Benand, "evidently originates from the mare. Should one of her foals have it, those in succession will rarely escape, unless suckled by a mare free from the contamination."

This paper of M. Benand's, which was transcribed into the first volume of THE VETERINARIAN four years afterwards, received confirmation from the pen of Mr. Pritchard, veterinary surgeon, Wolverhampton, who (in the fifth volume of the same journal) wrote a fuller and highly interesting paper on the subject, from which we shall take the liberty here to make an extract.

Mr. Pritchard informs us he has "several times witnessed the destructive affection;" that "the joints are attacked with acute inflammation, which, by metastasis, moves from one joint to another, and from one limb to another;" and "thinks, with M. Benand, that it arises from colts sucking the mares when they return from work*; from some change in the milk, probably produced by

* *Query.*—Did these foals run with their dams at work? and, if they did, had this unnatural or forced exercise of their tender joints any thing to do with the production of inflammation in them?

the exertion of the animal keeping up, for several hours together, increased action in circulation."

Never having had an opportunity of making any observations on this formidable disease of the joints of the young animals, we can do no more than refer such of our readers as may desire farther information to Mr. Pritchard's instructive paper (in THE VETERINARIAN for 1832). We have introduced the subject here because we think it comes fairly under the heading of *rheumatic inflammation* of the joints; of which, in point of fact, as it appears to us, it is a form peculiar to foal-hood.

## *Ulcerative Disease of Joints.*

As far as our observations have hitherto gone, there would appear to be three different kinds of inflammation of joints; viz. 1, that which is the result of what goes by the name of "an open joint," to which, for distinction's sake, we may apply the epithet *traumatic;* 2, that which we have called *rheumatic*, or *metastatic;* 3, that which is prone to take on the character of ulceration, and from that circumstance may be denominated the *ulcerative.* Having considered the two former, our present affair is with the latter.

In their investigations into the causes and nature of lamenesses there was between the old and modern school of farriery this essential difference;—that while the farriers, for the most part ignorant of anatomy and physiology, confined their observation to the external changes or alterations of parts, veterinarians, brought up in a knowledge of those sciences, have extended their inquiries into the internal structures, and have there made discoveries which, although their existence might have been casually known to some of their professional ancestors, were certainly not by them, as by us, connected with the ordinary causation of lameness. So long ago as the year 1828, Mr. Jas. Turner, veterinary surgeon, of Regent Street, London, discovered the cause of what is called "groggy lameness," to be ulcerative disease of the navicular joint; and in the year 1830, Mr. Goodwin, veterinary surgeon to her Majesty's establishment, made a similar discovery in regard to spavin; and

both these discoveries were made known through papers published in the second and third volumes of THE VETERINARIAN, to which we shall have occasion to draw the especial notice of our readers when we come to treat of those diseases in detail. Our intention at present is to make a few observations applying to ulcerative disease of joints in general, as being one of the most frequent, the most grievous, and the most irremediable causes of lameness.

It has frequently happened that a horse has been known to be lame, and lame too for a great length of time, and yet nothing unnatural to be detected either by the hand or by the eye in the lame limb: at one time he goes better, at another time worse—seldom so lame as not to be able to do some work; and often, on that account, being worked on until he becomes lame to that degree that, for shame's sake—if not from humanity's—his master cannot use him any longer: in which condition he is either submitted to some veterinary surgeon for treatment, or else shot as being no longer useful, or as being from neglect reduced to a state past redemption. The animal is destroyed, his lame limb examined, the joints of it dissected, and within their cavities marks of ulceration discovered. The secret is unravelled; the horse went lame from ulcerative disease of his joint. The natural inquiry to the mind of the discoverer now is, how came this ulceration here?—what is the history of it?—what the cause of it—the effects of it?—and what could or might have been done by way of cure or mitigation of it? information all leading to instruction how such cases are to be detected, and how they ought to be treated.

THE PRODUCTION OF ULCERATION may happen in one of two ways: it may either be the effect of bruise or breach of the synovial membrane, or the consequence of inflammation excited in it. With a view of bringing to our aid in the solution of these interesting questions any observations afforded us by practice that bear upon them, let us make mention of some notorious enough to shut out all doubt as to their application, whatever difference of opinion any theorization upon them may give rise to. One of these facts is, that the ordinary seat of lameness arising from ulcerative disease in the fore limb is the *navicular joint*, in the hind limb the *hock joint*. Now, these are both joints likely in an

especial degree to experience the effects of stress of work and concussion. The navicular joint, totally unable of itself to bear the impress of weight of the body, is constructed upon that spring-like contrivance that enables it to play up and down—descend and ascend—according as the weight presses hard upon it or not: its spring constitutes its defence against concussion; and any thing that checks, arrests, or interferes with the action of that spring, subjects it to injury, to bruise, to breach, even to fracture. Again, in regard to the hock, that is the identical joint through whose operation the grand work of progression is carried on: no wonder, therefore, that it should prove out of order oftener than any other of the hind joints, or that we should so often discover ulceration in it. Both in the navicular and hock joints, therefore, have we great cause to look for that which is likely to injure the synovial membrane, or at all events excite inflammation in it. The question is, is the ulceration a consequence of inflammation, or does the inflammation follow the ulcerative disease?

A fact that appears to us to throw much light upon this question is that of articular lameness in many instances manifesting itself "all of a sudden." A horse, never lame perhaps in his life, shall leave the stable in his ordinary state of perfect soundness, and while out drop suddenly lame, and from that moment become and continue a lame horse, without there being to the observation of his master any thing whatever to account for his lameness. Can such a lameness as this—known from experience commonly to prove articular—arise from inflammation? Can inflammatory action have set in *all of a sudden?* What, then, seems the feasible way of accounting for his lameness, assuming it to be in the joint, most likely either the navicular or hock? Why, that bruise or breach or solution of continuity of the synovial membrane has taken place, and that this is followed by ulceration and by inflammation. If the horse be examined *immediately* after lameness has befallen him, the suspected joint or foot will feel cool—as free at least from any extraordinary heat as the fellow one in the opposite fore or hind leg: four-and-twenty or eight-and-forty hours afterwards, however, heat becomes detectible, inflammation has set in, and all doubt as to the locality of the seat of lameness is dispelled.

Supposing the lame horse to be laid up on the discovery of his lameness, it very often happens that after two or three days repose he comes out of his stable going much less lame, all but sound perhaps: the inflammation that supervened on the injury to the synovial membrane, generally of the sub-acute character, has in this instance proved a mild attack, and in reality has tended rather to the animal's benefit than otherwise; has probably nearly or quite healed up the breach made in the membrane, and so enabled the horse to go comparatively painlessly. A very little, however, must be expected to open the breach again, filled up as it is only by lymphy effusion; and so in practice we find it, for let the horse be taken out again only but to exercise, and his lameness will surely return.

When the lameness comes on gradually, and insidiously rather, as sometimes it does, appearing at first so slight as to incline us (from an unwillingness, perhaps, to see any failing in a favourite) to doubt of its existence, we apprehend that the injury to the joint has been such as to excite inflammation of a mild character in it, without at once being productive of ulceration in the membrane. Of course, a repetition of injury will excite more inflammation, and that will produce more lameness, and there will speedily be ulceration following: the case, in fact, although its origin has been different, will be reduced to a parallel, in point of pathological nature, with that whose beginning was sudden.

The effects of this (sub-acute) inflammation on the synovial membrane are these;—either aggravation of the breach originally made in the form of ulceration, or the production of ulceration where no breach has existed. But this ulceration does not appear to be productive of any (or of but extremely little) purulent secretion; else we should at times see abscess of the joint during life, or collections of purulent matter after death, which we know never to be the case. There appears a decrease in the supply of synovia, while in the ulcerations there is an evident tendency to throw out lymph, as if to granulate. After the inflammation a softening takes place of the articular cartilages, deep into which the ulceration has sunk, and which, in point of fact, has been its bed or bottom from the commencement. Ulceration and softening of the

articular cartilages is followed by caries and softening of the ends or articular surfaces of the bones, the result of which is—inflammatory action in the meanwhile being aroused in the surrounding ligamentary and fibro-cartilaginous tissues—anchylosis, partial or complete, and destruction, at least for any useful purpose, of the motions of the joint.

THE LAMENESS consequent on ulcerative disease of joints is found to be, as indeed might be expected, greater at one time than at another. There are reasons for this. In the first place, it must be remembered that the synovial membrane—that part of it at least which is reflected upon the articular cartilages—is not in health a very sensitive part, whatever it may be in a state of inflammation or of ulceration; and in respect to ulceration, it must also be remembered, that, although its commencement is certainly in the membranous tissue, the cartilage becomes its veritable bed—soon, indeed, its all but exclusive seat; and the articular cartilages, we know, of themselves possess little or no sensibility at any time. When once caries of the bone, however, commences, again does the case, so far as lameness is concerned, change its nature; bone being, in a state of disease, a sensitive structure. The grand or chief producer of lameness would appear to be the inflammation present. In the case of a recent injury, so long as the breach was fresh, and was confined chiefly to the synovial membrane, we believe that lameness, slight in degree, would ensue: we are not sure, however, that this lameness would be shewn—certainly not to the same amount—when once the ulcerations had made the cartilage their bed, and, in the absence of all inflammatory action, either in the synovial membrane or in the bone; for, as for the articular cartilages, it is very doubtful whether they, of themselves, be susceptible of any such interstitial action as inflammation.

Consideration of these phenomena, connected with health and disease, will best guide us through those mazes in practice in which we find ourselves so frequently called on to give opinions as to the probability of cure, and as to the likelihood there appears of that cure being permanent. The grand point for the veterinary surgeon to arrive at, is the actual morbid condition of the joint he is called on to treat: whether inflammation be present or no, and

in what stage or form; what is the probable nature of the ulcerative disease; to what extent it has proceeded; whether the case be a first, second, or third attack; what amount or kind of work the horse has been doing, his age, &c. Inflammation will always be best met by abstractions of blood as nearly topical as they can be practised, and blood-letting is rendered doubly effective in those joint-cases when it is followed up by sharp blistering over the entire surface of the joint, or as near thereto as is possible. Rest —absolute rest—is an adjunct all but indispensable to the medical treatment; and, in general, great and permanent benefit in the end is conferred by turning the horse out into a strawyard with a soft and mucky bottom: cold, increased by wet, being a great restorative to a joint rendered lax and weak by long-standing disease.

By way of appendage to the subject of "ULCERATIVE DISEASE OF JOINTS," we would say a few words in explanation of certain appearances which there is, we believe, little doubt, have on more than one occasion been set down to the account of *ulceration*. It cannot fail to have struck any person in the habit of dissecting joints, that frequently excavations are seen in the articular cartilages, as though portions of them had been chiselled out, and that such appearances, simulating ulceration, are met with quite as frequently in sound joints as in unsound ones. The hock joint, more than any other, is notorious for presenting such excavations: in it they occur in these situations:—one of tolerably large size in the middle of the groove running between the condyles of the astragalus; another somewhat less upon the opposing surface of the middle projection of the tibia moving in this groove; and a third, still less in dimensions, is often to be found at the anterior extremity of the said groove of the astragalus. These excavations are distinguishable from caries or ulceration of the cartilage—First, by the absence of all signs of inflammation;—by being, on the contrary, found in joints displaying every aspect of health. Secondly, by their surfaces, instead of having an asperous feel, giving the finger, as it passes over them, the sensation of (though the surface may feel uneven) having had all its asperities rubbed off or worn down by friction. Thirdly, the cartilage or bone constituting the floor of these pits or hollows is found to have acquired

a shining hardness and solidity of structure remarkably different from what is seen in caries or ulceration; and from this circumstance has it acquired the denomination of *porcellaineous deposit.* For my own part, however, I do not look upon it as any "deposit" at all; rather, that there has been *absorption:* at the same time, no doubt, there has been a transmutation of the substance remaining into firmer and harder material.

Were we asked what occasioned this absorption, we should answer, *pressure combined with friction;* and add, that the hock joint is the especial seat of these excavations, owing to the circumstance of its being the joint most of all exerted in progression. We look upon their presence as *fortuitous;* for they are not to be seen in *all* hock joints, and in some that are bone-spavined, even, are absent: nor can we, for our own part, see any use they serve, or any inconvenience they give, by their presence.

## *Ossific Disease of Joints.*

The epiphyses of bones, entering into the formation of joints, are frequently found encrusted with adventitious deposits of osseous matter, much augmenting their volume, and altogether, in many cases, altering their original shape; and these crustaceous bony deposits have their origin, commonly, in inflammation, chronic or acute, of the periosteal coverings of the epiphyses: we say "commonly," because it would appear that such changes of structure, and additions to it, do now and then take place without *any* precursory or accompanying inflammatory action, at least without any that is discoverable through outward signs. There is a very remarkable propensity in the horse's economy to what is called *ossific action:* an injury of any kind—a blow or kick, contusion or wound—to the periosteum, exciting inflammation in it, is almost certain to be followed by exostosis. Inflammation—or even increased arterial action—excited in the same tissue by other causes, will give rise to similar conversion of it into bone. The same observation will apply to the elastic fibrous tissue uniting the small supplementary bones of the limbs to the shafts of the large straight bones with which they are articulated, the union being

of a nature that warrants the appellation of *joint;* so that here is an example, and a very common one, of ossification of a joint. In fact, ossific disease commonly has its origin and nidus in one of these two fibrous tissues—the periosteal or the fibro-cartilaginous; and may, as was said before, be the result either of inflammation springing up in its own proper substance or spreading into it from some contiguous tissue.

From the circumstance of our finding these adventitious osseous deposits for the most part in the vicinity of joints, as well as from the fact of their being often associated with disease in the cavity of the joint, we learn to regard these two affections—the ossific and the ulcerative—as, to a certain extent, correlative or consequent one upon the other; nevertheless, on occasions, one, certainly, shews itself in a solitary and independent form. The following case of recent occurrence is well calculated to demonstrate the connexion between periosteal and synovial disease, and their dependence one upon the other.

October 25th, 1845, Mr. A's bay gelding, while being led out for exercise, alongside of another horse, received a wound, trifling in appearance, from a kick, upon the upper part of his near arm, which, at the time, bled rather freely, but did not cause lameness. The arm was fomented, and a dose of physic given next morning, during which day, on account of its being Sunday, he was not taken out to exercise. On the third day (Monday) he was led out, the physic requiring that he should be moved. There was now some trifling discharge from the wound, and a little stiffness on motion. The medicine operated well, and the fomentation was persevered in with unusual diligence, the owner being anxious about his horse, and all went on so well that on the seventh day from the accident the animal was taking his exercise as usual by the side of another horse.

On the 4th November (the eleventh day from the accident) the groom perceived the horse walking lame on his return from his accustomed exercise, and, becoming alarmed at this unexpected relapse of lameness, brought the patient to me. This was the first time I had seen him. It struck me at the moment that the wound, which was still issuing purulent matter, was directly upon the

bone, and the circumstance led me to make the remark, that it was possible there existed some fracture. At this the owner smiled in evident disbelief; for, although lame, the horse used the leg too well to admit for a moment the idea of his limb being "broken." From this time, however, I had him confined to his stable; and though under treatment, both constitutional and local, which commonly succeeds in cases of the kind, he daily grew worse. The arm took to swelling very much, and the discharge, which was at first purulent, became, on the third day after his confinement—the fourteenth from the attack—of a synovial character, shewing that the shoulder joint had become opened, although a silver probe introduced could not be made to enter it, but appeared to abut against the outer condyle of the humerus. Every means the case would admit of, without risk of further injury, was employed to detect fracture, and every now and then *crepitus* was distinctly heard; and yet, that no main shaft of bone was broken was evident, from the fact of the animal being able (when made to do so) to stand and bear his weight upon the limb, and to walk upon it. Indeed, on one occasion, when thrown down by the accident of the slings giving way—into which he had been put at the urgent desire of his owner—he actually raised himself up upon his lame limb. Every thing failing to afford relief, and his local malady having by this time, in addition to the enormous tumefaction of limb it had caused, aroused alarming constitutional irritation, it was deemed imperative, for humanity's sake, to put an end to the poor creature's sufferings. On the 7th December —the forty-third from the day he received the injury—he was shot.

Examination of his limb shewed a fracture of the external condyle of the humerus; and splinters of bone, broken off its side, were found, in fragments, lodged in the soft parts surrounding the condyle. A sinus was discovered leading from the wound into the cavity of the joint, which the probe had failed to find out. There had been for some days before death a diminution in the quantity of the discharges, owing to their having, through gravitation, burrowed underneath the faschia, among the muscles of the arm. The synovial lining of the joint presented spotty blushes of red

in patches, and along the middle of the groove, running between the condyles of the humerus, to the extent of an inch and a half, existed *ulceration through the substance of the articular cartilage.* What, however, constitutes a remarkable feature of this post-mortem account, and what is of more consequence to us in our present inquiry, is, that from the surface from which splinters of bone had been detached, a crop of soft granulations—of *callus*—was seen springing up, which, in a short time, would have become converted into bone; and upon the bone in front, *above* the attachment of the capsular ligament, appeared a ridge of new formed matter, becoming osseous, running obliquely downward towards the inner condyle, from the superficies of which were sprouting similar granulations.

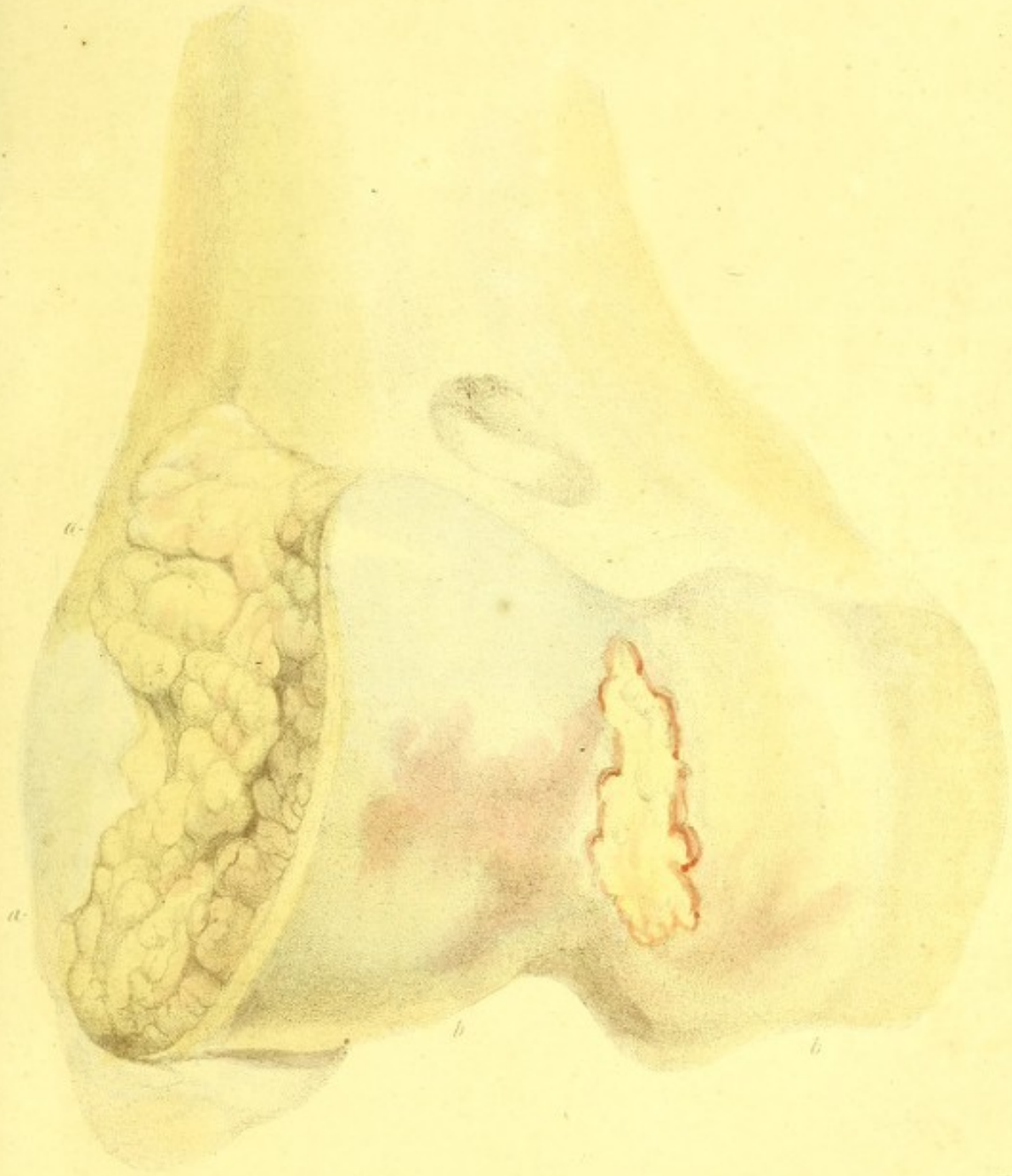
The value of this case to us consists in the connexion of the appearances inside with those outside of the joint, and in the period of time these respective morbid changes were known for certain to have taken place: it being fairly assumable that all parts, before the accident—the horse being but three years old—were in the most perfect health. That the joint could not have been opened by the wound is evident enough; nor was any discharge of synovia apparent until after the elapse of a fortnight from the commencement of the case; so that the morbid alterations within the joint may be said to have occupied a month, or to have been of some such duration. Those, however, exterior to the cavity of the joint may have earlier date affixed to them: granulations, no doubt, commenced growing from the fractured side of the condyle immediately after the setting in of inflammation, and the natural inference is, that the same inflammation which seized the broken condyle, spread itself upon the capsular ligament, and thence into the cavity of the shoulder joint, as well as upon the periosteum covering the epiphysis of the bone; in one case causing opening of the joint, in the other the conversion of the fibrous tissue into bone.

These are observations that will serve us as *data* whereupon we may safely ground our theorizations on certain phenomena which present themselves in such diseases of joints of spontaneous—or apparently spontaneous—origin as resemble those

# PLATE VI.

## ULCERATIVE DISEASE OF THE SHOULDER JOINT, THE RESULT OF INJURY.

PLATE VI. This Plate represents the lower extremity of the os humeri of Mr. A.'s horse, whose case is given at pages 52-4. It will be observed, that the outer articulatory prominence (*a*, *a*,) has its border and sides covered with pale granulations, sprouting from the surfaces which sustained the injury, and which thereby had become splintered; fragments of bone having been found, *post mortem*, among the contiguous soft parts. The broad trochleated articulatory surfaces of the bone (*b*, *b*), exposed to view, present here and there patches of redness, especially remarkable upon the tumid border of the articular groove running between them. Occupying the middle portion, however, of the groove itself, extending along it to the length of an inch and a half, and the breadth of half an inch, is an irregular patch of ulceration, which has penetrated the substance of the cartilage, down to that of the bone; from which latter is seen, springing up, a crop of pale granulations. This circumstance, viz. its granulative condition, denotes the *recent* character of the ulceration: in other respects, the ulceration has all the character of that which is the accompaniment of acute articular spavin, &c.




Inflamed & Ulcerated Condition of the Lower end of the Humerus from External Injury.

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arising from external injury. In spavin, for example, we have disease within the hock joint, and disease without it, the same as we have in several other joint affections; and it becomes necessary for us in all such cases to understand the connexion between the internal and external disease, and how either may exist independently of the other. There are few subjects that, heretofore, have had less attention paid to them, and consequently whose real nature has been less understood, than lamenesses arising from diseases of the joint: every year of the present age, however, is adding to our knowledge of them; so much so, indeed, that we may safely predict that lamenesses hitherto classed as "obscure" in their nature, will in a few years become readily explicable by us. And this will be accomplished by observations such as are afforded us by cases we have had opportunities of watching in their progress from their beginning to their very end.

CONCERNING THE FORMATION OF NEW BONE, Dr. Watts, from a close and critical observation of four cases of injury and disease of bone, has come to the following conclusions:—

"1st. That the theories alleging that new bone is formed only by living parts of old bone, in cases of necrosis and fracture, are incorrect."

"2d. That the periosteum has evidently the power to produce new bone of itself, without the aid of the old bone."

"3d. That the formation of new bone by the periosteum consists, at first, in the deposition of osseous matter in the form of a fine microscopic network; and therefore, that the Haversian canals are only a secondary, not a primary, osseous tissue."

4th. That in cases of necrosis and fracture, the process of reproduction of bone by the periosteum is the same*.

FOR THE CAUSES OF BONY FORMATIONS, in the horse's limbs at least, we must not look to inflammation alone. It has been brought under observation before, that the horse's economy is such as is peculiarly susceptible of action tending to such formations; to which may be annexed the fact, of our constantly meeting with exostoses, of various descriptions, in young unbroke horses—

* Edinburgh Med. and Surg. Journal.

colts that have never had even bridles on: we find splents, and spavins, and ringbones, &c. in subjects by whom no kind of work or exertion has ever been performed, and in places where inflammation, in no palpable or detectible form at least, has ever made its appearance. The tissue that becomes in the generality of these youthful subjects converted into bone, is that which constitutes the uniting medium between the small and large metacarpals and metatarsals, and between the ulna and fibula and the long bones to which they are respectively attached. All these bones sustaining whatever weight happens to be thrown upon them through the strength of their attaching substances—they having no resting points below—it appears to us like one of those beautiful provisions of Nature we have so much reason to admire on other occasions, to change this uniting tissue, whenever it is found inadequate to the resistance required of it, into bone, and thus enable the attached and now immovable bones to sustain additional force or weight. Whether this be or be not the true interpretation of Nature's proceedings, it is certain that, as adult age approaches, all these *epiphyses*—as they may almost be looked upon—become *apophyses*, or neither more nor less than so many genuine processes or protuberances.

If Inflammation be not the proximate Cause, what is the cause of these conversions of soft tissues into bone? We have no right—as was said before—to argue the presence of inflammation in the absence of every sign by which we are able to recognise it. At the same time we can very well imagine—in fact, we believe—that any undue stress upon the tissues in question proves the occasion of augmenting their vascular action, and that the effect of this is the commencement of a change of fibrous or fibro-cartilaginous tissue into osseous substance. According to Dr. Watts, it would appear that the ossific action had its commencement in the periosteal covering of the part, and from that extended inward: whether this be the case or no, it is notorious enough that the ossific operation does not cease until, besides uniting the branch to the trunk bone, it has produced a tumour—an *exostosis*—to which we, in conformity with custom, give the name of *splent, spavin, ringbone, &c.*, according to the part upon

which it is found growing. When horses, however, come to be worked, to have their joints sprained or otherwise injured, the inflammation consequent thereon, *is*, as has been already shewn, the ordinary precursor of exostoses occurring upon them, or in their immediate vicinity.

EXOSTOSES OCCASION LAMENESS OR NOT, according to the condition, inflammatory or not, of the nidus of *callus* in which they are forming, as well as the condition, stretched or inflamed, of their periosteal tunics. In general, we know that horses do not go lame from splents; we also know that bone spavin, frequently, of large size even, is present without occasioning lameness. On the other hand, simply a "knot" in the spavin place now and then evidently causes lameness. All this, we repeat, will depend upon the condition, at the time, of the callus and of the periosteum; though in the case of spavin in particular we must take likewise into consideration the interference of the tumour with the action of any tendon or joint, as well as any participation of the latter in the diseased action. The extreme soreness which now and then is manifested by horses whenever exostoses of which they are lame are felt or pressed, arises from an inflamed and morbidly sensitive state either of the callus or of the periosteum, or of both.

THE TREATMENT OF OSSIFIC DISEASE OF THE JOINTS will be best considered under the respective heads of particular lamenesses arising therefrom. We shall find it a form of disease which, so far as joints are concerned, is, as we have before observed, frequently complicated with ulceration of the articular cartilages; which consideration it is that has induced us to take *general* views of both diseases before we proceed to treat of their special forms, under the appellations of spavin, navicular-joint disease, knee-joint disease, &c.

## SPAVIN.

THE DERIVATION of our word *spavin* is involved in some doubt. Blundeville, whose definition of it is perfectly unequivocal, calls it "the spauen," and informs us that the Italian name for it is *spauano* or *spauanagno**. In Spanish it is called *esparavan*†. Of our own lexicographers, one derives it from the Greek σπάσμα, or from the Latin *spasmus* ‡;—the catch-up of the spavined limb in action being regarded, it would seem, as *spasmodic* :—another from the old French word *espavent*‖, the modern French name for spavin being *éparvin ;* while a third derives it either from the French adjective *épars,* or from the Latin one *sparsus*§, so called from the spavined horse being supposed to go with a *straddling* gait.

Shakspeare has introduced the word into two of his dramatic pieces. His fantastic description of the nag upon which "the mad Petruchio" was seen coming to claim his bride, will never be forgotten :—

————"His horse hipped with an old mothy saddle, the stirrups of no kindred : besides, possessed with the glanders, and like to mose in the chine; troubled with the lampas, infected with the fashions, full of windgalls, *sped with spavins,* raied with the yellows, past cure of the fives, stark-spoiled with the staggers, begnawn with the bots; swayed in the back, and shoulder-shotten."

Again, in his play of Henry VIII, the bard has used the word in his caricature account of the gait some English gallants had acquired by their travel in France :—

"One would take it,
That never saw them pace before, *the spavin*
And springhalt reigned among 'em."

* The four chiefest Offices belonging to Horsemanship, &c. &c. By Master Blundeville. 1608.

† Diccionario de la Lengua Castellana. *Madrid,* 1732.

‡ Skinner and Lemon.

‖ Johnson, Todd, and Richardson.

§ Thomson's Etymon of English Words. *Edinb.* 1825.

THE DEFINITION of spavin, casting away all old and fanciful notions about the disease, ought in propriety to be one consistent with our present improved state of pathology. For a definition in accordance with the commonly received or popular ideas of spavin—with, in fact, what we actually *see* of the disease—we can hardly have a better than Blundeville's :—" Spavin is a great hard knot, as big as a walnut, growing in the inside (meaning *inner* side) of the hough, hard under the joint, nigh unto the maister veine, and causeth the horse to halt." Defining it to be "an exostosis" or "a deposit of bony matter" upon the inner side of the hock, as our modern writers in general have done, is surely little improvement on Blundeville's definition.

Unfortunately, spavin is one of those appellations in our veterinary nosology which has not only been applied to diseases of opposite natures, but has received different interpretations from different writers: thus, Blundeville has one chapter treating " of the drie spauen," another " of the wet spauen or through spauen;" whereas Solleysell makes the dry spavin synonymous with string-halt, calling the bone spavin, *ox spavin*, " because old oxen are commonly subject to it, and have it extremely big." In our own day we are constantly hearing of *bone spavins*, *bog spavins*, and *blood spavins*. Well might Hurtrel D'Arboval say—" La science vétérinaire plus qu'aucune autre, est encore embarrassée d'un patras indigeste de mots insignificans ou impropres, inutilement employés les uns pour les autres, et une judicieuse réforme à cet égard est vivement desirée." For my own part, I would fain discard the word *spavin* altogether from our nosology, and in its place introduce some appropriate names for the three or four diseases it at present is used to denote: such however is the attachment for old or received appellations, such the prejudice against new ones, that I must confess I lack courage to embark in so ungracious an undertaking. One thing, however, I must do, and that is, circumscribe the meaning of the word *spavin*, whenever and wherever I may make use of it, to that disease of the hock commonly called *bone spavin ;* in which sense, that I may render my definition at once sufficiently comprehensive and characteristic,

I DEFINE SPAVIN TO BE, an *exostosis* of the hock, commonly located and detectible on its inner side, whereby bones before move-

able become cemented and fixed together, and which is sometimes productive of caries of the articular surfaces of one or more of the joints of the hock.

THE SITE OF SPAVIN is the antero-inferior part of the inner side of the hock, immediately beneath the prominence of the joint below. Why spavin should grow upon the *inner*, and never—or but very rarely indeed—upon the outer side of the hock, there are two satisfactory reasons:—one is, that the inner sides of the limbs are nearer to the central line of gravity than the outer; the other, that, from the arrangement of the cuneiform bones, the hock joint is so constructed that the inner metatarsal bone is impressed by the superincumbent weight more forcibly, and consequently is compelled to yield or descend to a greater degree, than the outer bone. Such a phenomenon as a spavin on the *outer* side of the hock is all but unheard of: I am not saying it never occurs, nor indeed am I quite sure it would be called a spavin if it did: when any thing of the kind does happen, it is commonly the result of injury. Solleysell mentions something of the kind, and calls it a *jarde* or *jardon*. Many years ago, a horse was admitted into the Royal Horse Infirmary, at Woolwich, for a spavin growing directly *upon the front of the hock*, opposite to the joint between the lower cuneiform bone and large metatarsal. The tumour was not distinguishable in the ordinary side-view of the hock, nor was there any tumefaction whatever in the usual situation of spavin. Spavins may present themselves simultaneously in *both* hocks: commonly, but one hock is affected, and I do not know that either in this respect manifests any preference over its fellow. Sometimes, after spavin has run its course in one hock the other will become affected.

## *Causes of Spavin.*

These I shall consider under the heads of *predisposing* and *exciting*:—

PREDISPOSITION TO SPAVIN may be either *constitutional* or *local*: in the former case, lying in breed or constitution; in the latter in some peculiarity in the formation of the hock, or in the use made of it. Solleysell speaks of spavins being *hereditary*; though Gibson's interpretation of this is "natural weakness." In a paper

from Mr. Carlisle, of Wigton, Cumberland, read before the Veterinary Medical Association, and published in THE VETERINARIAN for 1839, the writer says—"Hock diseases are often hereditary. I have known the progeny of some horses very much disposed to spavin; others inherit a tendency to splents, ringbones, &c. The peculiar formation of the parts, inherited from the parent, render them susceptible of those diseases from causes that would make little impression on other horses."

For my own part I am very much disposed to believe in the existence in the system of what I would call an *ossific diathesis*. I have most assuredly seen unbroke colts so prone in their economy to the production of bone, that, without any assignable outward cause—without recognisable injury of any kind—they have, at a very early age, exhibited ringbones, and splents, and spavins. There might have been something peculiar in the construction of their limbs to account for this; at the same time there appeared a more than ordinary propensity in their vascular systems to osseous effusion. Growing young horses, and particularly such as are what we call "overgrown," may be said to be predisposed to spavin, simply from the circumstance of the weakness manifest in their hocks, as well as other joints. When horses whose frames have outgrown their strength, with their long and tender limbs, come to be broke—to have weight placed upon their backs at a time when the weight of their own bodies is as much as they are able to bear—then it is that the joints in an especial degree are likely to suffer, and windgall and spavin to be the result. Indeed, under such circumstances, spavin, like splent and other transformations of soft and elastic tissue into bone, may be regarded as Nature's means of fortification against more serious failures.

THE HOCK MOST DISPOSED TO SPAVIN appears to me to be the compact short-pointed hock which is placed at the extremity of a short muscular thigh, and upon the top of a lengthy leg. This is the kind of hock we frequently see in hunters of good repute, and in hackneys valued for their trotting powers; and consequently there may be something in the *work* the hock is put to, as well as in its formation. We do not so frequently observe spavins in race-horses, and horses that have lengthy blood-like quarters;

neither are "sickle hocks" nor "cow hocks" thereto disposed: this may arise from their experiencing less concussion than hocks of another description. After all, however, there is no hock of any form or kind that can be said to be exempt from spavin; and many spavins will be found referrible to injury which would probably have produced them in any hock whatever. The horses of the cavalry are of a description that, taking them as a body, are disposed to spavin; and, formerly, when the manege and drill exercises were a great deal more violent and trying than they are at present, a great number of spavined horses might be found among them. Since, however, the pace has become moderate, and the halts less abrupt, and more time has been given to the cavalry recruit horse for the evolution of his natural powers, the disease has much abated in prevalence.

THE EXCITING CAUSES OF SPAVIN, after what has been said concerning the predisposing, will appear to be fairly inclusible under two general heads:—one being, extension, strain, sprain, or laceration of the fibrous tissues of the hock; the other, concussion of its joints. Hard galloping or hard trotting, and sudden pulling up—springing into the leap or jump—pesading or croupading upon the haunches, heavy tugging draft, &c.;—these are the actions most likely to cause such injuries, and they will be, *cæteris paribus*, the more likely to occasion them, the greater the weight the horse has at the time upon his back—if more than he is able well to carry in rapid progression, or to produce spring of the body or leap with. Mr. W. Goodwin, many years ago, made the remark*, and he was confirmed in it at the time by the observation of the late Mr. Boutall, that curbs of which horses were not completely cured not infrequently led to the production of spavins. We find old writers on farriery ascribing spavins to *blows:* so unlikely, however, is such a part as the inner surface of the hock to receive a blow, and so varied would be the situation of spavin (which we find is not the case) were it produced by blow, that there needs no hesitation in declaring such an assertion to have been made without foundation—hypothetically.

* See VETERINARIAN for 1830.—Discussions of the Veterinary Society.

*Symptoms of Spavin.*

These are in general plain, simple, and unequivocal. The horse manifests lameness in one of his hind limbs, and on examination a circumscribed spheroid tumour, of the magnitude of half a walnut or more—"a jack" as a spavin is often called by dealers—is evident enough both to the sight and feel of the man practised in such matters. Lameness, however, the effect of spavin, may be present without any detectible tumour: on the other hand, there may be a tumour, even of large size—"a thumping jack," in dealers' phraseology—and yet lameness not be a consequence.

IN THE DETECTION OF SPAVIN, the eye is a nicer test than the hand: though the two, one in confirmation of the other, constitute our ordinary agents in the examination. Commencing with critical *inspection* of the hock, the place in which the examiner can best trace in his eye the line of its inner superficies, is, standing by the side of the horse's (correspondent) fore limb: here, by stooping his body, and carrying his head either near to or away from the animal's abdomen, according as may be required, he will obtain the sought-for profile view of the inner superficies of the hock. Now, supposing the examiner, in this position, casting his eye down the inner surface of a sound or normal hock, he begins, superiorly, with that prominence so remarkable in all hocks—though more conspicuous in some than in others—the internal *malleolus* of the tibia; from which the descending line, marked in his eye by the profile of the superficies, undulates inward and backward until it has reached the bottom of the hock, where it suddenly declines down to a level with the line of the cannon. Now, it is precisely the interval between the prominence of the hock ceasing and the cannon beginning—the part of the superficial line which constitutes the *dip* from one into the other—that is *the site of spavin:* a small round tumour interrupts the natural declivity from the hock to the cannon, and in a moment catches the eye of the experienced observer. In cases where the tumour, from its smallness or flatness, or diffuse character, is indistinct to the eye, the examiner will not make his mind up concerning it until he has narrowly compared the suspected with the sound or normal hock. For my

own part, I always think this comparison is most critically made by standing in the situation above described, first on one side of the horse and then on the other, and carrying the impression made in the eye from one hock to the opposite. By placing himself, however, immediately in front of the horse, and directing his view between the fore legs, both hocks may be inspected simultaneously, and to more advantage than if he were positioned behind the horse: in neither of these situations, however, to my mind, can the examiner obtain that critical profile view of the superficies which is best suited to the detection of the small or flattened tumour of spavin.

In these doubtful cases it is that we more especially derive advantage from coupling the feel with the sight; by the one sense confirming or correcting the impression made by the other. The sensation given to the fingers, carried over the place of spavin in a normal hock, is not one of uniform levelness or rotundity of surface; we feel certain irregular elevations natural to the parts: below the malleolus we feel the process of the astragalus, the prominences of the cuneiform bones, and immediately beneath that of the small cuneiform bone, the head of the inner small metatarsal bone. Indistinctness to the feel of these landmarks—if I may so denominate the natural prominences—and particularly about the site of spavin, or any unusual fulness or rotundity of surface thereabouts, would excite suspicion, and this suspicion would be confirmed or removed by contrasting the feel as well as the aspect of one hock with that of the other. It is but natural to expect there should be, in their callous or inflamed condition, heat and tenderness in these tumefactions; it is difficult, however, in general, to detect the former; and as to the latter, it is equally difficult often to ascertain whether any flinching the horse may manifest arises from tenderness, or from any pressure the examiner may be making, or from a habit of catching up his hind leg the moment it is handled, as some horses will.

LAMENESS, THOUGH THE ORDINARY, IS NOT THE NECESSARY CONSEQUENCE OF SPAVIN. The lameness of spavin arises from different causes:—mostly, from the pain or soreness the animal experiences in using his hock, which, varying in different cases and at different periods or stages of the malady, will account for

its fluctuations—for the horse being so much lamer at some times than at others. Secondarily, lameness may be produced, in chronic inveterate spavin more particularly, by inability to flex and extend the hock as usual, owing to some increase or alteration in the joint oil, or else in consequence of partial anchylosis. Indeed, lameness may vary in degree from what is called "stiffness" in action to downright halting or hopping. In general, the lameness bears no proportionate intensity to the magnitude of the spavin: a horse may have a large exostosis on the spavin place, and yet not evince lameness; on the other hand, a horse may be extremely lame, and yet only "a knot" be discoverable in the seat of spavin. Ordinarily, the lameness arising from spavin not being such as to incapacitate the horse, and being behind instead of before, he is kept at work with it when he ought to be laid up. Most likely, he goes quite limpingly when first he leaves his stable in the morning, but, after having gone awhile and got warm, his lameness shews itself less and less, until at last he goes all but or quite sound; the explanation of which appears to be, that any redundance or incrassation of the synovial fluid the morbid condition of the hock may have caused, is by action, by repeated flexion and extension, temporarily removed; and the motion which from that cause, or from partial anchylosis, at first was stiff and painful, becomes by degrees comparatively facile and painless. In a case, however, where there exists much inflammation of the tissues, or in that form of disease in which ulceration or *caries* is present, exercise, so far from benefitting the animal, makes his lameness worse.

My own observation has led me to note two kinds of lameness in spavin:—one, the effect either of the ordinary sub-acute or chronic inflammation, or of partial anchylosis of the parts, is but comparatively slight, and consists, for the most part, in stiffness on motion, or in defective flexile power of the hock joint; the other, the effect of acute inflammation of the spavined parts, or else of ulceration of the joints, consists in a sort of spasmodic catching-up of the spavined limb the moment the heel of the foot comes down upon the ground, something after the manner of stringhalt. Stiffness may not infrequently be observed even in the horse's side movement in his stall. With such characteristic lameness as

this, and with spavin present as well, evidently hot and tender to pressure, there can exist no doubt about the case. Where, however, the lameness is but slight, although a spavin is present, yet from the absence of any heat or tenderness in the swelling, as well as from its duration, may doubt arise as to the cause of the lameness. In such a case as this we should take advantage of the well-known fact of the fluctuating or evanescent character of spavin lameness; to which end it is advisable to have the horse under examination hard ridden or driven, or otherwise exercised until he be in a profuse sweat, and afterwards kept standing tied up in a stall until he be cold, and stiff in his joints, and then trotted out again. A knowing vendor of a spavined horse would take care to "warm" him by a good ride or drive before he took him to shew to the presumed purchaser; and then, while under examination, by dint of whip and spur, and management in the bridle hand, he might pass his merchandize off—to an unwary buyer—as sound. Indeed, so much is sweating work, or exercise approaching thereto, apt to prove a foil to shewing lameness, that one is almost inclined to say no horse ought to be examined under such circumstances, certainly no horse suspected of spavin. The time of all others that a spavined horse will be apt to manifest his lameness will be the day following after a hard day's work; and when he makes his first egress from the stable in the morning is the critical period for examination.

Horses that go limpingly lame from spavin, lame at all times, and lamer still when they work, often experience pain in the seat of disease to a degree which, in the language of Solleysell, causes them "to pine away, especially about the flanks." They have probably been blistered and fired, perhaps setoned; have had their hocks frightfully scarred, and yet are lame to that degree that they are unable to do more than gingerly put the toe of the foot of the spavined limb to the ground, and so, painfully, hobble along; and although they may still maintain their appetite, yet are they low in condition, tucked up in their flanks, evidently, in short, "pining away." Such pitiable subjects, it is true, may be kept at work; the little, however, they can do when put to any thing requiring strength of action or pull, together with the wretched condition

they are generally in, is a fact so well known to coach and omnibus proprietors, and horse-keepers in general, that at the horse auctions such animals fetch little or nothing. Even for agricultural work such labourers as these prove of but little worth. Now and then, however, it happens that the spavined horse, although treatment has failed to render him sound, continues in respect to his disease in that state in which he appears to suffer no local pain at all while at rest, and but little while at work, and so is able to do a considerable amount of some kinds of labour, lasting in it perhaps for years. Still, such a horse is more likely than another to receive injuries, to experience aggravation or relapse of disease in his already diseased hock; and under such return or augmentation of ailment, unless great care be taken, and frequently with all the care we can take, may and will fail altogether.

SPAVINS EXIST WHICH OCCASION NO LAMENESS. How this comes to pass will appear when the time arrives to consider the reasons why spavins in general cause lameness, and on occasions very great pain as well, which cannot be done before we come to treat of the pathology of spavin. It is sufficient for our purpose here that we note and establish the fact, that lameness is not a *necessary* consequence of spavin. Nothing is more common than to meet with horses—colts even—who have what the dealers call 'knots' in their spavin places; and the time was when such 'knots'—which have always been regarded as spavins—were certificated as constituting unsoundness. This was professional decision which met with a good deal of opposition at the time, and justly so; and the result has been, that such "knots" are now allowed to pass as compatible with soundness. I remember, in the year 1827, rejecting a mare shewn by the late Mr. Harman Dyson to the First Life Guards, on account of having in each hock what I regarded as a large spavin: the mare, however, went perfectly free from lameness, and it was urged by Mr. Dyson at the time that he frequently met with enlargements of the kind —"low down," as these were—without any accompanying or consequent lameness. The mare, notwithstanding, I objected to. Since then, however, experience has taught me not to refuse to

pass such horses; but to take them, guarded by special warranty*; and I cannot say I have had any cause to regret such a change of opinion.

It is an observation of old date—Gibson makes it—that "a spavin which begins at the *lower* part of the hock is not so dangerous as that which puts out higher, "between the two round processes of the leg bone"; by which I take it, he means the *malleolus* above and the *cuneiform bone* below: the same writer adds—"a spavin near the edge is not so bad as that which is more inward, towards the middle, as it does not so much affect the bending of the hock." These are observations to which my own experience would lead me to subscribe; and I hope, when we come to the pathology of spavin, to have it in my power to shew they admit of satisfactory explanation.

LAMENESS ARISING FROM SPAVIN IS SOMETIMES PRESENT WITHOUT THE OUTWARD APPEARANCE OF SPAVIN. This is a form of disease better known to veterinary surgeons in general, I believe, under the denomination of *occult hock lameness*. My own attention to the subject was first drawn so long ago as in the year 1815, though then I was quite in the dark as to the nature of the case. On my return from Belgium, after the Battle of Waterloo, I had in my possession a bay blood mare, who was lame in one of her hind legs—I forget which—but whose lameness was of that nature that no external sign whatever was apparent to account for it. The limb had been searched over and over again by myself and some other veterinary surgeons, and the mare had been trotted and walked, circled and backed, and put to all other known trials and tests, without the examinations ending in any thing like concurrent opinions respecting either the seat or the nature of her lameness. The mare returned home, marching with the troops, led by a man on horseback—for notwithstanding her lameness she walked very well—and as soon as she arrived at head quarters (Woolwich), I shewed her to my father, at the

* The chief use of such special warranty being, to throw the responsibility upon the dealer, *in case* the painless and insensible spavin should turn into one productive of lameness: a change, however—as will be seen hereafter—by no means likely to happen.

time the Senior Veterinary Surgeon of the Ordnance Department. He examined her, and without hesitation pronounced her "lame in the *hock*," and she was treated accordingly; and the result was, at no great distance of time, her complete restoration to soundness.

It is true, so far as the case above related goes, that the only proof the mare's lameness was in the hock, was her restoration to soundness after the application of remedies to that joint. There is, however, to be said, in addition, to induce us to believe that it was so, that of all the joints of the hind limb, no one is so frequently—so likely to be—deranged as the hock; and, consequently, from this fact alone, is a *primâ facie* case made out. Moreover, we have to assist us, in our diagnosis, the stiff or imperfect flexion of the hock joint in action, and the wearing away of the toe of the shoe, shewing that the heel is rarely or but very gingerly put to the ground. Also the circumstance—often observable by the groom—of the animal resting the lame (hind) limb in the stable; on occasions, perhaps, knuckling over upon it, and so bearing the weight upon the toe alone. And it has happened before now, that while doubt was impending as to the locality and nature of the lameness, a spavin has made its appearance and dissipated all further conjecture; and with this development of the spavin, the lameness, so far from being augmented, is not unlikely to become better. This is an observation made so long ago as the time of Solleysell: this admirable observer, in one part of his chapter on spavins, says—"at their first piercing they commonly always make a horse halt, and afterwards, the swelling growing bigger, the horse halteth no more with it*."

## *Pathology of Spavin.*

THE CONSTRUCTION AND ACTION OF THE HOCK JOINT, complex as the articulation is, and different from all others with the exception of the knee, being a requisite preliminary knowledge to the due understanding of the nature and consequences of spavin, it may not be out of place here to make a few remarks

* Op. cit. part i, chap. xvi, page 60.

on this introductory part of our subject. The joints of the hock and knee—unlike joints in general, which are composed of two, or, at most, of three bones—are constituted, respectively, of several bones, having articulations between them, which, besides being for the purposes of motion, are made useful in counteracting concussion. There are no less than ten bones, and nearly as many joints or articulations, concerned in the composition of the hock; though but two of the bones, with the joint they form between them, are absolutely necessary for flexion and extension. The other smaller articulations, though contributing to motion, being especially serviceable in diverting or warding off concussion from the principal joint—that between the tibia and astragalus. In particular, the large and middle cuneiform bones, and the small metatarsals, are concerned in this latter function: hence it is, that these are the structures which—as we shall discover hereafter—are especially subject to disease. Concussion, however, operates differently in one instance from what it does in the other. Any force or shock received by the cuneiform or cushion bones is transmitted at once upon the large metatarsal bone, and along it conveyed to the pastern, and thence to the foot; whereas, pressure made upon the small metatarsal bones is received by the elastic fibro-cartilaginous substance uniting them to the large bone, they having no bony supporters. In the one case, therefore, concussion would operate upon the bones themselves, in the other, upon a soft inter-osseous substance: consequently, the articulating surfaces—their synovial membranes and articular cartilages—would be the parts to suffer in the cuneiform bones; the inter-osseous fibro-cartilaginous attachments, the parts to fail in the small metatarsal bones. Leaving the former for consideration hereafter, I shall at present devote my attention to the metatarsal joints.

PROFESSOR COLEMAN'S OPINION was, that spavin originated in splent of the hind leg. His words, in his Lecture on the subject, are, "The nature of spavin is, that the substance which connects the small to the large metatarsal bone, being violently put on the stretch (for it is highly elastic), inflames; and the result of this inflammation generally is, that ossific matter is effused, and becomes the medium of connexion between these bones. The

alteration, however, does not stop here; for bony matter continues to be deposited, so as to form a tumour on the inner side of the hock. In ordinary spavins, however, inflammation is not confined to this (inter-osseous) substance, but extends more or less over the hock; though *the tumour generally forms at the head of the inner small metatarsal bone*. And when once a spavin or splent has taken place—for *they are of precisely the same nature*, only that one is situated in the fore, the other in the hind legs—the disease must for always remain."

About the *seat* of spavin there is no room for dispute—the tumour almost invariably grows in the same place. Still, it has been remarked by the closest observers to be, in respect to elevation, either—what they have called—"high" or "low;" by which is meant, to be situated either upon the cuneiform joint of the hock or beneath it. In the latter case, having no relation whatever to the hock save proximity of site, the spavin would, to all intents and purposes, amount to no more than a *splent;* whereas, in the former case, it would be a genuine spavin. Now, that the one may, and sometimes does, originate in the other, there is sufficient evidence to shew; at the same time, it must not be forgotten that the majority of the cases presented to us in the form of *low spavin*, or veritable splent—"knots," as dealers call them—unattended by any lameness, continue free from the supervention of the spavin which produces lameness: at least, this I give as the result of my own observation. I do not mean to deny the truth of the Professor's doctrine, that spavin originates in splent: I only mean to contend that such is not the *common* or *usual* way in which the disease commences, and that hind splents, or, what means the same, low spavins, are seen existing for years upon horses' limbs without giving rise to high or genuine spavin and lameness. And this it was that led old authors on farriery, from Gibson downwards, to make the remark, that high spavins were "dangerous" when compared with low spavins.

THE PATHOLOGICAL SEAT OF SPAVIN must be looked for upon the cushion* bones, in the joints they form with each other, and with the metatarsal bone below, and the astragalus above. Too

* I call the two large cuneiform, *cushion* bones; resembling as they do, *in situ*, cushions placed one upon the other.

much weight thrown upon these bones and joints, shocks of concussion coming upon them, excite inflammatory action in their articular cavities, and outward connexions and coverings, and the result is, ulceration of the one, ossification and exostosis of the other. So long as lameness is present without tumour or other external sign, it would seem either that the disease was confined to the articulating surfaces, or else that osseous deposition took place in parts where, externally, it could not be detected. It must be remembered, however, that the ordinary case of spavin consists in the appearance of exostosis and lameness together: at least, from any report or history we in general obtain, we are unable to say which of the two has made its appearance the first. Therefore would it seem, in the generality of cases of spavin, exostosis being a primary symptom, that the inflammation *originated* in the ligamentary and periosteal tissues uniting and clothing the cuneiform bones; and that the inner in preference to the outer side of the hock joint became affected from the stretch and strain on that part being the greatest, in consequence of the inclination of the limb and preponderance of the weight to the inner side, rather than, perhaps, to the circumstance of the independent articulation of the inner small metatarsal bone, since we know that exostosis is not confined to the spavin-place. In post-mortem examinations we find coatings of osseous matter extending round upon the *front* of the cuneiform joints: and such more frequently, I believe, exist in this situation than we are apt to imagine; it being in the living subject difficult, often impossible, to detect exostosis hereabouts, on account of the osseous deposit being concealed by the ligaments of the cuneiform bones, as well as by the tendon of the flexor metatarsi. Cases, however, do present themselves, in which tumour in front is, by careful manipulation, to be detected*.

WHEN ONCE EXOSTOSIS HAS FORMED, there seems hardly any limit to its extension. Certainly, the higher it grows the worse in its effects it becomes; for then, not only are the cuneiform joints rendered anchylosed by it, but that with the astragalus as well; nay, the very main joint of the hock itself is threatened with

* See Plates II and III.

# PLATE II.

## SPAVIN DISSECTED.

PLATE II, represents the near hock of a thorough-bred horse, purchased by Cross, knacker, Camden Town, for slaughter, being rendered useless by excessive lameness arising from a spavin of unusually large size upon it, and more prominent and better defined than such tumours in general are. The animal had worked in a street-cab as long as he was able; and was suffering so much pain in the hock at the time of purchase that Cross had him killed the moment he reached the slaughter-house. The magnitude of the tumour, as well as the form of it, with the skin on, was that of the section of a middle-sized orange, spread abroad at its basis, so that it occupied pretty well the whole of the inner surface of the hock. Denuded of its skin and dissected, it appeared as is represented in the annexed Plate.

*a*, The os calcis.

*b*, The large metatarsal or cannon bone.

*c*, The small metatarsal or splent bone.

*d*, The astragalus.

*e*, *g*, The limits, superiorly and inferiorly, of the spavin tumour; whose surface exhibits a knobby irregularity, and whose substance is osseo-cartilaginous, incapable of being penetrated to any depth by the point of the scalpel, and yet in places soft enough to admit of having holes cut or dug into it. Throughout, it exhibits the same inflammatory vascularity (patchy redness) which its internal surface displays.

*f*, Part of the periosteal membrane, in which the tumour is encased, dissected off.

*p*, A piece of whalebone inserted into the joint between the two flat cuneiform bones, at the only place where the joint proved penetrable. The red part immediately above the whalebone represents the groove made by the inner division of the tendon of the flexor metatarsi.

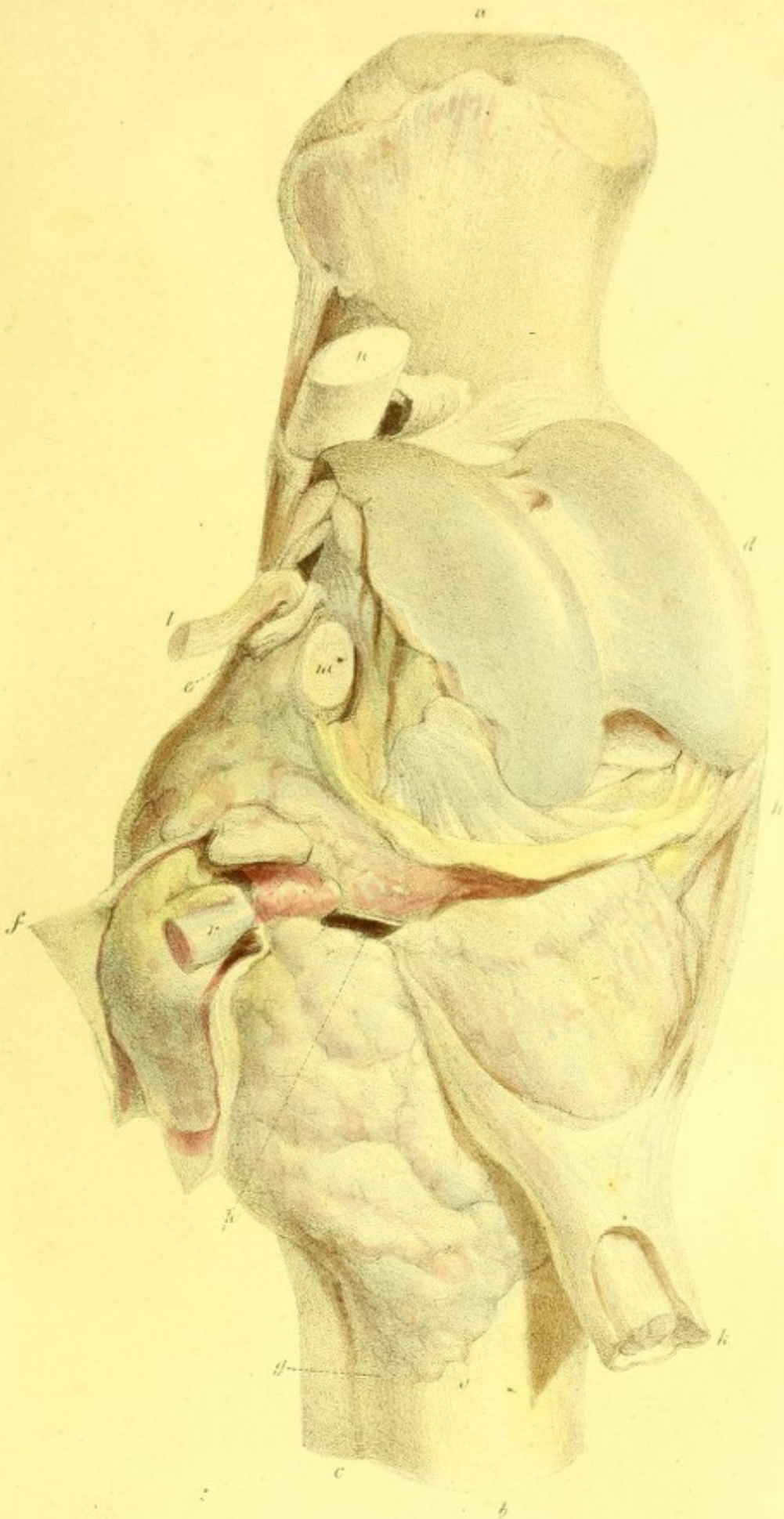
*f*, *h*, *o*, A line drawn from *f* to *h*, representing the basis of a triangle whose apex is at *o*, will include the osseo-cartilaginous deposit, spreading from the spavin tumour at the side, upon the fore part of the cannon bone, where it is partly covered by the tendon of the *flexor metatarsi*, which is seen (at *k*) detached and turned down.

*r*, The inner division of the *biceps* tendon of the *flexor metatarsi*, divided and dissected, in its course to be inserted into the head of the inner small metatarsal bone, which is buried deep in the substance of the tumour.

*l*, The slender tendon of the *flexor accessorius*, hanging down out of its sheath.

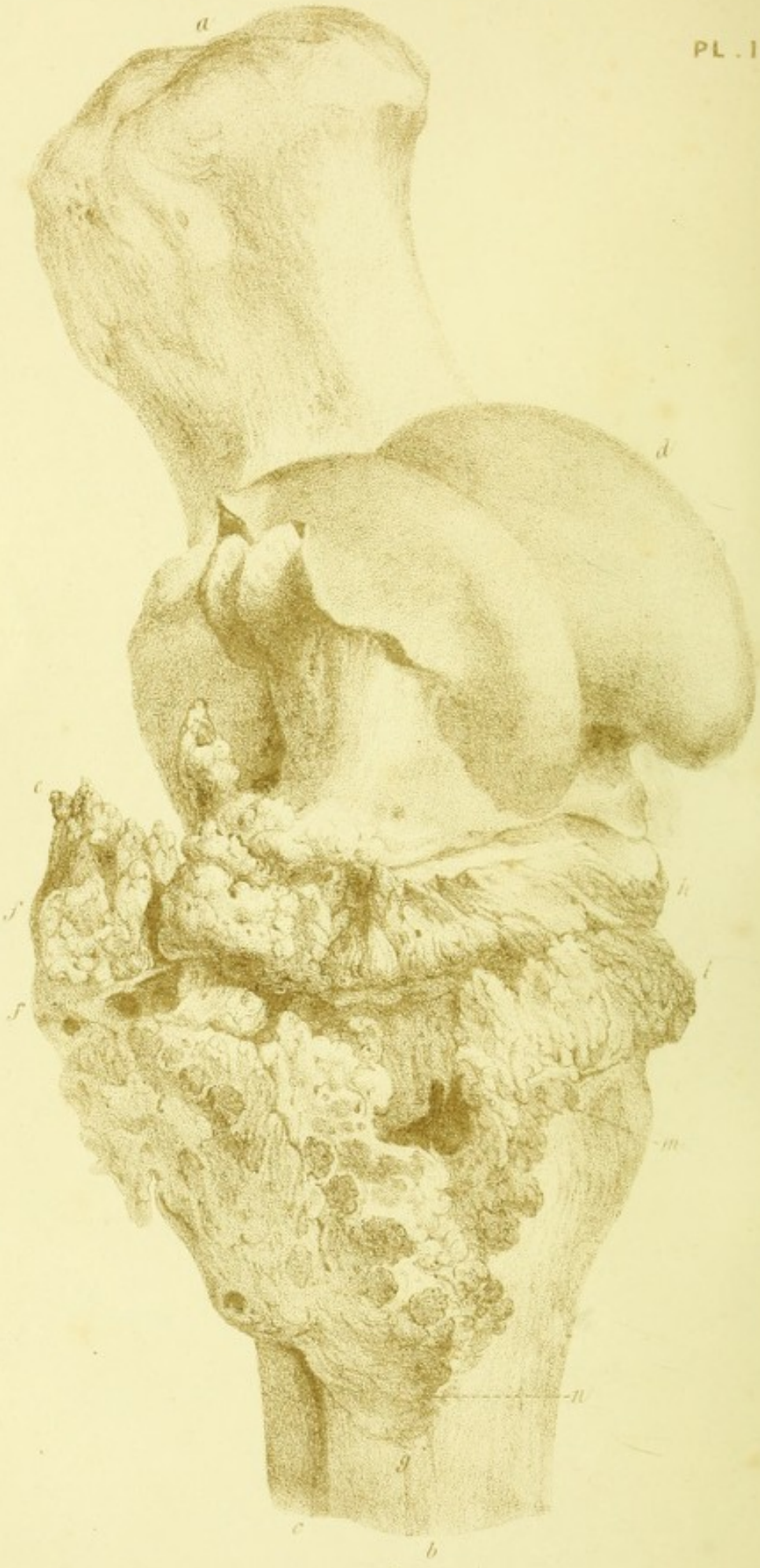
*m*, The tendon of the *flexor pedis*.

*n*, The tendon of the *flexor suffraginis*.




Spavin Dissected

Printed by C. H. Evirland.




The same Spavin after Maceration.

Printed by H. Fairland

# PLATE III.

## SPAVIN AFTER MACERATION.

PLATE III. The same spavin (as is represented in PLATE II), after having been subjected to maceration.

*a*, Os calcis.

*b*, Large metatarsal or hind cannon bone.

*c*, Small metatarsal or hind splent bone.

*d*, Astragalus.

*e*, The superior eminence of the ossification constituting the veritable *bone spavin*, now, after maceration, having a rugged aspect, and standing out in rocky prominences, in consequence of having become deprived of its *nidus* or bed of fibro-cartilage.

*g*, The inferior extent of ossification, spreading down for some distance upon the cannon bone.

*f*, *f*, The most prominent or perceptible parts of the spavin tumour during life.

*h*, The large cuneiform bone coated with osseous matter, of the same porous nature as the tumour itself is composed of, from which, in fact, it is an extension.

*l*, The middle cuneiform bone, underneath the former, coated after the same manner, and equally involved in the bone spavin disease.

*m*, *n*, The osseous deposition, after completely burying the inner cuneiform bone, as well as the head of the inner small metatarsal bone, spreads in an outward and downward direction, and covers the major part of the supero-anterior portion, or head and neck of the large metatarsal bone; so that there is, in point of fact, nearly as much bone spavin *in front* as in the usual place upon the side of the hock and cannon.

anchylosis. I have likewise seen instances—and in the different veterinary museums exist preparations of the kind—in which the entire articulatory mechanism of the hock has been encrusted and rendered immovable by a complete coating of exostosis. In general, however, the ossification is confined to the two cushion bones, they commonly being the first to contract bony union; next to them, the articulation between the lower cushion bone and the large metatarsal appears to suffer; lastly, that between the upper cushion bone and the astragalus.

READY-FORMED SPAVIN ATTENDED WITH LAMENESS being the case usually presented to our notice, it becomes of importance that we should, as well as we can from observation and experience, make ourselves acquainted with the rationale of a case so common. Supposing it to be a first attack, and a recent one, the owner of the horse representing that he has never been lame of the limb previously, it is of some consequence to know whether there had occurred any precedence in the appearance of the tumour and the lameness, also the period of time which one or both had taken to discover themselves. My own experience inclines me to the belief that in most cases the tumour of spavin is preceded by lameness: either the horse has been noticed to limp a little in first stepping out of his stable, or to go stiffly with the limb in action, or else to move in his stall stiffly upon it, or to rest it in preference to the opposite limb. One of two things seems certain in these cases; either that the tumour, if of slow growth, has occasioned the animal little pain or inconvenience while forming, or that the exostosis, keeping pace with the progress of the lameness, has been of rapid growth: of which alternatives I am disposed to adopt the latter, and for reasons that will best appear in the annexed case, one selected from others whereon observations made had proved similar:—

In July 1841, Captain B—— requested me to look at his second charger, the animal having gone, as he said, "very lame behind, the day before, while being ridden out." I examined the horse, but could detect no lameness whatever, although the trial trot, and sudden pull up, and turn-about, were several times repeated; neither did there appear any thing about the limbs to argue the

presence of lameness. I therefore sent the horse back into his stable, with a message to his master to the purport that he must have "fancied" his horse lame, for I could discover no lameness about him. In the course of conversation, however, on the subject, the day following, the Captain persisted his horse had gone palpably lame, although he afterwards admitted that the lameness had disappeared in the course of his ride. Four days after this, the horse was brought to me again, and on this occasion it was in the morning, prior to his having had any exercise. The case was now evident enough. The horse went limpingly lame in the near hind limb, and I had hardly cast my eye upon it before a large and prominent spavin caught my observation. This could not have existed—at least in any such prominent form—at my first examination of the horse: the inevitable conclusion was, that the exostosis had attained its prominency—although it might have, and probably had, *existence* before—in the short space of five days.

In the next case I shall relate it will be seen that lameness for *some weeks* preceded the detection of spavin.

In March, 1843, Lord T—— requested my opinion of a bay horse, for which, if found sound by me, he was to pay £130. The horse was brought out of his stable and run before me, when scarcely had he proceeded half-a-dozen yards from me before it seemed to me he went lame, and particularly in the turn; though when he came to trot back again he appeared to go quite sound; nor could I afterwards, at any moment on this occasion, detect that which I fancied I had seen during his first run from me. Unsatisfied, however, with this examination, I ordered that he be left standing in his stall until the following morning, when I would see him out again. I did so, and again imagined something amounting to lameness in the near hind leg, but which, as before, became by exercise so speedily dissipated that doubt was renewed concerning it. I resolved on seeing him a third time, and a third time had the same impression made on my mind; the result of which last examination was, counsel to his lordship not to purchase. It so happened, however, that the horse had, at the very strong recommendation of a friend, been sent for from Ireland especially for his lordship's purchase, with an assurance that he was sound; and

this friend, hearing of my opinion, which had caused him no little displeasure, one day, about three weeks afterwards, came to me with the horse, begging I would then look at the horse once more, and say whether I really determined him lame or sound. On this occasion, after seeing him ridden a trot, I pronounced him *sound*. "How, then, could you say he was lame three weeks ago?"—"Why, sir! a horse may be lame at one time and sound at another—be that, however, as it may, all I can say now is, that the horse, *at present*, trots sound; whereas, three weeks ago he went, in my opinion, *lame*." A month after this, the horse, which in the interval had been sold at a reduced price, on account of lameness having manifested itself, to a dealer, was brought for my opinion a fourth time, he having been purchased of the dealer, at the strong recommendation of his former laudator, by a captain in my own regiment. He was now lame enough in the near hind leg, and a large spavin obtruded itself upon my notice, which had no existence certainly at the time I made my first three examinations. After some preparatory treatment, I fired him deeply for the disease, and recommended that he have a winter's rest, the result of which was, restoration to working soundness. At the time I am writing, he continues sound, after having done two seasons' hunting, and remains in the highest estimation with his present master.

Hitherto I have regarded spavin as consisting in *exostosis*. An osseous tumour makes its appearance, either at the time of the manifestation of lameness or shortly afterwards, to which, and to which alone, the pain on motion of the hock, causing the lameness, used in times past to be ascribed by veterinarians. Professor Coleman taught that spavin was no more than a splent of the hind leg; and when once a doctrine is propounded formally *ex cathedrâ*, persons in general are apt to place implicit faith in it, few caring or troubling themselves to put it to the test of practice. In time, however, experience, unaided by any special or direct experiment, frequently detects error in received doctrines, and this has been the case in the instance before us. The Professor's pathology of spavin has proved by observation to be both defective and erroneous. True or genuine spavin is now known to have its site *above* where splent is situated; and, more-

over, it is ascertained that what from the beginning is no more than a splent in the hind limb, rarely turns to a true spavin, but continues in the form of a "knot" or knob, to which little or no importance is attached, from the circumstance of its rarely or never being known to be productive of lameness. This constitutes the error. The grand defect in the Professor's theory of the pathology of spavin is its insufficiency either to account for the extreme lameness so often present or to explain the reason of the disease being so commonly irremediable, all which has since been most satisfactorily accomplished. In the year 1830, Mr. Goodwin, the present Veterinary Surgeon to the Queen, read a paper to the Veterinary Medical Society* on the subjects of navicular disease and spavin, wherein, after informing the members present on the occasion that "his ideas on spavin were altogether different from those of authors both of the past and present day," he introduced, by way of illustration of his own views, a case which, "as it corresponds," said Mr. Goodwin, "minutely with others from which I have derived my notions of spavin, I need only trace the symptoms that were present in this instance, to put you (the members) in possession of my experience on this disease."

"The subject of this case was a harness horse of unusual perfection both in shape and action, and was a great favourite of an illustrious personage (George IV). He suddenly became lame behind, in the off fore-leg, and without the least visible alteration of structure to account for it. Circumstances, unfortunately for the poor beast, were such—the lameness disappearing after being turned out for a short time—that, instead of being given up immediately for treatment, he was made to perform his usual work until perfectly incapacitated from it by returning and aggravated lameness. Suspecting the seat of mischief to be in the hock, although at the time *the joint was unaltered in its form*, he was, three months after the commencement of the disease, blistered and fired; after which operations he was turned either into a loose place or into a paddock, as circumstances required. Not the least amendment took place at the end of six months, even in his quiescent

* Published afterwards in vol. iii of The Veterinarian.

state; and, after twelve months' trial from the time of his being given up for treatment, he was destroyed, his case being naturally considered a hopeless one."

"You will perceive"—continues Mr. Goodwin, holding up the hock for the inspection of the members present—" that ulceration of the synovial membrane, taking its origin between the two cuneiform bones, has extended into the substance of the bones; that they have become *carious;* and the disease has been gradually extending itself to other parts of the joint; and I have no doubt that, had the animal been suffered to work on for any length of time, *necrosis* and anchylosis of every bone concerned in the hock-joint would have been the result, as you will observe has been the case in the hock [holding up to view another specimen] I now shew you."

At a subsequent sitting of the Society, Mr. Goodwin produced a third specimen of spavin, in a hock that had belonged to a horse, also the property of George IV, and which had cost 350 guineas at five years old. The horse had had curbs, for which he had been fired. Four or five years ago he shewed stiffness in his hind limbs in action; but, as the stiffness disappeared after he had been ridden for a short time, no serious notice was taken of it, and the disease the occasion of it—incipient spavin—was left to make such progress, that, when the horse came at length to be given up for treatment, he was found past all remedy. However, he was blistered and turned out; but, after being turned out he became worse, and was in consequence destroyed. In the off hock, in which there was the least lameness, there was *no exostosis, no alteration in the form of the joint;* but there was ulceration of the synovial membrane, with slight caries of the cuneiform bones. In the near hock, the disease had proceeded from *caries* to *anchylosis:* there was *no separating the large and middle cuneiform bones from each other* even with a chisel, or *the latter from the cannon bone.* In neither hock was heat detected during life; *nor was there any tumour or other external indication of disease.*

In the year 1832 a case of spavin occurred to me which fully bore out Mr. Goodwin's improved views of the disease. No. 4 of G troop of my own regiment was passed by me, at four years old, in

the autumn of 1829, as sound, and was at the time remarked by every person who saw him to be one of the handsomest and best bred colts we ever recruited. In July 1832 he was brought to me lame. I found he had a spavin, for which I ordered the ung. antim. tart.; and the result was, that, at the expiration of a month, with rest, he had become sound enough to return to work, and was ridden again in the ranks. In the January following, however, (five months afterwards) he returned to me as lame as ever. He now was fired, and subsequently turned out. In May, being once more "relieved," sound enough to take his work again, he left my care for duty, and continued thereat until the ensuing August, at the latter end of which month he experienced an attack of pleurisy, and of that died. This afforded me an opportunity of examining his spavined hock, and I found such appearances, with the addition of the exostosis, as Mr. Goodwin has described, with evident ulceration and caries of both the tibia and astragalus as well*.

The foregoing case, while it is confirmatory—if confirmation were needed of a fact now become so notorious—of the morbid states of the articulations of the hock in spavin, likewise seems to shew that the disease of joint exists at a very early period; for, although this horse was taken under treatment *from the first day he evinced lameness*, yet was he never afterwards rendered sound. Bloodletting from the thigh vein, purging, fomentation followed up by inungation with the antimonial ointment, and a month's rest, had done as much as is generally done in such cases; still, the horse was not *cured* of his lameness, but broke down again five months afterwards, notwithstanding he was favoured at duty—which was at no times hard—as much as possible: the result, in fact, being much the same as we should have looked for in a case of patched-up disease of the navicular joint. From this, and many other similar cases, I cannot therefore help coming to the conclusion, that disease of synovial membrane is *occasionally*

* There are naturally—as has been before remarked—little *fossæ* or pits observable upon the trochleated surfaces of these two bones: in this case these pits were much enlarged, and moreover had margins of tumid and reddened membrane, and were at their bases spotted with red, and asperous to the feel, instead of smooth as in health.—*Vide* Pl. IV, Fig. 1 & 2.

# PLATE IV.

## INFLAMED AND ULCERATED CONDITION OF THE SYNOVIAL SURFACES OF THE ASTRAGALUS AND TIBIA IN INVETERATE SPAVIN.

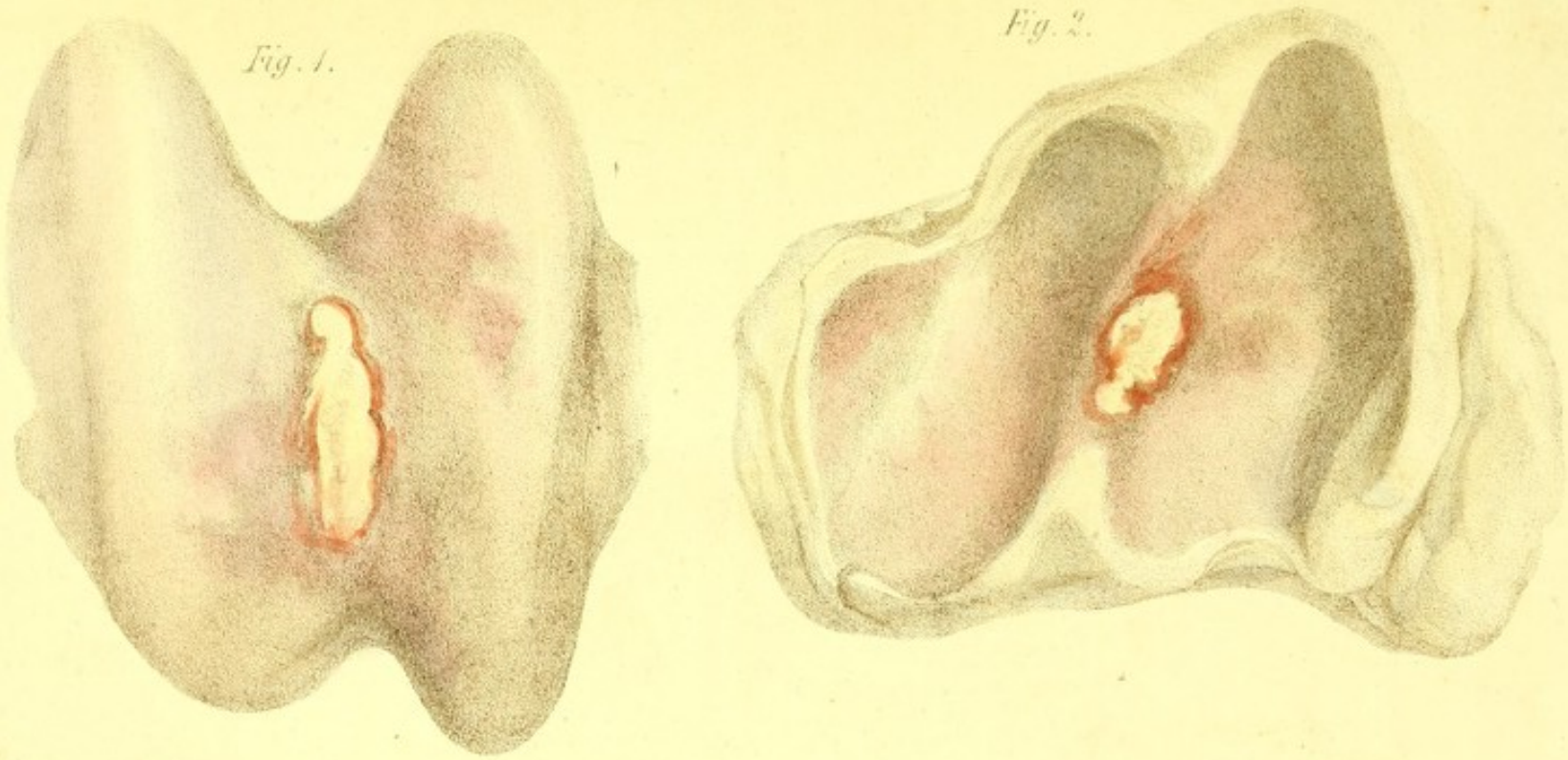
(G 4, Troop Horse, Case related at pages 77-8.)

*Fig.* 1, The astragalus presenting to view its articulatory trochleæ.

*Fig.* 2, The lower end of the tibia presenting its concavities, in which the trochleæ of the astragalus play, in the motion of the hock-joint.

In both bones the synovial membrane upon the articular cartilages is in an inflamed condition, and, especially, shews inflammation around the lips of the ulcerations apparent in the centres of the joint, such parts being deeply reddened, as well as perceptibly tumefied.

The *caries*, or ulcerations, are, in the sites in which they are ordinarily found, viz. in the centre of the articulatory channel between the condyles of the astragalus, and upon the middle articulatory eminence of the tibia. They are deep and ragged, and in their greatest depths display the bare substance of the cartilage underneath; while around these bare (white) parts granulations are apparent. Altogether, the disease within the joint had the appearance of being of an acute and highly painful character.




Inflamed & Ulcerated Condition of the Astragalus & Tibia in Inveterate Spavin.

W. E. Kearney del. et lith.

Printed by C. H. Earle & J.

present at a very early period: whether early enough to *precede* the exostosis is another question.

Mr. Goodwin, in the course of the discussions to which his paper—I have made the foregoing extracts from—gave rise, expressed his opinions to be, that "spavin generally *commences* between the two cuneiform bones," and that the disease, from its commencement, consists in "inflammation and ulceration of the synovial membrane:" exostosis being, he thinks, "a subsequent affair;" unless it be in the case of "*common* spavin," and that from the beginning "was an exostosis*." It being an acknowledged fact that in ordinary cases of spavin, accompanied by lameness, exostosis is either actually present or speedily makes its appearance afterwards, which exostosis is of the *high* description, and it also being ascertained that the callus of the exostosis is of that inflammatory nature which must cause pain, for my own part, I am disposed to think that, in the early stage, inflammation of the periosteum and consequent effusion constitutes the sole disease; but that, no sooner are the cushion or two large cuneiform bones cemented together by effused callous or osseous matter than, from the concussion these bones in their fixed state must necessarily experience, bruise giving rise to inflammation ensues, and this lays the foundation for the ulceration and caries which follows. In the case wherein no exostosis—no spavin—is detectible, it would seem as though synovial disease had been set up in the first instance, and without such ascribed concussion: it must be remembered, however, that—as I stated before—callous or osseous matter may be deposited upon the surfaces of the cushion bones in situations where, from being covered by ligament and tendon, and other soft parts, it is not to be discovered either by eye or hand; as indeed proved to be the case in one (if not both) of the hocks of the valuable horse belonging to our late Sovereign, whose history is related by Mr. Goodwin, as copied by myself at page 302. Could post-mortem examples be brought forward of disease of joint *without* any concomitant callous or osseous incrustation, and consequent fixing together of the cushion bones, it would of course go to shew that

* By *common* spavin, I take it, Mr. Goodwin means the "knot" or knob of bony deposit before alluded to

the disease of spavin might have its *beginning* within the capsular ligament of the hock joint. That in all cases of inveterate and incurable spavin the synovial membrane is the seat—the main seat—of disease, and that this is the principal reason why all our known means of cure fail, is a fact beyond all doubt or dispute: at the same time, the supposition that the disease, although attended by lameness in its early stages, may and frequently does consist in pure exostosis, will account for the fact of cases of spavin, when timely and effectively treated, occasionally admitting of recovery.

There is another fact to which I would call attention, from the circumstance of its appearing in corroboration of the disease of spavin having its commencement outside the joint, and making its progress into the inside. If we examine the cuneiform bones of a spavined hock after maceration, we shall perceive that the caries which their surfaces exhibit has evidently commenced upon their *inner* parts—that it has, to appearance, spread from the exostosis outside upon the articulating surfaces inside the joint; it very commonly happening that the outer parts of the same surfaces remain in a sound state*. Again, I have at the present moment another preparation of the bones of the hock before me in which the two cushion bones are inseparably united along their front sides by ossification; and yet so smooth are their exterior surfaces, that no spavin, or the slightest vestige of one, would be discoverable in the living subject. Such is a true case of *occult, concealed,* or indiscoverable spavin.

Although the diseases inside and outside the joints are different at their commencement, one consisting in inflammation of the synovial membrane and subsequent ulceration of the articular cartilages—while the other consists in inflammation followed by ossification of fibrous or fibro-cartilaginous substance, yet in the end do both diseases merge into one and the same morbid action of ossification, tending in its progress to the cementing and fixing of parts, once moveable upon one another, together, and in the end converting the entire mechanism of the joint into one solidified diseased structure, coated inside and out with porous rocky osseous deposit.

* See Pl. V, Fig. 1 & 2.

# PLATE V.

## THE CUNEIFORM BONES.

Here the same macerated hock is exhibited as is represented in PLATE III; the difference being that, in the Plate before us, a separation by force has been made of the joint at the articulation formed by the two large cuneiform bones: the object being to shew to what extent the *caries* has affected the articulatory surfaces of these bones.

*Fig.* 1, The superior division, includes the astragalus (*a*) above, joined to the large cuneiform (*c*, *d*, *b*, *e*) beneath it, which latter presents its under surface to view. The inner and posterior parts (*c*, *d*) of the cuneiform bone, while they are, outwardly, incrusted with the exostosis of spavin, inwardly, or within the joint, present a worm-eaten aspect or *caries* (*w*, *w*); the outer half of the same articulatory surface (*e*, *e*, *e*) being smooth and normal in condition. Osseous incrustations (*f*) also extend from the inner side of the bone along the entire of its front border.

*Fig.* 2, The superior division, composed of the middle and small cuneiform bones, which, being turned upside down in order that the upper or corresponding surface of the middle cuneiform bone might be presented to view, has, of necessity, the inner side to the spectator's right; while the outer side of the bone, or that which has preserved its sound articulatory condition (*e*, *e*), is to his left.

*a*, The front of the bone.

*b*, *b*, The posterior parts.

*c*, *c*, *c*, The cuboid bone (on the outer side and behind) in a sound condition, with its upper surface turned to view.

*d*, *d*, The small cuneiform bone (on the inner and posterior side) completely buried in the osseous tumour of the spavin; the incrustation extending round from the inner side upon the front border of the bone.

*w*, *w*, *w*, Worm-eaten surfaces or caries of the middle and small cuneiform bones, shewing plainly the connexion between the exostosis outside the joint and the caries within it.

*Fig. 1.*

*Fig. 2.*

The Cuneiform Bones of the same Spavined Hock

Printed by C. H. Reynell

And not only does the hock itself suffer, until every joint constituting it has become carious and ossified—the articulation between the tibia and astragalus being the last to contract the disease, hence the reason, as I said before, of spavined horses being able, lame though they be, to work on—but parts in the immediate vicinity likewise contract similar disease, among which the ligaments at the back of the hock joint, and the suspensory ligament at its place of origin, are the most commonly so affected.

VARIOUS PATHOLOGICAL CAUSES FOR THE LAMENESS IN SPAVIN, it is evident, therefore, admit of demonstration. It was formerly thought that the main or sole cause for the pain was the distention of the periosteum by the tumour underneath it, the same as is said to happen in the case of *nodes* in the human subject. I would not go so far as to say a case of this description never occurs; but I should certainly lay it down as my opinion that the stretching of the periosteum was by no means so frequent a cause of the pain and lameness in spavin as others that I will mention. The exostosis, in a state of partial or entire callus, is itself in certain stages in that inflamed condition that it is but natural to suppose *it* must be the seat of considerable pain. Then there is to be taken into the account—the chief source of pain, as it must be acknowledged to be, when present—the inflammation and ulceration and caries of the joints. And, further, what operates against the theory of the distended periosteum is the fact of low spavin or hind splent, "knots" upon the hock, as they are called, rarely giving rise to lameness; though they are calculated to put the periosteum on the stretch quite to the same degree as true spavins. One argument, however, there exists in favour of the distention of the periosteum, and that is, the asserted fact of lameness having been known to be relieved—some say *cured*—by division of the stretched membrane, an operation called *periosteotomy*, whereof it will become my business to speak hereafter.

## *Treatment of Spavin.*

SPAVIN is one of those diseases improvement in the treatment of which has not kept pace with our advances in the science of hippopathology. We all acknowledge that new and bright lights have been thrown on the pathology of spavin; that we are now in a situation, through discoveries in morbid anatomy, of explaining that in the symptomatology and curability of the disease which before was inexplicable; and yet we have left, not merely unimproved upon, but undisturbed, our ancestors' plans of treatment: nay, hold them at the present hour in all the estimation they were formerly held. It may be matter of fact, that the experience of ages has but confirmed the insurpassable efficacy of the old mode of treatment; it is, however, strange, to say the least about it, that the very same remedies our forefathers employed with most success for the cure or relief of spavined horses, should, now that the disease has been proved to reside *within* as well as without the hock joint—to consist in *ulceration* and *caries*, as well as in *exostosis*—still maintain undiminished their good reputation. To remove any doubt concerning the antiquity of our present remedial agents for spavin, I shall make a few quotations from some of the old authors on farriery, beginning with Solleysel. "Bone spavin," says this father of veterinary medicine, "is a very dangerous distemper, and requires the most violent remedy, viz. the *fire;* and even this is oftentimes applied without success."—"When the disease is *hereditary**, it is in vain to attempt the cure by any method than by giving the fire." Again: "No person can promise a certain cure in this case, or to make a horse sound that is troubled with spavin, by giving the fire; though there is *no other effectual remedy*†." From this quotation, we learn that Solleysel not only was fully acquainted with the superior efficacy of firing, but that in recommending it he was likewise aware how

* The hereditariness of spavin was discussed at p. 60.

† Compleat Horseman, Part II, chap. cv, page 281-2.

often, in cases of confirmed or inveterate spavin, we had to lament its inefficacy.

GIBSON'S ACCOUNT OF THE TREATMENT OF SPAVIN is really so admirable that I question whether a better stands on record: the perusal of it makes one almost blush for shame, feeling, as we must do, that it comprises nearly all we know, or at least practise, in the matter, in these boasted days of discovery and improvement. "The usual method," wrote Gibson, "of curing bone spavin is by blisters and firing, without regard to the situation or cause from whence it proceeds. If a fulness on the *fore part of the hock* comes from hard riding, or any other violence, threatening spavin, coolers and repellents only are proper."—"Spavins that happen to colts and young horses are generally *external** and superficial, and may be cured with *milder applications than* what are commonly made use of for their removal, and with less danger of breeding callosities in the joints; for it is better to *wear out these maladies by degrees*, than to strive to conquer them all at once."

Gibson, with great good sense, objects to caustic blisters, which, "for the most part, leave a continual baldness, and often a remaining stiffness, which can never be removed," and recommends a vesicatory of a milder description in combination with terebinthinate mercurial ointment, which, to prove effectual, "must be often repeated, and so requires a good deal of time before the cure is complete and perfect." When a horse goes lame some time before a spavin shews itself, and at length a spavin is discovered "deeply situated and extremely hard," having its situation "among *the sinuosities** of the joint," the usual practice is "to fire immediately, and to use the strongest caustic blisters, and sometimes to fire and lay the blister immediately over the part." I would, however, "first of all choose to try a more gentle method, because *horses are often worse after the use of forcible means to remove spavins than they were before.*"—"And, therefore, if the owner can be persuaded to allow a *sufficient time*, the best and safest way is to make trial of some *mild* caustic or blister."—"However, some spavins lie so deep, and run so far *into the hollow of the joint**, that no applications

* Such expressions as these are of a nature to induce one to believe Gibson had seen disease *within* as well as without the joint.

can reach them, so as to make a perfect cure."—"A charge, or caustick ointment, *with sublimate or arsenic,* is the most likely to succeed in this case."—"I have known *some bold ignorant fellows* succeed in such cases."—"The same thing has happened by *firing deep* into the spavin."—"A true spavin in an old horse proves no less difficult; and in such cases, *firing all round the hock,* and afterwards turning them out to grass, is the most likely to succeed, so far at least as to fit them for some sort of business; though the stiffness of the hock will be but little abated, even if the spavin be removed, stiffness on bending of the joints being an infirmity to which all old horses are more or less subject, even where there is no manifest malady or disease*."

I have made my extracts from Gibson so full and lengthy, that my readers might see how much, a century ago, had been accomplished in the way of treatment of spavin; and now that they have perused this excellent account, I can entertain no doubt of the professional part of them, at least, being of opinion with me, that the veterinarians of the present day have little to boast of in the way of innovation or discovery in this department of veterinary therapeutics.

WHAT DID COLEMAN SAY ON THE SUBJECT? He took an anatomico-philological view of it, and said, "neither spavin nor splent was ever cured." By this he meant, that the fibro-cartilaginous tissue, which was converted by these diseases into *osseous* substance, was never re-converted into its original soft elastic nature, but for ever remained bone. Nevertheless, Coleman blistered and fired, the same as veterinary practitioners of the present day are in the habit of doing.

The important subject of the treatment of spavin conveniently resolves itself, for our consideration, into two divisions;—into the *curability of the disease,* and *the remedial agents most proper or likely to work a cure.*

* A new Treatise on the Diseases of Horses. By Wm. Gibson, Surgeon, 1754, 2d edit.

## *The Curability of Spavin*

Is a question the answer to which, to avoid blame thereafter, requires a good deal more of caution and circumspection than is apt to be given to it. When persons talk about "cure," it is for professional men to ascertain what meaning they attach to the word; whether by *cure* they mean restoration to perfect soundness, or simply that approximation to soundness which enables the animal to do his work, in effect at least, as well, or as much to the satisfaction of his master, as he did before he went lame. And it is still more especially the business of the veterinary surgeon, before he ventures to offer an opinion concerning the curability of spavin, to make himself correctly informed of the history, the duration, the degree of lameness, the aspect and feel of the tumour, &c. &c. of the case in question. It is for want of taking care to be furnished with these simple and obvious *data* for guides that young and incautious professional men too often suffer themselves to be betrayed, in speaking of a disease possessing such a fluctuation of character as spavin, faltering in their opinions, or giving such as are of a diverse or conflicting nature: the circumstances, past and present, being represented alike, and no omission of any one of them of importance being made, the case of spavin, difficult as it often is of prognosis, will hardly give rise, in the minds of experienced veterinarians, to any material difference of opinion. Coleman said, spavin was an incurable disease; but then he made cure to consist in restoration of *structure* as well as restoration of function. We restrict our notions of cure to restoration of function. We say, if we can remove the lameness of a spavined horse, or remove so much of it as will enable him to do that kind or amount of work which is required of him, that we have succeeded in a serviceable cure, if not in a sound one, notwithstanding he may "go stiff" when he first leaves his stable, and that exostosis may still be perceptible enough when we come to inspect his hock. And this is the sort of soundness to which spavined horses in general, when they are said to be cured, are restored. If I were to

say that spavin in the end will prove to be an incurable disease, I should be asserting that which in the main has been found to be correct. Inveterate spavins rarely admit of any alleviation, even of their lameness; and such as have not arrived at that state of disease or inveteracy that precludes all hope of cure, have but too frequently their alleged "cures" followed by return and permanency of lameness. *Cæteris paribus*, a spavin upon the hock of a colt or a young horse is more likely to admit of cure than one in an old horse, the powers of restoration being greater in one than in the other. A spavin that is put forth on a sudden, and with which lameness is simultaneous, is more likely to be cured than one that has been long in coming forward—long in "breeding," as people say—and which has been preceded by lameness of a transitory character. This brings to our mind the old observation about those lamenesses being the most difficult of removal which steal gradually on our notice. Such lamenesses in their tardy advance bring with them two important pieces of information: they shew they cannot be the result of injury; at the same time they afford us pretty strong evidence in themselves of being the offspring of inward and insidious disease—disease of a nature that has been some considerable time coming to such maturity as to occasion pain, and that sufficient to produce lameness; and which will require—as most diseases, they say, require double the time to quit they take in coming—a more considerable time still before it takes its departure.

Persons bringing to us lame horses are naturally anxious about them, importunate to be informed not only as to the probability of cure, but as to the space of time the cure, supposing it to be probable, is likely to occupy in bringing about: they, of course, especially want to know when they shall be able to *work* their horses again, and, in their importunity to obtain as early a date as they can to this day of restoration to work, they are very likely to extract from the practitioner, at some unguarded moment, a promise of a shorter time being occupied in treatment than, in justice to his patient as well as to himself, he ought to have consented to. It is not impossible the veterinary surgeon may be requested to treat the spavin during the time the horse is at work,

or with an understanding that a few days, or a week, or even two weeks, will be yielded for the process of cure. It is not to be denied that incipient cases of spavin do now and then present themselves, which—consisting as some or most of them at so early a stage probably do, purely in exostosis—are capable of being, in the course of a week or a fortnight, relieved to that degree that lameness almost or quite disappears, and that, therefore, the horse is naturally enough considered by his owner to be fit to return to his work: comparatively few, however, will the number of such cases be as will not relapse for medical treatment, and in an aggravated and even hopeless pathological condition, compared to what they presented in the first instance. The disease, which at first was confined to the periosteal tissues, outside of the hock joint, has now invaded the synovial membrane within, and the result is, ulceration of the articular cartilages covering the cushion bones: a sad addition has been made to the already existing disease; the case has become converted from one of a simple into one of a complex character; and the cure, if now practicable at all, has been thrown back weeks, if not months. The case of the troop horse (G 4), related at page 77, furnishes a good example of this proneness to relapse; and it is the more striking in this case, because what was deemed sufficient rest was at each period of fresh attack fully conceded. The same thing happens in disease of the navicular joint. Here is, as in spavin, ulcerative disease of joint; and whatever treatment be adopted, either in one case or the other, *rest*—absolute repose of the diseased joint—and that for a sufficient length of time, is indispensably required. The curability of spavin so much depends upon an uninterrupted state of inaction of joint, that, as Gibson with truth assures us, with "sufficient time," *mild* remedies will succeed; whereas, without it, the severest will be pretty sure to fail. And, for my own part, I am very much inclined to the belief that the success derived from deep firing and blistering is in a measure ascribable to the extremely sore and rigid condition of skin produced thereby, rendering it for a considerable time, through the pain consequent on the act, next to impossible to flex the diseased joint. In confirmation of the expediency, or, rather, the necessity of rest, I may mention that I have,

on many occasions, witnessed the happiest effects from confinement of spavined horses in stalls, persevered in to a great length of time; nor would I, for my own part, in a case where rest, and duration of rest, could not be obtained, counsel any veterinarian to undertake the treatment of spavin. Even under all favourable circumstances, he foreknows his liability to failure, and most assuredly it becomes a duty he owes himself, if not his patient, to diminish that liability to the uttermost. When consulted, therefore, on the curability of spavin, let the practitioner take care to bargain closely with his employer for sufficient time for *repose* for his patient.

### *Remedies for Spavin.*

As soon as it is ascertained that a horse's lameness proceeds from the existence of spavin, every person of any experience in the affairs of the stable will tell you, at once, that the remedy is *blistering* or *firing* the hock. These, we have seen, constituted the curative agents of the farriers before our time; they are in no less estimation by farriers and others, nay, by veterinarians too, of the present day. Were I disposed to follow the current of opinion, professional as well as unprofessional, I might, therefore, sum up the treatment of spavin in two words, *blister* and *fire*, or *fire* and *blister*. Not that it is my intention to speak disparagingly of these two popular, potent, valuable remedies; only to inquire whether they really possess in themselves value sufficient to engross our attention to the exclusion of all others.

With no disease has empiricism made itself more busy than with spavin. Be the disease within or without the joint, by nobody has it ever been regarded as *constitutional*. No veterinary surgeon has once suspected spavin to be connected with any rheumatic or other disordered state of the constitution; and on this account, on account of the undisturbed good health spavined horses commonly enjoy, and the conclusion, therefore, that the disease of the hock is purely local, as well as from the conviction of the uncertainty or hopelessness of recovery through ordinary remedies, have, it would seem, more experiments been made

for the cure of spavin than in the case of almost any other disease. Some of these have been truly mechanical, rude, and even barbarous in their nature; while others have been based upon scientific views, such as have been entertained by their projectors; though, after all, as I have already more than once had occasion to observe, are we at the present day found practising blistering and firing, the same as was practised a hundred years ago by our professional predecessors.

The notions respecting the nature of spavin of the farriers of former days were precisely the same they are with the professionally unlearned of the present day: they find the horse lame in the hind limb, it is pretty evident his lameness proceeds from his hock, and it is manifest he has a bony tumour thereupon, and, therefore, the natural inference was—has been all along, indeed, until Mr. Goodwin demonstrated its fallacy—that the *exostosis* was the whole and sole cause of the lameness. Nothing, therefore, seemed required but to get rid of this tumour; and the simplest and readiest way of accomplishing this, appeared at once to

SAW OR CHISEL OR RASP OFF THE EXOSTOSIS. And, so far as the prompt removal of an osseous tumour goes, surgeons up to the present day have devised no simpler, safer, or more summary mode of proceeding than by operation. Many years ago, a person who had obtained some celebrity for curing spavined horses, came from one of our northern counties to London, and in consequence of representations made by him to the Board of Ordnance, had permission granted him to make certain experiments at Woolwich on horses belonging to the Royal Artillery, to be selected, on account of having spavins, by my father. This man was dexterous enough in his handicraft. He cleverly dissected the skin off the exostosis, and afterwards, with a common iron chisel and wooden mallet, chiselled off the osseous tumour, and then brought the divided portions of skin together, and, if I remember aright, secured them by ligature. So far all appeared plausible enough. But the operator had not calculated on, or seemingly cared for, the consequences of an operation so purely mechanical and rude. He had not foreseen what was sure to follow, *inflammation*, and inflammation it might be, and in some of the cases proved, of that acute and de-

structive character which would almost for certain leave the hock in a worse state than it was even in its purely spavined condition. Nay, in one or two instances the hock joint became opened from sloughing, consequent on the operation, thereby endangering not the limb only, but the life of the animal. The saw would have been a less offensive instrument for such an operation than the chisel; indeed, with a saw such as is used for like purposes by surgeons, the removal of the tumour might have been effected with comparative safety. I have heard a veterinary surgeon say, he has used the *horse-rasp*. In any case there exists danger of inflammation ensuing. Added to which, there is to be considered, that, although so much of the ossification may be removed as constitutes the "lump" or swelling, the base or bed from which such tumour has grown still remains, uniting the cushion, and other bones as well perhaps, as fixedly together as ever. And, as for the ulcerative disease within the joint, supposing such to exist, that cannot, of course, be in any way ameliorated, supposing it not to be aggravated, by such an operation. Lastly, we must not be surprised if a second and larger spavin should grow in the place from which the first has been removed.

CAUSTIC has been employed to remove the exostosis. "Bold ignorant men," as Gibson calls them, have done a vast deal of harm by the indiscriminate use of caustic applications of the most potent nature—such as arsenic, corrosive sublimate, &c.; at the same time, it is not to be denied that remedies of such powerful agency in the hands of those whose observation and experience has taught them their legitimate use, are neither to be dreaded nor despised. I should, myself, lay it down as a rule, on no occasion to be departed from, that *high* or genuine spavin, i. e. exostosis seated upon the cushion bones, is not a case for the employment of caustic, owing to the contiguity of the hock-joints. But that the *low* or spurious spavin—that which is veritably but a hind splent—is the apposite case; and that to "take off" such an exostosis, caustic has been, and, I believe, by an old and respectable veterinary practitioner of my intimate acquaintance continues to be, used with satisfactory results. The mode of application is this:—With a sharp-pointed conical—sort of elongated budding—iron, red hot, bore holes, half

an inch, more or less, in depth, according to the prominence of the tumour, into the exostosis, and fill these perforations with a paste composed of white arsenic and flour. In due time deep sloughs will separate, bringing away the substance of the exostosis, and curing probably the lameness, but leaving a wound to granulate and cicatrize, ending with enlargement of the hock, both general and permanent.

PERIOSTEOTOMY, as proposed by Mr. Sewell, the present Professor at the Royal Veterinary College—in imitation of the operation surgeons were in the habit of practising for the mitigation or removal of the pain caused by nodes—constitutes the neatest and most scientific operation for the cure or relief of the lameness arising from exostosis. The theory being, that in splents, &c., as in nodes, the pain arose from the tension produced in the periosteum by the pressure of the tumour growing underneath it, division of the periosteal membrane, by slitting it or otherwise, appeared all that was required for the relief of the lameness. Impressed with these notions, and sanguine in so simple a method of cure, Mr. Sewell, in the year 1835, made known to the profession his "New Operation for Curing Lameness in the Horse, generally caused by Contusions which occasion Periosteal and Ossific Diseases," in a printed circular, from which I take this introductory sentence, and am now about to make some further extracts*. Condemning "the old practice of firing, applying caustics, puncturing, bruising, blistering, or other stimulants," as inefficacious, Mr. Sewell (in the circular) informs us that he had "for several years employed *setons* beneficially;" "but now," he adds, "I invariably adopt the new plan." "In chronic cases, previous preparation is seldom necessary, beyond keeping the parts for a short time wet with cold water; but when the inflammation is acute, attended with swelling, and a tense adhesion of the skin, these symptoms should be first allayed by topical

* A copy of the circular, I believe, was sent to every member of the profession. It being, however, now eleven years since, it is possible many may have lost or mislaid their letters, and probable, that many veterinarians who have graduated within that period have never seen the circular; and therefore it is that I make my extracts from it full and sufficient in this place.

bleeding, fomentations, poultices, and the administration of a purgative, until the skin is relaxed."—"Commence the operation by taking up the skin between the finger and thumb of the left hand, and make an orifice with a knife, lancet, or with scissors, sufficiently large to admit the probe-pointed periosteotomy-knife*, which pass under the skin the whole length of the ossification. Then withdraw it, cutting through the thickened periosteum, down to the bone."—"If the disease or lameness be of long standing, a small tape or thread seton may be inserted, and kept in a few days."—"The operation is very easily performed, in from one to three minutes; but I consider it necessary only when there exists actual lameness. This, in the majority of cases, is *immediately* removed. A slight inflammation and swelling supervene the next day. The part may be fomented, and moderate exercise given, and generally in about ten days or a fortnight the animal is fit for work. The enlargement considerably subsides, and in some cases becomes quite absorbed."

Although Mr. Sewell has not mentioned the case of *spavin* as curable or relievable by periosteotomy, yet it is sufficiently evident that when spavin consists purely in exostosis—as in the form of *low* spavin or hind splent is the case—it is as susceptible of benefit from such an operation as any other exostosis; and, by way of proof, I may mention I have known lameness arising from spavin of this description removed in this way.

There can be no possible objection to an operation so simple, so harmless indeed, as periosteotomy; all that we have to desire is that it were more generally successful than in practice it is found to be. Were the pain, the cause of the lameness, the product of distention alone of the periosteum, we might place great reliance on periosteotomy; but, when we know that the *callus* of the exostosis is a *nidus* of inflammation, and, consequently, a source of pain *in itself*, we lose confidence in an operation which effects no more than the relief of the membrane covering the tumour. This constitutes the principal cause—there being other

* An instrument invented by Mr. Sewell expressly for the performance of the operation.

minor causes—of the failure of periosteotomy in pure exostosis. To the articular disease of spavin it is, of course, altogether inapplicable.

Were spavin nought but exostosis, there would be nothing in the way of the horse's restoration to soundness; the inflammation and pain attendant for a longer or shorter time on the callous or osseous tumour being relievable in a variety of ways, though by some more promptly and effectually than by others; whence have arisen the number and diversity of remedies proposed or practised at one time or other for spavin. The disease within the joint, not being known, was left out of the account of treatment. Defective pathology has led to insufficient or erroneous therapeutics; and, strange to add, even now that the former is amended, the latter still remains unimproved.

COUNTER-IRRITATION will be found to be the leading principle on which the treatment of spavin has hitherto been conducted, and it is a principle in entire accordance with the new lights thrown upon the pathology of the disease, and one on which we are still mainly if not exclusively acting in our therapeutics: at the same time we have a right—nay, it is our bounden duty—to inquire whether or not counter-irritation includes *every* therapeutic agent of use to us in our attempts to remove or relieve the lameness arising from spavin. We must bear in mind that spavin, which has hitherto been treated as consisting simply in exostosis, has to be regarded by us as a disease of the synovial membrane and articular cartilages, and, further, that it is to the *breeding* rather than to the development of the disease that our efforts must be directed, if we would hope for a favourable result. I hesitate not to assert that, under delusion of external appearances,

GREAT ERROR HAS BEEN COMMITTED in the ordinary modes of treating spavin; and to add, that it is high time this error, so serious to our patients and discreditable to ourselves, should be corrected. The disease presented to the mind of the veterinary practitioner of the present day for treatment is not the disease which the farrier of former time had in view: they both go by the appellation of "spavin," it is true; and to the simple circumstance of the name remaining unaltered, it would appear, is in a

great measure owing the continuance of the old remedies for spavin, as well in their commendable as in their objectionable forms. And when once the judgment has become wedded to any particular line of treatment, we all know how difficult we find it to lay aside old and favourite for new and untried remedies, or even to apply the old ones in any way different from that in which we have been taught, or from what our own practice appears to have confirmed as the best. If the same plan of treatment which those before us practised for *exostosis*, or bone spavin, be precisely that which is the best adapted for ulcerative disease of the synovial membrane and articular cartilages, then are we borne out in firing and blistering for spavin at the present day, the same as was done formerly; nor have we any reason to hope for better success than attended the practice of those who have gone before us, which, as we find from their writings, was sorry indeed. What does Solleysel say? Why, "that no person can promise a certain cure, or to make a horse sound that is troubled with spavin, by giving the fire."—What Gibson? "That horses are often *worse* after the use of forcible means to remove spavin than they were before."

And do we not at the present day, in too many instances, blister and fire, and fire and blister, scoring and torturing our patients in the severest manner, and yet, after all, without conferring any relief?—nay, on occasions, rendering horses lamer than we found them!—disappointing our employers, and vexing ourselves. In a word, our treatment has amounted to nothing but lamentable failure; to avoid which, or, at all events, to escape the incurrence of blame from such sinister results, must prove of serious import to the conscientious veterinary surgeon.

REST.—One has but to reflect for a moment on the delicate nature of the tissue by which joints are lined, and how the surfaces of that lining are defended from rubbing, one against the other, by a glib, soft, joint oil, to feel assured that, in its inflamed or ulcered condition, motion of any kind must be hurtful. And yet, after having blistered or fired for spavin, what is the usual practice? Why, *to turn the horse out.* Suppose a man to be the subject of ulcerative disease of the hip or knee joint, what would be the direc-

tions of his surgeon, touching his walking upon or using the affected limb? On this point, I imagine, we cannot have better authority than Sir Benjamin Brodie. "When the cartilages of a joint," says Sir Benjamin*, "are ulcerated, it may well be supposed that the motion of their surfaces on each other must be favourable to the progress of ulceration. I have known some cases in which *rest alone* was sufficient to produce a cure. In all cases *the symptoms of the disease are aggravated by any considerable exercise;* and we may, therefore, conclude that the keeping of the limb in a state of *perfect quietude* is a very important, if not *the most important,* circumstance to be attended to in the treatment." Do we not keep horses standing quiet, or in confined apartments, in treating them for navicular disease? And that is but another form of ulcerative disease of joint. Setting, however, all analogy out of the question, I can positively out of my own experience assert, that spavined horses that are rested during treatment will derive thereby a benefit of which those that are turned out will be deprived; and, further, that I have seen cases of recent spavin relieved to a degree approaching to soundness by "rest alone."

I know private practitioners meet with difficulties in keeping lame horses up in stables, or in providing boxes for them. The stall of the invalid is wanted for his working substitute or successor. Then there is to be considered the keep of the lame and useless horse, and how much less the cost of such would be at grass or straw-yard. Still, whatever weight these considerations may have with the proprietor of the horse, the veterinarian is in duty bound to give him to understand that his lame servant will stand a very much better chance of recovery under one plan of treatment than under the other; and that, should the remedies used fail in the horse that is turned out, or taking exercise, he must ascribe the failure to the lack of that quietude which is found so desirable towards the cure of spavin.

It is possible it may be argued, in opposition to what I have stated on the desirableness of rest or quietude, that spavined horses

* In his "Pathological and Surgical Observations on the Diseases of the Joints," p. 142-3, 3d edit.

that are severely fired, and afterwards turned out, by no means so infrequently come up very much relieved, and, on occasions, in a state of soundness. All this I am ready to grant. But I would account for the fact in a way somewhat different, perhaps, from the explanation commonly given. I admit that the firing, as a most severe and enduring counter-irritant, has been productive of great benefit; at the same time we must not overlook the other effect this violent excitement of inflammation and ulceration of the skin covering the hock necessarily has had, and that is, from the soreness and pain occasioned by flexion of the joint, the compulsion on the part of the animal to refrain as much as possible from moving, at all events, from *bending*, the hock; so that, in effect, the diseased joint has in a measure been, during the turning-out, in a state of repose. Moreover, it must be remembered that the motions of flexion and extension are principally effected by the rotation of the trochlea between the tibia and the astragalus, and that the cuneiform joint is not necessarily called into action, though it cannot escape being compressed the while, and consequently, in the state of disease in which it is, injured more or less every time weight is thrown upon the lame limb. After all, however, any abstinence from motion or compression the joint may experience in the turned-out horse, is not to be compared to the state of absolute quietude it enjoys in the horse that is kept up; added to which, whatever amendment may result from inability to flex or bear weight upon the joint so long as it continues painful, and sore, and stiff, we may expect will be again forfeited the moment he loses this pain and soreness, and regains the use of the limb. In fine, by turning out we are liable and likely to undo much, if not all, that we have taken so much pains to accomplish by the iron; and to this error in treatment I ascribe, more than to any other circumstance, the large proportionate number of failures in the cure of cases of spavin.

BLOOD-LETTING, as *locally* or *topically* as it can be practised, I regard as a valuable remedy in all cases where the disease is *recent* and *inflammatory* in its character. Were spavined horses brought to us as soon as they manifested lameness, instead of being worked on until they become too lame to continue at work—as is

but too frequently the case—success would attend many of those curative efforts which now end in lamentable failure. Topical blood-letting would not be then, as it is but too generally now-a-days, cast aside as an inefficacious remedy. There are three places from which we may draw blood with considerable effect on disease in the hock:—one is the saphena vein in the thigh; another, one of the superficial veins upon the hock; a third, the artery at the toe of the foot. Of these I prefer the first, taking care to open the vein as low as I conveniently can, and thereby to render the evacuation as topical as is possible. We cannot always be certain of obtaining the quantity we may desire from the superficial veins running over the side of the hock; and as most of these veins communicate with the saphena, there seems no great good in preferring them. The toe of the foot is too far distant from the seat of disease.

It appears strange that early and copious abstractions of blood should be so universally recommended and practised for disease of the navicular joint; and yet for the disease of the hock-joint—which is of an analogous nature to it—nothing should be thought of but firing and blistering. Neither theory nor experience will countenance inconsistency like this. Under the same circumstances there is as good cause for bleeding in *articular* spavin as in navicular joint disease; the reason why it is not "found to answer" being, that it is not put into practice under similar circumstances. A horse falls lame in one of his *fore* limbs, and the lameness becomes too evident to escape observation; and his master, either from sympathy or shame, at once desists riding the animal, and takes measures for his restoration. But a horse may fall lame in one of his *hind* limbs, and his owner not discover it, at all events not for some time, or may mistake it for "cramp," or some "peculiar gait" the animal has acquired; and even should the lameness be detected, still, as it does not amount to enough to incapacitate the horse from working, and as the "stiffness" he manifests when first brought out of the stable "goes off" through exercise, he is continued at work until he evinces absolute incapability, or lameness to a degree to excite shame, if not compassion, in the breast of his master. For these reasons we do

not have spavined horses brought to us for treatment at so early a period of disease as other cases of lameness, or at nearly so early a stage of their disease as, to render their cure probable or hopeful, we ought to receive them at. I shall now relate a couple of cases—out of several I could produce — to shew the amount and kind of relief we may hope to afford in recent inflammatory spavin by blood-letting.

CASE I.—*Jan.* 3, 1839, D 4, a five-year-old grey mare, never known to have been lame previously, while at work in the riding-school, suddenly manifested lameness in one hind leg. She was immediately brought out to be shewn to me. I found her quite lame in the near hind leg, exhibiting a prominent spavin upon the near hock. I ordered her to have a high-heeled shoe nailed upon the foot of the lame limb, to lose sixteen pints of blood from the saphena vein, immediately above the hock, to take a brisk dose of cathartic medicine, and to be kept standing quite quiet, tied up in her stall.

10*th.*—Saw her trot out for the first time. She runs almost sound. Apply a sweating blister to the exostosis.

18*th.*—Scarcely any lameness remaining.

26*th.*—Sound. She was nevertheless kept in a state of quietude for a month longer, and then sent to work.

*In March following*, she failed in the other (the off) hind leg, but without any appearance of bone spavin. Notwithstanding the absence of all tumour, however, regarding her case still as one of spavin, I treated her off hock the same as I had before treated the near, and the result proved equally satisfactory. She became sound in about the same period of time.

She afterwards continued at her duty until the 14th January of the following year, on which day she was brought to me again, now lame in *both* her hocks, and from bone spavins equally demonstrable in them both. She was, after due preparative treatment, fired *deeply* in both hocks. In June of the same year she was cast and sold, in consequence of going with "stiff" hocks—wanting that flexion in them requisite for efficient cavalry action.

CASE II.—F 16, a black gelding, eight years old, was admitted on the 19th December, 1839, for "lameness in the off hind-

leg," the cause of which was not apparent. Blood was drawn from the saphena vein, a high-heeled shoe put on, fomentations used to the hock, and a strong dose of physic given.

*Jan.* 10*th*, 1840.—Three weeks afterwards the horse was discharged for duty, "sound."

17*th*.—Returned to the infirmary stables on account of relapse of lameness in the same limb, the cause now being, evidently enough, *spavin*. Local blood-letting, fomentation, &c. were again practised, but this time without affording any relief.

29*th*.—The hock was blistered. After a month's rest, the blister in the interval having worked off, there was still no amendment.

*March* 2*d*.—The hock fired. Failing to derive benefit from which, he was, ultimately, cast and sold.

These cases shew us that good may be expected from blood-letting practised *early* in a case of spavin, but not afterwards, and thus afford additional evidence of the desirableness of submitting spavined horses at once to treatment. Veterinary practitioners, who have few or no opportunities of treating spavin in its inchoate stage, have, perhaps, little notion of how much may be effected in the way of cure by blood-letting, the horse being the while kept at rest. It might, indeed, be argued that the rest does the good. Be this the case or not, all I can say is, that, aided by strict quietude, I have found venesection of essential service in the incipient forms of spavin lameness. At the same time I am fully of opinion that any amendment we may have obtained by such means is rendered permanent—when perhaps it would prove but temporary—by following up the blood-letting by counter-irritation. I would not counsel any person, whose spavined horse has been relieved or cured by such means as local blood-letting, and physic, and rest, to put that horse to work again until he had undergone a pretty severe course of counter-irritative treatment—in the form of blistering, or firing, or setoning, &c., as the case may seem to require.

Although recent cases of spavin are in general relievable, if not curable, by blood-letting and rest, experience has taught that others, in advanced stages of the disease, and which unfortunately

constitute by a great deal the majority of the cases brought before us in private practice, rarely obtain much, if any, relief from remedies so mild and transitory in their operation. Still, when there exists any sign or indication of inflammatory action in the diseased joint—when lameness is of that painful nature, that, for the sake of mitigating the animal's suffering at least, the soothing and not the irritating plan of treatment is manifestly called for—blood-letting, with physic and fomentation, &c. ought to be had recourse to, and will prove the best preparatives for any counter-irritant treatment intended to come afterwards.

### *Firing.*

FEARFUL and formidable as the operation of firing must be admitted to be, thirty years and upwards of observation and experience of my own, tempered by a regard to the opinions of others thereupon, has brought the conclusion home to me, that, for the radical and permanent cure of articular spavin, it is a remedy paramount to all others. In the inchoate stages of spavin, we have seen that topical blood-letting, with fomentation, physic, and rest, frequently restores the horse to soundness. These remedies failing, blisters, setons, stimulants, and other local applications, at times, succeed. From the day, however, that the case of spavin becomes confirmed, inveterate, chronic—in such cases, in fact, as give us reason for apprehension of return of lameness, the actual cautery is the remedy alone to be confided in. The ancient practice was—and that practice, backed both by humanity and reason, has been handed down to the present generation of veterinarians—before so severe and painful an operation as firing was had recourse to, to make trial of *mild* remedies; and willingly would I counsel my professional brethren to pursue the same philanthropic course of treatment, did not experience in essays of the kind teach me, that, in such cases as I have described above, they have seldom proved successful, at least, hardly ever permanently so; and that the actual cautery, resorted to at last through com-

pulsion, was, by so much as its employment had been deferred, lessened in its chance of success.

"PREPARATION FOR FIRING," as it is called, will be required in all cases where it is intended to apply the cautery deeply and extensively, and will be advisable even though so circumscribed be the fired surface as it is in the case of spavin. And the topical blood-letting and physic, &c., employed for the cure of recent spavin, though they fail to remove the lameness—probably through the case being of that antecedent date that relief is hardly to be expected from them—will be well adapted to bring about this desirable condition of body. So far, therefore, from such antiphlogistic treatment being thrown away, and the interval it has occupied being regarded as so much time and labour lost, it will turn out to be the best preparative, local as well as constitutional, we could have instituted for an operation so apt to create excessive inflammation and consequent constitutional disorder, as firing: while the fomentation "softens" the skin and renders it more susceptible of the fire*, the lowering of the system prepares it to receive the shock apt to be occasioned thereby.

SEVERELY PAINFUL AND IRRITATING AS FIRING is known to be, it sounds any thing but agreeable, even to the ears of professional men, to hear persons—sporting gentlemen and others—ordering that their horses be fired for this or that trifling defect, the nature of which they know little or nothing about, with as much *sang froid* as they issue an order for bridling and saddling their hacks or hunters. The phrase "firing," to them, seems to convey no consequences with it. Scoring a living horse's limbs appears to them no more than a flea-bite. And yet, before now, have horses died in consequence of the pain and irritation occasioned by firing. Mr. Spooner† mentions the case of a horse that was destroyed from being fired. Nay, horses have died from having their legs blistered even. An instance of this came under my own observation.

A veterinary surgeon, a good practitioner, and a man of many

* Solleysel's View of Local Preparatives.

† See VETERINARIAN for 1837, p. 147-8.

years' experience, killed a horse of his own in this way. It was a three-parts bred horse, and, no doubt, an irritable subject, and possibly not duly prepared: he being, rather in haste, required to be blistered or fired on account of staleness in his legs. Unfortunately, and certainly injudiciously, the four legs were *simultaneously* blistered, with blistering ointment such as was at that day—the year 1821—in common use, containing a small proportion of corrosive sublimate. The legs took to swelling more than they ordinarily do after the application of blisters, and yet not to a degree to create alarm. They, however, commenced discharging from their surfaces about the usual time, but rather prematurely the discharge abated; and on the fourth day after being fired the animal was seized with oppression in his breathing, manifesting symptoms of fever, loss of spirits and appetite, &c. Feeling alarmed at this attack, his owner called on me to come and consult with him on the case. This was about nine o'clock on the morning of the fifth day. I found the patient breathing hard and oppressively, with dilated nostrils, through which the Schneiderian membrane was seen red, like scarlet; and it was told me he had ejected, through his nose, a little while before, a frothy coffee-coloured fluid, having a disagreeable odour. The hind limbs were swollen to that degree that the thighs partook of the tumefaction; but the swelling of the fore limbs had not as yet reached the arms. His pulse was not more than 60. But there was an expression of pain and anxiety in his countenance too significant to be mistaken, and he was restless, though loose in his box, ever and anon looking back at his flanks, or, in distress, thrusting his nose out at the door of his box, seeking the cold air. His legs were with all possible haste got into warm baths, and he was bled, and took medicine, &c. The blood, as it flowed, proved treacly in consistence, dark even to blackness, and it quickly congealed; though, after all, the coagulum turned out any thing but a firm one. No relief being obtained through the day by what had been done in the morning, at half-past seven o'clock at night he was bled again. Now, however, a gallon of blood was with great difficulty obtained. After this the mucous membranes became pale, the mouth and lips and extremities cold, the pupils

dilated, respiration hurried. At nine o'clock all his symptoms had increased. His flanks were now beating at the rate of 66 per minute, his pulse was imperceptible at the jaw, and at the heart beating too feebly and flutteringly to be distinctly counted. Afterwards, he broke out, over his whole body, into a profuse sweat. His extremities had a deathlike feel; his eyes were staring, wild, and delirious-looking, the pupils unaffected even by the light of a candle. At twelve o'clock he died. Thus, in seventeen hours from his first manifestation of constitutional irritation was this wretched horse a dead carcass. The *post-mortem* appearances—such, at least, as could be viewed as the result of so short an illness—consisted in morbid aspects of the air-passages, pleura, and lungs. The lining membrane of the trachea and bronchial tubes had turned black from inflammation, appearing as though mortification had actually taken, or was on the eve of taking, place. There was also some effusion into the substance of the lungs, though these organs were in a tuberculous condition from former disease.

The above case is instructive to us in a double point of view. First, it teaches us caution in blistering—and *à fortiori* in firing—horses, and especially warns us against doing so in *the four limbs simultaneously;* and, secondly, it shews us that, in horses known or suspected to have any disease of chest, firing and blistering are doubly hazardous operations. Firing or blistering a circumscribed surface, like the seat of spavin, it is true, is of no great moment; it is when we come to fire—and *deeply* fire—the legs from fetlocks to knees or hocks, that evil consequences are to be dreaded in irritable constitutioned horses, or such as are unprepared to endure so great an amount of pain and irritation.

THE ANCIENTNESS OF FIRING is notorious. Solleysell tells us, Arabians, Turks, and Italians practised it, to strengthen their horses' limbs. Gibson likewise informs us that the practice "was first borrowed from the Arabians," and that "the Arabians fired their horses *to strengthen their limbs**."

VEGETIUS has a very interesting chapter "OF THE MANNER OF

* See vol. i, edit. 2, of his "New Treatise on the Diseases of Horses," p. 165.

GIVING THE FIRE, AND THE CAUTERY *." In it we learn, that "to promote the cure," authors have pitched upon a twofold remedy, viz. *the lessening of the quantity of blood, and the burning of the cautery*, by which relaxed parts are *strengthened* and confirmed, the cautery being "*the very last thing to be done* for performing the cure." "The burning constringes or binds fast the parts that are relaxed,"—"takes clean away cankered sores,"—"recalls to their own natural state the parts of the body which from any cause whatsoever have been disordered, and put out of their natural state;"—"for when you have broken the skin with the red-hot iron, all the distempered matter is concocted and maturated, and, being dissolved by the benefit of the fire, runs out with the humour through the holes made by the cautery, and so the disorder is cured, and the pain removed."—"But you must know that cauteries made of COPPER are more effectual to perform a cure than those made of iron."—"Sometimes (in firing) the points of the cautery are thrust into the part. Sometimes the red-hot iron is drawn along so as to form the similitude of a line or of little palm branches; for in this the skill of the horse-doctor is commended, if he cures the animal with the cautery, so as not to deform it. But according to the place where the distemper lies, and to the state and condition of the skin, the cauteries are impressed with more force, or more lightly,"—"* * the cure ought first to be attempted by letting blood, drenches, ointments, &c.; and if they are of no benefit, last of all the fire is applied."

SOLLEYSELL† entertains strange notions about the influence of the moon on fired horses, directing that the "fire" be given, unless in cases "of extream necessity," always "during the wane of the moon." "The best time," he says, "is about five or six days after the full moon."—Solleysell appeared to have reason to dread deep firing; for he cautions us against "piercing the skin with red-hot *knives*," as he calls the firing-irons; his rules of proceeding being to—"1. Press not too hard upon the part. 2. Let the knife be red hot, not flaming. 3. Let it be heated in a

* Chap. xxviii, p. 57, of the English translation, by the "Author of Columella Translated." London, 1748.

† Compleat Horseman, Hope's Translation, edit. ii, pp. 283-6.

*charcoal* fire."—"Unless in cases of extream necessity you must *never pierce the skin,* but only sear it gently, and by degrees, till it be of a reddish colour, resembling a cherry:"—"'Tis incomparably better to make use of a moderately hot knife, and to draw the same stroke five or six times over, than to make it at one dash with a very hot knife."—"Seven or eight days before the application of the fire, the parts must be *softened* either with baths or fomentations."—"The part being softened, you must proceed to give the fire gently, but dexterously, according to the nature and situation of the part, either in the form of a *feather, rose, shield, palm of the hand,* or any other convenient figure."—"The fire thus dexterously and lightly given to a part that is already softened, will produce a much more considerable effect than the most violent fire that can be applied without a due preparation of the part by softening remedies."—"You must give the fire with a knife that has a pretty thin edge, but rather round than sharp, and always rub it on a piece of wood when you take it out of the fire, for the ashes that stick to it would cut and fester the skin. You must also observe to *follow the hair,* that it may cover the marks after the sores are healed. Thus, for example, when you have occasion to give fire on the sinews of the fore legs, you must draw a line or rose downwards, between the sinew and the bone on both sides, and three or four more upon the sinews at equal distances, rather than imitate those who draw cross lines, as if they were going to broil a fish."—"I have hitherto used *copper* knives with very good success, and I shall always prefer them before gold, though not before silver."—"The effect of the fire lasts twenty-seven days, which may be divided into three equal periods, for its *agglutination, state,* and *declination.*"—"'Twould be convenient to let the horse repose *all the while.* But the shortest time of rest that can be allowed on this occasion is eighteen days."—Not even gentle walking exercise, half an hour daily, which will cause the fire to "operate more vigorously," must be commenced until "eighteen days after giving the fire."—"I may justly reckon myself among the number," adds Solleysell, "who have brought this method (firing) into fashion at Paris;"—and "I think I may be allowed to say"—"I have done a consider-

able service to the public."—"About twenty-five years ago, the giving of the fire was reckoned to be as effectual a way to dispatch a horse as the discharging of a musket at his head; but now the case is altered, and this method is commonly practised without the least scruple."

GIBSON*, in his relation of the case of "a very fine young horse," who from hunting had "put out a spavin," and who was given up to have done "what he (Gibson) would with him," gives us the following account of firing: "Very strong causticks" having failed to afford relief, Gibson "judged it *safer* (than venturing farther with caustics) to fire." And the following constituted his "manner of firing a bone spavin:"—"The irons for the operation were made in the shape of a fleam, that they might go deep into the substance of the spavin, only they were not pointed as a fleam, but rounded on the face, and made thick towards the back, that they might retain the heat. In this operation some small bloodvessels were cut through, which could not be avoided, and caused pretty large effusion of blood, till it was stopped with styptic. The wound was about half an inch deep, and an inch in length, with two or three short strokes or lines on each side. It was kept with a dressing of dry tow till the third day, that the bleeding might be fully stopped: nothing was discharged for several days but a glut of viscid water, during which time he was in great pain, and his hock swelled very much, which symptom was removed by fomentations, such as are recommended for punctured wounds. The first dressings were only turpentine spread on tow, afterwards mixed with precipitate finely ground, viz. two drachms to an ounce of turpentine." It was "two months" before "the skin began to close over the wound."—"In the space of three months the sore was quite healed up, and covered with hair, except about the bigness of a farthing, over which I caused a defensive plaster to be laid. He was purged during the time of his cure, and in four months he went through all his exercises, and hunted the first season, and every season afterwards, perfectly free from lameness."

* Op. cit., at p. 604, vol. ii, p. 262.

IN THE FOREGOING EXTRACTS several observations strike us forcibly for their accuracy and truth, and their applicability, and even the use that is constantly made of them, at the present time. One is, the admonition to make trial of *mild* or *simple* means of cure before we call into our aid so harsh a measure as firing.

BLUNDEVILLE'S caution is, "not to be too hasty in giving the fire," but "to attempt, *first*, all other convenient remedies; and, when nothing will help, to make the fire our *last* refuge." Humanity would prompt us in *every* case to do so; but I fear that in too many cases we should discover, when it was late, that it had proved bad medical policy to have so acted. I must confess, there was a time when I should always have given a preference—a trial, at least—to simple and comparatively painless remedies, before I had recourse to firing; believing in Hippocrates' aphorism, that, "Quos cunque morbos medicamenta non sanant, ferrum sanat; quos ferrum non sanat, ignis sanat; quos vero ignis non sanat, insanabiles existimare oportet." The new lights, however, of late years thrown upon the pathology of spavin, together with the observation of the frequent recurrence of lameness after horses have been sent away "cured" of spavin by such mild means, have wrought, in this respect, an entire change in my practice. Viewing the case as one of *articular* spavin—of disease *within* as well as disease without the hock joint—after having prescribed topical blood-letting and fomentation, and physic, and low diet, and rest, even though it should turn out that the case has received so much benefit thereby as to be restored to soundness, my advice still is, the firing-iron had better be "run over" the hock to make *permanent* that which rest, and remedies so simple, have accomplished. Perhaps it will be asked here—Why not *blister* or *seton* the hock? My reply is, because neither blister nor seton is likely—has by experience been found—to confer that *lasting* benefit which the actual cautery has been proved to afford. This, however, is too weighty a question to be disposed of by naked assertion: it will have to be considered hereafter.

Another pointed observation of the ancients, and one we have never lost sight of, it having been handed down to us from generation to generation, is the *bracing* and *strengthening* power of fir-

ing. At one time there were breeders, and other horse-persons, in our own country, who, like the Arabians, would have their foals' or colts' legs and joints fired with a view of "strengthening" them. Whatever effect of a sthenic description, however, firing may have upon legs or joints weakened by disease, I am unhesitatingly of opinion that no *sound* or normal parts can reap the same benefit from it; that, in short, we cannot improve that which is already, *of its kind*, perfect. We can neither "gild refined gold" nor add a "perfume to the violet."

THE OPINIONS OF VETERINARIANS OF OUR OWN DAY on the important subject before us, fortunately for me on the present occasion, are obtainable in a form and to an amount that will, I can entertain no doubt, prove highly satisfactory to all who desire to institute comparisons between the old and the new schools of veterinary surgery. In the year 1837, Mr. Mayer, jun., of Newcastle-under-Line, read a paper* to the Veterinary Medical Association "On the Actual Cautery and Setons, and the Utility of each in Veterinary Surgery," which is not only in itself a valuable production, but has proved, in the issue, of very great service to us, inasmuch as it became the means of eliciting, in the course of the debate to which it gave rise, the opinions of some of the oldest and most experienced practitioners of the day.

MR. MAYER (jun.) himself, has found the actual cautery, as a remedy for spavin, of superior and permanent efficacy. The cautery has, with him, succeeded when setons have failed in establishing a cure; and "not alone for the cure of spavins," but for other diseases as well.

MR. SIBBALD, "with one exception the oldest practitioner present" on the occasion of the discussion of the paper, said, "so far as osseous deposits were concerned, and *spavins*, and lamenesses referrible to the tendons of the fore legs, he had frequently found setons altogether fail; and then, the firing-iron being resorted to, the horse had been cured."

MR. THOS. TURNER—the present President of the Royal College of Veterinary Surgeons—"for twenty years had been accustomed

* Afterwards published in the tenth volume of THE VETERINARIAN.

to have recourse to the heated iron *in almost every case of lameness belonging to the leg*"—"He had performed (with it) hundreds of cures that could not have been accomplished by other means."—"For osseous tumours, for lesions of the thecæ of the tendons, whether the perforatus or perforans; for all injuries of the suspensory ligament, &c. is there—he spoke to practical men—any thing equal to the firing-iron? The same with tumours on the outer and inner ancle. The same with *spavins*."

MR. SIMONDS regarded the question as one of *comparative* value and usefulness. "In the incipient stage of spavin, a seton might arrest the progress of the evil; but when there had been bony deposit, and the action of the joint had been interfered with, nothing but the actual cautery could effect a cure."

MR. BRABY was decidedly of opinion that, "with regard to most of the lamenesses of the horse, setons were quite inefficient, and must give way to the scientific application of the cautery."

MR. HUTCHINSON.—"I have had horses under my care with spavin which I have fired in the usual way without any good effect. I then have had recourse to the seton, and they have become sound." And this "was bone spavin, and I fired deeply."

MR. SPOONER—Deputy Professor, Royal Veterinary College—admitted to the fullest extent the action of the cautery as "a counter-irritant," and to a considerable extent its action as "a local depletive;" but repudiated the notion of its acting "as a bandage."—"He was an advocate for firing in certain cases; and he undoubtedly agreed with Mr. Turner—when you fire, fire!"

MR. TURNER (James) did not wish to decry the operation of setoning; he knew the occasional good effects of setons, but he also knew the good effects, the incalculable benefits, arising from firing.—"He could not refuse to divulge one startling fact arising from the firing operation. He called it 'startling,' for the effect was magical. Whether he undertakes the cure of ringbone or spavin, or of osseous tumours generally, or of ligamentous swellings, the very moment that he penetrates the tumour to a certain depth, the lameness vanishes, and the patient becomes in a manner a sound horse. This may be considered as a novelty in

veterinary practice, but it is a true fact, not occurring in every case, yet not unfrequently seen." This he accounted for by "penetrating deeply the diseased part, and actually *neurotomizing* it."—"Much is accomplished by the penetration of the iron at the time; and afterwards considerable sloughing ensues, and the parts become nearly or altogether insensible, and the horse can go and can work like a sound horse, and is capable of almost every thing he could effect before he became lame."—"That can be done by deep firing which never was accomplished by superficial firing."—"He believed that the neurotomizing the part was the principal agent in the cure; but still he had always thought that the artificial bandage thus produced was a most important agent in causing the absorption of osseous or other tumours."

MR. CHEETHAM advocated firing in preference to the seton, which, regarded "merely as a counter-irritant," he thought "was not equal to a blister." The actual cautery was "one of the most powerful of remedies."—"As to firing being a bandage, there was no doubt about the matter."—"Spavin was not so much a disease of the mucous membranes, as it was primarily a ligamentous disease."

MR. HOLMES thought, in the use of the firing-iron and the seton, the distinction to be drawn was "the length of time the disease had existed, and the evident change of structure that had taken place. The great objection to firing was the blemish that it left, and the consequent diminution of value entailed."

MR. YOUATT thought that in spavin "the seton might be most advantageously employed." He reprobated the deep cautery lesions of Mr. Turner, but was fully impressed with the benefit said to accrue to the fired parts from the old and new skin growing tight and inelastic, and "acting as a bandage" upon them.

MR. DAWS preferred—"for thorough-pins, spavins, and curbs," —"*the iron* beyond dispute." But in firing he has rarely penetrated the skin without having had cause to repent of it." In two instances of "broken down" horses, fired for experiment, deep cautery lesions, such as were recommended by the Messrs. Turner, were followed by death.

MR. BEESON was the decided advocate of the seton. Conjoined with blisters, he has found it perfectly efficacious. He could safely say, he had not fired for fourteen years.

THE WEIGHT OF EVIDENCE OF THE VETERINARIANS OF THE NEW SCHOOL, afore-named, preponderates in favour of "giving the fire" for spavin · setons being for the most part regarded either as unadapted to the case, or as remedies inferior in point of efficacy; and blisters being set down lower still in the scale of curative agents. If, then, we take it to be a settled point that it is our duty or best policy to give the fire, the next question we have to ask ourselves—one that likewise fell under discussion in the course of the afore-mentioned debate—is

TO WHAT DEPTH OR EXTENT THE FIRE SHOULD BE GIVEN? From what we can collect from the old authors, some of them appear to have made pretty free use of the iron. Gibson speaks of the wound he made with the cautery being "half-an-inch deep," though but "an inch in length." I can well remember that my father used his firing-irons with great boldness; and my impression is, that at that day, thirty or forty years ago, such was the *general* practice of firing. At the time, however, that setons came so much into vogue, at the London Veterinary College in particular, and after the introduction of periosteotomy by Professor Sewell, firing became much decried as a "cruel" and "unnecessary" operation, it being alleged that setons were fit and efficient substitutes for it. In these attempts to discard the red-hot iron out of the veterinary surgery—as it had already been cast out of human practice—there was manifest a most praiseworthy spirit of philanthropy, descending from the man upon the brute, and alighting upon that brute which we most deservedly hold in especial regard: yet was there one paramount consideration—one insurmountable objection to turning the cautery out of doors—neither medicine nor instrument was left in our hands which, in *certain cases*, could supply its place; and, therefore, had we persisted in relinquishing the use of the hot iron, we must have confessed ourselves unable to work cures in many inveterate and all-but-hopeless cases which, with its aid, we now successfully undertake. But, said another class of veterinarians—among whom, I am not

ashamed to confess, I, in former days, stood myself—"cannot we effect all we desire or require by

SUPERFICIAL FIRING?" by which is generally meant, firing that does not penetrate the skin—the cutis vera. It was thought that—for the sake of the sufferer—this sort of compromise might be made. Those veterinarians, however, whose practice lay the most in hunting and racing counties, and who had not only spavins and curbs to contend with, but had awful cases of what is called "broken down" to mend or restore, found from experience that, with them, nothing would suffice short of the *deep cautery lesion;* and the first person to remind such practitioners as might have been led astray by the practice of setoning, &c., or the error of supposing that deep firing could be dispensed with, was Mr. James Turner. So long ago as the year 1830, "AN INQUIRY INTO THE CIRCUMSTANCES WHICH HAVE BROUGHT INTO DISREPUTE THE OPERATION OF FIRING FOR LAMENESSES OF HORSES, WITH AN IMPROVED METHOD, AND SUGGESTIONS FOR ITS ADMISSION INTO HUMAN SURGERY," was sent by Mr. Turner to *The Lancet*, and from that journal copied into THE VETERINARIAN. In this "inquiry," after stating that "experience gained by a long practice in a hunting country notorious for its hills and flints incapacitating the legs of horses"—"his desire is to 'see the phœnix rise from its dying ashes'"—which I interpret to be, the restoration of the old or deep method of firing—he informs us, his "practice in firing horses has convinced him that the success of the operation, *if performed for the removal of lameness*, where the ordinary means have failed, whether situate in a joint or a sinew, depends solely on making each separate line or incision from end to end, completely *through the skin* or common integuments, *cutis* as well as cuticle, and boldly exposing the cellular tissue forming the immediate covering of the ligaments, tendons, periosteum, &c., with all due caution, of course, not to pass the instrument so near as to wound or scar these important structures." In spavin, his practice, as we have already seen, is to "penetrate deeply the diseased part, actually neurotomizing it."

In a case of *articular* spavin I feel no hesitation whatever in saying, that the deeper or more severe the firing, compatible with

the safety of the joint, the greater, in fact, the counter-irritation produced, the greater is likely to be the benefit accruing therefrom. Persons who have been fond of plugging the spavined hock with caustic, after making perforations in the exostosis with the actual cautery, have often succeeded in conferring signal and permanent relief; and I look upon this severe application of the firing-iron as much the same in regard to effect, there being risk in both cases of doing harm by inducing sloughing beyond what was intended, and in neither case being there any *absolute certainty*, when the case is one of inveterate and established lameness, what will be the result.

There is a notorious fact in regard to spavins in process of cure or under treatment, which must not be lost sight of; and that is, that, notwithstanding a horse may experience a return of his lameness after his first treatment for spavin, or may not, perhaps, have been benefited by it, yet let him become sound from secondary or subsequent treatment, and the chances are he will continue sound at his work, and always afterwards remain so; the explanation of which appears to be, that, so long as any periosteal or ligamentary tissues clothing or connecting the cuneiform bones are left unconverted into osseous matter, inflammation will return, and lameness be the consequence; but, from the moment the cuneiform bones become consolidated from osseous deposition, or completely anchylosed, inflammatory action ceases in the diseased parts: the horse having the main articulation of the hock—that between the tibia and astragalus—left unimpaired, sufficient for the flexion and extension of the limb, efficient, indeed, for all the ordinary purposes of motion, and constituting of itself in action what commonly passes for functional soundness.

THE FIRING IRON in use in our own day differs, as it would appear, little or nothing from the fleam-shaped one described by Gibson. Since firing has become a sort of *fashion*, one preferring it in the "similitude of a line," another in that of "little palm branches," or of a "feather," "rose," &c. &c., and that, in order to make the firing appear thus neat and pretty, it has become necessary to have the horse *cast* to perform the operation, the firing irons have been made shorter in their shafts, and straighter or less

curved in their blades: the material of which the cautery is made being *iron* in preference to the *copper*, as used by Vegetius and Solleysell. In point of *efficacy* it can make very little difference whether the lines or scores drawn with the firing iron be parallel or angular or crosswise: my own notion accords with Solleysell's, that they should be drawn "downwards," i.e. run parallel one to another. My rule is, that their direction in all cases be regulated *by the course of the hair*. It is certain that, so drawn, they leave less blemish than when drawn athwart the growth of the hair, and that this is equally as effectual as firing performed in any other way. The only drawback being—and it must be confessed this is a serious one—that, the proprietor of the fired horse not being so well pleased with the appearance of the work, "the skill of the horse-doctor" will fail to be so much "commended." This FANCY-FIRING, as it may be called, has, as I have before said, entailed the necessity of *casting* horses for the operation; and this, of itself, is an objection to it of no mean account; for when we come to consider how many accidents have occurred in casting, even under the most careful and judicious hands, and that every horse that is cast—although it must be acknowledged the chances against being hurt are very great in his favour—runs a risk, remote though it be, of injury, it certainly must be considered desirable for veterinarians to hold up and practise a method of firing which does not call for the throwing of the subject.

THE PRIMARY OR INSTANT EFFECT OF THE ACTUAL CAUTERY on the skin is to sear and to divide it: the division of the *cutis* being frequently attended—especially when the edge of the iron, instead of being rounded off, as it ought to be, is sharp—by some trifling hæmorrhage, and constantly by the destruction of such subcutaneous cellular tissue as the cautery happens to come in contact with. Pain, felt or expressed a great deal more by some horses than by others, accompanies the searing; annoyance from "the fire in the parts," and irritation follows, great or little in amount, according to the extent of surface fired, the depth or superficiality of the firing, the susceptibility or idiosyncrasy of the subject, &c.

SECONDARY EFFECT.—For the first and second days after

being fired—the hock being the part our observations in particular have reference to—nothing but the dry scores of the iron are observable. The hand applied to the surface may discover increased heat and tenderness, and probably fulness as well, of the part fired, or there may be general swelling of the limb; and yet, if we may judge from the quietude the animal commonly evinces, while tied up in his stall, his general aspect, and his unimpaired appetite, no great pain appears to succeed this circumscribed application of the cautery. About the third day, reckoning the day of firing as the first, there will be noticeable, in addition to more or less swelling of the limb—which, should it not have come on the day before, will most likely become apparent enough now—*exudation*, in the form of dew-drops, of sero-albuminous fluid, tinged in those places which the iron has penetrated the deepest, with blood. On the fourth day, the swelling of the limb will have become augmented, and the liquid exudation, increased in quantity, will be observed oozing out from the fired places, trickling down the leg, staining white hair, wherever it comes upon it, of a bright orange yellow colour, while at the bottom of the deepest scores there will, about this period, be visible some pus formations. The fifth day will disclose purulent secretion pretty generally from such parts as gave omen of it the day before: any scores that may not have penetrated the *cutis* continuing to be gummed up with the albuminous exudation. The tumefaction of the limb—the horse having been kept all the while standing, fastened up in his stall—is now at its highest; and this is the period when the horse should be removed into a loose box, and have his liberty given to him, taking the precaution to put a cradle upon his neck for fear of his gnawing or biting his fired hock.

From this time there will be daily augmentation of the discharges, the purulent, as the case proceeds, prevailing over the serous and albuminous; and, shortly after he has had it in his power to take exercise, there will be observed manifest decline of the general swelling of the limb. The secretion of pus taking place now from the surface of the cutis, as well as from the ulcerated scores, the matter lodges, and burrows underneath the deadened exfoliating cuticle, forming pouches under it, or little

abscesses; and the result of this detention of pus in contact with the cutis is, ulceration of the latter, destruction of its substance, and with it of the bulbs or roots of the hair; and this ulcerative process goes on—supposing the lodgment of pus be not disturbed—to the entire destruction of the skin; so that, in the end, the eschars of cuticle forced off in patches by the accumulation and weight of purulent matter upon them, the cutis presents a perfectly raw surface—a sheet of ulceration, in fact. This is succeeded by a *healing* process, bringing us to the

TERTIARY OR REMOTE EFFECTS OF FIRING. The ulcerative action is no sooner arrested than a granulative process commences; and surprising it is to observe how rapidly the cherry-cheeked granulations form and spread, filling up the chasms and holes ulceration has made. As fast as the deficiences are made good, the remnants of skin—if any be left—are stretched abroad to cover them; and soon, here and there, will little insulated patches of hair be seen springing up on such parts as still retain the pilous bulbs entire. Such places as the old skin, by a natural process of stretching or spreading—"contracting," as it is called—cannot be made to cover, must be furnished with new skin; and skin-making is not only a tardy but an expensive process in the animal economy: at least, so we have a right to argue it to be, from the space of time it occupies, and the evident efforts of Nature to make the most of the old skin. What with the stretching or spreading of the old, and the formation of the new skin in barely sufficient breadth to meet the demands of the case, the healed cicatrized part has a tense and compact feel it did not possess before, and this apparent tightening of the skin it is which, as it is said, "acts as a bandage"—bracing and "strengthening" the fired part. I suspect, however, a good deal of fallacy in this assumption of "bandage." The inflammation so long pervading these parts has caused effusion of adhesive matter into the subcutaneous cellular tissue, the result of which is agglutination of the *cutis vera* to the parts underneath—the *periosteum, peri-chondrium, tendinous thecæ,* &c., which agglutinated condition of parts it is that, in the absence of the cellular connexion through which they obtained motion upon one another previously, gives the

skin the sensation of being *tightened* or *braced:* relaxation of it not again taking place until the solid effusion into the cells of the subcutaneous reticular membrane becomes absorbed.

THE MODUS OPERANDI OF FIRING will comprise, not only the effects produced upon the skin and subjacent tissues by the red hot iron, but also the relief or aggravation accruing therefrom to the disease on account of which the firing is employed, together with an explanation of the mode or manner in which such relief or aggravation is brought about. It would appear that the physiological effects of firing must be, in their first impressions at least, closely similar to those arising from the application of the *moxa* to the human subject. The pain is "drawn out" from the distempered part by the suddenness and intensity of the shock occasioned by the cauterization to the nervous tissue of the healthy structures around and about it; the parts actually burnt or cauterized having their sensation at once destroyed by the searing of the divided nervous filaments. However painful the operation may be at the time of performance, it appears to leave no more annoyance behind it than a general burning, benumbing sensation, under which a horse will take to feeding with as eager an appetite as though he had nothing amiss with him, and will, on occasions, as Mr. Turner assures us, "trot off sound" to his stable. And this will endure until the period of inflammation arrives. Then will this suspended or benumbed sensibility be followed by a morbidly sensitive condition of parts, as well as by increased vascularity. Come to dissect fired limbs, what do we find? Through the earlier stages, red vessels in unforeseen abundance, and of larger size than ordinary, infiltration of the cellular tissue, general thickening and augmentation of substance: through the later stages, in consequence of a process of absorption, a disappearance of all this increased deposit, proceeding to an abatement or removal of parts in a state of enlargement from disease, and to a shrunk, contracted, braced state of the parts in health; and withal, ending in permanently diminished sensibility, as well as vascularity. In the course of these changes is brought about—in a manner we are not permitted to learn—such a revolution in the morbid orgasm of the fired part as, in the majority of cases,

eventually ends in the return of normal structure and function, or in such changes as possess sufficient approximation thereto to enable the animal to use the part or parts, formerly incapacitated from disease, with that freedom which passes under ordinary observation for a condition of soundness.

Both in first impressions and in subsequent effects, blisters and setons fall short of the actual cautery; added to which, the latter in its operation from first to last is found to possess a power of working good in the restoration of parts much injured or altered by disease which the former under no circumstances whatever evince. We have no restorer equivalent to the hot iron—nothing of equal power to do good or to do harm. With it, with caution, humanity, and judgment, the veterinary surgeon may, without fear of incurring the reproach of the philanthropist or lover of his horse, work a great amount of good; without such judgment and caution, he will be deservedly set down as one who, through ignorance or inconsideration, has put his unfortunate patient to cruel, and wanton, and uncalled-for torture.

THE AFTER-TREATMENT OF THE FIRED PARTS used in former days to be "left to Nature." After standing tied up in his stall for two or three or four days and nights, the custom was to besmear his fired parts with train-oil, or grease of some description, and then to turn the horse into a loose box, or else at once to turn him out into some field or paddock or straw-yard: thus were the scores made by the red-hot iron suffered, beneath a coating of oil or grease, to scab and fester, and harbour matter under the eschars, which ever and anon fell off, or else got knocked or rubbed off, exposing raw bloody surfaces of *cutis*, from the aspect of which it was evident enough what mischief had been all the while brooding amidst such a medley of grease and scab and matter and filth. And such mischief becomes of a nature not to be repaired. The true skin—the *cutis vera*—is seen becoming ulcerated wherever purulent matter is lodging upon it; the consequence of which is, that the bulbs or roots of the hair are all the while suffering destruction, so that when the chasms made by ulceration come to be healed up, such places are found unprovided with hair: the bulbs or roots from which the hairs spring never becoming rege-

nerated after having once been destroyed. As baldness or "blemish," therefore, according to the old mode of treating, or rather of non-treating, fired limbs proved frequent and extensive, it became an object of great importance to institute some plan of treatment which should save the skin and hair bulbs, at the same time that it afforded some relief to the animal, who, by being neglected, was really suffering more pain in his fired parts than for humanity's sake, after having undergone what he had in the operation, he ought to have been allowed to do. To this point, some years ago, my cousin, Mr. Charles Percivall, called my attention; and it struck me at the time to be one of such consequence that I begged of him to put his thoughts on the subject upon paper. This he did, and sent the same, in the year 1842, to THE VETERINARIAN*. And so much did they please me on perusal at the time, and such benefit have I derived from the application of them in my practice since, that I feel I shall not be doing justice to this part of my subject if I do not make some extracts from them in this place.

"In the early part of my professional life, being in a sporting country, I was frequently called upon to perform this operation; and, in accordance with the general custom, I paid very little attention to my patient subsequently, and often had great cause to be dissatisfied with the appearance of the animal afterwards, notwithstanding I had taken the greatest pains in the operation. It was not until I had experienced much annoyance from the blemished and unsightly condition of the fired legs that I began to think seriously on the subject, and to see the necessity of paying more attention subsequent to the operation than I had hitherto been in the habit of doing. The loss of hair, and consequent blemish and disfigurement, which I had frequently met with in fired and blistered horses, I for some time attributed to the presence of some corrosive ingredient in the blister, knowing it to be a common practice with many persons to blister very soon after the operation, and, with some, even at the time of operating: however, experience soon convinced me that I was not altogether

* Vol. xv, p. 20—21.

right in my conjecture, finding that the same thing took place from firing without any subsequent blistering, and even from using a blister which I knew to be properly prepared. This I found to proceed from the discharge issuing from the cauterized or blistered surface becoming dry and hard, adhering so firmly to the hair that the confined matter or pus underneath produced, in many instances, deep ulceration, frightful sores, and consequent destruction of the roots of the hair; circumstances which induced me to adopt a different mode of procedure, in order to prevent a recurrence of the evil, and relieve myself from the too frequent annoyance I had experienced on this head.

"My mode of treatment, although simple, will be found to be very efficacious in preventing the disfigurement above alluded to. At the expiration of a week from the time of operating (or sooner if the legs have ceased to discharge, and are becoming dry and hard), I make my patient stand in a tub of warm water, or foment the legs for an hour and a half, or two hours, every day; carefully removing from time to time the sloughs and scurf, and discharge, and applying a little common oil or lard, which it is of consequence to do before the surface gets quite dry, in order to keep the parts soft and pliable, as well as to facilitate the removal of the sloughs and scabs, or inspissated discharges. In the course of a week, under this treatment, the sloughs will separate.

"In the event of any superabundant granulations, I have recourse to the sulphate of zinc, or sulphate of copper, in solution, &c.

"When perfectly healed and free from scurf, I prefer a loose box to the grass field for a fortnight or three weeks, making use of wet bandages, physic, &c., occasionally leading my patient out to stretch his legs, as circumstances may dictate."

My own practice is, as soon as the period arrives for fomentation, to have the fired parts daily cleansed by bathing with warm water, and afterwards besprinkled with common (baker's) flour: that, in consequence of being of itself an astringent as well as an absorbent, rendering the use of any lotion or other application, unless in cases assuming an unhealthy aspect, unnecessary.

I likewise quite agree with my relation in his concluding paragraph about the expediency of turning horses out at such a period

and such a season. "The system of turning (the fired horse) out in a week or ten days after firing or blistering—the practice of the old school—is, in my opinion, decidedly objectionable. A loose box, together with the treatment beforementioned, until the inflammation attendant upon the operation has subsided, is to be preferred; for, should the animal be placed in a situation which affords him an opportunity of taking violent exercise while the legs are in an inflamed state, or before they have recovered their wonted tone and strength, he is likely to suffer from, instead of being benefitted by, the operation. I have seen many horses that had been blistered and turned out during the summer months taken up with their legs thicker than before turning out, which I could attribute to nothing but their having been driven about by their companions, tormented by the flies, and made to exert themselves when the ground was hard, and at a time when the legs were not in a fit state to bear such exertion."

### *Other Remedies for Spavin.*

IT must not be supposed that, because of the paramount efficacy of firing, we are to refuse the aid of other remedies of acknowledged power in certain forms and stages of spavin. The pain the animal is put to, and the length of time he is kept under treatment, by the operation of firing, are sufficient reasons for us not to desire to have recourse to it save in cases of absolute necessity, or wherein there is not the same prospect of affording relief by less severe remedies. The case of spavin I have all along regarded as the one in which we are especially called on to "give the fire" is that which I have designated *articular spavin*, from its essentially consisting in *caries* of the articular cartilages. The *periosteal spavin*—that external to the joint, and consisting in *exostosis* alone—being, as we have seen, of itself, a totally different disease, will yield to comparatively mild remedies. The confounding of the one disease with the other, or rather of the two together, it is which has given rise to such strange discrepancy of opinion concerning remedies for spavin; one person contending that spavin is a disease easily and always relievable by comparatively mild

and painless remedies, while another maintains that firing, and firing alone, can avail. "I can cure spavins with setons," says one practitioner; another, that "blisters" are the things; a third, that "periosteotomy" is all that is required. Paradoxical as it may appear to unprofessional people, it would not be difficult to shew, all were, in a measure, right, and yet that all were wrong; the affirmations being made without any reference to the kind or nature of the disease represented by the name of *spavin*. The scientific veterinarian will take little heed of such empirical language as this; but will apply himself to the thorough comprehension of the state and stage of the disease he is, under the appellation of "spavin," called on to treat, and apply his remedies accordingly.

Obviously, the important consideration in undertaking the treatment of spavin must, I repeat, be whether the case is actually one of the periosteal or articular description; and by way of assisting the judgment of the young veterinarian in discriminating between the two, it may not be amiss in this place to remind him—1st, That a recent case of spavin, and one occurring for the first time—not a relapse—is, presumably, periosteal; and is with still more reason regarded as such when the exostosis accompanies or precedes the lameness; 2dly, That heat and tenderness in the tumour are evidences of the lameness being referrible to it, and to it alone; 3dly, That, although no tumour or external spavin may be perceptible, we are not, therefore, to set the case down as one of articular disease, since tumour may shortly make its appearance: knowing, as we do, that exostosis or callus may exist in situations where from its being covered by ligament or tendon, or by both, the nicest examination will fail to detect it; 4thly, That spavin in a young—an unbroke—horse is likely to be periosteal; 5thly, That lameness will, under exercise or exertion, abate or disappear when arising from periosteal spavin; whereas, very often, when articular disease is present, the lameness will be increased instead of being lessened by motion or work. Appearances and circumstances the reverse of these will dispose us to regard the case as articular; at the same time, it must be borne in mind that it is, indeed, very problematical whether such a case as *pure* or

uncombined articular spavin ever exists. My opinion, as before expressed, is, that the disease outside gives rise to the disease inside the hock joint;—that the two have a pathological connexion, and, wherever the latter is present, a simultaneous existence. Chronic or inveterate lameness—lameness that has existed for a length of time, the horse having the while been kept at work; relapse upon relapse of lameness, and the patient aged; are all circumstances favouring the presence of the compound spavin. For this case, as we have seen, firing is the remedy; and the firing, to produce its utmost effect, must be, I again say, both extensive and severe. In fact, the owner of such a horse, should he expect a cure to be performed, must make up his mind to consent to a course of treatment which cannot but necessarily occupy some months. Should there lurk any doubt about the case, that it calls for the adoption of such strong measures as these, or there be any disinclination to adopt them, or should the case clearly be one of periosteal or ligamentous disease, then we may turn our attention to some less violent remedy, and none is more worthy of our notice than

## Seton.

It is hardly necessary for me to observe here, that, whatever notion change of name may carry with it into some minds, a seton is nothing more than a rowel thrown into an oblong or linear form, and that the effect of either will be in the ratio of the extent of superficies it occupies or passes over; the one or the other being ordinarily employed in practice according as the skin is loose or tense over the part in a state of disease. In pulmonic affections, for example, we insert rowels or plugs into the breast; but through the sides, for the same complaint, we introduce setons: the skin upon the latter being so tense as with difficulty to admit of being rowelled. And for the same reason, in cases of spavin, wherein we desire to employ counter-issue of this description, we prefer seton to rowel. So much, however, has been said about the efficacy of seton in spavin—such extravagant sort of praise, by Professor Sewell in particular, indulged in on the subject, carrying

its sanative power in such cases even beyond that of the actual cautery—that I verily believe some of the juniors and less experienced of our profession have felt disposed to attach a *specific* power to the seton as a remedy. That setons are often found of great service in spavin; that in certain cases, and under particular circumstances, they prove relievable or even curative of spavin, I am, from my own practice, too well convinced to listen to any opinions to the contrary; but, that they possess any remedial power in confirmed or inveterate cases of spavin which will bear a comparison with that belonging to the firing-iron, is what no man who has had to treat many such cases, I should imagine, will subscribe to. Spavin, it must ever be borne in mind, essentially consists of two diseases; and these diseases are so opposite in their nature, that to make a selection of any individual remedy, and say, it is applicable to either or to both of them, in any state or stage it or they may happen to be, is downright quackery, and nothing better.

For *articular spavin*, then—if our design be to work a cure that will prove serviceable and lasting—the actual cautery is, generally speaking, the preferable remedy. But for callous tumour or exostosis, i. e. *periosteal spavin*, seton will often be found a very useful and effective counter-irritant. It must be remembered that spavin, whether it appear in one form or the other, is a disease that rarely manifests much acuteness, or indeed occasions much pain, unless in the latter and aggravated stages of the disease; and on this account, seton from its action, though tardy, being unremitting, is calculated, give it time enough, to work a great amount of good. A blister, prompt and for a time severe in its operation, will probably effect some immediate relief, but that relief is not found to be of the enduring or withstanding character of that which is so much more slowly brought about by the seton. So far there certainly is a sort of appositeness, as a remedy, of seton to spavin; but that, beyond this, to imagine it possesses any *specific* power, is, I repeat, absurd.

Ordinarily, but one seton, that being a broad one, is passed for spavin; the course given to it being from above, directly across the tumour, to below it. Another seton may be advantageously

passed, taking a similar course, on the outer side of the hock; and this constitutes my ordinary practice. For the first three or four days after it is passed, the seton should not be moved—not drawn up and down, indeed, until such time as sufficient inflammation is aroused in the parts contiguous to it, the object being to promote all the counter-irritation and counter-issue possible. And until the desired inflammation and swelling be manifested—the better still if it pervade the limb—the patient should be kept standing up in his stall; afterwards, a loose box is the preferable situation for him. When we find we have succeeded in eliciting a sufficient issue of laudable pus, we must take care that the seton be moved sufficiently often to prevent the lodgment of the matter, and the consequent formation of small abscesses or pouches underneath the skin; since the effect of such detention will be, ulceration of some part of the canal of the seton, and consequent premature casting off or liberation of the tape. In fact, this is one of Nature's methods of getting rid of the offensive and irritating tape or thread, or whatever else the seton may consist of; the other being, ulceration gradually going on in either aperture of the seton, and especially in the upper one, at the part over which the knotted end of the tape usually depends: it being curious enough to observe how ulceration progresses at the place from the pressure of the tape, while granulation keeps repairing the aperture above the tape; until at length the seton, growing gradually shorter and shorter in its canal, is completely cast off by unassisted natural procedure.

I have limited my recommendation of seton to the case of external or periosteal spavin. There is one stage, however, of articular spavin in which the seton not infrequently proves of service, and of service even after firing appears to have failed. The patient, we will say, has been properly fired, has had the requisite period of repose or turning out, his fired parts have healed and cicatrized, and yet he proves, shortly after return to work, if not before, "as lame as ever." Firing the bald blemished parts again is out of the question. What then is to be done? I say, under such circumstances, I have known the introduction of a seton followed, after some three or four weeks of issue—for time must be allowed—by considerable benefit, if not by soundness; and, what

is more, this secondary or deferred soundness is likely to turn out of *permanent* character. My interpretation of such cases as these is—not that setoning has surpassed firing as a remedy, but—that the actual cautery has left incompleted the process of cure, for lack of time probably having been given to bring it about, and that the seton, and the additional repose, have at last effected the object. I believe that the firing has failed—if "failure" such can be called—either from its not having been practised with sufficient severity, or from insufficient time being given before the animal's work was resumed.

In the year 1827 I had an opportunity afforded me of testing—as far as the cases experimented on would test them—the comparative efficacy of the seton and the actual cautery. It was the year I entered the First Life Guards, and it became requisite for me, on joining, to make a general inspection of the horses of the regiment. In the course of my inspection I found nine horses lame from demonstrable spavins; some three or four of which I was of opinion offered prospects of amendment by treatment, and accordingly these were taken into the infirmary. This occurring during the time that setons had acquired a sort of specific fame from their alleged all-but universally successful employment in spavin by Professor—then Assistant Professor—Sewell, at the Royal Veterinary College, it was thought these cases might be made to cast some light upon the much disputed question. With this in view, two were selected, both chronic, both exhibiting stiff and hobbling lameness on emerging in the morning from their stables, both aged horses, both in fact as nearly similar as two cases of spavin could be expected to be*; and, at the period of my taking them under my care for treatment, both horses, lame as they were, actually at work in the ranks. After some requisite preparation the spavined hocks of both these horses were blistered; but no relief was afforded. A month afterwards, one of them (No. 6 of A troop) had his spavined hock fired, but not deeply; and across the spavin place of the hock of the other horse (No. 26 of F troop) a seton

* Unfortunately, I could learn nothing satisfactory concerning their history or period of lameness.

was introduced, the broadest tape that could be procured being used for the purpose. The inflammation in the fired hock was augmented, and for a time maintained beyond the ordinary degree, by dressings to the scores of blister ointment; while the seton in the other horse was kept discharging as much as possible by digestive dressings. The seton was kept in five weeks. At the expiration of two months from the commencement of their treatment, the setoned subject was cast and sold on account of "incurable lameness," he having experienced but little relief; whereas the fired horse returned to his stable "sound," to resume his duty. I am quite aware that an experiment of this description is open to objection, first, from the difficulty, next to impossibility, of procuring two exactly similar cases of disease*; and, secondly, from their being insulated cases; though this latter objection falls to the ground when it comes to be supported by that observation and experiment on an extended scale which decides the question of efficacy in chronic or confirmed cases of spavin by a great majority in favour of the firing-iron.

I shall now relate a case which would seem to prove the superiority of the seton over the cautery; though, for my own part, I would not assert that the failure of the latter was not ascribable to lack of time of repose, or of absence from work, being afforded.

No. 21 horse, belonging to H troop, was admitted into the infirmary June 1835, on account of relapsed lameness from palpable spavin. Inungation of the tumour with ung. ant. potassio-tart. having been employed without benefit, the month following the hock was fired *deeply*. The operation was performed on the 23d of July, from which period until the 26th of September the patient was kept in a box. Still he went lame; and, lame as he was, was sent to his own stable to take walking exercise in hand, it being thought that, after so much rest, motion might benefit him. On the 12th of November, he having done nothing in the interval but take, daily, his prescribed walking exercise, he returned into the infirmary for treatment lamer even than he had been before. A blister was ap-

* It might be urged that it was impossible to say with precision what was the state of the hock *joints*.

plied upon his hock, on the outer side of it; but that did no good. December the 10th two setons were passed, one along the inner side immediately upon the spavin enlargement; the other along the outer side of the hock, the length of each being four inches. The setons continued discharging for three weeks, and then, on account of efflorescences of granulations sprouting up around their apertures, were taken out. It might, also, be as well to state, that during the first fortnight they were in they excited and kept up a more than ordinary irritation and inflammation; producing, indeed, so much general tumefaction of limb, that it was deemed advisable, in order to restrain it, to give cathartic medicine, foment, &c. The week after the final extraction of the setons I had my patient trotted out, and could not, to my agreeable surprise, perceive any lameness.

Seemingly contradictory as these cases are, according to my manner of reasoning on them, they all three but tend to the elucidation of the same pathology; which, though it has been given before, it may be useful to repeat here;—and that is, that what we call the "cure" of spavin consists in the complete ossification of the diseased joints, and consequent perfect *anchylosis* or functional annihilation of them; and that the remedy which brings about this final conversion of the morbid parts the soonest proves the best, and that the cure cannot be manifested until such is accomplished; the horse then, but not until then, going free from pain: the use of the main joint of the hock being left him entire wherewith to perform flexion and extension with sufficient freedom to constitute what in these "cured" cases is regarded as working soundness. Should therefore firing, either from not being "deep enough," or from insufficient laying-by of the patient, fail to restore soundness, or, what amounts to the same thing, to bring about this desired or indispensable transformation of parts, a seton, by exciting inflammatory action afresh, may complete the process: on the other hand, whatever seton, or blister, or other remedies, may fail from want of stimulant power to effect, is likely to be accomplished by the potent and paramount efficacy of the firing-iron.

## Blister.

There appears to me more reason for making a comparison between a seton and a blister, as remedies for spavin, than between a seton and the actual cautery; and of the two former, for my own part, I give the preference to the seton. It is not at all times safe or politic to *theorize* on the action or effects of different remedies, since on occasions those prove of most avail which afford, in our preconceived opinion, the smallest promise; though, most assuredly, were I permitted to do so on the present occasion, I should say that a seton, from the enduring character of its operation, as well as from the amount of counter-inflammation it is frequently productive of—to say nothing of the unremitting issue arising from it—is a remedy better fitted for the relief of a chronic deep-seated disease, such as spavin, than a blister is; seeing that a blister, though sharp enough and prompt enough in its operation at first, quickly degenerates into comparative inaction. It seems not so much to be the activity or severity of the counter-irritant as its enduring unremitting operation that proves so desirable; though, undoubtedly, the combination of both virtues in the same remedy will give it a high rank, a principle on which I would account for the paramount superiority of firing for spavin.

It is clearly of little or no use to apply a blister for a spavin unless that blister is a *severe* one; and, therefore, I recommend that strong blistering ointment should be used for the purpose; such ointment as the farriers of olden days were in the habit of using, such as contains bi-chloride of mercury and Venice turpentine; ingredients which, while they add causticity and stimulancy to vesication, tend materially to protract the operation of the blister. And as soon as one blister shall have worked off, if time can be spared for it, I would recommend a second to be applied, this being the only plan of insuring any thing like success from vesicatories.

It was a common practice at one time, and continues to be with some even at the present day, to apply a blister after firing for spavin. For this, however, providing the firing has been performed with the requisite severity, there cannot be the smallest necessity.

## Ointments of Antimony, Mercury, and Iodine.

These are hardly to be named as remedies for spavin. I have, it is true, now and then employed antimony ointment—composed of the potassio-tartrate of antimony and lard—with some slight advantage; but this has rarely proved lasting. As for mercurial ointment, of itself it may be set down as all but inert and quite useless, though, in combination with iodine, of late a good deal has been said in its favour. My own experience is yet too limited to enable me to say any thing decisive about the efficacy of such a combination in spavin; though, from all that I pretend to know and have heard, I should say that absorption or removal of the exostosis was the utmost we ought to expect from it, and that therefore its employment promised no benefit save in periosteal spavin attended with enlargement.

## NAVICULARTHRITIS.

No class of persons feel the inconvenience of a defective nomenclature, in any branch of science or art on which they may be engaged, more than writers and lecturers. In titles and names in particular, the obligation to use two or more words to denote that which admits of having its signification expressed equally well by one, is a tax they are continually paying; until at length the repetition of the periphrasis becomes so tiresome that they begin to bethink themselves if they cannot devise some substitute for it in the shape of a single word. It is this consideration, coupled with the one that really it is disreputable to our profession not before now to have had an appropriate name for the disease I am about to treat on, that has induced me to offer for acceptation the one superscribed. NAVICULARTHRITIS—a compound of the radical words Ναυς or *navis* or *navicula*, Αρθρον, and *itis*—literally signifying NAVICULAR-JOINT-INFLAMMATION—is, to my mind, the term we have long wanted. *Naviculitis* means but *navicular-inflammation*, and therefore is indefinite in its signification.

Dr. Brauel, Professor at the University of Cazan, whose admirable Essay has recently been translated and inserted in THE VETERINARIAN, calls the disease PODOTROCHOLITIS; and a very significant and appropriate appellation this is—classically derived, as it is, from πους, a foot, and τροχιλος, a pulley—an appellation only inferior in my mind, for our use at least, to naviculartheritis, from the circumstance of one being so much more familiar to our ears and tongues than the other.

DEFINITION.—By naviculartheritis is to be understood, disease of the navicular joint giving rise to lameness.

THE HISTORY of Naviculartheritis will embrace its DISCOVERY and its PROMULGATION. I never myself heard the *navicular* disease or *navicular joint* disease so much even as mentioned before Mr. Turner published his papers on the subject. My study of veterinary science, as a pupil, commenced and ended under Professor Coleman; and certainly never by my teacher, that I have the most distant recollection of, was the word "navicular," in connexion with

or reference to disease, once mentioned. I remember that the Professor attributed foot-lamenesses in general either to disease of the sensitive laminæ or to contraction of the hoof; and in my notes of his Lectures I find this memorable passage:—"In nine cases out of ten of what are termed 'groggy' or 'foundered' horses, these parts (the sensitive laminæ), in consequence of chronic inflammation, have become altered in structure, effusion of lymph or of bony matter taking place."

Among the heap of old works on farriery we look in vain for any distinct or satisfactory account of naviculartbritis; though it would appear allusion is made to disease of the navicular joint under the denomination of "sprain of the coffin joint" or "*os calcis*," or "heel-bone," the names by which the navicular bone in those days went. The work of the earliest date wherein we find such allusion is that of Jeremiah Bridges, intituled "No Foot, No Horse," and published in 1752*. He speaks of "A Sprain of the Coffin Joint," and directs, by way of treatment for it, drawing blood—in the manner we do now—from the foot, and passing a seton through "the hollow of the frog to the pit or hollow of the heel, under the foot-lock joint;" with care "to avoid touching the capsule of the *tendo palmaris*" (tendo perforans); and in some cases "drawing the soal;" also, blistering "three or four inches above the hoof;" and, as the "last attempt"—"the actual cautery or giving the fire"—beginning the strokes "two inches above the coronet." Concluding with the observation, that, "where one horse happens to be really lame in the coffin joint, it is mistaken a hundred times in practice."

That Moorcroft—as well, no doubt, as Field, senior, with whom he was associated in business, in Oxford-street—knew of the disease, we have his own evidence to shew. In a letter to Captain (now Sir Edward) Codrington, in 1804†, respecting a horse thought, in his own judgment, to be lame from "contraction," Moorcroft expresses his doubts that it is not "a complicated case" of lame-

* No Foot no Horse: an Essay on the Anatomy of the Foot of that Noble and Useful Animal a Horse, &c. By Jeremiah Bridges, Farrier and Anatomist. Baldwin, Paternoster-row, London, 1752. 8vo, pp. 151.

† Published in vol. xix of The Veterinarian, p. 449.

ness, saying,—" When an injury has been sustained in the coffin joint*, happening from violent pitching of the limb on a pointed or hard substance, favouring of the foot occurs before any contraction is observable."——" Your case has features in it which from your statement appear awkward; and I have put you to the expense of this long letter in order that you may form some opinion whether your horse is lame from pure contraction, or from contraction connected with *deep-seated injury of the foot.* The information I have endeavoured to convey, you may, perhaps, not thank me for; however, if I had understood completely the facts heretofore stated many years ago, I should have saved myself much disappointment, and my employers much expense."

A subsequent letter of Moorcroft's—one he addressed, in 1819, to the editor of the "Calcutta Journal," on the occasion of being made acquainted with the "discovery" of neurotomy by Mr. Sewell—will serve as an interpretation to the above extracts from his former letter, and satisfactorily, I think, shew that they had relation to the navicular disease:—

" With reference to your paper of the 23d inst., noticing, as discovered by Mr. Sewell, within about eighteen months, a cure for lameness in horses, commonly called 'coffin-joint lameness,' I beg to observe that the mode of treatment alluded to, so far from being a discovery of the last eighteen months, was practised by me *about eighteen years ago.*"—" For a long time previous to this period it had been fashionable to attribute most lamenesses in the fore limb of the horse (of which causes were not glaringly obvious in alteration from natural form) to some disease in the shoulder;"—and " on dissecting feet affected with these lamenesses *the flexor tendon was now and then observed to have been broken, partially or entirely;* but more commonly *to have been bruised and inflamed in its course under the navicular or shuttle bone, or at its insertion into the bone of the foot.* Sometimes, although seldom, *the navicular bone itself has been found to have been fractured;* at others, *its surface has been deprived of its usual coating, and studded with*

* In the "coffin" joint, as will be seen hereafter, is included the *navicular* joint.

*projecting points or ridges of new growth, or exhibiting superficial excavations more or less extensive.*"—"The horse cannot possibly place the tendon in a state of repose or inactivity, except during the time he lies upon the ground; and it is subject to pressure invariably both in his lying down and getting up. This constant exposure to pressure, in addition to the nature of the parts injured, renders inflammation permanent, and prevents coffin-joint lameness receiving permanent relief."

There are other passages in this lengthy letter I might extract, did not those I have taken appear sufficient to prove that Moorcroft was well acquainted with the seat and nature of navicular-thritis under the appellation of "coffin-joint lameness;" and that it was, in point of fact, this identical disease to which his letter to Sir Edward Codrington, in the year 1804, had reference.

In 1808, Moorcroft quitted England for India, leaving Field, senior, in possession of his practice in Oxford-street, and Coleman sole Professor at the Veterinary College, by which latter gentleman lectures were continued to be given at the College, without—as I have already shewn—any mention whatever being made of the navicular joint disease: leading us to infer that Moorcroft had imparted none of the knowledge he possessed of "coffin-joint lameness" to his successor, Coleman. Indeed, from the time Moorcroft departed for India, false notions about coffin-joint or foot lameness appeared once more to have gained currency; and as Coleman taught that either contraction of the hoof, or disease of the laminæ of the foot, was the proximate cause of "groggi-ness," the real or true cause was not likely to be again brought to light unless by some one of Coleman's *élèves*, who—not "pinning his faith upon another man's sleeve"—looked into matters for him-self. And such turned out to be the case. The disciple of the Professor who did "look into matters for himself" was Mr. James Turner; and the result of his investigations into the causes of "groggy" lameness was the discovery, afresh, of navicular joint disease. Mr. Turner, no more than myself, possessed no other knowledge than what he had derived from Professor Coleman's "Lectures," or, at all events, was in entire ignorance of what had been seen or done in respect to naviculartharitis by Moorcroft; and,

therefore, Mr. Turner became entitled to all the merits of a discoverer; and, wisely, lost no time in making his discovery known both to Professor Coleman and Assistant-professor Sewell. This communication was made in 1816. No reply was given at the time to it by either of the Professors; but Coleman, as I am informed by Mr. Turner, soon afterwards made "ample acknowledgments" of the discovery publicly in his lectures. And this I believe to be a faithful account of the history, comprising the discovery and publicity, of NAVICULARTHRITIS.

Subjoined is a copy of the communication originally made by Mr. Turner to Messrs. Coleman and Sewell; a document which has never appeared in print, and which I should not, but through the trouble Mr. Turner has kindly taken to search for it amidst heaps of other papers, have been able to lay before my readers on the present occasion. Unfortunately, there is no date attached to it: still, the fact of copies having been sent to both the Professors at the London Veterinary College, in the year 1816, will sufficiently attest its age:—

*(Copy.)*

OBSERVATIONS ON THE DISEASE OF THE FOOT OF THE HORSE COMMONLY CALLED FOUNDER, OR GROGGY LAMENESS, BUT, BY MODERN PRACTITIONERS, CONTRACTION OF THE FOOT.

I WAS induced to direct my particular attention and study to this disease, in the first place, because our best treatment and greatest exertions were generally unsuccessful;—secondly, in the course of practice I was frequently obliged, in obedience to the opinion of the day, to pronounce to the owners of horses thus afflicted, that contraction of the foot was the disease, when, in fact, they were often good-looking open feet. This complaint was formerly described by the term Chest Founder, supposing it an affection of the muscles of the shoulders and chest, but since the establishment of the Veterinary College, contraction of the foot, considering that from the horny box being diminished in size, its capacity is not equal to its contents, consequently the sensitive parts of the

foot receive unnatural pressure: by this alteration in the shape of the hoof modern practitioners account for the lameness, the actual cause of lameness being compared to the pressure of a tight shoe upon the human foot. The result of my dissections was, the discovery of an important joint within the hoof, so much diseased as to be incapable of acting as a joint.

Taking into consideration the extreme pain attendant upon the destruction or merely inflammation in the interior of a joint, it strikes me as being a more likely cause of lameness than contraction of the hoof; therefore, from this and the following practical facts, I entertain a different opinion.

First.—The immense number of horses there are in this country with narrow heels, whose feet are contracted, but not lame; and we have numerous instances of contraction to an extreme, feet so distorted, from the length of the toe and the narrowness of the heels, as to bear no resemblance to the circle which was the original form, and yet go perfectly sound.

Secondly.—We are daily seeing groggy or lame horses confirmed cripples, with feet which, from external form, must be declared good; so fair in appearance, that no practitioner, upon merely taking up the foot, would venture to pronounce it bad or contracted, if he did not know at the same time that the horse was a cripple.

Thirdly.—The hind feet of many horses are much contracted, but we have very few instances, if any, of lameness behind from contraction. I think no practitioner has ever pronounced a horse groggy behind.

Fourthly.—The too many instances we meet with in practice of the obstinate lameness remaining after we have removed the contraction. Many are the instances of groggy horses with contracted hoofs, that after having been at grass for a considerable time, perhaps for a whole year, whose feet have so altered as to have become circular, and every purpose answered except the principal one, the removal of the lameness.

Fifthly.—The sudden manner in which they are frequently attacked with this disease. Horses that were known never to have been lame have become violently lame on the road, suddenly, with

this complaint, and never after become sound again to work, and the owner or groom shall not have had the least suspicion that the animal was becoming lame. If contraction were the cause, surely the lameness would, in every instance, take place gradually.

These points induced me to search for another cause for the lameness. By dissection, I have discovered another; and, to the best of my knowledge, it is a disease which has never been described by any author. The seat of it is in the navicular joint of the foot: I mean the joint formed by the navicular bone and the flexor tendon, where the tendon slides over the navicular bone; the circumscribed cavity which is supplied with synovia or joint oil, to prevent friction between the internal polished surface of the tendon and the smooth cartilage covering the navicular bone. The worst stage of the complaint is a total *destruction* of the navicular joint, which is so completely disorganized, that it can no longer act as a joint; there is not a drop of synovia to be found in it. The cartilage covering the navicular bone next the tendon is either entirely absorbed, or else in a complete state of ulceration: the corresponding surface of the flexor tendon, which was before as smooth as the highest polish, has now become rough, and the delicate membrane lining it, abraded; and in most of the desperate cases there is a *strong adhesion* of the tendon to the navicular bone. When adhesion is present, there is, generally, besides the loss of cartilage, a loss also of part of the navicular bone itself, a small hole formed in its centre from absorption. In some instances there is an ossification of the parts contiguous, but I have dissected many desperate cases of this navicular disease without any ossification. When the disease is less violent, there is a deficiency of synovia and an inflammation of the secreting membrane; an absorption of part of the cartilage of the navicular more particularly in the centre, and some roughness of the corresponding surface of the tendon: in this milder form of the complaint there is no adhesion of the tendon to the bone.

I have dissected every groggy foot that I have been able to procure: in every instance, without one exception, I have found the navicular joint diseased. I have found it in groggy feet with contraction, and also to the same extent in good-looking open feet.

It must appear strange that such a formidable disease as this should so long have escaped detection, and, particularly, as the foot of the horse has been a subject of so much investigation. I can only say, that in my own dissection was the first time I ever saw the disease; that I never heard of it, and that I never was taught it. If some practitioners have occasionally met with instances, it appears they have been put by, as cases of rare occurrence. The unfortunate animal is suffering perpetual pain from these delicate surfaces coming in contact, which were never intended by Nature to have touched each other. By the loss of the synovia at this important part these highly sensible surfaces are not only in contact, but, when the animal is in action, they are actually rubbing against each other; and, to make his misery the more complete, they happen to be immediately under the centre of his weight.

JAMES TURNER,
*Veterinary Surgeon, Croydon.*

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Twelve years after having communicated to Messrs. Coleman and Sewell the results of his researches into the morbid causes of "groggy lameness," i. e. in 1828, Mr. Turner read a paper on the subject before the Veterinary Medical Society*: prefacing it by stating that it was a "copy of the above-mentioned communication, with this reservation—that although twelve years' experience in active practice since that period had induced him to draw some other inferences which may not exactly accord with the first impressions, yet they will seem to harmonize in the aggre-

* This paper was published in THE VETERINARIAN for February 1829, and was followed by a second paper "On the Symptoms and Cure of the Navicular Disease," read December 4th, of the same year, and published in THE VETERINARIAN for January 1830. Both these papers, together with some observations on shoeing—also published in THE VETERINARIAN—were, with additional remarks, collected into a work, published in 1832, well known to the profession, under the title of "A Treatise on the Foot of the Horse," &c.&c. By J. TURNER, M.R.C.V.S., London, 1832.

gate;" adding, "I believe I am correct in stating, that before the year 1816, the (St. Pancras) College Museum, splendid as it then was, contained but a solitary specimen of the navicular disease, and which was simply a diseased navicular bone, divested of its ligaments and tendon; but Mr. Coleman has on several occasions since candidly acknowledged, in his lectures, that he had looked upon it previously to that time as a specimen of disease of very rare occurrence."

Thus is the account concluded of the history of naviculartbritis so far as regards our own country. With this, however, the inquiring veterinarian will hardly feel satisfied: he will naturally desire to be informed what has or had been brought to light respecting the disease in other countries. A more satisfactory answer to such a question cannot, perhaps, be produced than by quoting what has been said in relation thereto by—certainly the best author, out of our own country, on the subject, viz.—Dr. Brauell; in the translation of whose work—"An Essay on *Podotrocholitis*" (navicular joint disease)—we find the following passage:—"The author (Dr. Brauell) commences his "essay" by passing in review the writings of the ancients, wherein he does not meet with a single passage leading him to infer they possessed any knowledge of the (navicular) disease. The earliest allusions to it are to be found in the works of Lafosse, jun. He was ignorant neither of the seat nor of some of the peculiarities of podotrocholitis; but, confounding it with other diseases of the feet, he failed to give any description of it as a special disease."

It must seem strange to those who have entered the veterinary profession within the last twenty years, that naviculartbritis, a disease now-a-days in everybody's mouth, was thirty years ago unknown. In 1809, when I entered the Royal Veterinary College as a pupil, what were the cases of lameness I found in the college stables? I remember well that a very large proportion of them were called cases of "contraction:" that I found to be the prevalent disease, and that it was to which the Professor's chief attentions were evidently attracted. I found these horses wearing shoes of a particular kind upon their lame feet. Some, tips; some, bar-shoes; some shoes with clips at the heels, &c., and all standing for

several hours in the course of the day with their fore feet in tubs of water: every now and then being trotted out in hand by direction of the Professors, with the view of ascertaining what progress towards amendment was being made by the treatment adopted. And it was a common circumstance for such cases to continue for months under treatment. I also remember how much of Professor Coleman's attention the complaint called "contraction" occupied—what a favourite the subject was with him, and how ingeniously and learnedly he descanted upon it in his lectures:—He would say—"Expansion of the hoof is effected by the pressure upwards of the frog and the pressure downwards of the navicular bone. By properly thinning the sole, rasping the quarters, lowering the heels, giving the frog pressure, and keeping the horse in a pond all day long, or else tied up with his (lame) feet in a tub of water, we have no difficulty in removing contracted hoofs. Although difficulty there be none, however, in restoring the original form of the hoof, we too frequently find we have gained nothing by it, because we have not restored the original structure of the parts contained within the hoof. Contraction of the hoof, in consequence of the internal parts being squeezed, produces inflammation of the laminæ, and ossification of them. This causes the horse in galloping to avoid to his utmost coming down upon his heels or to tread upon hard ground, the concussion at such times being great from loss of elasticity in the laminæ, so that the moment he comes to work he falls lame. In nine cases out of ten of what are termed 'groggy' or 'foundered' horses, these parts, in consequence of chronic inflammation, become altered in structure, effusion of lymph or bony matter taking place."

The above extract from the Professor's Lectures, while it demonstrates all absence of knowledge of disease in the navicular joint as connected with groggy lameness, shews the connexion existing in Coleman's mind between such lameness and contraction of the hoof. Contraction, he says, by pressing upon the sensitive parts of the foot, "produces inflammation of the laminæ, and ossification of them," and this "occasions *groggy* or *foundered* lameness." In another place he gives the causes of contraction, as consisting, summarily, in want of pressure from above and from below.

This leads us to an important part of our subject—

THE CONNEXION BETWEEN CONTRACTION AND NAVICULARTHRITIS.—Of contraction of the hoof there are two kinds:—one is a contraction of the heels, called *lateral contraction;* the other, contraction of the hoof *from below upwards,* or *vertical contraction:* by Mr. Turner called "*occult contraction.*" That of which Coleman is here speaking, and which, in fact, is meant when "contraction" is talked about, is an anormal approximation of the *heels*—and sometimes *quarters* as well—of the hoof. The circumstance, so well-known and appreciated, of horses lame from navicularthritis, so far from having contracted feet, possessing commonly what are called "open" or "good" feet, clearly indicates that navicularthritis in nowise owes its existence to lateral contraction of the hoof. The fact of so many horses formerly being considered lame from contraction, whereas, now-a-days, contraction is so little heeded that a case of lameness from it seems a rare occurrence, would appear to argue the contrary, viz. that navicularthritis must frequently beget contracted hoofs. We cannot believe, knowing what we do now, that the many cases treated in by-gone days at the Veterinary College for "contraction," were all lamenesses of that nature; on the contrary, we would almost take upon ourselves, at this remote period of time even, to pronounce that *all* were assuredly not. What were the exceptions, then? Why, probably, cases of navicularthritis, which, from want of proper treatment, had become incurably and permanently lame, and in which unremitting pain or uneasiness of foot, had, from constant favouring and resting of the lame foot, engendered contraction.

It is pretty evident, from what has been stated (at pp. 122-3) that Moorcroft, in such cases, saw cause of lameness beyond the contraction of the hoof. When Sir Edward Codrington wrote to him, saying, he thought his horse was lame from "contraction," Moorcroft's reply was, I fear yours is "a complicated case;" adding, "I have put you to the expense of a long letter, in order that you may form some opinion whether your horse is *lame from pure contraction,* or from *contraction connected with deep-seated injury of the foot.*" Language such as this is pretty indicative that Moorcroft was neither in ignorance of the true cause of lameness in this case of—at all events, *suspected* or *assumed*—navicular-

thritis, nor of the formidable and but too frequently—when become chronic—hopeless nature of such a disease; hence his concluding regret, "if I had understood, completely, facts heretofore stated many years ago, I should have saved myself much disappointment and my employers much expense!" Lateral contraction of the hoof, then, may be taken so far in connexion with naviculararthritis that it will now and then be found to supervene upon that disease, though never, as a cause, to forerun it: a result we might feel disposed to look for much oftener than it occurs, from the circumstance, I before mentioned, of the horse favouring and reposing, on every occasion he can, his contracted and lame foot. In being consulted, therefore, on contraction, we shall, with Moorcroft, be led to inquire, from history, present symptoms, and other circumstances, whether the case before us be one of *pure contraction*, or one of *contraction the sequel of naviculararthritis*.

The time is now come for us to examine into a fact too notorious among veterinarians of a certain standing in the profession to be questioned, and which the account I have given of the lame patients I found at the Veterinary College, during my pupillage in 1809, tends to confirm, viz. that in former days contraction appeared as the ordinary or prevalent cause of foot-lameness; whereas, now-a-days, all or nearly all foot-lameness is set down to the account of naviculararthritis. It is probable that in both these opinions error has played its part, there being a fashion and a fondness for novelty in medicine as in other matters: still, the broad fact is undeniable, that contraction is, as it were, gone out of our sick register to make room for naviculararthritis, and it becomes my duty to afford some explanation of the apparently strange metastasis.

It will hardly be necessary to remind such of my readers as are old enough to have heard our late distinguished Professor's excellent lectures on the foot of the horse, that that was a part he made his peculiar study, bringing to the task acknowledged talent, and having a field of observation before him, in his army practice and college practice, to test and work his theories upon, of no less ample dimensions than established character. Coleman found the horses of the cavalry—as indeed were the horses of the community at large in those days—shod with thick-heeled clumsy shoes,

wearing their hoofs unpared down, with their frogs thereby elevated above the ground, shrunk and shrivelled, and probably diseased as well, and all from want of pressure in one direction, viz. from the ground, and from having too much pressure in another direction, viz. from being squeezed between the high and contracted heels of the overgrown hoof. The penetrant eye of Coleman discovered not the evil alone but the cause of the evil. "Nature," said he, "formed the frog of the hoof large and prominent, in order that it might receive pressure every time the animal places his foot upon the ground; but here, the smith, in his ignorance and presumption, has cut it away, suffering the heels to grow down far below it, and the consequence has been degeneration and disease of the former, and contraction of the latter." From that moment Coleman commenced his reform in the practice of shoeing, and his first efforts—as indeed were his last—were directed to *giving pressure to the frog*. And a great reform he in this manner effected. Nay, through such practical reform he lived to see—wherever shoeing was "properly" conducted—what he had all along predicted would one day be the case—the prevention of contraction: his words, in his lecture on the subject, being—"If a three-year-old colt were constantly to be brought here—to the Veterinary College—to be shod, I feel convinced *he would never have his feet become contracted.*"

In getting rid of contraction, however, Coleman did not, nor did any body else, nor was any one likely to, foresee what was to happen. That was left for Mr. Turner to discover—or, at all events, to make known. And the circumstance, now explained—though not, that I am aware of, explained before—of naviculartbritis being an uncommon disease so long as contraction was a common one, but becoming comparatively frequent the moment contraction was put all but an end to, accounts for Coleman viewing the solitary preparation in the Museum at the Veterinary College as a specimen of "*rare* disease," as well as for the unlikelihood there consequently was of naviculartbritis being discovered in days when the dissection of morbid parts was pursued with nothing like the diligence which has marked its prosecution in later times.

Is pressure to the frog, then, a *cause* of naviculartbritis?—Not

under ordinary but under extraordinary circumstances. A foot with a sound and prominent frog is *in a condition* to receive the disease; while one with a shrunk, shrivelled, and especially a diseased frog, enjoys a sort of immunity from taking it—is, in fact, as I shall shew, protected from an attack of naviculartbritis.

PREDISPOSITION.—The notorious fact of the foot in a condition to receive naviculartbritis, or actually attacked by the disease, presenting a hoof which for normal aspect might be selected as a specimen of health, with a frog such as Coleman would have pronounced to be perfection, while it puzzles the non-professional man, is at once seized upon by the veterinary surgeon, supposing the horse to be lame of the foot, as *pathognomonic* of the nature of the case. Beholding so good-a-looking foot, and yet a lame foot, his suspicions become at once aroused, and the probability is, that, investigation into the cause of the lameness confirms them. Contraction has certainly nothing to do with the case; on the contrary, the foot is open at the heels, and presents a bold prominent frog, a frog that has evidently been all along receiving a full amount of pressure from the ground, and been in full play in consequence, and so has warded off contraction. Whenever contraction proves to be an accompaniment of naviculartbritis, one disease will be found to be the sequel of the other: contraction of the hoof being almost certain to supervene upon such constant favouring of the foot as the pain and lameness of naviculartbritis necessarily entails.

The contracted foot, I repeat, with its high heels, and its raised and shrunken, and perhaps diseased frog, may be regarded as possessing a kind of protection from naviculartbritis; and, presently, we shall perceive the reason of this. The curious correlative fact, however, is, that neither is the broad or flat foot, no more than the narrow one, the subject of disease in the navicular joint. If violent pressure to the frog be—as I think I shall be able to demonstrate that it is—fruitfully productive of naviculartbritis, how comes it that flat feet, in which frog pressure is remarkable, should be exempt from or insusceptible of it? The answer to this question is, that such is the normal thinness or weakness of the horn of such feet, and such their consequent properties of elasticity and yielding, that pressure

and contusion from the ground upon the frog is thereby, in any injurious effect it might have, counteracted, the frog not being under such circumstances rendered inexpansible or liable to become a hard fixed body the same as in the navicularthritic foot. For let it be here observed, that exposure of the frog alone, *frog-pressure* as it is called, is not, of itself, sufficient for the production of navicularthritis; there must be present *rigidity of the hoof* as well, soft and elastic horn, as I said before, defeating the mischief pressure to the frog would otherwise be likely to entail.

The foot predisposed to take navicularthritis—the one indeed we might, *à priori*, imagine would become the subject of the disease—is the strong, round, short-toed or clubby foot, open at the heels, with a sound frog jutting prominently out between them. Here is a frog exposed to all the pressure Lafosse or Coleman would have desired for it, bounded at its sides by heels thick and strong, and indisposed to yield, and itself liable from its very exposure to become, in the warm stable, hard and dry, and incompressible. Pressure from the ground upon such a frog must render it in effect a fixture; it cannot, will not expand; and at the very moment pressure from below would force it upwards, weight from above is with more or less violence descending upon it. Under such circumstances, can we wonder that the delicate synovial lining of the navicular joint should become crushed and broken? Rather, is this not the very way in which, when we come to reflect upon the matter, we should suppose such a lesion would be most likely to happen?

But, if exposure of frog and rigidity of hoof prepare the foot for taking the disease, how happens it that navicularthritis does not occur in the hind feet?—which, we believe, it never does. It is very well known that the fore feet are liable to many diseases to which the hind are hardly if at all obnoxious, and navicularthritis constitutes a most important ailment in this catalogue. The weight of the head and neck, in addition to that of half the body, upon the fore feet has been adduced by way of accounting for this; also concussion, &c. has likewise been mentioned; but, the real fact of the case is, that the disease—or one precisely analogous to it—*does* occur in the hind as well as the fore limb, though not in the foot,

but in the hock joint. *Articular spavin* to all intents and purposes consists in the same pathological lesion as does naviculartbritis: a fact that will serve to cast additional light on the etiology of both diseases. Still further light is derived from the superadded fact of the knee joint being occasionally affected with the same disease. In fine, there is no joint of the limbs, nor hardly any synovial structure in them, but what is liable to acquire, under fitting circumstances, a like disease.

It will not appear strange that the navicular joints of the hind limbs should exhibit no such disease as so frequently invades the same joints in the fore limbs, when we come to consider the difference of function, in progression, performed by the fore and hind extremities. While the former are little more than props of support, and for that reason have their bones ranged in the form of upright columns, the latter have their shafts obliquely placed, thereby constituting, one with the other, so many obtuse angles, to the end that by forming powerful levers, and affording every advantage for action to the muscles attached to them, they may be fitted for the grand purpose of propulsion of the body onward. Any injury sustained in action by the upright column—the fore limb—will originate in jar or concussion, aggravated by the moving weight superimposed upon it; whereas, any injury that may accrue to the hind limb will arise from the stress imposed upon the several levers and angles at the moment progression is being effectuated, the principal axis of which movement being the hock joint, that, as might be expected, will be the part to feel any inordinate pressure or force of action. The navicular joint fails in the fore limb, then, simply from the circumstance of being the nethermost joint of the column—the last to receive the shock from above, the first from below; and the hock in the hind limb is the joint expected to fail, because it is not only situated so as to receive the brunt of the shock, which in the fore limb descends down the column, but has likewise to sustain the weight of the body and its burthen, at the time force is employed in their impulsion onward, even while in state of motion. Joints appear to sustain more harm from shock or concussion, caused either by imposing great weight upon them while in action or by high or sudden descent of move-

ment, than from hard or continued work; and we shall universally find that those of the fore or hind extremity suffer most, in particular the navicular or hock joints, according as they have respectively been the most called into action. We see this exemplified in hunters, racers, chargers, hackneys, carriage or coach horses, &c. It is an axiom in practice with every veterinarian of experience, that lameness in the fore limb has for its ordinary seat the *foot*, in the hind limb, the *hock;* and, as we have seen, when we come to reason physiologically on the subject, science completely bears us out in accounting for these apparently paradoxical localities of lameness.

But why should not the *coffin* suffer as well as the navicular joint, that entering equally into the construction of the pedestal of the column of the fore limb? This shews there must be something more, besides the circumstance of its nethermost situation in the column of support, to account for the navicular joint being so frequent a seat of injury, while the coffin is, in fact, a part rarely diseased. And I cannot, myself, satisfactorily account for this but on the principle of frog-pressure, or, rather, frog-contraction. The facts already stated, of naviculartharitis having become so frequent a disease since frog-pressure became so fashionable in the practice of shoeing, compared to what we have reason to believe it was before, and of its invariably happening in feet presenting sound prominent frogs, militate most strongly in favour of this opinion: at the same time, there may be something in causation ascribable to the circumstance of the navicular *joint*, as we denominate it, being one which owes its formation to the main tendon of the fore leg in connection with bone. We know that one of the uses of the frog is to serve as a stop or stay to the foot; and where horses in action are suddenly pulled up, or in their descent from leaps have to sustain themselves by firm footing upon the ground, they throw themselves at once upon their heels and frogs, and in such efforts and shocks, no doubt, frequently do mischief to the navicular joints, and particularly when their hoofs, from standing in the stable or lack of moisture, have become hard and dry and inelastic. In the act of standing for any length of time, and in any efforts that may be required to sustain that posture, it would be the coffin-joints,

were it not for the *laminæ*, that would suffer; whereas, the former being relieved from pressure as well as concussion by the latter, we find horses that are compelled to fatiguing efforts of standing, particularly in warm situations, not contracting disease of the coffin-joint, but of the laminæ—*laminitis*, or "fever in the feet," as the malady is called; and this is a complaint which on many occasions has proved epidemic, and on board of ship in particular.

Although predisposition may, and probably does, exist equally in either foot, it is a rare circumstance for a horse to be attacked with naviculartbritis in both feet simultaneously, as rare as it is for laminitis to be known to confine its attack to one foot. This difference between two diseases affecting the foot admits of ready and satisfactory explanation in the fact of the one having the exciting cause applied equally to both feet, while in the other—naviculartbritis—the excitant will rarely operate but in one, either from the circumstance of one foot being commonly made freer or stronger use of than the other, or from the application of the cause being commonly but to one foot. Most horses, from the habit of leading in cantering or galloping with the off foot, exert the off limb in action more than the near; and I find, on referring to my register, occurring within a given period of time, a proportion of ninety-three cases of lameness in the off fore foot to seventy-six in the near foot.

THE EXCITING CAUSES of naviculartbritis will for the most part be found under the heading of what we denominate "work;" a fact all our experience but tends to confirm, the simplest result of observation being, that where most work is done there we find most horses lame in the navicular joints. At the same time, this general cause of the mischief will be more or less operative, as regards naviculartbritis or any disease in particular, accordingly as the kind of work the horse performs, the kind of foot he is possessed of, and the mode in which such foot is pared and shod, favours the approach of this or that disease. That naviculartbritis may occur on a sudden, without there being any work in the question, from some mis-step or false step, some spring or jump, or leap or stumble, there is ample evidence to shew. A horse shall come fresh and sound out of his stable, make a stumble or a jump, and all at once

fall dead lame: examination of the limb is immediately instituted; nothing is found in the foot or elsewhere to account for the lameness, and the case at length turns out to have been from the first naviculartharitis, or at least such lesion as is certain to lead thereto. This, it is true, may be regarded as an incidental occurrence. A tolerably certain way, however, of producing the disease would be to take a horse with a foot predisposed to it, and especially with one susceptible of it from having had the disease before, and give him a rattling trot or gallop upon a hard road, or take him for a day's hunting, and over such a country as Surrey, where flints meet his foot at every step.

In cavalry regiments, where the work of the horses is at times and seasons only such as can be called hard or trying, and that mostly during the summer, lengthened and accurate observation has shewn that cases of foot-lameness are more prevalent during such working periods and seasons, and most of all prevalent in months when the ground upon which they exercise may be expected to be dry and hard. Looking back a period of eighteen years in my own regiment, I find recorded in the time 239 cases of "lameness in the foot," supposed to be naviculartharitic. Dividing this period of eighteen years into two of nine each, I find but 71 of such cases occurred during the first half period; 168 occurring in the course of the second: a circumstance to me accountable for on the score of there having been a smaller remount of horses in the former, as well as of the regiment having performed not only a less amount of work during the time, but that work consisting in slower and more regulated paces. Furthermore, distributing the whole number of cases—239—under the heads of the several months of the respective years in which they occurred, I find a very large proportion happening during the working months; there being as many cases registered, on an average, during March, May, June, and July, as during the remaining eight months altogether. Some trifling diminution has appeared in the month of April, perhaps owing to the general showeriness and consequent wetness of the ground in that month. The prevalence in March has evidently owed its rise to the relapses—cases patched-up during the winter—giving way again in the spring, as soon as work came to be renewed.

In one of our cavalry regiments, owing to an inordinate course of field-day drilling, there existed at one time as many as 30 per cent. of their horses lame, and most of the cases were evidently naviculartbritic. We may therefore safely set down *work* as a grand excitant of naviculartbritis.

A vulgar saying amongst horse-folks is, that "it is the pace that kills:" as veterinarians, we might with truth say, "it is the pace that *lames*." We shall ever find most lame horses in situations where the feet are battered upon hard or stony ground; though such battering will not, as observed by me before, operate with the same destructive effects where there does not exist the same predisposition or susceptibility to take the disease, or rather where its mischievous operation is—unwittingly, I believe—guarded against by paring the foot and by shoeing. Nimrod—the late Mr. Apperley—during the eight years he resided in France, from observations made on horses in his own neighbourhood, as well as from what he had seen in the course of his travels through France, was led to exclaim—"How rare lame horses are in France; those lame in the feet especially!" sagaciously ascribing so remarkable a difference between the horses of France and those of our own country "to the comparatively slow pace at which French horses travel;" although a friend of his (Nimrod's) "a clever mechanic," felt inclined to attribute the evil to differences between the French and English methods of shoeing horses: "depend upon it," his friend would say, "the French system of shoeing contributes much to their soundness, as far as the feet are concerned, by the superior method of *nailing**" For my own part, my explanation of the fact—for fact and truth it appears to be—is, that, frog-pressure being a grand cause of the evil, in France they get rid of this not merely by paring the frogs away more than we do, but by protecting them afterwards by thick strong-heeled shoes; so that while the frog of our English-shod horse is battered upon the road and struck against every stone it meets with, the frog of the French-shod horse is furnished with a couple of stout lateral defences, between which it is raised up out of the way of blows and

* See Nimrod's Account of Comparative Disease among English and French Horses, in THE VETERINARIAN for 1839.

pressure. At the same time, I believe that a dry and hard, or "rigid" hoof, and, in particular, a rigid frog, materially adds to the danger of having this disease produced: the elastic hoof and spongy frog, in the flat weak foot for example, yielding under the infliction of blows and pressure, so as for a length of time—for always, perhaps—to counteract any harm that might accrue from their being fixtures, and which, I believe, does result from that circumstance. I am of opinion with Mr. Turner, that an "evil" accrues from keeping horses standing so many hours in the stable, and from the irregular work they are in consequence apt to be put to; and this evil, I repeat, mainly consists in the hoof, during that time of confinement in the warm stable, acquiring a *rigidity* which unfits it for yielding under pressure simultaneous both from above and from below; and the consequence is, or is likely to be, bruise or lesion, or irritation excitive of naviculartbritis. And this I should take to be the usual or common way in which this tristful disease has its beginning.

### *Symptoms of Naviculartbritis.*

THE FIRST OR EARLIEST SYMPTOM OF NAVICULARTHRITIS, according to Dr. Brauell, *is pointing of the foot;* though, from the unlikelihood of its being discovered or attracting notice, or from the little heed that may be taken of it, supposing it to be observed, so long as the horse continues to go sound, it has in general escaped mention as such. Commonly,

LAMENESS IS THE SYMPTOM WHICH FIRST STRIKES ATTENTION. Now, lameness may make its appearance on a sudden, or it may come on by degrees: in the former case it being often intense in the first instance; in the latter, ordinarily slight, and mostly transitory.

A horse shall quit his stable for work or exercise in his habitual state of soundness, but while out shall drop suddenly lame. At the moment, his rider or driver imagines he has trodden upon a stone or picked up one, and under such supposition hastes to inspect the foot. No stone, however, is found in the foot,—no signs of one having been lodged there. The horse, unable to pursue his

journey, is walked home, probably has his shoe taken off by the farrier, and his lame foot examined. Still, nothing is discovered to account for the lameness; neither is there any perceptible swelling or heat about the leg. The horse not recovering his soundness, some veterinary surgeon is called in, and the mystery becomes cleared up. Numerous instances might be adduced of this occurrence: one will suffice here.

A very sound fine-actioned horse, twelve years old, ridden by one of the guards forming the escort on the occasion of the Queen going to open Parliament in February 1839, suddenly fell limpingly lame. His feet were, in appearance, of the healthiest description; naturally rather oblong than circular, but particularly strong, sound, and good. The shoe was taken off his lame foot on his return home, but nothing was discovered; and yet the lameness, from the action, and the absence of all other apparent cause for it, was supposed to have its origin in the foot. The shoe was left off, and the foot immersed in a cold poultice, and a dose of physic was given. In a week, on the shoe being re-nailed on, the horse proved sound, and was returned to his work. A month had not passed before he was brought back, lame again in the same foot. And as the symptoms of naviculararthritis had now unequivocally manifested themselves, he was subjected to the usual course of treatment for such disease.

Nothing is more common than for certain descriptions of military horses, while engaged in charges and other rapid movements upon hard and unequal ground, to fall lame in this manner; and particularly for such horses to do so as have failed from naviculararthritic diseases on occasions before. And, in private practice, Mr. Spooner, V.S., Southampton, has recorded (in vol. vi, p. 40-41 of THE VETERINARIAN) some cases of the same kind well worthy perusal. There is also a case, excellently in point, related by the late Mr. Castley, in vol. ii, p. 493-4 of the same journal.

In the ordinary way, however, the lameness arising from naviculararthritis is gradual in its development, insidious and stealthy even. At the beginning the horse is imagined by the rider or driver to go lame. While out he *fancied* his horse now and then went gingerly, or dropped upon one foot; and on his return home,

with the unpleasant impression upon his mind, examines the suspected leg and foot,—perhaps has the shoe taken off. Not making discovery, however, of any thing amiss, he begins to console himself that his apprehensions were but imaginary; and, finding his servant the next morning in his wonted state of soundness, feels persuaded that the affair altogether was but a phantasm; his "wish," no doubt, being "father to the thought."

The next journey or rapid work the horse performs brings back the lameness, and now it assumes more the form of reality, and does not pass off so quickly again. Still, give the horse rest, so that he can repose his lame foot, and the lameness is likely to vanish a second time; or, at all events, to become so much diminished that little or no heed is taken of the little "favouring" that remains, supposing it does not altogether escape observation. In this way I have known, even under ordinary carefulness, days pass away before the horse was thought to be really ailing: under other circumstances, weeks may elapse; nay, when heedlessness or indifference prevails, months may run on before the lameness is regarded as "bad enough" to lay the horse up.

In the end, when work is persevered with, the lameness, although at first but slight and transient, cannot fail to become unremitting and severe; and it is very possible, as I have already shewn, that it may be so from the very beginning. In either case the horse, we will say, finds his way to a veterinary surgeon; and his examination elicits such proofs of the existence of navicularthritis as I shall now particularise.

THE GAIT OF THE LAME HORSE is to the experienced veterinarian demonstrable that the lameness is not in the *shoulder*. I do not mean to say it is quite impossible to mistake, by the gait, shoulder for foot lameness, and *vice versâ*; but I contend that, to the man of observation and experience, it is but rarely that any doubt in such respect will present itself; and that when it does, such doubt is commonly resolvable by tests beyond those of simply running the horse forward and back again: what these tests are will come under consideration when we are on the subject of *shoulder lameness*. But there is a gait likewise which, though not peculiar to navicularthritis, tends very much to confirm our

diagnosis when, from other symptoms, we have reason to believe the disease is present. While the animal projects the lame limb with less freedom and boldness than its fellow, he endeavours to tread upon the toe of the foot and save the heel; and in trying to do so turns the toe in, at the same time that he steps short with both feet. And now and then, as he is trotting along, he will suddenly drop most perceptibly upon the sound limb—shewing lameness at that time evidently enough, though perhaps he shewed it but doubtfully in running straight forward: in a step or two, however, he recovers himself, and goes again as little lame as before. Inspection of the *shoe* taken off the lame foot—testimony of action too much disregarded—will shew by the marks of wear upon it the manner in which the animal has been in the habit of treading with the lame foot—how much, in fact, the toe is worn in comparison with the heels. The circumstance of the lameness being aggravated by work and diminished by repose, taken into account with this kind of action, enhances the value of any inference we may deduce from action alone: at the same time such evidence as this is not to be relied upon to the exclusion of symptoms of more importance.

There being no swelling nor heat or other sign of disease or injury discoverable in the leg, or other parts of the limb, is *negative* evidence that the foot is in fault; therefore,

THE FOOT SHOULD NOW BE LOOKED TO. Its general aspect, probably, is that of round and compact, approaching to clubby, such as has been afore described; perhaps rimmy as well around the wall, which beneath the coronet exhibits a remarkable shelving or falling-in; a "stricture," as Mr. Turner has denominated it; perhaps, also, there is to be observed contraction of the heels, with a strange falling off in the natural prominence of the quarters: I say "perhaps" to these appearances, because in a case quite recent, and a first attack, all of them may, and most likely will, be absent —the hoof will present literally its normal aspect; though when the horse has been any considerable time lame, and when the lameness proves to be a second or third attack, such afore-mentioned anormalities are likelv to be sufficiently marked to strike our observation.

The shoe being taken off, the foot is examined in other parts, by means of the drawing-knife and pincers. It is possible, after all, the case may turn out one of prick by a nail, or of the nail being driven too "coarse," or of the foot being "bound by the shoe." Nothing of the kind we will say is demonstrable. The sole cuts out dry and hard, and proves to be thick and strong, and requires a great deal of its substance to be pared away to make it "give" under the pressure of the thumb; and when a sufficiency has been pared away to produce this effect, the frog, left isolated as it were, surprises us by its depth and prominence, while the sole itself, through so much paring, has become an arch of striking height and concavity. This is the state of hoof that constitutes what Mr. Turner has called "occult contraction;" and to which that gentleman has attached so great import in the production of naviculararthritis: his words being—"The occult or partial contraction abruptly opposes the navicular bone in its descent, and thereby crushes or bruises the delicate synovial membrane lining the joint, which suffers mechanical injury from the very material which nature bestowed as a defence, and which has degenerated into a hard, rigid, inelastic protuberance, no longer capable of yielding and expanding under the superincumbent weight." And in order that we may detect any difference there may exist in this particular between the two fore feet, Mr. Turner very properly recommends that *both* fore feet of the lame horse be unshod and similarly pared out. I may, however, say of this symptom as I said of other alterations or anormalities in the form and aspect of the hoof—that it is one which belongs to the chronic or relapsed case, and not to the recent one. Pending this investigation into the state of the foot, we may, with a view of throwing additional light on the nature of the case, put some questions to the master of the horse or his groom, and it behoves us to be very particular in putting the all-important one,

DOES THE HORSE POINT THE LAME FOOT? i. e. does he stand in his stable with his lame foot placed in advance of the other? Nay, it not very unfrequently happens that the animal at the very time he is brought to us for advice, will, while his master or groom is relating his ailment, stand all the while, in our presence, with his

foot *pointed*: revealing, as it were, himself the nature of his malady at the very time it is being inquired into. Dr. Brauell, as I said before, declares pointing to be the *earliest* indication of navicular-thritis; and for my own part I think this very probable, notwithstanding it seems not to have attracted notice as such by our own veterinarians. This will hardly be wondered at, however, when we come to consider that lame horses are brought to us out of other persons' stables, and that pointing with many horses, especially on a first or recent attack, is a symptom by no means so ready of detection as many may imagine, even after lameness is set in; and therefore it is no uncommon thing for pointing to be denied altogether, both by the groom and master of the horse. Mr. Turner has cautioned us against being deceived by such representations. "My rule," says he, "is never to place reliance on this statement; and therefore on a quiet examination in the stable, *unobserved* by the animal himself, I generally catch him in the fact: probably not extending the lame foot out a yard before him, but projecting only about a hand's breadth beyond the other foot," &c. In making such observations, however, and drawing our conclusions from them, it must be borne in mind that there are horses quite free from lameness who point the foot from habit—who stand so for ease—make it, in fact, their natural standing posture. Horses in years, and who are stale on their legs, sound though they be in their work, very often get into a habit of what is called "shifting their legs" in their stalls, i. e. standing first upon one foot, then upon the other, *pointing* or resting them by turns. It is but natural that the animal should point the foot in pain, or, in other words, take his weight off it, the same as we find another horse doing whose foot has been pricked in shoeing, or has picked up a nail; and this it is that makes pointing a symptom of so much importance in our diagnosis. We appear to be assured by it, that, whatever the malady may be, the *foot* is the seat of it; and that we may make this assurance doubly sure in our diagnosis, we must ascertain that it is invariably with the same foot the pointing has been observed.

HEAT OF FOOT, though one of the ordinary symptoms of navicularthritis, will not be present in every stage of the lameness. When a horse, for example, falls lame on the road on a sudden,

the cause of lameness not originating in inflammation--which as yet has not had time to set in—it cannot be expected that heat should be present. Neither will it be found in certain chronic stages of the disease, wherein lameness is rather the consequence of altered form and structure than of inflammatory action. Indeed, in naviculartritic disease in general the inflammation present seldom runs beyond what we call the *sub-acute* character; and therefore does not give rise to any very great deal of preternatural heat of hoof. Another circumstance accounting for the little heat that is to be detected in naviculartritis is the thickness of substance, and consequent distance, there is between the seat of disease and part to which the hand can be applied—the wall of the hoof or the sole; the latter, after being pared out, being, in point of fact, the nearest point to the navicular joint. After both soles have been cleaned out, Mr. Turner informs us, he has generally detected "an extra-proportion of heat in (that of) the lame foot:" adding,—what I have not myself noted,—"*the throbbing of the pastern arteries* is a more important criterion." Usually, also, there is some augmentation of heat, and of fulness with it, to be perceived around the coronet: a symptom that seems natural enough when we come to reflect on the vascular composition of the coronary substance—on the quantity of blood it must always contain, even when the foot is in health, and to what extent that quantity is likely to become augmented under disease. The fulness around the coronet will account for the appearance of sinking or falling-in which the hoof of the lame foot presents. It will also serve to explain the origin of the *rimminess* which the hoof in after days is so likely to exhibit: the secretion of horn (which takes place in the coronary substance) being naturally much influenced under congested and inflammatory conditions of that vascular substance.

RELAPSE. Careful inquiry should be made, and carried back as far as it conveniently can be, with a view of ascertaining whether the present be a first or second or third attack of lameness in the same foot, and whether or not any thing of the kind has ever happened to the opposite fore foot: the very circumstance of *relapse*, from the known tendency of naviculartritis to return, adding important weight in the consideration of symptoms, to say

nothing about the influence it must necessarily have over prospects held out in the treatment of the case. No lameness is so apt to return as that arising from naviculartbritis. Were a person a hundred miles off to write a letter to a veterinary surgeon, saying, " My horse goes lame, and I can discover no cause or semblance of cause whatever for the lameness; — there is nothing particular to be observed in his action to lead to a belief that it is shoulder lameness;—once or twice he has through repose become sound again, though lameness has not failed to relapse every time he has been returned to work again—and in the stable, and often out of the stable, the horse points his lame foot;"—I say, were a person to write thus concerning his lame horse, any veterinary surgeon to whom he wrote might, in his own mind, without any great apprehension of being mistaken, set the case down as naviculartbritis.

Commonly, the lameness relapses in the *same* foot; now and then, rarely until it has more than once returned, the fellow fore foot contracts the disease; and when it does, the first stone may be said to be laid for the foundation of *grogginess:* a sad termination, which, even by the most judicious and prompt treatment, can but be deferred for a longer or shorter period, rarely or never averted. After slight and cursory treatment, though the lameness be removed, should the horse be put *immediately after* to work, it will be almost sure to return: the only safeguard we know being energetic treatment at once, and that followed up by sufficiency of repose. There is more probability of a horse standing sound in his work after a first than after a second attack: and yet I have known many instances of horses standing their work after relapse, particularly when the second attack has occurred at no long interval of time from the first. When, however, a horse comes to experience a *third* attack of lameness in the same foot, but little reliance can be placed on him afterwards. He may, and probably will, by proper treatment and rest, be restored to soundness again; but not, I should fear, to *stand.* I can hardly recall to mind an instance where a third attack has not been succeeded by a fourth, and that by a fifth and a sixth: irremoveable lameness in one foot, or in both (grogginess) being the final catastrophe. To give a few examples, with the view of shewing how, in general, such cases

proceed to their end, in army practice at least:—F 3, troop horse, was first attacked in June 1836; secondly, in February, 1837; thirdly, in June 1837; fourthly, in October 1837. C 6, another troop horse, was attacked, first, in July 1843; secondly, in March 1844; thirdly, in May, 1844; fourthly, in February 1845; fifthly, in September 1845; sixthly (and now in the opposite fore foot, as well as in the original lame one, becoming, in fact, "groggy") in May 1847. G 5, troop grey mare, attacked, first, in September 1845; secondly in April 1846; thirdly in July 1846; fourthly, in December 1846; fifthly in May 1847; and still lame in the same (the near) fore foot.

Making a calculation of cases which have occurred under my own observation within the last twenty years, I find that in army practice a ratio of about one case of first attack in six or seven may be expected to relapse. In private practice, for sundry reasons which need not be mentioned here, the proportion of relapses I should expect would be much greater; though, of course, in both situations relapses must be greatly dependent on circumstances. In respect to the likelihood of relapse, or to the interval of time at which we may look for the return of lameness, that must depend on the nature of the "cure" achieved, as well as on the kind and intensity of the work the horse is either put to at once, or gradually inured to perform. Prompt and energetic treatment, succeeded by long repose, and a *gradative* introduction to work, avoiding all such kind of exertion as is likely to jar the fore feet much, affords the best chance of permanent soundness. In military veterinary practice we know pretty well in what seasons, and months even, we shall have occurring cases of naviculartrhritis. In the spring of the year, or as soon as field or road work commences, and especially at times when the exercising grounds have become hard and dry from want of rain, we are certain to have lame horses. "Screws" which have been loose before become now loose again, and fresh cases make their appearance: such of them as relapse again commonly shewing lameness at intervals of three, six, and twelve months; they being the periods of time at which the cases, according to their nature and the season at which they have occurred, are usually sent to work again.

PERMANENT LAMENESS of the affected foot is the result to

be anticipated from such relapses, and this may be expected to set in at a period more or less remote according as circumstances prove favourable or otherwise; relapse following relapse at intervals, long or short, as the case may be, until, in the end, such morbid changes take place in the diseased foot as render restoration of normal function and feeling impracticable, and the consequence is irremoveable lameness. And such will too frequently happen even under every advantage of treatment and repose. When, however, neither rest nor remedial treatment are had recourse to, but, on the contrary, the horse, lame as he is, is worked on, permanent lameness, of course, will become established at a much earlier period: nor will the case experience any decided remission of lameness; though, in general, a good deal more lameness, even by such a case, will be shewn at one time than at another, owing to attendant circumstances, such as work, rest, shoeing, dryness or humidity of hoof, &c. A lame horse, thus neglected or abused, will commonly come before us with marked symptoms of the inveteracy and irremediableness of his ailment. From continual uneasiness or actual pain in it, he is in the constant habit of pointing the lame foot; and this removal of the weight off the foot while standing, combined with the little impress of weight upon it during action, in the course of time, becomes the indirect cause of certain physical alterations in the external foot, independent of any of another kind that may be going on in its interior. From absence of its accustomed impress of weight from above, by the force of which, in health, it is kept expanded, the hoof contracts, particularly at the heels and quarters; and contracts, not only in its lateral but in its vertical diameter likewise, across from sole to wall: the lame foot becomes, in fact, altogether *smaller* than its fellow; the difference in magnitude between the two fore feet, as the horse stands before his examiner, being now perfectly obvious; and, moreover, the same is satisfactorily demonstrable by actual admeasurement. Such change in the form and magnitude of the hoof of the lame foot is, of itself, eminently pathognomonic: Mr. Turner feels "thoroughly satisfied that when contraction is accompanied with chronic lameness, disease exists in the navicular joint, either structural or functional." The shelving-in of the wall, and the concentric eminencies or *rims* upon it,

are also now, generally speaking, strikingly conspicuous. There will likewise be felt some callous or osseous enlargement of the coronet and pastern, and perhaps of the cartilages at the heels as well; it being about this period that ossific changes are commencing.

At the time that the examiner, standing directly in front of the lame horse, is noticing these differences in the two fore hoofs, most likely his eye will be attracted upwards by the manifest flatness of surface, and apparent deficiency in substance, in the *shoulder* of the same limb, as compared with that of the sound one. So remarkable is this defalcation in cases in which pain and lameness have long been present, that, considering the obscurity in which the disease of the foot was years ago veiled, we cannot feel surprised that the shoulder should have been regarded as the actual seat of the lameness. We now, however, know better. We know that the shrinking or wasting away of the shoulder is but the natural consequence of lengthened repose of the part, or comparatively inadequate action of its muscles; it being an established law in the animal economy that muscles become large and bulky in proportion as they are exerted, and *vice versâ*. So that while the muscles of the lame limb are shrinking for want of action, those of the sound limb are actually swelling into larger size from having extra duty to perform: the circumstance of the shoulder evincing this change more than any other part, and of one muscle in particular—the *triceps extensor brachii*—striking our attention from its diminished bulk, arising simply from the shoulder being the most muscular part of the fore limb, and from that muscle being used in action, as well as standing, more than any other. Hence it happens that the fleshy prominence so conspicuous over the joint of the elbow in the sound limb is frequently hardly observable after long-continued lameness.

Generally speaking, relapses of lameness, as I have had occasion before to remark, take place in the foot first attacked by navicularthritis. Now and then, however, the opposite fore foot will become attacked, and the disease, returning first in one foot and then in the other, will exhibit a sort of gouty or metastatic character; though this, be it noted, is comparatively rare. When lameness attacks

the sound foot while the lame foot continues unrestored, the horse being now lame from naviculartbritis in *both* feet, we may consider that the foundation has been laid for that deplorable state we call

### *Grogginess, or Groggy Lameness.*

In adopting which vulgar but significant appellations as the heading of this division of my subject, I, with Mr. Turner, regard them as synonyms of naviculartbritis, with this additional meaning,—that, to constitute *grogginess*, the lameness from naviculartbritis or its *sequelæ* must be present in *both* fore feet, in place of but one. There can be no doubt but that the epithet "groggy"—comparatively a modern one—was suggested by the unsteady, rolling, unsafe action of the lame horse being compared to that of a drunken man; and though in former days such was commonly connected with knuckling-over of the fore fetlock joints, and the tottering standing which such an insecure posture necessarily produces, yet have the pathological researches of later times demonstrated that veritable groggy lameness has its origin in naviculartbritis and its consequences. When horses from long or excessive work are what is called "shook" in their joints, such will add to their unsteadiness and want of stability, or, it is possible, may of itself produce an action that might be mistaken for "groggy." Indeed, the loss of elasticity which the limbs of very old horses in the course of nature sustain, combined with the effects on them of excessive strain and work, produce a stilty, concussive, bone-shaking action of them, which, it appears to me, was what old writers on farriery meant to denote by the denomination of "shoulder-shotten;" but which is certainly not—has, in fact, no connection whatever with—what we call *grogginess*. I have myself seen horses, young in years and perfectly fresh on their legs, and sound in their feet, that have, after a month or two of what is called "shoulder-in" work in a riding-school, exhibited all the symptoms of the so-called "shoulder-shotten" or "shooken;" cases which at first I did not understand, but whose nature I afterwards came fully to comprehend, and at the same time learnt that the

simple remedy for their restoration to soundness was withdrawal of them from such exercises, or, rather, giving them lengthened repose.

So that "grogginess" had better have its meaning limited to the lameness consequent on the actual presence of naviculartbritis, or some one or other of its *sequelæ*, simultaneously in *both* fore feet; and then, so understood, it becomes plainly distinguishable both from *founder* and shoulder-shook or "shotten:" it being now agreed among veterinarians, both of the old and new school, that founder is but another name for *laminitis* or fever in the feet.

It rarely happens, as I stated before, that a horse is attacked for the first time with naviculartbritis in both feet. Usually, but one foot is attacked, and to that foot the disease confines itself; and in the same foot still, generally speaking, relapses, should it return after disappearing; and it will do this for a second, a third, a fourth, and even a fifth time; though, in other cases, after a second or third relapse the fellow foot will fail; and now the foundation stone may be said to be laid for a state of groggy lameness.

In fact, it is evidently the pointing or resting of the lame foot in the stable, and the favouring of it while out, that, by imposing more weight and work upon the sound foot, causes the latter in the course of time to fail. For example, a horse will experience two or three or four attacks of lameness in the same foot. His owner, wearied by the tedious protraction of the case, and impatient at the expense of keeping so useless a servant, either summarily disposes of him, or, in a fit of vexation at the recurrence of lameness after so much rest and treatment, resolves to work him "lame or sound." Sold or unsold, therefore, the lame horse, instead of being laid up afresh, sufferer as he is, is kept at work, going sometimes quite lame, at other times—after rest perhaps—not so lame, until at length he begins to step short likewise with the sound limb, and by degrees proves lame in that also: in the end becoming as lame in one foot as in the other, or what dealers call "groggy."

In horses who are taken that care of, that their lameness is attended to and treated the moment it is perceived, this double dis-

ease is often for a long period warded off, and has, as I shall shew hereafter, been known, under watchful management, to be kept aloof altogether; a circumstance which will add weight to the opinion that the disease in the sound foot is rather to be regarded as the result of over-weight and work, than as being referrible to any constitutional or local susceptibility. Perhaps, better than by any further description, light will be thrown on the progress of navicularthritis towards grogginess by the relation of some cases.

C 6, troop horse, at the time four years old, was admitted for treatment on account of lameness in the near fore foot *(navicularthritis)* on the 20th July, 1843; had the lame foot pared out, stood with it in a warm bath, had it poulticed when taken out of the bath, and took, during the time, a dose of cathartic medicine. No relief being afforded by such mild treatment, blood was taken from the foot, and a blister applied over the fetlock joint, as well as upon the pasterns and coronet; and he was turned at a fitting time into strawyard. By the time he had been out a week he took a cold, and was taken up and treated for it. In a few weeks, after the blister had completely worked off his leg, he became sound, and under moderate work continued so until the following spring. On the 20th March on the following year he was again admitted into the infirmary for lameness in the same (near) fore foot. Again he was submitted to treatment, and again—on the 15th of May following—sent out, nearly sound, to be led out every day until he had quite recovered the use of his ailing foot. No more complaint was made of him until February 1845, when he was sent a fourth time for lameness. A couple of months' treatment once more restored him, but not for so long a period as before; for in September of the same year (1845) he returned again, but now lame in the *off* fore foot. A fortnight's treatment, however, rendering him sound, he was sent away to duty again. Knowing his great susceptibility of lameness, and being a horse of fine showy make, he was specially favoured in his duty, being as much as possible preserved from any hard work; and in this manner was he kept up, going very tolerably sound for nearly two years longer. Last May (1847), however, he failed in both fore feet, having become completely groggy, though still, of the two, lamer in the near fore foot.

In February 1837, E 15 (Corp. Lawrence's horse) was attacked with naviculararthritis in the near fore foot; but after standing without his shoe in warm baths and poultices, and taking cathartic medicine, was at the end of a week restored to soundness. Ten days, however, had not passed before he returned lame again in the same foot; and this time had sharper treatment, occupying a month. His soundness endured until the middle of June. Now, however, he was lame for the third time in the same (the near fore) foot; and this time, after being strongly blistered, was turned to strawyard. Having run there during the autumn, he was taken up about Christmas once more sound; and after this remained so until the beginning of February 1839, when for the first time he shewed lameness in the *off* fore foot. He was now bled in this foot, and afterwards blistered in both legs, and again turned into strawyard. In the middle of March he was taken up, and made a "convalescent," i. e. remaining without work in his stable; going now what is called "feeling" in both fore feet. In December 1840, having latterly been doing nothing but walking, whenever it came to his turn, backwards and forwards to the Horse Guards from Hyde Park barracks, he failed completely in both fore feet. Being a very fine horse, it was desirable to make every effort to save him; and, accordingly, once more he was received under treatment, though now with no hopes of success beyond that of mitigation of the pain in his feet. This time, also, his treatment was wound up by blistering, the blister applied being of the most severe description. Palliation of the lameness was all, however, that was effected; and in the end, in the spring following, the animal was "cast," unfit any longer for cavalry duty. It was in June 1836 that he was first attacked, and was lame on this occasion three weeks. Secondly, he was attacked in February 1837, as stated above.

In some cases, owing to great care being taken, and the all but total abstinence from any thing that can be called *work*, grogginess may for years, or even altogether, be prevented taking place; and this has been effectuated, notwithstanding lameness has become irremoveable or permanent in one foot. G 5, troop grey mare, first became lame in her near fore foot in September 1845. On

this occasion, the course of a few days' simple treatment restored her to soundness; so that after a few days of additional repose she returned to her work. On the 27th of April of the following year (1846), however, she returned lame in the same foot; and this time had a month's treatment, and afterwards a month's rest. For all that, however, in July following she became lame again in the same foot; and now, after treatment, was turned to strawyard, and had a three months' run. Still, under very moderate work she fell lame again in December ensuing; and though made once more quite sound, on being put to work this summer falls lame in the same foot for the fifth time, in July 1847, never having shewn the slightest symptom of failure in the opposite fore foot.

I can, however, relate a case wherein, under very moderate work or rather gentle exercise, for three times the above period, lameness was exclusively confined to the same foot. Eight years ago a general officer became possessed of a remarkably handsome well-shaped hunting mare, who, though never while in his possession was hunted or put to any hard work, fell lame two years afterwards in her near fore foot, for which lameness she became my patient. She got perfectly sound again under treatment, but has never ceased since, at intervals, to go lame; and at the present time, with the diseased foot much diminished in size, is permanently more or less lame upon it; still, at no time in the course of the six years she has been, off and on, lame in one fore foot, has she evinced any lameness in the fellow foot.

THE ACTION OF THE GROGGY HORSE is directly the contrary of that of the *foundered horse:* while the latter steps as much as possible upon his heels in order to avoid the pain occasioned by any stretch of the *laminæ*, the former treads the ground upon his toes, letting his heels down afterwards, in order that the heels may in the least possible degree receive impress from the pressure of weight from above as well as from the ground below. The pit-a-pat pottering gait of the groggy horse is truly characteristic, not to the sight alone, but to the ear even: a "judge" of these matters has but to *hear* the sound made by the steps of such a horse to at once recognise his ailment. The sensation too, as might be expected, created by the action of the groggy horse upon his rider, is alto-

gether peculiar: thus, a man both blind and deaf, mounted upon such a horse, would be able to tell, the moment the horse came to trot, whether or not he was groggy.

GROGGINESS MUST BE REGARDED AS A STATE OF INCURABLE LAMENESS. And yet, when such a state is not *confirmed*, i. e. has not from the length of time it has existed, and the alterations of structure in the feet which have consequently taken place, become established, grogginess frequently admits of alleviation, though *cure* may be hopeless. Even in such a case, however, it rarely happens that any permanent relief is conferred; seldom, indeed, any beyond what disappears as soon as the horse comes to return to any hard or severe work. Conscious of these facts, people seldom bring us groggy horses for treatment, while we, for our part, are equally shy in having any thing to do with such forlorn cases; and therefore it is that groggy horses are kept at work; and in certain situations, such as four-wheeled draught and agricultural employ, a great deal of useful work they will perform. The remark of old coachmen on the road used to be—"They didn't care how lame a horse was *afore*, so that he retained the sound use of his hind limbs;" and for draught this is the really practical and proper view of the matter, the tug of draught depending principally on the hind quarters.

## *Pathology of Navicularthritis.*

WHILE other lamenesses of the foot were plainly traced to their seat, and had their nature satisfactorily developed, there remained one, of which, from its seat lying out of the way of ordinary or superficial observation, the pathology continued wrapped in obscurity, or rather enshrouded in error, the supposition and generally received opinion being that it lay in a part with which, as has since been demonstrably proved, it had never any connexion. What we now recognise as *navicularthritis* was acknowledged to be a *foot* lameness, and was imagined to be located in the coffin joint. Nor was this groundless supposition effaced from the minds of veterinarians until Mr. Turner produced irrefragable evidence,

negative as well as positive, that the navicular *bursa* or joint, and that alone, was the seat of the obscure disease, and the sole and exclusive source of the lameness. "The coffin joint is *never* affected," says Mr. Turner: adding, "I have dissected all the groggy feet I have been able to procure, and have found the navicular joint diseased *in every instance.*"

It is not difficult to find reasons why this discovery was not made prior to the institution of a veterinary college, though it is any thing but creditable to such an institution that it remained unmade after the anatomy and pathology of the horse were publicly professed to be taught. Deeply and cunningly buried as the navicular joint is within the hoof, surrounded on every side by bulwarks of the strongest description, we have no right to marvel that the farriers of old did not discover the hidden retreat of lameness; but we have good reason to complain that *veterinary colleges* did not find out the seat of a lameness which was acknowledged by them as well as others to be in the foot. Had they cut into the navicular joint in any case where death happened to befall the lame horse, they could not have failed to have made the discovery; and the readiest way of laying open the joint for inspection is to make with a saw a vertical incision through the quarter of the hoof, on either side, carrying the incisions obliquely inward through the cartilages; then, with a scalpel detaching the perforans and perforatus tendons from their union with the contiguous parts, the former may be dissected down to its place of insertion, and turned back so as completely to expose the navicular (bursal) joint.

THE PARTS DISEASED, in cases of naviculararthritis or grogginess, are the under surface of the navicular bone and the upper one of the perforans tendon. It will be remembered that the inferior or posterior surface of the navicular bone is covered with cartilage for the purpose of articulating, i. e. forming a *bursa* or joint with the opposed tendon of the perforans muscle, which in the motions of the bone, upward and downward, plays over it something after the manner of a rope over a pulley: the surfaces of the bone and tendon being in more complete co-aptation from the circumstance of the bone having a transverse eminence (or *crest*) across its middle, to which the tendon is fitted by a corresponding excavation

in its substance, which hereabouts is rather of the nature of cartilage than tendon. And both these cartilaginous surfaces being lined by a delicate vascular (*synovial*) membrane, the same as other bursal cavities are, which continually exudes joint-oil, the play of one upon the other is at once rendered facile and frictionless.

Now, it is either the said crest across the navicular bone or the opposed concavity in the tendon, or both together, which shew the earliest signs of disease in cases of naviculartbritis: of the two, Mr. Turner seems to give the priority to the tendon; whereas Dr. Brauell informs us, his observations have proved to him that neither the navicular bone nor the bursa is the *invariable* nidus of incipient disease, "it being as likely to arise in one tissue as the other;" and adds, "that when the bone is primitively attacked, the disease develops itself tardily and insensibly; but that in the tendon the evolution of naviculartbritis is comparatively rapid and decided." Let which part will be first attacked, it is pretty evident that the opposed surface soon takes on the morbid action, either from direct contact, or, as Brauell says, from "sympathy:" the curious accompanying fact being—one that casts a strong light upon the etiology of naviculartbritis—that the upper or coffin-joint surface of the navicular bone, although covered with articular cartilage the same as the lower, has not, on any occasion whatever, been found a participator in the disease. "I have frequently seen," says Mr. Turner, "in long-standing cases of navicular disease, not only all the cartilage of the inferior surface of the bone ulcerated, but also a material part of this small bone absorbed—almost annihilated—and yet found its upper surface sound, with the cartilage entire, and the synovial membrane quite perfect."

THE MORBID APPEARANCES presented by the navicular bursa of a horse who during life had been the subject of lameness from navicular disease, will vary according to the stage the disease happens to be in at the time of death, and will also be influenced by the treatment the animal may have undergone for it during life. It is only by chance that, in the early stages of naviculartbritis, opportunities offer for *post-mortem* inspections; though in the latter or *groggy* stages opportunities abound: it being

any thing but a rare circumstance for an unfortunate wight of a horse to be led to the slaughter-house on the very account of his grogginess.

That the disease at its outset, in its most active form, consists in inflammation, we possess every evidence we can have to shew, considering the buried situation of the navicular bursa, and considering that the inflammation itself, at its highest, is no more than what we should, comparing it with other inflammations, denominate *sub-acute*. Exceptions, however, must be made of such cases as occur on a sudden—where the horse, perfectly sound the moment before, and never lame at any antecedent period, falls lame in an instant; for in such cases inflammation has had no time to set in, to occasion the lameness; though it speedily supervenes in the injured tissues, and, subequently, itself becomes, if not the sole, a highly aggravated cause of the lameness. The probability is—for we can only through some mere accidental occurrence put it to the proof—that lameness occurring thus suddenly proceeds from *lesion* or actual breach of the synovial membrane of the navicular bursa, and that either the crest upon the navicular bone, or the depression in the tendon opposite to it, is the seat of such lesion. At the same time it is to be presumed, that such injury—whatever it may be—is intense of its kind, from the fact of its producing *at once* a limping lameness.

A case related by the late Mr. Henderson, of Edinburgh, in the second volume of THE VETERINARIAN, will be found to furnish us with some light hereupon. The horse had been lame from ossific inflammation of the cartilage of his left fore foot; but had been restored to soundness, and continued sound for three years, when he fell lame again in the same foot. This time, however, remedies which had before proved successful, failed; and Mr. H. had come to the conclusion that his case was *navicular*, and that, therefore, his condition was hopeless; on hearing which opinion the owner took him and drove him seventeen miles in a carriage, the consequence of which was an attack of acute founder (*laminitis*) of which, on the sixth day, he died. Upon the inferior surface of the navicular bone, in its centre, was discovered "a dark red spot," and "very small spiculæ of bone were beginning to shoot

through the articulating cartilage." This shews the cartilage was in the *preparatory condition* for ulceration.

When, on the other hand, naviculartbritis steals on by degrees — as is the usual mode of its attack—we have evidence sufficient that inflammatory action has set in, and to this we are bound to ascribe most, if not all, of the anormal phenomena which follow. In this case, the probability is, that the injury giving rise to the inflammation amounts to no more than a contusion or bruise of the synovial membrane; and this is Mr. Turner's opinion:—"I am thoroughly convinced," says he, "that this complaint (naviculartbritis) at its commencement, is neither more nor less than a *bruise* of the synovial membrane lining the joint."

Brauell tells us that the commencement of the disease is usually marked by "either inflammation of the bursal membrane only, or of that and the navicular. The superior portion of the bursa which unites with the superior border of the navicular bone, and is contiguous to the tendon, presents upon its internal surface a blush of redness, accompanied at times with slight tumefaction. The portion which covers the trochlear cartilage, as well as the anterior surface of the tendon, has lost its pearly whiteness, and taken on a saffron hue. And the bursa itself is frequently thickened. The fluid contained within the bursa is of a reddish hue. The vessels passing underneath the navicular are often found injected; and the flexor tendon at its insertion often has the appearance of having been compressed at its sides: its anterior surface looking wrinkled."—"When the navicular bone is inflamed it is red and strongly injected. The vessels traversing it are dilated. But when macerated, it is found to have decreased in weight—its texture to have become more porous; occasionally the bone having a puffy appearance."

INFLAMMATION HAVING SET IN, WHAT FOLLOWS?—Remembering that the inflamed tissue is a secreting structure, and being acquainted by observation with what happens in like circumstances in other joints, we are prepared to meet with

DEFECTIVE SECRETION OF SYNOVIA The late Professor Coleman had observed this change; and the fact has since received ample confirmation at the hands of Mr. Turner, whose words are—

"In the earlier stages of the disease there is deficiency of synovia, but not a total absence of it; the secreting synovial membrane highly inflamed, &c.—In the advanced stage of the complaint there is a total destruction of the joint, which is so completely disorganized that it can no longer act as a joint. *There is not a drop of synovia to be found in it.*" This constitutes what is called the *dry* state of joint; and it seems like a remarkable occurrence in a bursal cavity—which the navicular joint in reality is; it being so well known that inflammatory action in *bursæ* is commonly productive of augmented secretion of synovia, as is instanced in the *capped hock*, the *windgall*, &c. For my own part, however, I do not regard this deficiency of synovia in the navicular joint as an anomaly to the general law of articular inflammation. I very much doubt that in the *earliest* stages of naviculartbritis the synovial secretion is diminished; I should rather feel inclined to think it was augmented, although it may be extremely difficult to produce demonstrative proof either of one state or the other in that *incipient* stage of the disease which alone could turn out satisfactory.

As, however, the disease in the joint advances, and ulceration comes to destroy, or interstitial deposition to change, the secretory structure of the synovial membrane, the secretion, of course, would become scanty, and even wanting altogether; and this I suspect to be the history of the dry navicular joint; and not, as I said before, anything different in the inflammatory action from what happens, under like circumstances, in other joints and bursal cavities.

ULCERATION OF THE CARTILAGE speedily follows, if it be not simultaneous in its appearance with, the inflammatory action. It must be remembered that the synovial membrane clothing the articular cartilages is of that tenuous character that its existence upon such parts was for a long time disputed; and that no sooner is it attacked with inflammation, than from its low degree of vitality, it, or rather the cartilage underneath it, falls into a state of ulceration; and it is the most prominent point of the cartilage, the part most remote from the source of circulation, which is the first to fall into this state: likewise, the same may be said of the hollowed central point of the cartilaginous capsule of the tendon opposite.

Once commenced, ulceration spreads down the sides of the navicular crest, giving the formerly smooth and shining surfaces of the bone the patchy eroded aspect which has been well characterized as looking like *worm-eaten;* at the same time that, owing to the ulceration, and to the attenuation as well, of other parts of the articular cartilage, discolouration is very visible: the surfaces having, in exchange for their humid and shining aspect, taken on them a dead and dingy brownish tinge.

Brauell, whose observations on this point are worth our recording, says,—"the consequences of inflammation of the navicular bone are, in all cases, *a diminution in its magnitude;* and *caries* is the primary cause of this. The caries is either deep or superficial, and is found invading one or more points, particularly the crest (or transverse eminence) of the navicular bone and its lateral depressions. Prior to the development of the caries, little eminences about the size of millet seeds are discoverable upon the surface: after maceration they look like so many *exostoses.*"—"As the caries increases in depth and breadth, the holes in the bone enlarge, sometimes attaining a capacity to hold a hazel nut. In this porous condition the bone is exceeding liable to fracture, an accident the more likely to happen from the caries being accompanied by friability of the substance of the bone."—"And, while the navicular bone is experiencing loss of substance on the one side, it is very seldom that any new-formed osseous matter is deposited upon the opposite (articulatory) surface. It is around the borders, posterior, superior, and inferior, where such deposits are generally found. And it is the union which takes place between such incrustations shooting out from the posterior and inferior borders of the navicular bone, and similar *spiculæ* issuing from the back part of the coffin-bone, that constitutes anchylosis between one and the other."

ADHESION.—At this period of the disease, the synovial covering of the perforans tendon being likewise in a state of exulceration, adhesion is very likely to take place between it and the navicular bone; though in a case where ulceration of the cartilages prevails this is not so likely to happen as in one wherein the primary ulcerative action in the membrane is immediately succeeded by a granulative or adhesive process. And it is most usual for this ad-

hesive action—which, be it noted, may ensue without any previous ulceration—to take place around the circumferent borders of the bursa, rather than in the middle or articulatory parts.

An appearance I have observed adhesion to take on in cases of not very old date or chronic character, is, a membranous sort of morbid production spreading from the border of attachment of the tendon upon the circumferent surface of the bone: the new formation being of a pink colour, and apparently organised, looking like converted albuminous effusion. Mr. Mogford, of Guernsey, who happened to be with me while I was examining into a case of this description, informed me he had frequently observed a similar condition of the joint.

Brauell's observations hereupon are,—"the flexor tendon frequently contracts adhesions with the navicular bone, but not throughout its whole extent of contiguous surface, but only at those places bare of synovial membrane, and where separation and rupture of its superficial fibres has happened. At first, these fibres exhibit no more than partial disconnection or roughening; gradually, the entire surface becomes covered with elevations and depressions, and thoroughly uneven. And now very frequently may be perceived upon it red *striæ*, looking like muscular fibres, and these appear to be the result of exudation. Sometimes, in places, greenish spots are perceptible. The destruction of the tendon proceeds with the continuance (and aggravation) of the disease; extending from before backward, in spots, until at length the substance of the tendon becomes so reduced that it is actually transparent: nothing of it, on occasions, remaining save slender softened bundles of fibres, separated from one another. The rupture of these is the natural consequence of the ulcerative action; though before that takes place, the tendon is found to have attached itself to a fresh place in the superior and posterior part of the navicular bone: the two parts being also united by a solid fibrous layer furnished by the right superior suspensory ligament, which is very much hypertrophied and thickened for the purpose."

THE TERMINATIONS OF NAVICULARTHRITIS, then, may be looked for as follow:—1. In *resolution*, or return of the navicular joint to its pristine condition—a termination, it is to be feared, not

Pl. VII.

Fig. 1.

W. H. Kearney del.

On Stone & Printed by C.H.Tu

Naviculararthritis.

# PLATE VII.

(From a preparation in Mr. Goodwin's Museum.)

*Fig.* 1, THE NAVICULAR JOINT is here represented as exposed, after the manner recommended at page 168, by sawing through the quarters of the hoof, and carrying the incisions obliquely inward, following the course of the commissures, until they meet at, or a little posterior to, the point of the frog; which effected with the saw, the section is isolated with a strong scalpel, and afterwards turned back: as is represented by *a a*.

*b b* Is the flexor tendon in such a state of ulceration that the navicular bone (*c*) is seen through its ragged and lacerated borders.

*c* Is the navicular bone, with its under surface exposed, in a state of acute inflammation and ulceration.

*Fig.* 2 Is the navicular bone of the same foot after it had been macerated and dried. Its upper or articulatory surface is here presented to view, shewing that an oblique fracture (*e e*) had taken place in it.

often to be looked for, even under favouring circumstances, and certainly never to be expected under opposite ones. 2. In *adhesion*, and this would appear to be the most common termination; and though not the most favourable, still so far from being the most unfavourable that the horse will, in the absence of ulceration in the joint, probably step sound with it, or sufficiently so to continue his ordinary work. 3. In *caries*, ulceration of the bone, and consequent liability to, if not actual, fracture of it; with or without ulceration of the tendon as well, and in time liability to, if not actual rupture of it likewise; in either of which disastrous issues of the case nothing remains but the bullet.

COLLATERAL DISEASE, no doubt, will on occasions arise out of naviculararthritis, though such is by no means so frequent as has been imagined: on the contrary, in the generality of cases, even for years will the disease confine itself to the navicular joint, and, as I said before, not so rarely to the joint of *one* limb, the fellow fore-foot remaining unaffected. "With regard to ossification of the cartilages of the foot," says Mr. Turner, "and ossification of portions of the ligament of the navicular bone, and other bony excrescences within the foot, I have to remark, that, having dissected so many extreme cases of chronic foot lameness of many years' standing, in which I have found all the ravages of the disease *limited to a space within the foot not exceeding half-an-inch square*, and unaccompanied with the slightest disease of any other part of the internal foot, I am induced to consider them (ossification of the cartilages and ligaments, &c.) as *mere effects* arising out of the navicular disease; and more particularly as there are more groggy feet *without* the slightest ossification of the ligaments of the navicular bone than with them."

## TREATMENT OF NAVICULARTHRITIS.

There is no description of lameness in horses concerning which unprofessional persons feel themselves so much puzzled as about "navicular disease," as it is called. They cannot understand how a horse's lameness should be "in his foot," while, at the same time, that foot exhibits to their eyes all the outward and visible signs

of health—while it is, in fact, what they would call "a good foot." Neither is it an easy matter to explain to persons unacquainted with the anatomy and physiology of that beautiful but complex piece of animal structure, the horse's foot, how all this comes to pass. And less satisfactory still comes the announcement which the veterinary surgeon feels it his duty in such cases to make to the proprietor of the lame horse, that the lameness is of a nature requiring the horse to be laid up out of work for some length of time, and that treatment, even under every advantage of repose, is not always—and particularly when the lameness has been of considerable duration, or proves to be a relapse—so efficacious in restoring soundness as he himself, as well as his employer, have reason to desire.

Farriers and grooms, and persons conversant in the ailments of horses, have always attached ill omens to cases of lameness in which nothing was to be discovered to account for lameness: they have ever "fought shy" of such cases, and been evidently mysterious and guarded in their opinions concerning them, experience having taught them that seldom any "good" resulted from having to do with them. Many a fine-looking horse, going lame from no visible cause whatever, has been bought at the hammer, a "bargain" as it was at the time thought, who has turned out after long and skilful treatment still a lame horse, and in the end proved any thing but "a bargain" to his purchaser.

The medical aphorism, that what has been a long time in *coming* will take a long time to *go away*, will be found of especial application in navicularthritis; and what renders the navicularthritic case still worse in prospect is, its known tendency to relapse. It is vexatious enough to have a valuable horse, in the bloom of health and condition, fall lame in one of his feet without any blame being imputable either to his groom or his rider, and with nothing to be seen or felt by either of them to account for his lameness; but the vexation becomes doubled when the owner comes to be informed that the animal's lameness is of a nature which will not only require his being let out of condition, but that will necessarily occupy some considerable time in being treated after a manner which affords the best promise of the horse standing sound in his work afterwards.

It is any thing but an agreeable duty on the part of the veterinarian to feel himself forced to make such disclosures as these; and I may add, unless he be prudent enough to make such preliminaries understood, the treatment of the case may, in the end, prove any thing but creditable to him or satisfactory to his employer.

THE TREATMENT OF NAVICULARTHRITIS may be either of a mild or soothing description, or such as affords relief rather by the absence of annoyance and irritation than by any especial curative influence in the means employed; or it may consist in the adoption of such remedial means as are proved to possess positive power over the disease present. In a case of naviculartbritis which is quite recent, the preferable plan of procedure is this negative form of treatment; such being advantageous both on account of the less alarming aspect it presents to the owner of the lame animal, and because very frequently—supposing the horse to be put under it immediately after the lameness shews itself—soundness will result from it. I am quite aware it may be said that this is dallying with the case—losing time by treatment—which, supposing it does succeed, may fail to *permanently* remove the lameness. I am not of opinion, however, that the short time occupied by such palliation materially affects the subsequent and more appropriate treatment of the case; and as it very frequently happens that it is desirable to have the horse restored to soundness in a short interval of time, and without blemish to his foot or leg, even though such restoration cannot for certainty be depended on to last, I think the simple plan of treatment I am about to describe, in cases that are *truly recent*, will be found advisable: at the same time I wish it to be distinctly understood, that, in a case in which the proprietor of the lame horse is willing to afford the requisite time, and the horse, after being restored to soundness, is to be expected to return to severe work, there can be no question about the general inadequacy of this mild treatment to answer such an end.

The simple plan of treatment I adopt in a case of naviculartbritic lameness which has but just commenced, is to have the shoe taken off the lame foot, to have the sole of the foot pared out, and the crust rasped round, and afterwards to have foot and leg immersed in a warm bath, the immersion being succeeded by the envelopment

of the lame foot in an ample hot poultice of bran and linseed meal. The poultice will require renewal every night, as well as every morning after the warm bath. And while this emollient treatment is soothing and relieving the foot, I commonly exhibit a brisk purgative. The purge will occupy the animal three days, and the day he is admitted or seen for the first time reckoning for the fourth, three days more will complete the week, at the expiration of which time he may have his shoe *tacked* on, and be seen out. By such simple treatment, and a week's repose, many such cases have I seen restored to soundness; but then must be taken into this account the important circumstance of these cases coming to me *on the very day*, I might almost say on the very hour, of their commencement. Such prompt application cannot be looked for in private practice, and therefore it is that the nature of the case becomes materially altered. Still, in many instances when late application has been made, supposing the case to be a first attack, and it be highly desirable, as I said before, to have the horse made sound without blemish, the emollient plan may be tried: it may very likely fail, but it will hardly put the animal's lame foot in a worse condition for more surely effective treatment than it was formerly in, and, after all, but a week or so will be lost.

THE PERMANENTLY RESTORATIVE TREATMENT consists in *topical blood-letting* and *blistering*.

BLOOD-LETTING is practicable, so as to have a *topical* or local effect, either from the foot itself or from some bloodvessel directly supplying blood to it, or returning blood from it. The pastern arteries and veins have been opened with this view; puncture of the former, however, has been found to be attended with inconvenience and even danger, while the latter have yielded too spare and uncertain a stream of blood for the evacuation to be such as was likely to be followed by any or much beneficial result. The part from which blood is usually drawn, and with more convenience and effect, perhaps, than from any other, is the *toe of the foot*, or, rather, the anterior border of the horny sole, whereabouts is to be found the *circumflex artery* of the foot. Not that this vessel supplies the navicular joint, its arteries coming principally from the *artery of the frog:* there, however, exists so free an intercommunication between

the bloodvessels of the foot in general, that abstraction to any amount from one may be said to exert more or less influence on all.

Preparatory to the operation of opening the artery, the horny sole of the lame foot should be pared with a sharp drawing-knife until every part of it be made thin enough to *give* with facility under the pressure of the thumb; which being done, with a small drawing knife (a searcher) a groove should be made crosswise a little behind the junction of the front border of the horny sole with the toe of the crust of the hoof, deep enough to penetrate to the quick, through which, with a common bleeding lancet, the circumflex artery is readily stabbed; and the stab is to be made *obliquely*, such wound yielding blood more freely and plentifully, generally speaking, than either a transverse or a linear puncture. The stab should not be made before free passage has been opened through the horn with the drawing-knife for the lancet, and sharp and forcible should be the movement of the hand in making the stab. Upon this movement, and upon the direction of the point of the lancet, as well as upon hitting the precise spot for puncture, depends the success of bleeding from the toe of the foot.

Mr. Turner is an advocate for *commencing* the treatment with blood-letting; and he would have blood abstracted *locally* "until the system is affected *generally*—six quarts of blood to be drawn at one operation." Excellent, however, as my friend's practice in general is acknowledged to be, I cannot help thinking that in the present instance he has stepped a little beyond the bounds of the requirements of the case, or even of prudence. It must be borne in mind that the inflammation we have to treat, rarely, if ever, manifests an *acute* character, and that in some cases ulceration rather than inflammatory action is prevailing; a state of joint in which blood-letting cannot be expected to afford that relief which as a remedy for inflammation is naturally looked for from it. For these reasons I commonly limit my blood-letting to the abstraction of six or eight *pints*, repeating this in cases which exhibit any unusual amount of inflammatory action; and while the wounds resulting from these bleedings are healing, I administer a brisk cathartic. An excellent rule for general practice is to immediately succeed the

first blood-letting, as soon, at least, as the wound in the sole is sufficiently healed, by what is familiarly known as "a sweating blister."

Now, to make myself in this matter understood—in a case brought for treatment as soon as lameness is discovered, and which has been preceded by no previous lameness in the same foot from the same cause—in other words, is no *relapse*—as I have before observed, from simply leaving off the shoe, and putting the foot into a warm bath, and afterwards a hot poultice, will the lameness very commonly subside. The stability of such a cure, however, not being reliable upon, this simple treatment may either be from the first rejected on the score of its inefficiency, and such as I am now describing—bleeding and sweating—adopted in its stead; or, this latter treatment may be kept back in reserve for the relapse, which is but with too much reason to be apprehended as the consequence of severe work, even here. For the single blood-letting and sweating blister still falls short of what is practicable for the permanent relief of the case; but then it will occupy less time, and be attended with less blemish, than the most severe form of treatment.

Supposing a horse lame from naviculartbritis brought for treatment—as such cases usually are in private practice—so long after the first shew of lameness that it is evident warm baths and poultices are put altogether out of the question, the point then will turn on the expediency of submitting the animal to this single blood-letting and sweating blistering in preference to laying him up for so much greater length of time as an extreme plan of treatment would necessarily demand. It may make a difference of a month or six weeks, and such often becomes a considerable objection. In such a case, after the wound is sufficiently healed to admit of a tip being nailed on—care being taken that any festering that may have been engendered is at an end, and replaced by granulative action—a sweating blister should be applied upon the pastern and coronet; the best application we can use being, in my opinion, the *acetum cantharidum*. To produce the desired effect nothing more is required than to *paint*—if I may make use of the expression—the hair of the pastern and coronet, in the direction it grows, with a

small painter's brush, taking care that the strokes of the brush are repeated frequently enough to *wet* the hair thoroughly with the liquid. The horse is then to be fastened short up, so that he cannot lie down; and four and twenty hours after the application of the blister, supposing it to have taken due effect—which by this time it will if it produce any effect at all—the hair, which has become ruffled and matted together by the discharge from the blister, should be sponged well with warm water, the object being to preserve the skin from any subsequent stimulation from the blister or the acridity of the discharge caused by it, and thus to preserve the hair. Should insufficient effect appear to have been produced, it may be advisable, on the second or third day afterwards, to apply a little more of the *acetum;* though extreme caution will be needed in so doing, having rarely made the experiment myself without, in the end, having had reason to repent, on account of the hair coming off. I would rather wait a few days before the second application was made. The sponging operation should be carefully performed every morning, smoothing down the hair in so doing: at the same time it is a wise precaution to take, to smear the heel with grease, lest any of the blister or discharge should escape into it. About ten days or a fortnight after the application of the blister, under attentive management, the sweated parts will in general have become sufficiently soft and pliant again to warrant the horse being seen out in a short gentle trot. Should there remain, however, any scurfiness about the pastern or coronet, his action will necessarily be stiff in those parts, and on that account perhaps will he still shew lameness, supposing he does not do so from his continuing unrelieved by the remedies that have been employed. Providing he go sound, or so much better that he is evidently on the road of improvement, let him remain, as before, at rest in his stall for another week, and then be again trotted out for trial; a period when, his progress towards amendment being satisfactory, he may be turned into a loose box, his continuance in which must depend entirely on circumstances. Should his services be peremptorily demanded, of course he must return to work; though the longer he is kept out of work the greater will be the chance for him to stand sound when he comes to be put to it.

In a case wherein such treatment as this—intermediate as it is in intensity, and length of time occupied, between the mildest and severest forms of treatment—fails to afford the expected relief, or in a case wherein either from consideration of its nature, or from its being a relapse, or other circumstances, it is resolved from the first to place the lame horse under that course of treatment which presents the surest prospects of ultimate success, sufficient length of time being granted by his owner to put it into effective execution, the plan to be adopted—which I believe, at all hands, is reckoned the most effectual—is as follows:—

When there is plain evidence to shew, or even reason to suspect, that inflammation continues unabated in the navicular joint, take blood, not once only, but twice, from the toe of the foot, nay! thrice, if required, which is rarely the case, to the amount, under ordinary circumstances, of six or eight pints each time; and as soon as convenient after the last bleeding, i. e., as soon as the wound made by the lancet is sufficiently healed to bear having a tip nailed upon the hoof*, have the coronet and pastern, and *fetlock as well*, closely trimmed or rather shorn of their hair, and over the entire surface apply a strong blister; the horse being fastened up in his stall afterwards, so as not to be able to lie down, according to the usual mode of securing blistered horses. After standing for three or four or five days in his stall, according as more or less swelling of the leg ensues, the blistered parts may be well oiled, and the patient may be turned into a loose box; but I would not have this box a large one, because in his present condition quietude is much to be preferred to moving about. Such a blister will cause the cuticle, and with it the hair, to come off, and the horse will certainly not have his leg restored to be in a condition for work under a month or six weeks, the blood-letting and blistering altogether occupying about a couple of months. And unless such time be given up for the treatment, the veterinarian had much better, for his own credit's sake, be without the case. Indeed, in many cases, some two or three weeks more will be found desirable either

* It may not be requisite or even advisable in a strong-horned foot to put on any shoe: in a brittle or weak-crusted foot a tip prevents fracture of the hoof.

for complete recovery from the effects of the blister, or for the more perfect subsidence of the lameness.

But supposing, after all this, that the lameness continues, if not to the same degree, still in too palpable a degree to admit of the animal being re-taken to work, what at this stage is to be done?—what more can be put in practice for the relief of the case? Having recourse to blood-letting and blistering again would be injudicious, there being most probably nothing to call for it. Whatever inflammation existed at first has most likely by this time departed altogether from the navicular joint; or, if it has not wholly ceased, has subsided into a lingering chronic action which hardly calls for, or is likely to be very little benefited by, repetition of blood-letting. There may be—indeed, probably there will be—some heat and tumefaction remaining about the pastern and coronet; but this is most likely the effect of the blister, and therefore need not be heeded further than as some guide to us concerning our future treatment of the case.

In this stage of an unrelieved or uncured case I have frequently tried the *frog seton;* though hardly ever, I may add, with such result as has satisfied me of any decidedly beneficial operation it has had: on the contrary, the horse has often gone as lame after the withdrawal of the seton as he did before: I have therefore discontinued using the frog seton in naviculartharitis. The practice I now adopt—in the case before us—is rather of an *assuasive* than a counter-irritant character. It consists simply in employment of refrigeration and rest. This, whilst it cools the external parts, and robs them of any heat or inflammatory action they may still retain, abstracts any chronic inflammation that may linger about the parts within, at the same time that it softens and supples the hoof. Having had the tip on the lame foot removed—supposing this has not been done before—and the sole thinned afresh, the toe shortened, and the quarters rasped, I recommend that the horse should stand with his fore feet in clay. The simple plan I adopt is to make a clay bed in the horse's stall, of sufficient breadth to render it impossible for him to place his fore feet in any situation out of it, and deep enough with clay to bury the hoofs of the feet, as they stand, in it. In this bed I

have the animal kept standing, taking care that his head is tied short up, all day long; while, at night, he is placed in a littered stall to lie down, or else is turned into some confined yard or box. This is preferable to standing with the hoofs immerged in water, because from the conducting property of the clay, and the continual evaporation going on from the various irregularities of the trampled clay bed, the feet experience so much more refrigeration. In this simple treatment I persevere until such time as heat has entirely left the external parts, and swelling likewise; at least, the latter to that extent that it is from appearances likely to subside: and thus have I known numberless cases of the kind described at the head of this paragraph either restored to soundness, or to that approximation to it that they have been considered sufficiently recovered to perform whatever has been required of them.

ABOUT FIRING THE CORONET OR PASTERN, I have nothing more to say than that it is an old practice, one that was had recourse to at a time when naviculararthritis was noted as "*foot* lameness," without any thing being known of its seat or nature; at the same time one which, from its counter-irritant operation, has no doubt been on many occasions followed by benefit; not more benefit, however, than would have resulted from a blister, nor so much as generally is found consequent on blistering after blood-letting. Added to which, the scorings of the cautery, if made *deep*, tend to disorganize and destroy the secretory structure of the coronary body, and this may entail a defective or irregular formation of horn.

# NEUROTOMY.

NEUROTOMY—compounded of two Greek words, viz. τεμνω *to cut*, and νευρον *a nerve*—was, at the suggestion of that warm-hearted and revered friend of the veterinary profession, the late Dr. Geo. Pearson, introduced by me, in my "Lectures," in the year 1823, as an appropriate appellation for what commonly went by the name of "unnerving," and sometimes by that of "nerving:" phrases which, besides being untechnical, were neither of them definite or distinctive enough in their meaning for professional use.

DEFINITION. Neurotomy, as the operation is now understood, may be defined to be, the division of a nervous cord, and the subsequent excision of a portion of it, with the view of removing pain through the destruction of feeling. The *plantar nerves* are those commonly operated on; but any nervous cord of the body may, if occasion call for it, become the subject of neurotomy.

THE PURPOSE FOR WHICH NEUROTOMY IS PERFORMED is, usually, the removal of lameness; though the operation may have, and has had, other objects. And the lameness the most certainly and the most effectually removed by it, is foot-lameness, and especially of a naviculartritic description: hence the reason of the account of neurotomy being consecutive to that of navicularthritis.

THE INTRODUCTION OF NEUROTOMY INTO VETERINARY MEDICINE is comparatively of modern date. For years before, the division of nerves had been practised by human surgeons, in particular for the relief of that most painful of all painful affections, *tic douloureux;* but there is no mention of any application of the operation in veterinary surgery prior to the time of Moorcroft; nor was it until Professor Sewell had announced himself as, and was acknowledged to be, THE DISCOVERER OF NEUROTOMY FOR THE REMOVAL OF LAMENESS, that Moorcroft, who had left England for India, came forward and advanced his claims to that

honour; which he did in March 1819, in a letter "To the Editor of the Calcutta Journal," as follows:—

"Sir,—With reference to your paper of the 23d inst., noticing as discovered by Mr. Sewell, within about the last eighteen months, a cure for a lameness in horses, commonly called 'coffin-joint lameness,' I beg to observe, that the mode of treatment alluded to, so far from being a discovery of the last eighteen months, *was practised by me about eighteen years ago!*"

"Finding that diminished supply of blood (by tying both the inner and outer artery of the fetlock) did not counteract the mischievous effects of pressure on the inflamed tendon, I turned my thoughts towards subduing its increased sensibility by diminishing the proportion of nerve naturally distributed on the foot. On this principle I raised the *outer* nerve of the fetlock joint out of its bed with a bent probe, and cut it across with a pair of scissors. This was done in several instances, and always with immediate and decided lessening of lameness; frequently, indeed, the animal when he rose from the bed appearing perfectly sound. But the result was not uniformly and permanently successful, relapse of lameness occasionally taking place after a period of soundness for some weeks, and as often at grass as at work."—In an operation of the kind Mr. Moorcroft performed on a horse, the property of Lord G. H. Cavendish, in a struggle the animal made at the moment the nerve was divided, it broke its back. At first, Mr. Moorcroft confined himself to the division of one (the outer) plantar nerve: afterwards, however, he bethought himself, that, "if it should happen that the division of *both* nerves should completely remove the pain, and exercise restore the original facility and latitude of motion to the joint, and that by degrees the sensibility should be reproduced, so far as might be necessary for the complete performance of all the functions of the foot and limb, a new and rich field would be opened to physiological research. It was resolved, therefore, to divide both nerves, in a case of relapse of great lameness in a mare. The animal on rising from the bed trotted boldly and without lameness, but now and then stumbled with the foot operated on. The wound healed in a few days, and the mare was put to grass." She progressed favourably for some weeks, but

happening to cut her foot severely in galloping over some glass bottles, such severe injury accrued to "the joint" (the coffin) that her case became hopeless. Mr. Moorcroft winds up this interesting account of neurotomy with the following very sensible practical deductions:—

"From the preceding experiments it has been shewn, that, by the diminution of the quantity of blood passing to the inflamed joint, the sensibility was not subdued, owing to adverse peculiarity of structure; that by the diminution of sensibility the repairing powers of the part were not injured, as far as they depended upon the action of the bloodvessels; that by a very sudden division of one nerve a fatal accident was produced; and that by the extinction of sensibility, the natural guard against external injury, through the division of both nerves, an accident was rendered destructive, which in the usual condition of the foot might have been less injurious. The unfortunate results of surgical practice, candidly related, rank in utility of record next to those of opposite termination—errors in practice guiding experience to sound conclusions.

"I recollect not the number of horses operated on by me successfully, though it was somewhat considerable. Some of these were worked by myself, and the general impressions on my mind at this interval are, that horses so operated on, when they did not again become lame, were more apt to stumble with the limb operated on than the other; and that this mode of treatment was likely to be more usefully applicable to coach-horses than to horses intended for single harness or for the saddle*."

These observations shut out all doubt or surmise, not only that the operation of neurotomy had been practised, but practised successfully by Mr. Moorcroft, before he departed for India, which was in the year 1808; at the same time, they afford us reason for believing, that the same talented and skilful veterinarian was on the brink of bringing forth what has since been brought to light through the experiments of Mr. Sewell, viz. the utility of neurotomy as a remedy for the removal of lameness in cases where

* The entire paper from which these extracts are made will be found in The Veterinarian, vol. iii, p. 619, *et seq.*

medicine is confessedly powerless, together with the serviceability of neurotomized horses, not for driving only, but for riding, and even for hunting. It appears, however, from this account, that Moorcroft did not continue long enough in England to perfect that which he had so promisingly commenced; and that, after he had left, neurotomy had died away in repute, or rather had never been made public until it was proclaimed to the veterinary world by Professor Sewell; and therefore to that gentleman is equitably awarded the honour of being the originator or introducer of a practice which has saved numbers of horses from premature slaughter; and while it has spared them days of unceasing pain, has restored a very great majority of them, at least for a definite time, on account of their serviceability, to the keeping and favour of their masters.

THE RATIONALE OF NEUROTOMY is plain and simple. Lameness is the manifestation of pain. Deprive the part in pain of its sense of feeling, and the pain, with the lameness consequent on it, ceases; not to return until sensation shall return, and not *necessarily* even then. Neurotomy, therefore, as a remedy, differs from all other remedies, insomuch as the relief afforded by it is *instantaneous*: divide the nervous cord going to the seat of lameness, so as to cut off all communication between the part in pain and the sensorium, and comparing nervous action to what it in some respects so nearly resembles, the same effect is produced as when the wire of communication is cut proceeding from some electrical machine or battery. Electricity, like nervous action, is at an end; the electric battery is charged in vain; the brain can no longer take cognizance of impressions or injuries inflicted on the neurotomized part. Suppose the seat of lameness to be the foot, the *plantar nerve*, being the trunk whence that organ derives its nervous branches, is the nervous cord to be cut to deprive the foot of sensibility: but there are *two* plantar nerves as trunks, one on either side of the pastern, and the division of but one of them will paralyze but the half of the foot of the same side; consequently, to render both sides of the foot insensible to pain and lameness, both plantar nerves must be divided. This done, a horse may be cut, or stabbed, or struck any where below the division of the nervous trunks—or at

least below where any branches are given off from the superior division of the nerve—with perfect impunity: the dealer's common test of a neurotomized foot being to prick the coronet with a pin; should the horse not flinch or catch up his leg, he is set down as "a nerved one."

The reason is now plain why a horse, dead lame even before he be cast for the operation, becomes, from the moment neurotomy has been performed, perfectly sound. No change whatever has been effected on the disease which caused his lameness; nothing, in fact, in or about the foot or limb has been altered, save that the communicating sensitive cord has been cut in two, and sensitive action has in consequence ceased. Although, however, such alone appears as the *immediate* result of the operation, we find it was asked by Moorcroft, as indeed it naturally would by an inquiring mind, if there were no

REMOTE EFFECTS FROM NEUROTOMY to be looked for—whether the nutritive and secretory functions of the foot, deprived of nervous power, would proceed as before; and, further, what difference neurotomy might make in the animal's action or tread upon the ground. Moorcroft had observed that, under the loss of nervous energy, "the repairing powers of the part were not injured, so far as they depended upon the action of the bloodvessels;" and subsequent experience has confirmed this observation. Inflammation appears to be the same process in a senseless as it is in a sensitive foot, and the secretion of horn goes on as well in one as in the other; the grand and important difference between the two being, that, supposing the neurotomized foot to receive a prick or bruise, and inflammation and suppuration to follow, matter may collect and burrow underneath the sole or frog, or other part, and the horse, incapable of feeling any hurt in his foot, can of course give no intimation of mischief, by shewing pain or lameness, to his groom or master; and consequently, unless the latter should detect the evil himself, suppuration may proceed to that extent to cause the hoof to separate and be cast off the foot: a catastrophe which has happened more than once, and one that has been brought forward as a fearful argument against the practice of neurotomy. A neurotomized horse may receive a stab in being shod from a nail

taking a wrong direction, or he may pick up a nail on the road, and no intimation whatever of injury be given, unless it happen by his farrier or groom to be discovered. Such accidents, however, are not of every-day occurrence, neither are they, in the hands of expert farriers and careful grooms, likely to happen without their knowledge, and therefore have no right to be regarded in the light of arguments against neurotomy further than that such hazard, remote though it be, tends to the diminution of such a horse's value in the market.

The operation of neurotomy has certainly taught us important uses of nerves to the foot. By imparting sensation to the organ they become at once its safeguards in health and (if I may be allowed the expression) its nurses in disease: they inform the animal when his foot is hurt, and they warn him, through the pain he feels, that the injury, or the inflammation the consequence of it, will be aggravated by pressure upon it or use of it; and therefore it is that he "favours" the ailing foot in action, and "points" with it while at rest, and so in effect *lays it up*. This the neurotomized horse, feeling no pain, finds no occasion for doing; and the result may, through inattention, possibly be such as I have before stated, viz. suppuration of the entire foot, shedding of the hoof, and even, from subsequent irritation in other parts, in the end, death itself.

But there is another use of nerve to the foot which neurotomy has thrown strong light upon, and that is, *the horse's sense of feeling through his hoofs*.

Does the Neurotomized Horse maintain the same Step and Tread he used before? To this important question I unhesitatingly answer, no!—he does not. There can be no doubt but that the horse *feels* the ground upon which he is treading, and that he regulates his action in consonance with such feeling, so as to render his step the least jarring and fatiguing to himself, and therefore the easiest and pleasantest to his rider. The tread of the hoof creates a certain impression—depending on the nature of the ground trodden upon, and the force and manner with which the tread is made—on the nerves (of sensation) of the foot; which nerves being associated above the knee, in their course to the sen-

sorium, with motor nervous fibres, the motions excited by the latter will necessarily be more or less influenced, through the will, by the impressions they receive from the former. Such impressions being, in the neurotomized subject, so far as regards the feeling of the foot, altogether wanting, a bold fearless projection of the limb in action will be the consequence, followed by a putting down of the hoof flat upon the ground, as though it were a block, creating a sensation alike unpleasant both to horse and rider. These combined alterations in action and mode of setting down the feet it is which give rise to the peculiarity in the gait of the neurotomized horse—consisting in lack of elasticity and consequent jarring movement—by which he is ever, when *both* fore feet have been operated on, distinguished by a rider experienced in such matters from other horses, as well as characterised in action and gait from what he formerly was himself.

This acknowledged defect has been adduced, and not without reason, as another argument against neurotomy. It must be remembered, however, that the foot for which such an operation has been performed was originally a lame one; and that, if we have restored it to soundness at some expense to its organization, still have we placed the animal thereby in a preferable condition to what he, as lame and useless, was in before; and therefore the argument holds good only to a certain extent. It certainly would have been doing much better for the lame horse had we made him sound without detracting in anywise from the remaining perfections of the foot: since, however, such was incompatible with the nature of the remedy, we ought in reason to be content with what has been achieved by neurotomy; and that this has amounted to no mean benefit I shall annex a few cases to shew, accompanying them with the remark, that I feel quite convinced, when the subjects for the operation shall have been properly selected, and the fitting time chosen for its performance, similar results may be sanguinely and pretty surely anticipated.

THE SUCCESS OF NEUROTOMY is best shewn by cases:—The late Mr. Castley, V.S. to the 12th Lancers, whose name in the early numbers of THE VETERINARIAN stands in no ordinary esti-

mation as a man of sound, penetrating, practical observation, has put two cases on record of great value to us in this place.

*Case* 1.—October 1, 1819, a bay gelding, belonging to his regiment, the 12th Lancers, fell suddenly lame of the near fore leg on the road between Hounslow Barracks and Hampton Court. Nothing was discovered to account for the lameness, either in the leg or foot. He was immediately placed under treatment, bled in the foot, physicked, &c., but all to no purpose. At the expiration of a month, although he stood in the stable as firmly upon one foot as upon the other, yet, when put in motion, "he was as lame almost as if his leg was broken." The *shoulder* was now imagined to be in fault, and under such a supposition was tended; but with no better success than when the foot was treated. On the 10th of January following, it was determined to try the effect of *nerving* (neurotomy). The horse arose after the operation, "and trotted sound. In a month he was in the ranks, and he remained in the regiment upwards of *eight years* afterwards, during which time he continued quite sound, although he was sometimes put to very considerable exertion." In 1828 the horse was "cast and sold" at Lisbon, the regiment being at the time in Portugal; not, however, on account of lameness, but for old age, and even then "he fetched £20."

*Case* 2 of Mr. Castley's is one in which *both* fore feet were successfully operated upon. A brown gelding, a troop horse, had been observed frequently to stand pointing or resting the fore feet, and particularly the off foot. For two years, however, after first observing this, he had not been reported "lame;" nor did he become absolutely so until the hot summer of 1826, when, after a severe ride on despatch duty, he went very lame in the off fore leg, for which (on the 14th June) treatment was commenced, such as bloodletting from the foot, blistering the coronet, purging, &c. and this produced great relief. Exercise, however, brought back the lameness. The latter end of August, the lameness being regarded as "chronic," and Mr. Castley's conviction being that it was "navicular lameness," neurotomy was determined on, and on the 1st of September was put in practice. As in the last case, the horse arose

from the operation, "and went sound." The consequence was he escaped being "cast" for sale, and was chosen as "one of the effective for the expedition to Portugal." He carried his rider all the time the regiment remained abroad, and returned, and was at the time Mr. C. wrote out his case (December 1829) present, doing his duty, with the regiment*.

I shall next relate a case that occurred to Mr. Rickman—a name likewise associated with the practical worth of the early Numbers of THE VETERINARIAN—which is remarkable on account of the extraordinary feats the horse, after being neurotomized in *both* fore feet, was enabled to perform, as well as for the extraordinary increase of value the operation conferred upon him. It is as follows:—

*Case* 3.—A beautiful chestnut horse, six years old, for which his owner (a farmer) had refused a hundred guineas, though he possessed "good circular hoofs" became a little lame in both fore feet, but more so in the near than the off. A farrier who attended him pared his soles, and blistered his coronets, and finally fired him from hoofs to knees; after which he was turned out, but came up, six months afterwards, worse than when he went out. Mr. Hilding, a friend of Mr. Rickman's, related the case to him, and consulted on the policy of purchase of the horse for the purpose of neurotomy. Mr. R.'s advice was to do so. Accordingly the lame horse was bought for £12 for Mr. Rickman to neurotomize. The operation was performed on both legs, below the fetlock joints. The horse was rendered by it, immediately, "quite sound." His new master, Mr. Hilding, who is a very superior horseman, rode him, afterwards, two seasons with the Shropshire hounds, and whenever they had a long run he was always in the front. He was offered 200 guineas for the horse, providing he would give a warranty, which however he could not, of course, do. Subsequently, the horse was sold for 60 guineas to Mr. Gittins, who rode him for two years with Sir Richard Puleston's hounds. He had then been operated upon four years, and still continued sound.

* These two cases will be found in ample detail in the second volume of THE VETERINARIAN, pp. 493-5.

" He was considered one of the most brilliant leapers that was ever put at a fence*."

Mr. THOMAS TURNER, the present energetic and respected President of the Royal College of Veterinary Surgeons, some years ago possessed a horse on which he performed the operation of neurotomy, and which he afterwards rode hunting for two seasons, with as much confidence, I have heard him say, as though he had never been the subject either of lameness or of neurotomy.

A CASE OF MY OWN shall conclude this summary of the eminent success that has attended neurotomy in proper hands, under favourable circumstances. In June 1837, a captain of the regiment in which I have the honour at present to serve, made me a present of a horse which, setting his lameness aside, bore a high name and value. His pedigree was—" got by Whisker out of Castrella," and consequently he was " own brother to Memnon," who had run second for the gold cup at Ascot. Indeed, it was this affair which led Chifney, then the owner of Memnon, to depart in haste from the course to purchase the subject of the present narrative at the extraordinary price of £1400; though, as soon as he discovered his fresh purchase had no run in him, he was glad to sell him for a charger at the reduced value of £200. At the time he came into my possession the horse was dead lame, and incurably so, in the near fore foot, from naviculartheritis; for which although he had been treated at several separate periods, and as often relieved, yet, so invariably did the lameness on work return, that he would now, but for my intercession, have been destroyed. July 1837, his lame foot was operated on. He arose, and immediately went perfectly sound, and for two years after, in my possession, continued so; the use I made of him being a hack about town. His former master also rode him after the operation, and declared him to be as perfect in his action and performances as he had ever been in his palmy days. What I continually remarked myself in riding him was, that, being much in the habit of changing his legs in cantering, he would quite as often lead off with the *near* foot (the one he had been so long and painfully lame upon) as with its fellow.

* VETERINARIAN, vol. iii, pp. 42-3.

ARGUMENTS AGAINST NEUROTOMY. Having shewn what success has attended the performance of neurotomy under favouring, or, to speak more correctly, under fitting and proper circumstances, I should be doing injustice to my reader by setting the operation before him in a light falsely dazzling, were I to withhold from him the recital of occurrences which from their aspect and termination have seemed to warrant others in bringing them forward as so many failures, and facts upon which arguments might be securely grounded against neurotomy. There is no more sure way, in the end, of bringing any new remedy or operation into discredit than that of setting forth all its virtues and good qualities to the entire exclusion of its bad ones: in the long run, failures will be certain to make themselves known, and the result of such disclosures is likely to be, that what at first was thought and said to be perfection itself, is now declared to be good for nothing, or absolutely bad, perhaps; it being in the one instance as much unfairly decried as it was in the other unduly extolled. Such has been the case with neurotomy. Its promoters and abetters, some influenced by fame, others by gain, set it forth at the outset in brilliant and shadeless colours, and thus succeeded in raising it to a great height in public estimation; so that, when reverses did come, its fall proved all the greater. Still had it sufficient buoyancy, sufficient real merit, to recover from such sweeping condemnation; and now, once more, is it restored by all reflecting veterinarians to that place in their catalogue of remedies which it ought to have occupied from the first, and which it is not likely now to suffer displacement from.

THE INSUCCESS OF NEUROTOMY, principally from causes which will be pointed out, may be shewn in various ways. Horses can be brought forward who have experienced no benefit from it; nay, cases can be related in which horses have thrown off their hoofs in consequence of it. The foot deprived of its power of feeling is as liable to receive injury as, perhaps more liable than, one that retains its sensibility. Either from being pricked in shoeing, from picking up a nail in the road, from a wound from a flint stone or a piece of glass lying in the road, or a bruise from the opposite foot, or a festered corn, or some other like cause, the senseless foot re-

ceives injury; which, not being as in the natural foot accompanied by pain, continues, unheeded by the horse, and probably by his master, and the result is, inflammation and suppuration, it may be, to an alarming extent, before any discovery be made of the mischief. Under such circumstances, we cannot, have no right indeed to, feel surprise at purulent matter having under-run the sole and insinuated itself between the laminæ, so as, in the end, to occasion the separation of the hoof from the foot. Is neurotomy to blame in this case? Was the master or groom not called on to pay especial attention to the foot or feet of an animal of which he had caused the nerves of sensation to be excised? Would any man of common reason suppose that a foot without feeling could evince pain or lameness from injury the same as a foot with feeling? And would he not consider it his duty, by attention to his horse's feet, to compensate in some measure for the deprivation he had caused him? I know that such occurrences as loss of hoof have arisen from over-work, or from work greater than the foot in the state in which it was operated on was prepared to bear, and that under such circumstances such a melancholy termination has been unavoidable: at the same time, I believe this to be a rare incident when due circumspection has been employed.

To COMMAND SUCCESS IN NEUROTOMY three considerations require attention:—

1stly. The subject must be fit and proper; in particular, the disease for which neurotomy is performed should be suitable in kind, seat, stage, &c.

2dly. The operation must be skilfully and effectually performed.

3dly. The use that is made of the patient afterwards should not exceed what his altered condition appears to have fitted him for.

The veterinarian who suffers himself to be guided in practice by considerations such as these will have little cause to regret having embarked in the experiment: on the contrary, in the long run, he will find he has thereby restored numbers of horses to work who were utterly useless, saved many lives from slaughter, and obtained for neurotomy a good name within his circle of practice.

A plain and safe argument wherewith to meet the objections to neurotomy is, simply to ask the question--what the animal is

worth, or to what useful purpose he can be put, that happens to be the subject of such an operation. If the horse can be shewn to be still serviceable and valuable, then is he not a *legitimate* subject for the operation. The rule of procedure I laid down when treating on neurotomy in my "Lectures on the Veterinary Art," so long ago as 1823, was to operate on no other but *the incurably lame horse;* and whenever this has been attended to, not only has success been the more brilliant, but indemnification from blame or reproach has been assured.

When first neurotomy was proclaimed as a "cure" for certain descriptions of lameness which all other remedies had failed to remove, persons having lame horses, eager to have them restored to soundness, flocked around veterinary surgeons to have them "unnerved;" such appearing to them no more than an ordinary remedy for an ordinary case. By this the veterinary practitioner was placed in a novel and trying situation. If he refused to operate, he probably lost a customer; and if he did so, he felt that he was performing an operation of magnitude and risk in a case wherein milder and safer means would probably prove efficacious. One veterinary surgeon in our great metropolis, during the season of *neuroto-mania*, operated on some hundreds of horses, and made thereby somewhere about as many pounds sterling; and the result has been, that, in quarters where "nerving" and "unnerving" were phrases constantly in horse-people's mouths, the operation is now hardly ever heard of, neurotomy having been set down in their minds as a lamentable failure. And certainly, for the rough work coach and cab and omnibus horses have to go through, for farmers' work, for all business, in fine, wherein so little attention is or can be paid to the feet and legs of horses, that so long as they are able to go at all go they must, neurotomy is altogether unsuited, and from them has been very properly discarded. In situations, however, where scrupulous attention can be given to feet and legs, and where work is not forced or even called for at times that repose may be advisable, neurotomy judiciously practised has proved of very great service in more points of view than the principal one of lameness. For this reason it is to be regretted that it has found so many enemies; though less surprise is excited by this so long

as those inimical to it are out of the profession. When men in the veterinary profession set themselves up in hostility against it, we feel anxious to learn the reason of their opposition; and therefore it is that I am now about to make a quotation from a veterinarian of high standing and talent of our own country, running, I am sorry to say, in words as follows:—"They (the opposers of his opinions and *discoveries* 'on the foot of the horse') have added a barbarity surpassing in refined cruelty even the unsoling or any other cruelty ever proposed by the old farriers, that of nerving the horses' legs when they were not relieved by their injudicious measures, and so destroyed the very fundamental properties of the foot, instead of pursuing the natural and most obvious means of prevention and relief from the evil. Seeing and deeply feeling the very great injury done to the animals, as well as to the public and ourselves, we cannot on such an occasion but express warmly our natural, and we believe just, indignation at such conduct*."

I shall wind up this defence of neurotomy with a paragraph from my own "Lectures," published, now, four-and-twenty years ago:—"The incurably lame and useless horse is him alone for whom I recommend it (neurotomy): my object being to render an animal serviceable during the remainder of his life, who, otherwise, must have been given up, as utterly valueless, for slaughter. No one who has given the subject of neurotomy the least reflection can imagine that the operation was ever intended to supersede other remedies. The very nature of it is such that, as a dernier resource, it is applicable only to a desperate and hopeless case; and if it succeed in restoring one of this description, it is of more value and consideration to us than if it were only applicable to such as we can relieve by other and simpler means. In conclusion, let me remark, that I do not recommend such horses being raced, hunted, or put to any other (like) extraordinary exertions. They may be driven in harness, and are more especially qualified for four-wheeled carriages or for leaders in others: in short, for situations where no weight is incumbent upon the fore feet.

"In this point of view—its objects being thus circumscribed—I dare prophecy that neurotomy will be known as long as the vete-

* "The Foot of the Horse." By Bracy Clark, p. 56.

rinary art. It has hitherto stood the test of this capricious age, and weathered out the storm of discordant opinion; it has ranked high in the estimation of its enthusiastic admirers; it has fallen into discredit and comparative dread with those who have misapplied it; it has now but to rise to a certain point in the scale of veterinary surgery, where it will remain despite of all future controversy."

THE ELECTION OF THE SUBJECT FOR NEUROTOMY it is upon which mainly depends the success of the operation. The operation itself is simple and easy of performance; but, however well performed, cannot avail in a subject unhappily chosen for it, or devoted to it at an improper time. It is therefore a duty the operator owes to himself, as well as to his employer, to ascertain the fitness in all respects of the animal brought to him for operation; nor should he suffer himself to be prevailed upon to undertake it unless in his own mind this fitness both of subject and disease be clearly made out. It is the swerving from this plain rule of direction which has too often brought both operation and operator into disrepute.

THE INCURABLY LAME HORSE is the *especial* subject for neurotomy, and, above all other descriptions of lameness, that arising from chronic and permanent and irremediable naviculararthritic disease is that which holds out the best promise of success from the performance of such an operation. But a horse may be lame from this cause in one foot, or in both feet. So long as lameness is confined to one foot, though that lameness be severe and unrelievable, still may the animal be able to perform a certain amount or kind of work; and whether it be advisable or not to neurotomize such a horse—supposing he be fitted in other respects for the operation—is a question that will best be determined by consulting with his master as to the amount or kind of work he is still able to undergo, and the pain he appears to suffer in undergoing it, or in the stable after his work is done. A humane master will feel for the pain his servant experiences, not only at work but while he is at rest; nor will he hesitate to submit his horse, under such circumstances, to neurotomy, although the division of the nerve be, for a moment—but only for a moment—exquisitely more painful than the lameness itself.

With a horse, however, lame from the consequences of navicu-

larthritic disease in *both* (fore) feet—confirmedly *groggy*, as the phrase goes—the choice does not lie between still able to work and neurotomy, but between neurotomy and the slaughter-house; for the inveterate groggy horse is absolutely worth for work next to nothing, while the pain many such poor beasts unremittingly endure wears them down in condition to that degree that ultimately their constitution gives way as well as their legs and feet. And, therefore, I repeat, nothing can save such horses from slaughter but the hand of the neurotomist; nor will that avail them at such times as other grave morbific changes have supervened upon those in the navicular joint, or where age has added decrepitude to lameness.

In neither case—neither in one nor both navicularthritic feet—will the judicious veterinary practitioner operate at a time when inflammatory action is detectible in the feet. It is a rule with surgeons, never, if it be possible to avoid so doing, to cut into an inflamed part; and veterinary surgeons should make it their rule, in the performance of neurotomy, to postpone the operation when inflammation is present, until such time as, by suitable means, such inflammation has been either altogether got rid of, or else sufficiently abated—by, in the case of the foot, taking blood from the toe, if that be necessary, and by hot or cold applications, poultices, &c. and physic, as the case may appear to require. In chronic cases, where blood-letting is not called for, standing in clay for so many hours a-day will prove an excellent refrigerent.

In regard to disease of the navicular joint, there is another stage of it besides the inflammatory in which neurotomy ought not to be performed, and that is the acute or active ulcerative condition of the articular surfaces. It must be evident to the smallest reflection that motion of the joint and pressure upon surfaces in such a condition cannot fail to be productive of the worst consequences: ulceration, aggravated by such abuse, will proceed with that redoubled speed and malignancy, that, the union of the flexor perforans tendon with the navicular bone being the especial seat of it, we need feel no surprise at rupture of tendon and dislocation of bone, and consequent breaking down of the horse. But, how is this ulcerated state of joint to be foretold?—how are we to know for certain that it exists? The best indications of its presence to

my mind are, 1st, An inflammatory condition of foot. And, 2dly, as *acute* ulceration does not exist without inflammation, causing extreme soreness of tread, there is, with the excessive lameness present, a shrinking from, a sort of dread of, throwing the weight of the body upon the fore feet, and this is accompanied by the expression of great pain in the stable. In such a case as this, means should be used to disperse the inflammation, and absolute rest should be strictly enjoined, with the view of, if possible, in the absence of motion of the joint, inducing granulative action in the exulcerated parts. Nor should any operation be undertaken until the hoofs had become cool, and the soreness of tread had greatly abated.

THE HORSE LAME FROM THE EFFECTS OF LAMINITIS, whose soles are so sunk that they give evidence of depression of the coffin bone, is not a fit subject for neurotomy. With (fore) feet in the condition his are, we may work some good by pressure upon the soles to the extent that the animal can bear it; but, to deprive them of sensibility, and to induce the horse to use them the same as he would sound feet, would be certain destruction of them. After laminitis, when the sole is sunk across its middle, just anterior to the toe of the frog, the coffin bone is actually resting upon the sole, creating the force which causes the latter to bilge; and what we are desirous of doing is, to take the weight off the sole from above while we augment the force of pressure upon it from below. Neurotomy would defeat this object; and besides that, would force the coffin bone actually through the sole, and so prove the occasion of total destruction to the orgasm of the foot.

There is, however, a kind of laminitis which we may call chronic or sub-acute, wherein the coffin bones are not at all or but little displaced, and consequently the soles not sunk; and this disease, from a repetition of attacks, will now and then end in producing grogginess. To neurotomy in cases of this description there is no objection: on the contrary, when such a subject is too lame to work neurotomy is recommendable.

IN OSSIFICATION OF THE CARTILAGES, partial or complete anchylosis of the coffin joint or pastern joint, when lameness therefrom, as it commonly is, is extreme, and such as to render the horse

unworkable, neurotomy will sometimes afford relief by creating a forced use of the ossified parts, and so, in the course of time, through perpetual effort, by degrees, generating motion in them, the consequence of the wearing away (absorption) of such points of the ossification as most, mechanically, oppose it.

FOR RINGBONE neurotomy has been performed with perfect success; although, unless such ringbone interfere with the motion of a joint, and thus become a cause of partial anchylosis, it may be set down in that class of diseases which admit of relief by other and less (to the animal economy) expensive remedies. Ringbones have been distinguished into *high* and *low*, according to their situation upon the pastern; the high as well as the low, however, admits of having its sensibility abstracted by neurotomy, the division of the nerves in the former case having to be made either upon or above the fetlock. A case is related by Mr. Rickwood in which neurotomy proved completely successful after blistering and firing had both failed; notwithstanding the work the animal had to perform afterwards was of the most trying nature. Still, I would repeat, that ringbone is not a disease which commonly calls for neurotomy, seeing relief may generally be afforded by simpler remedies.

"In 1824," says Mr. Rickwood (in vol. iii of THE VETERINARIAN, p. 213) "I operated on a galloway, the property of Mr. John Palmer, of Goldington, in this neighbourhood (Bedford). He went very lame in the near hind leg, in consequence of ringbone. I had frequently fired and blistered, with no good effect. After performing the unnerving operation the horse got up quite sound, and so continues up to this period (1830). He has for some time past been let out as a hack in this town."

In the case which follows, the lameness arising from *high* ringbone became removed by neurotomy:—

Mr. John Tombs, antecedently to his departure for India, operated on a blood filly for "an enormous ringbone upon the off hind pastern." She went exceeding lame, and had been repeatedly blistered, unavailingly. Mr. Tombs "excised a portion of the *metatarsal nerve*," and directed that the wound be treated *secundum artem*. The reason why he divided the nerve *above* its bifurcation was, that he was debarred from doing so below by the enormity of

the exostosis. Mr. Tombs did not learn the result of the operation until his return to England (in 1831); when he was informed that the lameness had vanished three days after the operation, and that the mare had, since, run three races, and had been sold. And that at the (then) present time she was doing sharp work, free entirely from lameness.—VETERINARIAN, vol. iv, p. 542-3.

The next case will shew that when ringbone prevails on one side, or is confined thereto, only the nerve on that side need be operated on.

In July 1836, Mr. Morris, V.S., Bideford, Devonshire, was requested by C. Radley, Esq., surgeon, of Newton Abbot, to look at a lame mare of his. She was four years old, and had two ringbones, one upon the near fore leg, the other upon the near hind. The exostosis first appeared when she was a twelvemonth old. (Does not this fact, along with many analogous ones, militate in favour of the *hereditary* nature of ringbone?) She had been several times fired and blistered in both her (ringboned) legs by a farrier previously to Mr. Morris coming to reside at Bideford. She was (now) lame only in the near fore leg. "Having attentively examined her," continues Mr. Morris, "I was convinced that the seat of lameness was confined to the *outer* side of the pastern. I recommended that she be nerved, to which the owner assented. Having prepared her, on the 6th July I performed the operation on the outer side only. The wound soon healed, and a month after, I had the pleasure of seeing her trot and gallop perfectly sound. Mr. Radley rides her, when visiting his patients, upon all kinds of roads, and says 'she never stumbles,' and that he prefers riding her to either of his horses."—VETERINARIAN, vol. x, p. 201.

FOR CONTRACTED HOOFS, viewing them in the light of idiopathic disease, or as being the immediate cause of the existing lameness, in the uninflamed condition of the foot, and when consequential changes of its orgasm have taken place which bid defiance to therapeutic measures, neurotomy is a warrantable resource. Indeed, regarding the contraction as *mechanically* occasioning lameness by the pressure of the sides or heels of the hoof upon the sides or sensible parts of the foot, the freedom and boldness which neuro-

tomy will encourage in the tread is calculated to prove of effect in expanding the hoof, and so removing the assumed cause of the lameness: not that this is of much consequence so long as the foot remains devoid of feeling; but that it may tell remotely to its advantage, supposing the foot after a time to recover its sensibility. There have been many instances of horses that have been neurotomized on account of lameness continuing to go sound, even after the demonstrated return of feeling in consequence of the re-union of the nervous trunks, and the case of contraction in question may be classed among such permanent restorations. The annexed case affords a good example of the result of severing the nerves in contraction:—

In November 1828, a black mare, the property of Mr. Buss, of the George-inn, Bedford, went extremely lame from contraction in both fore feet. She could not, from pain, bear to stand up in her stable even sufficiently long to take her requisite food. Mr. Rickwood operated on her, confining his operation to one nerve in each leg. When the wounds were healed she was taken back to work, and proved as useful as any sound horse; continuing now to stand the same time as other horses, and doing her work as well.—VETERINARIAN, vol. iii, p. 213.

THE PRECEDING CASES will suffice to shew, that, for lameness in the foot, coronet, or pastern, incurable or unrelievable by therapeutic means; for naviculartbritis and its consequences; for the effects of chronic coronitis and laminitis, barring sunk soles; for ossified cartilages, for ringbone, for contraction, the operation of neurotomy is especially applicable, and to such has been for the most part confined. Nor will those practitioners who regard their own credit, or that of the operation, feel desirous of extending much, for lameness at least, its sphere of appliancy. In no part of the body do we possess equal power over the nerves supplying sensation as we do over the—isolated or rather peninsulated—foot. Two nervous trunks, one running on either side of the pastern, form the sole communication between it and the brain, and these trunks take subcutaneous courses, wherein they are readily accessible to the knife. Most other parts and organs of the body derive their nerves from various surrounding sources, from below as well

as from above them; hence the difficulty, next to impossibility, indeed, in some instances, of cutting off nervous communication. This circumstance, taken into account with one other, viz. the frequently varied and extensive seat of the disease, will account for the failures that have attended attempts to restore spavined horses to soundness through neurotomy. I do not mean to say that such experiments have not at times succeeded, or that they may not succeed again, when the spavined case be proved to be *isolated*, or to consist simply in exostosis; though this last is a case wherein neurotomy is seldom called for. Furthermore, it must be remembered, that, in operating on nerves running to *muscles* as well as to other parts, we are dividing *motor* as well as sensitive fibres; and that thereby not sensation alone is destroyed, but motion likewise, leaving the part to which the divided nerve is running destitute of motion as well as sensation: therefore it is that neurotomy, as a remedy for removing pain only, is not applicable when the seat of pain or lameness is above the knee or hock. Nor, I may add, has neurotomy been found any other but injurious in what go by the name of *back sinew cases;* and for the twofold reason, of the difficulty there is in *completely* cutting off sensation, and of the liability that still must exist in every deranged or diseased tendon or theca to what we familiarly call "break down" afresh under the continued operation of weight and extraordinary muscular force.

NEUROTOMY HAS OTHER OBJECTS besides the removal of lameness. In effecting the immediate and total abstraction of pain and irritation, it has rendered marked service in cases of altogether a different nature from lameness, as well as of entirely opposite nature, one to another.

*Both the œstral and generative functions* have become restored through neurotomy. Brood mares that have proved barren in consequence of painful lameness annihilating in them all sexual desire, and that have ceased to have at the usual season any return of the œstrum, have, from losing such pain, had their natural generative functions restored, and become again good breeders.

"In 1822," writes Mr. Rickwood, in THE VETERINARIAN, vol. iii, p. 213, "a chestnut cart mare at Oakley, the property

of the Marquis of Tavistock, went very lame in the near foot behind, in consequence of complete ossification of the lateral cartilages and extensive ossific disease around the coronet. She scarcely ever placed the foot upon the ground, but generally moved on three legs. Her sufferings prevented the periodical œstrum. She had not bred for years. About two months after the operation she went to work, and moved sound. She has bred several healthy foals, and works as usual."

TRAUMATIC TETANUS HAS HAD ITS COURSE ARRESTED BY NEUROTOMY. In a paper "on Tetanus," read by Mr. Henderson, V.S. to the Queen Dowager, before the Veterinary Medical Society, in the year 1832, that gentleman says—"I have known a case (of tetanus), produced by a wound in the foot, cured by the operation of neurotomy; I have also known the same treatment in other cases fail. So, likewise, in tetanus arising from docking, horses have recovered, in consequence of the diseased part being amputated (which, in fact, is nothing but neurotomy); in other cases of the kind the same has failed."—"I particularly recollect," adds Mr. Henderson, "having examined one case where I found the spinal nerves very vascular, and the intestines bordering on inflammation; and such appearances naturally lead me to a belief, that, unless an operation can be performed *in a very early stage* of the complaint, we have but little chance of success."—VETERINARIAN, vol. v, p. 67.

Having determined on the fitness of the subject for neurotomy, and put him through such preparative treatment, or assigned him such resting time by way of preparation, as is deemed requisite, we proceed to take

STEPS FOR THE OPERATION.—But the operation, after all, must be regarded only as secondary in importance, subservient quite to the considerations of fitness of subject, and to the time when, and site (in the limb) where, its performance is to be undertaken. What success may follow the operation is not so much attributable to any anatomical knowledge or dexterity displayed by the operator, as to the judgment he had exercised beforehand in foretelling what the result of neurotomy was likely to be in that particular case.

In all operations, success a good way depends upon circumstances which are, for the most part, under the control of the medical practitioner. Fitness of subject is the chief of these; preparation of him is another; and last, but not least in animals, comes the securing of the subject, and the placing the part to be operated on in that position in which the operator can best exercise his power and judgment.

Attempts have been made, and are we believe on occasions still made, to perform neurotomy while the horse is standing, using a bistoury in lieu of a scalpel, in a manner we shall hereafter describe. For our own part, however, we advocate casting in all such operations. Let the animal, we say, be cast with hobbles in the usual manner, and let the limb to be operated on be separated and held in a side-line, until it can be brought to be bound down upon a truss of hay, previously covered with a linen cloth, to serve as a sort of operating table. And, in order to afford still greater security and steadiness of the limb so placed during the operation, an assistant, holding a blunt iron hook passed underneath the toe of the shoe, may firmly stay the foot, and keep the limb extended. While this is being done, however, it requires some vigilance on the part of the operator to see that the limb is not drawn into such a false position by over-extension, that, when the incisions come to be made, and the limb in the interim happens to change position, he finds the cut in the skin not opposite, as he expected, to the parts he is seeking for, but to one side of them; the consequence of which will be, to embarrass him more or less in his future proceedings. Therefore, on having the limb placed in position, let the operator take care that no such deviations by dragging or stretching be made as will throw parts in respect to the skin covering them out of their natural positions. Formerly, the part to be cut into used to be shorn of its hair prior to casting. This however is nowadays, perhaps wisely, dispensed with; the hair not being much in one's way, and the blemish being, for a time, the greater after the wound is healed.

PRIOR TO COMMENCING THE OPERATION, it will perhaps be as well for the operator to run over in his mind the course and relative situation of the parts about to engage his attention. He will remember that

THE METACARPAL NERVES are double, one running down either side of the leg; while the metacarpal artery is single, and accompanies the nerve on the inner side. This renders the relative course of one nerve different somewhat from that of the other.

THE INTERNAL METACARPAL NERVE, descending below the knee, lies buried underneath a faschia spreading from the knee upon the flexor tendons, wherefrom it is stretched across to the cannon bone, ending below in a crescentic border, underneath which, as under an arch-way, nerve, artery, and vein, are all seen emerging in their course down the leg. In the first part of its course the nerve runs close behind the artery, the vein being in front, a relative position which it (the vein) maintains throughout its subsequent course to the foot. About one-third of the length of the cannon downwards, the nerve detaches the *communicating branch*, so called from its uniting with the nerve on the outer side, which it does, after obliquely crawling round the back of the flexor tendons, at about the distance (measured in a straight line) of two inches and a half below its place of origin. After sending off this branch, the trunk more inclines in its passage downwards from the posterior to the inner side of the artery, and maintains this relation down as low as the fetlock joint. There, as it commences making its curve outward to meet the swell of the fetlock, the nerve gives rise to a branch almost as large as itself, and which takes a similar course, inclining however forward, and running *between* the plantar artery and vein, sending off in its way filaments to the fetlock and pastern, and finally distributing its terminating fibres upon the lateral and fore parts of the coronet. In addition to this *anterior branch*, the metacarpal nerve (or else the plantar nerve) detaches a *posterior branch;* and this takes its course between the plantar artery and plantar nerve, after crossing over the former, as well as over the ligament of the pad; so that, in fact, it is quite superficial. Its destination is the substance of the frog. Neither of these branches (the anterior and posterior) are meddled with in neurotomy. It is

THE PLANTAR NERVE—the continuation of the trunk (or metacarpal) nerve that becomes the subject of neurotomy whenever the *low* operation, as it is called, is contemplated. In the first part of its course, upon the side of the fetlock, this nerve inclines back-

ward to get *behind* the artery: a relation which it does not afterwards alter; though the circumstance of its running over the pastern *at the distance of an eighth of an inch behind the artery,* while upon the fetlock it runs in contact with it, is one of too much importance to the neurotomist to be treated with indifference; for, this circumstance it is that just renders it possible for the operator with a bistoury to insinuate the point of his instrument between the *artery* and *nerve,* and divide the latter without risk of wounding or cutting the former. Another part worthy the neurotomist's attention, and particular attention, is the slender cord known by the name of the *ligament of the pad;* and the reason why this claims such particular attention from him is, that on too many occasions, from its being white and cord-like, and about the size of the nerve, has it been mistaken by the operator for the nerve itself, and divided and excised instead of the nerve. Now, this ligament is a subcutaneous glistening cord, originating in the cushion or *pad* of cellulo-fibrous substance at the back of the fetlock (from which the tuft of long hair is growing); whence it passes in an oblique direction forward and downward, crossing over in its way both plantar artery and nerve, to dip into the interval left between the former and the plantar vein in its front, after which dip it spreads and expends itself upon the substance of the coronet*.

THE EXTERNAL METACARPAL NERVE, at the upper part of the cannon, is to be found between the flexor tendons and suspensory ligament; gradually however it inclines outward, and runs along the posterior and outer border of the flexor tendons, still inclining outward in its course until it reaches the outer edge of the perforans tendon, which for some few inches above the fetlock is the best guide we can take to find it. Upon the side of the fetlock it joins the outer posterior artery, running at first close behind the vessel, and pursuing its course in relation to the artery in precisely the same manner as its fellow on the opposite side, the internal metacarpal nerve, and giving off in its passage similar branches.

* All this will be better understood by a reference to Plate VIII.

THE OPERATION in itself, to a veterinarian acquainted with the anatomy of the parts we have been examining, and whose hand is at all practised in operations of the kind, is any thing but complex or difficult. With the limb properly placed, and the security of it such as will not admit, from struggling, of any material derangement of its position, and with a twitch on the animal's nose, the operator commences by making his

INCISION THROUGH THE SKIN.—Supposing neurotomy to be for lameness in the foot, which is the case of ordinary occurrence, it is the *plantar nerve* that becomes the subject of operation; and the place for many reasons found most convenient for its division is upon the pastern. The first of these reasons may be stated to be, that, when the seat of lameness is, as it commonly is, the navicular joint, the division of the nerve at this site answers the end required, while it leaves, uncut off, sensation in the *anterior* parts of the foot. The second is, since a horse never *cuts* or bruises his pastern, he will not strike either the wound that is made, or any tubular enlargement upon the end of the divided nerve that may follow the operation. The third, that the nerve is pretty well as accessible here as upon the fetlock; a situation in which the performance of the operation is amenable to one, if not to both, of the objections just mentioned.

The pastern, then, being the part chosen for the operation, the operator, either with his knife or bistoury, proceeds to business. The old-fashioned mode of proceeding is to make an incision with a scalpel directly down upon the nerve; and for my own part I do not think, taking all matters into consideration, that this mode has been improved upon. There certainly is no occasion to make so lengthy an incision as formerly used to be made; in fact, the smaller the incision the better: at the same time, unless some sufficient opening is made in the skin, the operator will find himself troubled, first, in getting hold of the nerve when divided; and, secondly, in dragging any length of it out (through such a confined aperture as is made by a bistoury) to excise the requisite portion. Prior to making his incision, let him trace with his fingers the border of the united flexor tendons in their course along the pastern, and at a place immediately below the head of the pastern,

where the fingers, pressing inwards, are found to sink into a sort of hollow, let him commence his incision, and carry it boldly downward to the extent requisite—say, an inch or an inch-and-a-half. Let the knife be sharp, and let sufficient force of hand be used in making the incision to divide the skin cleanly and completely through *at once*, so as to lay bare (should the incision have been judiciously made) the *plantar nerve*, crossed obliquely at its lower part by the *ligament of the pad*. When the incision through the skin has been made too low down, or with an obliquity from behind forward, instead of being in a direct line with the border of the tendon, it has happened that this ligament (and no nerve) has presented itself; and the result of this has been, either that the ligament has been mistaken for the nerve, and divided, and excised instead of it; or, that its presence has much embarrassed the operator in finding the nerve. The circumstance, however, of the superficial situation of the ligament — its lying so immediately underneath the skin that by uncareful dissectors it is often taken off with the skin, together with that of its *oblique* course, and that of its glistening (tendinous) aspect, confirmed by the proof, that, when pinched or pricked, no sensation is expressed, will at all times clear up any doubt which may exist on this matter. If the ligament happen to obtrude itself in his way, which it will now and then, the operator must push it with his scalpel—better backwards than forwards—out of his way; or he may, if found requisite, even cut it away altogether, without, that I know, any great harm being likely to accrue therefrom. Indeed, honestly speaking, the use of this ligament—for use it undoubtedly has—is wrapped in some obscurity. Having exposed the nerve, a blunt hook or aneurismal needle, carrying a ligature, may be passed underneath it; and now, that we have got with our hook or ligature possession of it, is the time to satisfy ourselves that we have really raised the nerve, and not the ligament, or the plantar artery: for the latter, as well as the former, has been a source of delusion, though I need hardly say that *pulsation* will set the case of the artery at rest; nor is it scarcely necessary for me to add, that the very act of laying hold of the nerve to raise it, and most certainly pinching or

irritating it, will set the animal struggling from pain, and thus most satisfactorily clear up every question of identity. All that remains to be done is to divide the nerve; and this is done better with a sharp bistoury than with either knife or scissors. Take care that such division be made as *high up* as the wound in the skin will permit, the object of this being two-fold;—1st, that thereby sensation is at once cut off, which it would not have been had the nerve been, first, divided below; and, secondly, that the excision of the requisite portion of the nerve—say an inch or so—(which is most conveniently effected by seizing hold of the lower end of it with the forceps) may not occasion the animal the slightest pain or inconvenience. Sutures may be employed or not to close the wound; and this finishes the operation on the inner side. And now it may become a question in the operator's mind whether or not he will proceed further than this, and operate upon the outer side of the leg as well. Cases, well authenticated, stand on record, in which the disease of foot appeared to prevail on the inner side, wherein one operation proved sufficient. At all events, should any such notions be present with the operator, there can be no great harm in making the experiment—suffering the horse to rise out of his shackles, and trotting him, to ascertain what amount of benefit has been conferred by the single operation. Should which not prove satisfactory, the animal can be thrown again, this time upon his opposite side, to undergo the same operation on the outer side of the leg.

On the other hand, should it be determined from the first to operate upon both sides of the pastern, and which in the majority of cases appears indispensable, as soon as one operation is concluded and the wound sewn up, the animal, as he lies, must be turned over; unless both (fore) legs require neurotomy, and then, before he is turned over, the *outer* side of the other leg may—after the operated leg has been returned to the hobbles, and the one to be operated upon separated and secured—be incised, and treated in the manner already directed, there being no essential difference between the inner and outer operations.

A TRANSVERSE INCISION THROUGH THE SKIN, instead of the

ordinary longitudinal one, is recommended by Mr. Webb*; his reasons for such recommendation being, that the cicatrix consequential on the wound, becoming covered by the hair growing down over it, is thereby more completely effaced. With this, however, ought to be taken into consideration, to what extent an incision across the skin might embarrass the future proceedings of the operator; and whether or not, through gaping, the healing of the wound might not, in the end, be protracted.

THE OPERATIONS CONCLUDED, the horse is released, and as soon as he has risen upon his legs it is usual to have him led along, first at a walk, afterwards at a trot, with a view of ascertaining what benefit has been conferred by the operation. The most decisive proof we can have of success is the restoration at once from a state of lameness to one of soundness; at the same time it must be observed, it does not follow, because such does not turn out to be the case, that hope of restoration is thereby destroyed. A horse may feel himself cramped from having been long fettered, or he may in moving his fore limbs feel sore from his wounds, or he may, I believe, continue to go lame from habit, simply because he has for so long a time prior to the operation been going lame. Let it be ascribed, however, to what cause it may, the fact is well enough authenticated, of horses hardly seeming to experience relief—at all events such decided relief—*immediately* after neurotomy, and yet who in after-times have been restored through it.

Now, then, the horse is returned to his stable. A stall is, in his present condition, a more suitable place than a box for him. He requires to be fastened up securely; two halter ropes are on that account better than one: the object being to keep him from lying down, and prevent him by any possibility reaching his wounded pasterns with his mouth. And now, wet linen bandages should be rolled round his pasterns; they will serve to support the sutures, and at the same time will keep the parts cool, and so moderate any approaching inflammation. With the same view a dose of physic may be given while he is under confinement. The

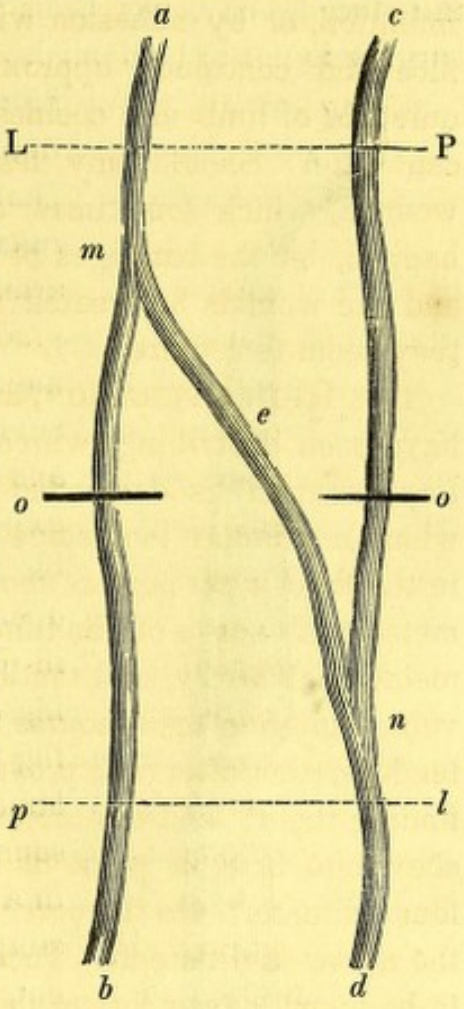
* In THE VETERINARIAN, vol. xxi, p. 270.

grand object is to obtain union of the divided skin by the first intention, or by adhesion without suppuration. And to this end, nice and continued approximation of the severed edges, with quietude of limb and coolness of body, are the best measures we can take. Should any festering make its appearance in the wounds, which sometimes, despite of our best precautions, will happen, let the bandages be removed, and the sutures drawn out, and the wounds be treated with simple dressings or poultices, as they seem to require.

THE HIGH OPERATION, as it is called in relation to the one we have been describing (which by way of distinction is named the *low* operation) is demanded whenever the seat of lameness for which neurotomy is deemed advisable is *above* the foot or pastern, in the fetlock perhaps, or above that even. Remembering that the metacarpal nerve of the inner side is closely connected with the metacarpal artery, and that both, together with the accompanying vein, maintain their course along the inner border of the flexor tendons, the latter will prove a sufficient guide to the operator for finding them; and our account of their course, at page 208, will shew him how in point of relation one to another they will be found situate. On the *outer* side of the leg, however, the course of the nerve is different. There, it has no attendant artery, and is to be found, as our former description will point out, rather *behind* than alongside of the flexor tendons; in the space, in fact, between them and the suspensory ligament. Having exposed the nerve by an incision in the direction of its course, the steps of the operation are the same here as in the case below, save and except that due attention must be paid to the presence of the cross branch of nerve forming the communication between the metacarpal nervous trunks. Originating high up, as this branch does on the inner side of the leg, and terminating low down on the outer side, were the two high operations for neurotomy on the same leg performed in directly opposite sites, as the low operations are, it is evident nervous communication with the sensorium would remain uncut off, unless such divisions of the trunk nerves were *both* made either above or below the places of junction of the communicating

branch. For this reason it is that, in high neurotomy, the operation is commonly performed above the branch on the inner side of the leg; below it on the outer.

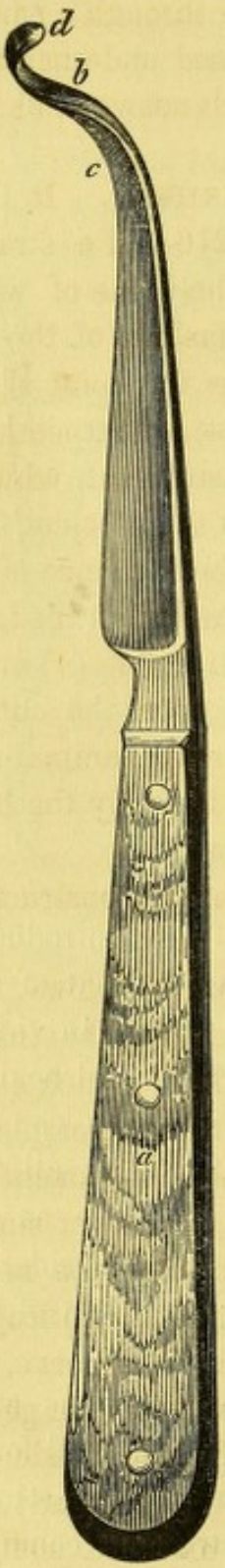
The annexed diagram will illustrate my meaning:—Let *a b*, *c d*, represent the metacarpal nerves dissected out and laid upon the table, connected by their communicating branch, *e*. Supposing the divisions of the two nerves made at any points represented by *o o*, it is evident communication with the sensorium would still be carried on through the communicating branch; whereas, were such points as are represented by L P or *p l*, chosen for section, the communicating branch would no longer serve the purpose of concatenation, because the divisions proved either *both* above or both below the points of communication.




IMPROVEMENTS IN NEUROTOMY, since its first introduction, have been suggested, and some of them have turned out of merit enough to be carried into practice. The chief objects in view in the performance of such an operation are expertness and neatness. While no cutting or meddling should be spared which can anywise conduce to the efficiency of the operation, it is at all times an object, and one deserving consideration, to leave as little wound or blemish as possible consequent on it. This consideration has prompted the substitution for the ordinary operation of what may be called

SUBCUTANEOUS NEUROTOMY; the operation surgeons are in the habit of resorting to when nerves are to be divided for the relief of *tic douloureux* or other painful affections; a long, straight, narrow, sharp-pointed bistoury being the instrument commonly

used for the purpose. That a similar operation admits of being introduced—nay, has been successfully practised—in veterinary surgery is not to be denied. In the first place, however, it must be remembered that it is in those situations only in which nerves run unaccompanied by arteries, or in which a nerve runs at some interval of distance from an artery, that such an operation becomes practicable; and, in the second place, it must be borne in mind that nerves simply cut in two, in a little time after unite again, and then the lameness, of course, may be expected to return; it not being practicable to excise any portion through such an opening as a bistoury makes. So that, in point of fact, unless for any time-serving or sinister purpose, such as the palming of a horse off for sale that has been lame and will become lame again, as a sound horse, hardly any end is answered in a case of lameness by the operation of simple division of a nerve. It is different, however, in such a case as tetanus, or in any case, in fact, in which the simple requirement is the immediate abstraction of pain or sensibility: the veterinary surgeon then, finding himself placed in the same position as the surgeon, may, if practicable, have recourse to the same method of operating.




All that admits of being done, in the ordinary mode of operating, by way of expediting the healing of the wound, and lessening the chance of blemish, is making the incision as clean as possible, and directly down upon the nerve at once, so as to render subsequent dissection unne-

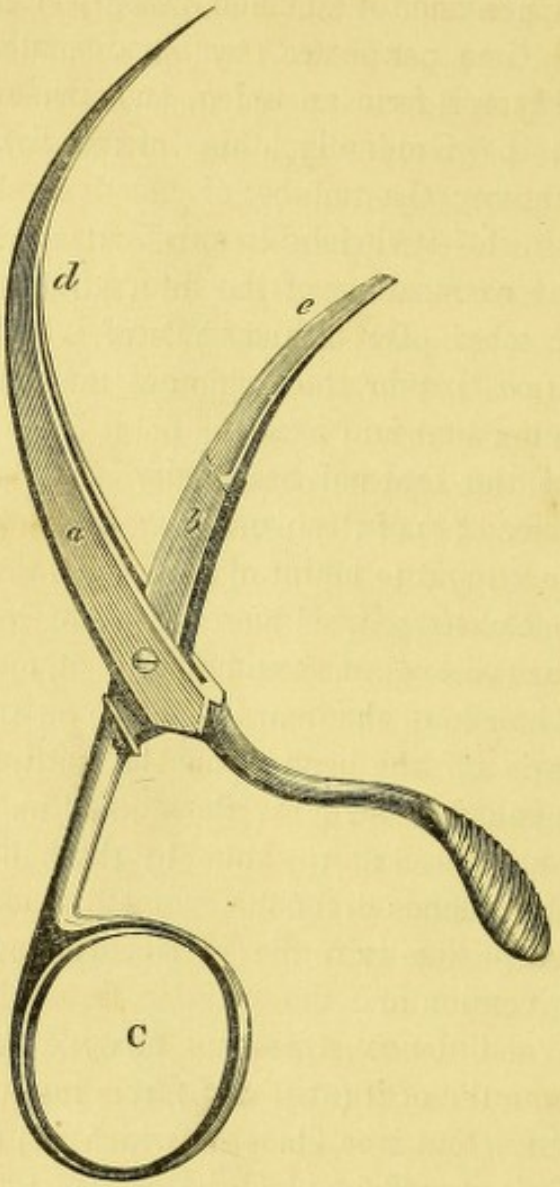
cessary; and at the same time to be careful to make the wound no larger than is absolutely required for the excision of sufficient length of nervous cord. With a convenient instrument, it is practicable to seize and divide the exposed nerve through a smaller opening than when a ligature has first to be passed underneath it; and we have two instruments in particular which answer this purpose extremely well. One is the invention of

MR. ERNES, VETERINARY SURGEON, DOCKHEAD. It is in the form—as will be seen in the woodcut at p. 216—of a straight sharp-edged bistoury, to the pointed part of the blade of which is given a sort of hooked curve (*c b d*), after the fashion of the first turn of a cork-screw; the intention being to pass the point of the blade (*d*), which is rounded off for that purpose, underneath the nerve, and so lodge it upon the bend (*b*) of the instrument, which is made flat and smooth to receive it, and to admit of sufficient force being used to raise the nerve out of its bed, without chance of injuring it. This done, and the nerve examined and identified, one semi-rotation to the right of the handle of the instrument (*a*) on its axis will transfer the nerve from off the bend upon the cutting part of the blade (*c*), whereupon any struggle the animal may make at the moment, or any force used at the time by the hand of the operator, effects its instantaneous division.

The other instrument, though of totally different construction, having similar objects, is the invention of

MR. GOWING, VETERINARY SURGEON, CAMDEN TOWN. As will be seen by the cut representative of it (at p. 218), this instrument resembles a pair of curved scissors, one blade of which (*a*) is made with a mortise through it (*d*) of sufficient length to completely receive within it the other, or cutting blade (*b*); the instrument admitting of thus being shut up, and then intended to answer simply the purpose of a *tenaculum*, to be passed underneath the nerve, and so raise it out of its bed for examination and identification. This done, and the operator satisfied he has hooked the nerve, and not either the *plantar artery* or the *ligament of the pad*, he gently permits the nerve to slide sufficiently forward upon the blade *a* to enable him to open the cutting blade (*b*), which now is ready, the moment the nerve slides back again upon the mortised shaft of

the blade *a*, at the pleasure of the operator, to be closed, and in being so, after the manner of a pair of scissors, to effect the division of the nerve. Only the upper half of the blade *b*, as will be seen by the woodcut, is provided with a cutting edge.

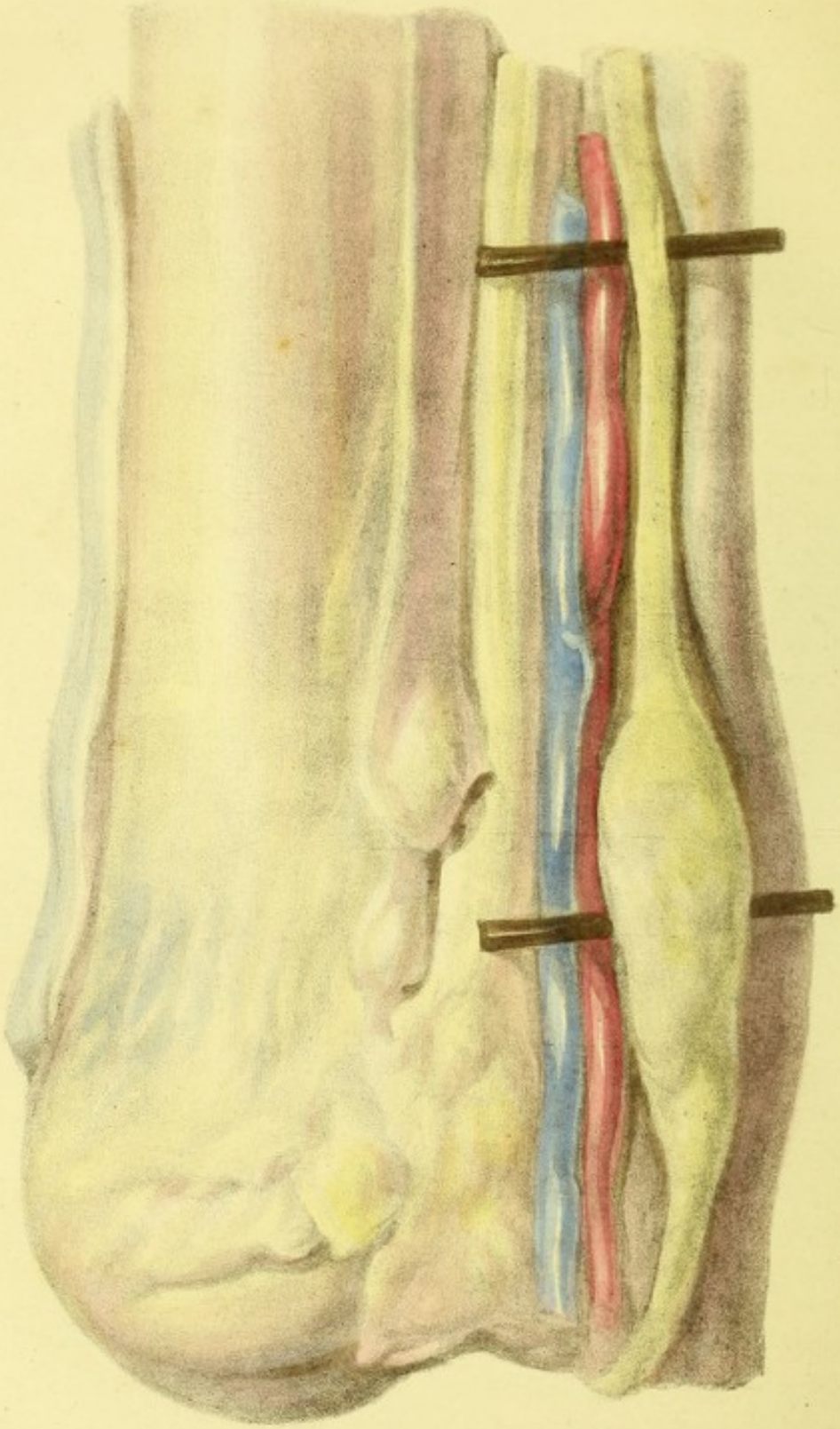



Between instruments of such different construction, although intended to answer similar purposes, there is no making any comparison. Nor is it needful for us to do so. All that we shall say, in passing any opinion on their merits, is, that in their way both exhibit more than ordinary ingenuity in their invention, and that the neurotomist who takes care to provide himself with one or both of them, will find himself at the moment of operating in the possession of an aid which will much simplify and shorten his undertaking.

THE UNION OF THE DIVIDED NERVES takes place forthwith, provided those nerves are simply cut in two; sensation—and with it lameness—returning in about a month or six weeks: but if a portion of nerve be excised, *immediate* union is thereby prevented.

In a series of experiments made on animals by Schwann* to set the question of union of nerve at rest, he found that when a portion of nerve is removed the restorative process is set up the same way as when there has been merely division of a nerve;

* On the Local Diseases of Nerves.



W.H. Kearney del.

On Stone & Printed by C.H.

Neurotomy.

# PLATE VIII.

(This drawing is made full size, from a fresh subject sent me by Mr. A. Cherry, in which neurotomy had been long ago performed, on account of incurable lameness from chronic navicularthritis.)

The effects of neurotomy are here pourtrayed. The metacarpal nerve of the off fore leg has been made the subject of operation, and the bulbous enlargement consequent on the re-union of the divided ends (through the intervention of effused lymph) is here remarkably naturally represented. (See page 219.) To render the bulbous nerve the more conspicuous, slits of whalebone have been insinuated underneath it, by which it is raised a little out of its cellular bed. This was not effected, however, without some difficulty, in consequence of firm adhesion having been discovered between the tumefied portion of nerve and the surrounding tissue, which, from being originally cellular, had become fibrous.

and that this was, that the extremities of the divided nerve, particularly the superior one, became thicker and more vascular: coagulable lymph, having the appearance of albumen, being poured out, and in a short space of time permeated by bloodvessels. Then, both ends of the effused lymph form an union, and anastomosing vessels shoot through it. Gradually, this intermediate substance acquires a firmer texture; the number of bloodvessels in it in the course of time diminish—it shrinks in substance as in cicatrization, and the separated extremities of the divided nerve approach nearer and nearer each other. But Schwann found it difficult to determine at what period this intervening new material was capable of carrying on the nervous function.

If we examine the nerves of the limbs of horses any length of time after they have been operated on in the usual manner, we find oblong bulbous swellings occupying the intervals from which portions of nerve have been excised; and these tumours we observe to be larger above than below, measuring three or four times the bulk of the original nervous chords. This consequent enlargement it is which makes it so objectionable to perform neurotomy on the side of the fetlock, where the horse, should he be disposed to hit his legs, would be certain almost to strike the bulbous nerve, and when he had done so, for the moment render himself dead lame from the exquisite pain the blow occasioned him. Between this nervous tumour and the cellular tissue by which it is surrounded, firm and dense adhesions exist every where; so that it requires some dissection with a sharp knife to raise the tumour out of its bed. Cut into, its substance is found to be pearl-white, solid, and firm, more like cartilage, in fact, than nervous substance.

Of the Regeneration of Nervous Matter our chief knowledge is with respect to the regeneration of the *tubular* fibres. "Many years ago, our countryman, Doctor Haighton, in making experiments to determine the function of the *vagus* nerve, shewed, that when a nerve is simply divided, without taking away any portion of it, union would take place, and the nerve resume its proper office. If a considerable piece were excised, so as to leave much interval between the cut ends, there

would be union after the lapse of some time, but not by true nervous fibres, nor in such a way as to restore the action of the nerve. It appears, however, from recent observations, of which those of Schwann, Steinreich, and Nasse are the most interesting, that true nervous fibres may be developed in this uniting substance, but apparently in smaller numbers than in the nerve itself. The proof of the regeneration of the true nerve-fibres depends upon the restoration of the nerve's function, and the demonstration of the presence of proper nerve-tubes by microscopical examination. Perfect restoration of the action of the nerve does not generally take place, owing, most probably, to the fact that the central and peripheral portions of the same fibres do not always meet again. The central portion of a motor fibre might unite with the peripheral segment of a sensitive one, and thus the action of each would be neutralized."—*Todd and Bowman's Physiological Anatomy.*

RETURN OF SENSATION.—So far as restoration of function in a nerve can be considered as proof of union of its divided ends, the notable experiment, so impressively set forth by our late Professor Coleman in his "Lectures," concerning the division of the *par vagum* in horses, is conclusive. If the nerves on both sides of the neck be divided at the same time, or within a short interval of one another, death becomes consecutive on the division of the last; whereas, if an interval of three weeks be allowed between the operations, the animal survives.

Neurotomy, as performed for lameness, proves the same thing in the case of excision of the substance of the nerve; the difference being, that, while after simple division the nerve takes but a month or two to have its union and function restored, after excision the time required for regeneration and restoration of function becomes lengthened in some sort of ratio to the quantity of nerve excised. MEYER, who instituted some experiments to illustrate this, found that when he excised one line in breadth of nerve, the reproduction occupied three weeks; and when two lines' breadth were cut out, two months. Mr. Sewell found, in cases of entire section of the nerves of the limbs of horses, that sensation returned in about a couple of months; but that when a portion of nerve was ex-

cised, the period of restoration and return of feeling could by no means be calculated with any certainty. In a horse I neurotomized many years ago, belonging to the Artillery, sensation and lameness returned in two years, and he was in consequence sold, unfit for further service. But, in a horse of my own, on which I operated for naviculararthritic lameness (whose case is mentioned in vol. xx of *The Veterinarian*), and thereby rendered sound, after having ridden him myself for upwards of two years, and then parted with him, sensation had not re-appeared. So far as the return of *lameness* is the question, one of the most extraordinary cases we have on record is that (Case I) of the late Mr. Castley (referred to in the same vol.), wherein the horse neurotomized returned to his duty, as a troop-horse, a month after the operation, and continued to do his duty for *eight years* afterwards; and even at the expiration of that length of time was not sold on account of any failing in his *ci-devant* lame limb, "but for old age." Although lameness had not returned, whether *sensation* had or had not we are not informed. The two conditions, although closely allied, and for the most part dependent, are not altogether so. As was stated before, cases, no doubt, arise in which changes of such a nature occur, either in the structure or function of the parts affected with the disease causing the lameness, as in time work the cure of that lameness, or, in other words, enable the animal to perform actions without pain, which in former times occasioned him more or less pain, and consequent lameness. Cases of this description, we repeat, may and do occur; though we are by no means sanguine enough of such results to hold out hopes of the kind to our employers.

NEUROTOMY CONFINED TO ONE LEG holds out better prospects of success than when *both* (fore) feet are robbed of their nervous influence. We had occasion, at the commencement of this subject, to state that there was, under the most favourable circumstances, some alteration occasioned by neurotomy in the action, either sensible to the by-stander or else to the rider. This, in one limb, might prove so slight as hardly to be perceived, though, existing in both, the derangement might turn out for riding any thing but what was pleasant. Added to which, in two legs, of course, there is more risk of failure from the operation than in one, and

there is double risk afterwards, supposing both operations—or rather all four operations—turn out completely satisfactory. A reference to those cases of neurotomy in which success has proved most signal and lasting will shew that, for the most part, they have been lamenesses of *one* leg. Indeed, so formidable to our French veterinary brethren did neurotomy in both fore legs appear, that they held it to be unwarrantable, nay, impracticable and dangerous. This, however, our own experience contradicts. Still, that neurotomist is in the happiest position who is called on to operate on one leg alone. Nor need he be under the apprehension, which might enter his mind, that because neurotomy has restored one foot, the animal will fail in the opposite one. If he does fail after this manner, it will be from a translation of navicularthritis, and that not a consequence of neurotomy.

SEQUELÆ OF NEUROTOMY. Notwithstanding the precaution has been given before, it is one that may be given again, indeed can hardly be repeated too often, viz. that every injury or sign of injury to a foot or leg deprived of sensation, requires double care and attention on the part of the person tending on such horse, seeing that the animal, feeling no pain, will afford no indication of annoyance or suffering himself. The disregard of this plain and obvious injunction it is that proves the fruitful source of mischief in various forms, arising out of neurotomy certainly, but as certainly not fairly ascribable to neurotomy. A simple bruise or tread upon a leg or foot devoid of sensation may breed inflammation and festering of the part, and that may end in caries or quittor, or in something worse, and all owing either to neglect or wilful perseverance in mis-doing, after the mischief has declared itself. Of such accidents, or rather ill consequences of accidents, it would be useless to speak further; and therefore we shall dismiss these avoidable grievances to examine

THE OTHER CLASS OF EVILS ARISING OUT OF NEUROTOMY, such as proceed from improper use of the horse after the operation, or at least of such use of him as under the circumstances of his special case he is, and ought, probably, to have been known to be, not in a condition to endure. To suppose that every foot deprived of sensation upon which a horse, as the result, goes sound, is

to bear any kind or amount of work the owner of the horse chooses to impose upon it, is running in the face of all reason. It is true, horses have hunted, have performed cavalry exercise, have carried their riders through long and fast journeys on the road, have done extraordinary work in harness: it is equally true, however, that horses which have been neurotomized have failed from the moment they have been put to any hard work or unusual effort, such having brought on inflammation and suppuration of the feet, followed by casting of the hooves, fracture of the navicular bone, rupture of the long flexor tendon at its place of insertion, &c. These are evils which may not at all times be avoided; at the same time, we have no right to invite or aggravate them by putting a neurotomized horse to severe or trying work whose foot or feet, though he go sound, are not, from all we can judge from appearances and circumstances, in a condition to bear it.

CAN A HORSE THAT HAS BEEN SUBJECTED TO NEUROTOMY BE CALLED SOUND?—"Most certainly, no!" replies our late honoured colleague, Mr. Youatt; and he pertinently adds, "There is altered, impaired structure; impaired action, and a possibility of the return of lameness at some indefinite period. Let the horse be ever so free from lameness, he has been disabled—he possibly is diseased now; but the pain which usually accompanies the disease being removed, there are no means by which it (the presumed or supposed disease) can be indicated." So far so good. But let us put the case in a somewhat different light: it may be a strained light, but still such result has happened, and may again happen. Supposing a horse restored to soundness through neurotomy; and supposing he continues to go sound for several years—nay, for life, afterwards; and supposing satisfactory proof to be given that in the said horse's originally lame and senseless foot the power of feeling can be proved to have returned; and to this add, that, after the most searching examination, no sign of existing disease is discovered. Is such a horse to be regarded, in the eye of law or equity, as sound or unsound? We leave the question for the "judges," as well of horses as of law, to determine.

## Other Joint Lamenesses.

We have seen that two joints in particular are subject to disease in horses, viz. the *navicular joint* in the fore limb, and the *hock joint* in the hind limb. Other joints of the limbs have, on occasions, proved the seats of lameness, but these two are its ordinary situations, the reasons for which have been before detailed.

Formerly, among the farriers of old, "the round bone," by which is indicated the *hip joint*, was supposed to be a frequent seat of ailments; and it was a common practice with those who held this opinion to fire the skin covering the round bone, the part they took for such bone being *the great trochanter of the os femoris*, which, in fact, is the nearest point, externally, to the hip joint. The firing was commonly made to imitate the wheel of a carriage; and some years ago, it was by no means uncommon to meet with horses having this mark upon their hip; though, at the present day, the occurrence is comparatively rare. This will not appear strange when the reader comes to be informed that numbers of horses whose lamenesses have really been in the *hock* have been pronounced "lame in the round bone." The advances made in veterinary science have satisfactorily shewn that the farriers' opinion was, for the most part, founded in error; the halting action which they considered as denoting hip-lameness, more critical observation, combined with *post-mortem* results, has demonstrated to have its origin in disease of hock, for the most part, indeed, in *spavin*. Spavin, as we have seen, is a fruitful source of lameness behind, frequently insidious in its rise and progress, sometimes difficult of detection, occasionally incapable of demonstration; no wonder, therefore, that it should so often lead the unwary and inexperienced into error.

But it is an easier task to expose palpable error of this kind than it is to define the limits of articular disease—to say what joints *commonly* are affected with lameness, and what rarely or never are—than to specify the joints really obnoxious to disease, and those that have never been known or observed to be diseased.

This is a subject on which information is a good deal needed; meanwhile, we must content ourselves with what we find on record, and with stating such results as have been afforded by our own experience.

## Hip-joint (or Round Bone) Lameness.

Eight years ago—in 1840—Mr. T. W. Mayer, veterinary surgeon, at Newcastle-under-Lyne, published a paper in THE VETERINARIAN on this subject, which had the two-fold effect of rectifying the erroneous opinions formerly entertained respecting its prevalence, and of warning veterinarians of falling into the opposite error of regarding it as an occurrence of extreme rarity; at the same time it has put us in possession of a good amount of useful information, of which it is our intention to avail ourselves on the present occasion.

"So strong of late years," says Mr. Mayer, "has been the tide of prejudice against the possibility of any lameness occurring in this joint, that we occasionally overlook it, and attribute the grounds of the mischief as resident in the hock: nor can we wonder at this, when, in the slighter shades of lameness in a hinder extremity, the effect upon progression is so very similar."

Our own observation would lead us to the belief that the hip-joint of the horse is rarely found in a state of derangement without there being some sprain, contusion, slip-up, fall, or other injury connected with the ailment; and then we, for our own part, think that it is a common seat of the lameness accruing from the injury, in consequence of its being a part very liable under falls, contusions, and certain kinds of sprains, to receive injury. At the same time, we must admit that too often, in cases of supposed hip-joint lameness, much of the medical opinion is founded in conjecture, there being, as Mr. Mayer has justly observed, at times a good deal of similarity in the halting produced by disease or injury of hip and hock, while in the case of the former no external sign shews itself whereby we can, either to our own satisfaction or that of our employer, demonstrate the nature of the case. At other times,

however, and in the generality of the cases of external injury, where the attention of the practitioner comes to be directed to the hip, a perceptible difference in the halting action is observable. There is a *hop* and a *catch* in the movement of the lame hind limb which, to the practised eye, pretty clearly shews the lameness to be in the hip: the hock, it being remarked, flexing itself with its wonted freedom.

Thus, the hip-joint, as Mr. Mayer has informed us, "is not only subject, like other joints, to strains of its connecting and capsular ligaments, but likewise to synovial inflammation from accidental injuries, &c., consequent ulceration of its cartilaginous surface, and extensive formation of matter, which, ulcerating its way out, may lie a long time embedded under the mass of muscles surrounding the joint before it makes its way to the surface."

"Foals," says Mr. Mayer, "and calves are occasionally subject to *scrofulous* inflammation of the hip-joint." In some cases of this kind he has "seen large formations of matter occur upon the sacro-sciatic ligament without being connected with the hip-joint."—"In others, the formation of matter takes place within the joint."

But "in full-grown animals," continues Mr. Mayer, "we rarely meet with scrofulous inflammation." In them, "in consequence of strains, or of being thrown down, particularly in carts and carriages, synovial inflammation is set up; and unless very vigorous treatment is early adopted, it either terminates in perpetual lameness from anchylosis, &c., or in the formation of matter, consequent ulceration, and, ultimately, loss of life."

The following narrative comes instructive to us here. A cart-horse, it was strongly suspected by its owner, had been thrown down in a cart. Mr. Mayer did not see the case for some months afterwards. The animal looked emaciated from pain and irritation. The affected quarter had much wasted, and as the animal moved along, by the application of the hand and ear, could every now and then be perceived a sensation and sound as though "the head of the femur chucked in and out of the acetabulum." Mr. Mayer was of opinion that there was either *a dislocation of the hip*, or *a fracture of the neck of the thigh bone*, and that therefore the animal had better be destroyed. Post-

mortem examination disclosed a very large collection of pus in and around the hip-joint, extending as high as the sacro-sciatic ligament. The round ligament was ulcerated through its attachments, the cartilage lining the acetabulum and clothing the head of the femur absorbed, and the matter had made its way through the capsular ligament, which accounted for the peculiar sensation and sound afforded by progression. It seemed remarkable, the pus had not made its way to the surface.

THE TREATMENT OF HIP-JOINT LAMENESS may turn out either a very trivial or a very formidable affair. Occurring, as it usually does, from injury of some sort, continual fomentation of the quarter, repose, and brisk cathartic medicine, will very commonly, give sufficient time, accomplish the cure. And the most effectual fomentation for such a part as the hip is a continual succession of woollen cloths, soaked in water as hot as the hand can be borne in it. A large covering of spongio-piline, with another soaking in the hot water ready to succeed it, would prove most effective. The fomentations may be followed by refrigerent or discutient lotions; though from the latter not much benefit need be expected. Any effective treatment, with a view of *discussing* or counteracting inflammatory action, must now consist in counter-irritation—in blisters or setons, or a rowel in the thigh, than which, Mr. Mayer's practice has taught him, nothing in such cases proves more beneficial. Although it may be proper to keep the lame animal for a time tied up in his stall with two ropes, so that he cannot lie down, when the inflammatory action comes to be on the decline a loose box is certainly the preferable apartment for our patient, and in some cases, especially during convalescence, a little walking exercise is recommendable.

PROFESSOR DE NANZIO, of the Naples veterinary school, who paid a visit to this country in 1837, left us what, perhaps, may be regarded as some valuable observations so far as they have reference to chronic or obstinate cases of hip lameness; but which involve an operation that nobody would think of subjecting a horse to for ordinary or recent lameness of the kind. "Many remedies," says the Professor, in his paper published in THE VETERINARIAN for 1837 (vol. x.) "have been employed for the cure of this species

of (hip-joint) lameness; but it must have been observed that, when this disease is of a chronic character, such remedies have produced no effect. Blisters, setons, and especially the heated iron, are the only means that can be employed.

The cautery is strongly heated; but if employed in the usual manner, it leaves unsightly blemishes, and sometimes does not produce a sufficient impression on the part to restore it to its former healthy state.

My method of proceeding, which I believe to be a novel one, which has succeeded in a great majority of cases, and which at present is generally employed at Naples, consists in making an incision from above, below, through the skin which covers the articulation. In order properly to perform this, it is necessary for the operator to insure himself of the *coxo-femoral articulation*, that he may not cut upon the trochanter, as is often done by persons ignorant of anatomy. In order to be certain of the place where the incisions ought to be made, the animal should be urged to make a slight movement forwards, and then one backwards, the hand being kept pressed the while upon the articulation, which is deeply situated, anteriorly to the trochanter. Having found the precise spot opposite the joint, mark the place by clipping the hair off with scissars.

Then, having properly secured the animal, make an incision through the skin from above below, as before described, separating by dissection the common integument from the cellular tissue beneath it, and envelope the flaps in pieces of lint previously steeped in water. The flaps being held apart by two *tenacula*, a budding iron, not greatly heated, is applied three or four times on the denuded articulation, care being taken to introduce the finger from time to time down to the bottom of the wound, in order to ascertain the depth of the perforation, as well as to be assured that the joint is not opened, as has happened at the hands of inexperienced operators. The tenacula and the lint guarding the flaps of integument are then removed.

A pledget of tow with marsh mallow ointment may be applied to the wound, or it may be left without dressing, precaution being taken to prevent the horse lying down or hitting or rubbing the

wound. Usually, it heals in from ten to twenty days, scarcely any blemish follows, and the horse becomes restored. The operation has repeatedly succeeded in horses that have been lame for a year and upwards; and has been repeated on the same horse with like success.

## ELBOW-JOINT LAMENESS.

Had it not been for a luckless wight of a horse of my own, my pen must have remained silent on this subject. The case is complete in every stage of its history, from its very insidious and dubious beginning down to its unfortunate and fatal termination. To me, all the way through, it proved a mystery; to others it may answer the purpose of a beacon in the event of their ever encountering a *rara avis* of the sort.

The subject of the disease was a chestnut gelding I got, in the year 1843, in a swap with Mr. Sewell, dealer in horses, Pimlico. He was then rising five years old, and looked like a weight-carrying hunter and useful harness horse, being in appearance little more than half bred. He was well shaped everywhere save in his fore legs; and they were not deficient in power, but were strikingly calf-kneed, with toes inclined outward, and action dishing and slovenly, the consequence of which was, that, in his usual careless jog trot, he made frequent stumbles through hitting his toe, although when excited or put into a gallop his action improved greatly, so much so indeed in the latter pace that it was in the eye of a sportsman undeniable. Though I used him mostly in harness, I occasionally rode him, and paid dearly enough for it by his having thrice fallen upon his knees with me. In neither fall, however, did he hurt himself; only on one occasion, indeed, did he graze the hair upon his knees. Still, I repeat, he was an excellent galloper, and turned out a capital jumper, and more than once acquitted himself very creditably with the Queen's hounds.

Soon after I purchased him—in the spring of 1843—he took the catarrhal influenza prevalent about that time, but had it favourably, and speedily recovered; since which, to the summer of 1845, he ailed nothing, but regularly did his work, which was extremely moderate.

The latter end of June 1845 he took the influenza again, and though the epidemic of that year was of a severe and fatal character, he had it very lightly; the only question being, as will arise in the sequel, whether his system did or did not in consequence of the attack, notwithstanding it was a mild one, imbibe the arthritic or rheumatic diathesis, which along with the influenza so much prevailed. Albeit, he recovered about the middle of July from the attack, and went to work again, appearing completely restored to health and strength and spirits.

A month afterwards—the middle of August—while driving him, I fancied he went lame in the off fore leg. I at first thought his lameness might arise from some temporary cause. I looked for a stone in his foot, but found none. I continued my drive notwithstanding, and when I returned home I had his shoe taken off. Still I found nothing to account for his slight and transitory lameness: I say *transitory*, for the following day I drove him again, and then he appeared better—hardly lame, in fact, at all. I continued working him—unwisely giving way to a vulgar notion that, in his somewhat dubious condition, he "might *work* sound"—for a few days longer; when I became ashamed of myself for driving a lame horse, and resolved on submitting him to some treatment likely to prove more effective than any thing which had hitherto been tried. Considering his lameness to be in his foot, blood was taken from the toe, and that followed up by a sweating blister upon the pastern. This treatment occupied the month of September. No relief resulting from it, I shewed him in the beginning of October to Mr. Arthur Cherry, whose opinion was that the *knee* was the seat of his lameness. Accordingly, treatment was directed to that locality, with, however, no better success than the former. On the 1st November both his fetlock joints were blistered, and he was, when fit, turned into straw-yard. There he remained until the 15th December, when he was taken up again into the stable, and, strange to say, in a *lamer* condition than he had ever yet been; and was thought now to be lame in the *near* as well as in the off fore limb. At all this I was so much surprised, and at the same time so disheartened, that I felt at a loss either to account for his lameness, or what steps to take by

way of remedy for it. In this state of mind I was, I may say, driven to attack the *shoulder*, every other joint likely to harbour disease having been already tested or treated for it. I therefore, as a sort of hit-or-miss treatment, had a large quantity of blood abstracted from the plat vein, and an ample blister applied around the off shoulder joint; cathartic medicine being at the same time given, as on former occasions. After this was done, instead of being allowed any motion on the limb, he was kept tied up in a stall in a state of absolute rest and quiet.

January came and passed, February came, still no relief; on the contrary, he had, under all the treatment described, become gradually lamer and lamer; insomuch that now, at the latter end of February, he was going, after all this rest, actually lamer than I had ever seen him go before. Several of my veterinary friends had the kindness, at my request, to look at him and examine him, after hearing my account of his case. Two thought he was lame in the shoulder, another in the foot, a third in the spine; all, however, agreeing that his case was a hopeless one, although, in consideration of his age and undisturbed good health, inclined to the opinion that he should not be given up without further experiment: since pure matter of experiment had his case now become.

The time is now arrived for me to enter into a more particular account of the symptoms his lameness presented, and particularly for the three or four weeks antecedently to his being destroyed. During the early period there was nothing to strike notice in his manner of projecting or putting down his lame limb, save that he evidently did all he could in action to throw the weight of his body, as it appeared to us, upon the *heel* of the foot; so that I more than once suspected chronic laminitis, and had on that supposition inserted a seton through the frog*. When he had become lamer, and was consequently more unwilling still to impose weight upon the lame limb, he evinced a sort of *dragging of the limb after him* in his going; which symptom it was, combined with an increased manifestation of it in his side movements, that disposed us to think his case was one of shoulder lameness. By the time, however, that

* In the performance of this operation he plunged and fell, and, as I afterwards thought, hurt himself; though, from the sequel, I am satisfied no hurt took place.

he shewed lameness in *both* fore legs, and particularly when he became, as he had latterly become, quite a cripple, he manifested a remarkable *crouching* sort of action, dreading almost to move his fore limbs forward, and manifesting such exquisite soreness and pain when compelled to move on, that, while he was making as short steps as he could, he was doing his utmost to keep his body back and advance his hind limbs to receive its weight, to prevent any of it, or as little as possible, falling upon his fore limbs. In short, his posture and gait altogether were very like that of acute founder; so like indeed, that, perhaps, one might not be able to make a distinction between the two diseases, were it not that in founder the feet would shew the nature of the disease; and that in elbow-joint disease, although the animal manifested all this pain and dread of stepping, yet, when the whip was applied, and he found himself obliged to go, did he plainly shew that his fear arose purely from the *pain* of the moment, and not from any cause of absolute *inability* to tread; and, further, that the pain was not evinced at the moment of *putting down* the foot, as in founder, but at the time when the body was required to be advanced by the hind *upon* the fore limbs; at the moment, in fact, that he was called on during action to throw the slightest weight upon the columns of bones, which he no sooner had done than his body shrunk back upon the hind quarters: in fact, it was evidently the effort to throw the weight upon the muscles of the shoulder instead of upon the bony column that occasioned this peculiar crouching gait. And every now and then, while he was being compelled to walk, would he, at the moment the weight came upon his fore limbs, crouch down to that degree, that lookers-on cried out he would "fall;" on no occasion, however, did he fall, but always saved himself by shrugging his body back upon his haunches. Reduced as he was to a state of crippleness to disable him even from walking about to get his own living at pasture, and evidently in exquisite pain every time he put forward his fore limbs in action, still it was not without both reluctance and regret, that, in the month of March 1845, I came to the resolution to have an end put to sufferings which every means we had made trial of had signally failed either to arrest or relieve.

*Post-mortem Account.*

THE ELBOW JOINTS proved the seats of disease. The inferior or broader half of the articulatory surface of the ulna presented a patch of ulceration, of the shape of a square whose sides measured about an inch each. The transverse portion of the articulatory surface of the radius, which naturally is an eminence, had become a fissure of ulceration of about a quarter of an inch in breadth at its widest, which was its posterior part: this ulceration extended but little more than half way across the surface, the portion of surface in front of it being sound. There was likewise a patch of ulceration in the interval between the condyles of the humerus, of a triangular shape, but which, in that situation, would not be opposed, either in action or at rest, to the ulceration upon the ulna. There was a patch of discolouration upon the front of the outer condyle, a seeming precursory to ulceration. From the surface of the ulcer upon the olecranon there were granulations springing up, which, it is to be believed, would in the course of time have turned osseous, and formed the nucleus for an anchylosis of the joint. In this instance, however, there existed no disease whatever of the periosteal or ligamentary tissues outside the joint, though I believe that would speedily have supervened upon the morbid condition afore described.

At no period of the duration of time the case was under treatment—seven months—was any satisfactory opinion given of the lameness, or the seat to it. The lameness came on very gradually, in a manner imperceptibly, and fluctuated in intensity, being sometimes more evident than at others. It followed no hard day's work or known injury. And it increased, though tardily, by degrees from first to last, and in the face of all kinds of treatment (to parts not affected), until at length it became intolerable. And so mysterious was its nature all the way through the case that nobody, by the merest conjecture, ever hit upon its seat. And yet, when its seat and nature came to be developed and considered, the symptoms appeared such as might have indicated it; and, moreover, inclined to the belief that there possibly might have

been some connecting pathological link between it and the attack of influenza. One reason for so thinking was, that the influenzal attack happened in July, the lameness in August; another, that the influenza of that year had shewn a remarkable predisposition, consequent upon it, to such translations; though against this opinion militated the absence of bursal swelling outside the affected joints, and of any deposit inside. After all, the case is not stripped altogether of its mystic vestment. Nevertheless, it is likely to prove so far useful to us, that, should we ever meet with a similar one, although we may be equally at a loss for a remedy for it, we may at least be in a situation to offer some satisfactory diagnosis of its nature.

## SHOULDER LAMENESS.

As the "round bone" or hip-joint has frequently had disease or derangement attributed to it in lamenesses of the hind limb when all the while the seat of ailment has been the hock, so the shoulder, over and over again, has been imagined to have suffered "wrench," or laceration, or injury of some sort, when all the time the seat of lameness has been the foot. At the time and by the persons such mistakes used to be made the different sites and kinds of lameness were not so well understood as they are by veterinary surgeons of the present day; and since both the hip and shoulder-joints are parts removed at some distances from the surface of the body, and are both of them pretty thickly clothed with muscle, disease might exist in either without there being any external signs of its presence, or be imputed to either when it did not exist without much apprehension of error being detected, seeing that no very obvious signs of any cause for lameness were to be found elsewhere. Action is our great guide in directing our attention to the shoulder as the seat of lameness; and though, as far as this goes, we may not have improved any very great deal since the time of Solleysell, still has so much light been thrown upon lameness in other parts, that, finding additional causes for it, we are less often in doubt concerning it, and consequently less likely to impute it to quarters in which its existence is by external signs indemonstra-

ble. Nothing has reflected brighter light upon the seat and nature of lameness in general than the discovery of *navicularthritis*. Before the navicular joint was known to be so common a site of disease as it has since been proved to be, ignorance or indecision in regard to the seat and nature of lameness found a ready and secure retreat in a part so concealed from view and touch as the shoulder-joint. The shoulder of the quadruped includes pretty well a fourth part of his body; it occupies a large space, comprehends many and various parts, and is complicated altogether in its structure. The bulk of it is made up of muscles. There are but two bones entering into its composition—the *scapula* and *os humeri;* but the joint they form between them, of the ball-and-socket character, possesses greater variety of motion than any other joint in the limbs; and, moreover, has connected with it a pulley-like bursal cavity, containing synovia the same as the main joint, which, there exist strong reasons for believing is, if not the ordinary, at least a very frequent seat of shoulder lameness. The tendon of the *flexor brachii*—a muscle principally concerned in the flexion of the arm of the quadruped—passes down from its attachment to the scapula within a groove formed between the tubercles upon the head of the *os humeri*, and plays up and down within this groove after the manner of a rope over a pulley; the surfaces both of tendon and groove being coated with articular cartilage and enclosed within a synovial sac. Now, from the circumstances of this muscle being mainly employed in bending or raising the arm, of the known liability of bursal joints, such as this, to get out of order, and of the presumed and pretty well ascertained seat of ailment being the *point* of the shoulder—a part directly opposite to this bursa—there seem good reasons for believing that this said bursa is the especial or usual seat of derangement or disease in shoulder lameness. It may appear strange, or even inexcusable, that in this, the sixtieth year, or thereabouts, of the introduction of veterinary science among us, we should be found making use of language so dubious as this in regard to the site and pathology of the lameness in question. It must be borne in mind, however, that for one case that is in verity shoulder lameness there occur thirty that are not; and that, being a lameness that is commonly curable or one of

which horses, give them time, somehow or other are found to recover, or, at all events, one which they never die of, or are put to death for, we get, in point of fact, little or no opportunity of examining into the state of parts supposed to be diseased; though, we may add, that such facts—and they are mostly of foreign growth—as stand on record shew the shoulder-joint, if not the *bursa*, to be the seat of disease.

THE FRENCH VETERINARIANS call shoulder lameness *écart*, because they say it has the effect of causing the horse "*écarter* le membre du thorax." And Barthélemy—one of their best authorities—asserts that the scapulo-humeral articulation, with its capsular ligament and investing muscles and tendons, is the seat of the lameness.

DE NANZIO, Director of the Veterinary School of Naples, was of opinion, likewise, that the shoulder-joint was in fault, and for that reason recommended his operation, as performed for hip-joint lameness, as applicable in this case.

M. LEBLANC, our professional friend and associate, for whose opinion we entertain the highest respect, has informed us—in THE VETERINARIAN, vol. x—that "old lamenesses arising from lesions of the superior divisions of the extremities are oftenest to be attributed to diseases of the articulations, and more especially to distention of the capsular ligaments."—"The capsular ligament of the shoulder-joint loses its natural aspect; is in some parts diminished in thickness, while in others it is increased in substance; its interfibrillary cellular texture is indurated; the tendinous fibres are no longer distinct; the surrounding mass has assumed a variable colour—oftenest a yellow tinge mingled with red points; the neighbouring cellular tissue is likewise sometimes indurated, at other times osseous."—"The synovial capsule and the synovial fringes (*glandulæ Haversii*) are always diseased—thickened, and of a mingled yellow, black, and red colour. The synovia is thicker than in health, and of a deeper colour. The articular cartilages are diminished in thickness; sometimes they are abraded in various places where they have a yellow hue. The ends of the bones are sometimes deformed and out of their places, displaying false articulation. Finally, the muscular tissue surrounding the shoulder-

joint is found discoloured and wasted, especially when lameness has been of long standing." Such is, or was, Leblanc's account of the post-mortem appearances. They evidently apply, we should say, rather to *chronic* shoulder lameness than to common or recent disease.

THE SYMPTOMS OF SHOULDER LAMENESS are—1st and negatively (in the absence of signs of other lameness) that the horse neither points with the foot of the lame limb, nor usually stands upon it differently from what he does upon the sound leg; 2dly, and positively, that, in trotting, he displays a movement in the fore leg different from the action of a horse lame in the foot or elsewhere.

SOLLEYSELL was perfectly well acquainted with the latter: his description includes pretty well all observation since his time has taught us concerning it. His name for the ailment was "shoulder-wrench," "shoulder-plight," or "shoulder-sprain." And he tells us, "'tis hard to discover where the lameness is if you did not see him get it, and *if the horse does not cast his leg outwards or make a circle with it, instead of advancing it straight forward;* for that is almost *an infallible sign that the grief is in his shoulder.*"

PAIN or inability evidently intimidates or prevents the horse from lifting and projecting the lame fore limb in the manner and with the freedom he does the sound one—"he cannot get it forward," as horse-folks say; i. e. forward in a direct line without pain, to avoid which he, as Solleysell has truly described it, "makes a circle with it," brings it forward with a sort of sweep, and perhaps some trail of the toe upon the ground as well.

But it may be endeavoured to elicit pain by pressing or squeezing or moving about the shoulder. Solleysell tells us to "take hold of the fore limb, and make it go backwards and forwards, that we may perceive how the shoulder can be moved, and whether or not the horse does not complain of pain or shrink while such motions are being performed." All this is usually done nowadays, and by veterinarians; though we must confess our diminished faith in tests like these compared with such as are afforded by action, and the absence of any cause or suspicion for lameness elsewhere.

DIAGNOSIS. Strange as it may appear to persons out of the

veterinary profession, it is notorious enough to those in it, that no two kinds of lameness have so frequently been confounded as foot lameness and shoulder lameness; the best explanation we can offer of which seemingly unpardonable error in judgment, probably, is to be found in the fact of there being "nothing to be seen" to account for the lameness either in one or the other. "The usual way," says Solleysell, "to know whether the grief be in the shoulder or foot, is to observe whether the lameness be increased or abated by exercise; for if it be in the shoulder the horse will halt least while he is heated with riding; but if in the foot he will halt most when he is ridden." This, so far as it goes, is good. But we must have other marks of distinction. We must observe the *gait* in the trot; mark whether the lame limb be carried outward or not. Next we should inquire if there be any pointing of the toe, any hurt of the foot, or any signs of shelving in or rimminess of the wall of the hoof, symptoms which, in the absence of the sweep of the limb in action, would at once draw our attention to the foot. Furthermore, the same horse may be made to perform movements especially trying to the shoulders, such as running round a circle while held in hand, or passaging, or backing, some one or all of which may possibly more perceptibly elicit the lameness or expression of pain. As for "wasting of the shoulder," a symptom by farriers and grooms in general laid great stress on, it is at best but a *remote* consequence of lameness, which may be in the foot or leg, and not necessarily in the shoulder: the explanation of the "wasting" being simply the loss or diminution from absorption of the fleshy fibres of muscles, in consequence of not having their healthful exercise, and of being compelled to be laid up in a state of inactivity, or even absolute repose.

Lastly, we must bear in mind, that the *knee joint* may be the hidden and mysterious seat of lameness, and that we may be referring that to the shoulder or foot which all the while lies concealed within or about the knee. Mr. Arthur Cherry's papers, inserted in THE VETERINARIAN for 1845, instruct us how to search for diagnostics of this. Verily, there is, we are sorely afraid, after all, about the seat of lameness—"more things than are dreamt of in our philosophy." Nothing but steady observation, and

faithful and frequent report, can clear up these matters; and this veterinarians are, or ought to be, setting their minds to the performance of. Progress in our knowledge after such a manner, it is true, cannot be but tardy; once attained, however, it will prove of a character that will be sure ever afterwards to serve us in practice.

THE CAUSES OF SHOULDER LAMENESS are all comprehended under *injury* in some or other form: we have no notion of the production of lameness of this description apart from some wrench, sprain, stretch *(écart)*, laceration, contusion, &c. of the shoulder; hence a slip-up, a false step, an over-strained gallop or leap, a violent tugging or pulling of the limb, occasioned by the attrapment of the foot in a rut or rabbit-hole, a collision against any hard or unresisting body of the point of the shoulder, any thing, in fact, that may outwardly injure the horse or may occasion the animal inwardly to injure himself, may prove the cause of a shoulder lameness.

In riding-school and military practice there is one particular movement which, carried to excess, is exceeding likely to cause shoulder lameness, and that is what is called shouldering-in and shouldering-out. Veterinary surgeons in the army see such cases occasionally; though, on inquiry, they will generally prove referable to abuse of the said practice, and not to the moderate or judicious performance of it. Some years ago I was employed in attending the horses sent to the cavalry depôt then established at St. John's Wood. Every now and then a horse was brought to me lame in the shoulder, and, on one occasion, cases of the kind became so prevalent that I was instigated to make inquiries into the causes of them, which, with very little trouble, and less demur, I found to be the strained exercises of shouldering in and out to which such horses had been put in the riding-school. Simple withdrawal of the lame horses from their work, and resting them in their stalls, restored them to soundness; and a word of caution in the proper quarter put an end to the evil.

THE TREATMENT OF SHOULDER LAMENESS will have to be conducted on those general principles which are our best guides in all similar affections. In making our selection out of the many remedies within our reach, attention should be paid by us to the

*history* of the case submitted for treatment: its duration, and the mode in which it occurred, when ascertainable, may very likely cast some light upon our restorative plan of procedure.

REPOSE of the lame limb is indispensable: without such a precautionary measure all remedies will have little chance of succeeding. On this account a stall is preferable to a box for the lame horse; and he should be fastened up in it so that he cannot lie down or move about much. Side-reins are more suitable than a single strap or rope.

FOMENTATION of the shoulder, in a recent case, we are of opinion is preferable to the application of cold or refrigerant lotions; but then, we mean fomentation *persisted* in, and directed in particular to the *point* of the shoulder. It being impossible to confine a hot poultice on the part, an ample covering of spongio-piline will be found an excellent substitute, seeing it may, by very simple contrivance, be made to closely cover the entire surface surrounding the point of the shoulder. The piline poultice should be replaced by a fresh hot one every hour.

A DOSE OF CATHARTIC MEDICINE is commonly given in such a case, and, we think, while the lameness is yet recent, with decided good effect: only let the dose be strong enough to purge the animal without there being a necessity for exercising him.

TOPICAL BLOOD-LETTING, so far as that can be carried into effect by drawing blood from the plat vein, is advisable in most cases—in severe ones indispensable. And the fittest time for its performance is the day the patient is sick and purging from the physic. From six to eight or ten pints of blood, according to the severity and duration of the case, should be abstracted.

COLD, in the form of refrigerant or evaporating lotions, or through the application of ice, may, if preferred, be substituted for the fomentations: for our own part, however, as we stated before, we like the soothing and emollient plan the best. At the expiration of a week of treatment of this mild and poultive character, the horse may be seen out of his stable, first in a walk, then, for a few yards, in a trot: caution being taken to put a stop to the trot the moment any lameness re-appears; indeed, to exercise of any kind, unless he should be found to go sound, in which case a walk out

for a few minutes, providing he do not "jump about," and risk relaming himself, will be beneficial. In the case of there being no amendment, or not that amount of "better" that had been expected, some change of treatment should be thought of. When hot and cold applications have failed to afford relief, sometimes

A STIMULATING LINIMENT, well rubbed in over the point of the shoulder, has been known to do good. The one we use is the following:—

℞. Liquor. ammoniæ
Ol. olivæ
Ol. terebinthinæ āā . . . ℥ij
Saponis mollis . . . . . ℥j—M. S. A.

This liniment takes immediate effect, and sometimes for a short time annoys the animal so much that he requires to be held in hand for a few minutes, or to be fastened up short with the rack-chain. The first perfrication, providing the rubbing be not contrary to the direction of the hair, will not move the coat; the second, however, will be apt to do this; the third almost certain to do so: knowing which, it will be for the prescriber to act accordingly.

A BLISTER entirely over the point of the shoulder is, however, the remedy most likely to prove efficacious in a case wherein mild means have conferred little or no benefit; the objection to such a remedy being the certain removal of the hair, and the consequent laying-up of the horse for a much longer time than consent in this stage of the lameness can always be obtained for; though, in the end, it may prove—as it often does—really a saving of time. Three or four weeks is the shortest period you can reckon upon for a blister to work itself out, even if it be sponged off with hot water as soon as it has taken effect—which in this case ought to be done: and then, even though the horse may prove sound, the shoulder will probably be left bare; though that, of course, will depend on the strength and composition of the blister used. What will frequently amount to a blister, and at the same time will leave the hair unloosened, is the application of the *acetum cantharidum*. A painter's brush answers best to apply it with, the hair being simply wetted with the essence by stroking it with the brush in the direction in which

it grows. This, we repeat, will frequently be found to *sweat* the skin without stirring the hair, and as such is, as a vesicatory, extremely valuable to us, and in particular in private practice.

No trial of the horse, not even a run-out, can be permitted for at least a fortnight after the application of the *acetum;* and then, should amendment be still imperceptible or insufficiently apparent to satisfy for what has been done, providing we see no reason to alter our opinion in regard to the seat of lameness, a severe and extensive blister had better be at once applied over the entire point of the shoulder, and the animal kept tied up in the stall until such time as it has worked off, or until the swelling in the limb be such as to call for his removal into a loose box, where he must remain for some weeks: time now being absolutely necessary for the working-off of the blister, and the carrying into effect those changes which, in consequence of its application, we have reason to believe are going on in the parts diseased, towards the righting or restoring of them.

THE ACTUAL CAUTERY is recommended by Professor De Nanzio, of Naples, to be used after the same manner for shoulder lameness as he has found it so effectual in hip-joint lameness *(see* VETERINARIAN *for* 1837); which consists in making incisions through the muscular and cellular tissue, after flaps of skin have been dissected back, down to the diseased joint, to the immediate coverings of which a budding iron, moderately heated, is to be three or four times leniently applied. The flaps of skin are then to be returned into their places, and simple or no dressings whatever used to the wound.

THE POTENTIAL CAUTERY has likewise met with continental advocacy. In the "Transactions of the Royal Veterinary School at Lyons for the Year 1840-1," published in THE VETERINARIAN for 1842, we are informed that—"Lameness of the scapulo-humeral and coxo-femoral articulations have in numerous cases been satisfactorily treated with chemical caustics. Fifty-three horses have been submitted to the treatment, thirty-five for shoulder lameness, and eighteen for hip-joint lameness. All have been cured save three, out of which two had been a long time lame, and the other's case was out of the ordinary character. Either the bi-

chloride of mercury or the arsenious acid may be used; though decided preference is given to the former. A small piece, weighing gr. ij, is introduced underneath the skin at the point of the articulation, and suffered to remain there eight-and-forty hours; from which neither the tumefaction that may follow, nor the absorption of the salt, nor the state of the wound, need cause any alarm. One untoward result on occasions takes place. The purulent matter generated insinuates itself underneath the skin, and causes a partial detachment of it from the tissues beneath. The insertion of a tent or seton, however, into the dependent pouch will speedily remedy all. Some persons use the sulphate of copper; but this is far less effective than the mercury. And the arsenic is more objectionable still, from its uniformly occasioning a good deal of tumefaction. Now and then it has produced poisonous effects.

SETONS—which are no more than new-fashioned and for some cases improved forms of the old *tent*, *plug*, and *rowel*—are by some practitioners employed in the place of blisters. To blisters, however, they are decidedly inferior both in point of activity and efficacy. If used at all, they might be made trial of in cases that had become *chronic*, and seemed to require something in the shape of a perpetual issue. After all, they form but a link in the long chain of counter-irritants; and are from their nature calculated rather to do good by their unceasing and protracted action than from any specific virtue resident in them.

RELAPSE. In every case of lameness almost, it is hardly less our duty to change that state as soon as we can for one of soundness than it is to guard against relapse of ailment; for not only is a relapse always less promising to treat than an original case of lameness, but it lays the practitioner open to taunts and reflections on the part of his employers and others as having not *cured* but simply "patched up" the case. Now, shoulder-lameness, like naviculararthritis, happens to be a case very likely to return should the subject of it be taken to work too shortly after soundness has been restored; and therefore it behoves the practitioner to keep his patient in hospital, or at rest at least, as long as he can; at all events, to caution the owner of the risk he runs in disobeying this wholesome injunction. In the course of our practice, we have

known horses who have had, as it were, periodical returns of lameness in the shoulder; at least, who have had their lameness come on as soon as they have been put to the same hard or violent exertion as in the first instance occasioned it, even though a twelvemonth or more has intervened between the application of such exciting causes: it being evident enough that the lameness would have relapsed before, had the horse been sooner put to his trying work. In the majority of cases, however, relapses, if they occur at all, take place on the horse's first being returned to work; and if not then, pretty confident hopes may be entertained they will not happen at all. In a state of convalescence there is no better habitation for the patient than a loose box: to the little motion he can take in which may be added, as he progresses towards soundness, walking exercise in hand, at an hour of the day and in a situation, if possible, when and where he will hear and see nothing to cause him to "jump about," and thereby run a hazard of relaming himself.

## KNEE JOINT LAMENESS.

On this occasion we shall, with permission, avail ourselves of the information contained in two valuable papers "On Carpitis," by Mr. Arthur Cherry, published in THE VETERINARIAN for 1845. In calling our attention to the knee joint as a seat of lameness, and not so infrequent a one as may be or has been imagined, Mr. A. Cherry has opened to our view a field of hippo-pathology hitherto much neglected. The knee in the fore limb may be regarded as the correlative articulation to the hock in the hind limb. The one and the other are composed of several small bones, opposed above and below to long cylindrical shafts. Both enjoy greater sphere of motion than is possessed by other individual joints of the limbs; and while the hock constitutes the axis of that motion through which progression is effectuated by the hind limbs, the knee is the joint on which what we call "action" in the fore limbs mainly depends. For, let a horse have an ailing or a stiff knee joint, and what is the consequence?—why, nothing short of inability to flex the leg to step forward, thereby rendering him no longer of any service to his master. Seeing, then, that the knee is

an articulation of so much importance in progression, the condition it is in, sound or unsound, perfect or imperfect, cannot fail to be matter to us of the greatest consideration. It was formerly said, "no foot, no horse;" we with equal reason say, "no knee, no horse:" the integrity of the knee being quite of as much consequence for action as that of the foot is for tread.

After attentively perusing Mr. Cherry's two papers, few reflective veterinarians will, we think, feel disposed to differ with us, when we assert that we have all been too much in the habit of referring the seat of lameness, at all obscure in its nature, to the *foot;* and that henceforth we may have reason to pay a great deal more attention than we have done to the *knee.* The chief difficulty we anticipate in this investigation of knee and foot together is what we may experience in forming a correct *diagnosis*—to say, in many cases, whether the proximate cause of the lameness is really in the foot or in the knee; a difficulty not a little enhanced by the curious fact mentioned by Mr. Cherry, of heat sometimes being felt in the foot when the seat of lameness all the time is the knee. Nothing short of close and accurate observation, ratified by experience, can surmount difficulties like these; and we doubt not, now that the attention of veterinary practitioners is called to the subject, that it will in time receive all this in the fullest measure.

"Under the term 'carpitis' (or knee joint lameness)," says Mr. Cherry, "I propose to describe a disease of the knee joint, which in its commonly existing form has never, as far as I am aware, been specifically described.

"The knee joint itself has been considered to be exempt from disease, unless from the infliction of direct injury: indeed, so far did the late Professor Coleman carry his opinion on this subject, that he used to assert, in the most positive manner, that the knee was *never* the seat of lameness.

"The old farriers described a lameness as existing, not referrible either to the foot, fetlock, or shoulder, to which, from the peculiarity of the gait, they gave the name of 'chest-founder.' From the very term employed, it is manifest that they were in ignorance of the seat and cause of such lameness. This term has been discarded by the modern veterinarian as 'barbarously ignorant;' but from its

expressing so accurately the manner of a horse's progression under certain states of lameness, it was worthy of being more closely investigated before it was thrown aside.

"It was not until I became acquainted with disease of the knee joint that I fully understood the applicability of their appellation; but reflection has led me to believe that the old farriers' term of 'chest-founder' must be considered a recognition of that disease to which I have given the name of 'carpitis,' albeit they described and treated of a symptom alone.

"The gait in chronic carpitis affecting both knee joints gives to a rider the sensation of the chest being displaced from its right position, a sinking or 'foundering,' and which feels as if it would increase at every step of the horse. When attention is drawn to this peculiar gait, it is easy to be distinguished from the short catlike step in naviculartbritis, which gives to a rider a sensation of the chest being raised up, or an attempt at doing so: further, the feet in naviculartbritis are brought to the ground with the toe first, and in consequence the step is short and stilty, from the weight being thrown as much as possible on the column of bones, to relieve the affected tendon or surface over which it plays; and from the same cause there is great inclination to canter, a pace which, when slow, brings into play but slightly the flexor tendons or navicular joint. In carpitis, on the contrary, these symptoms are reversed, from the cause of lameness being seated on or amongst the carpal bones. The effort is not now to throw the weight on the bony column, but on to the tendons and ligaments, and by this means to avoid concussion; hence the limb is carried forwards as nearly straight as possible; and, still farther to effect this object, it is thrown with a circumductive motion outwards, and brought to the ground with the heels first, as is shewn by the wearing away of the points of the heels of the shoe. This mode of progression produces a long step, and at the same time the fore-quarters are dropped or lowered, which has been, I doubt not, the origin of the term 'chest-founder.' There is also a disinclination to canter; and if this pace is attempted, it gives increased pain, and a rocking motion exceedingly unpleasant to the rider.

"Another point of difference may be adverted to, which is, that in 'carpitis' a horse will hang heavy on the bit; and if a false step is made, it is recovered from with difficulty. This will be accounted for by the previous observations; and when the toe strikes any obstacle, which is very apt to occur, it increases the lameness of that limb, but which gradually subsides to the previous state. In naviculartbritis the reverse of these are manifested.

"There is one other point of difference; that is, in the manner in going down or up rising ground. In carpitis the lameness is increased in descending and mitigated on ascending ground; in naviculartbritis this is reversed, arising from the same causes as before adverted to in speaking of the canter.

"It may appear as an objection, considering there is so much lameness, that there is not a great degree of external appearance of disease, as is seen in its analogous disease spavin; but that objection will vanish when we consider how much sooner a horse becomes unfit for use from a lameness in the fore than in the hind limbs; and therefore when a horse lame before is considered to be, from whatever cause, irremediably lame, he is not again used as a hackney, but is sent to harness, and thus the extra weight of a rider being got rid of, and also, in most instances, the pace being slower and more equal in harness than in saddle, another fruitful aggravation of disease is got rid of or diminished, while the converse of this holds with regard to spavin; for horses that are too lame from the latter disease to be pleasant in harness, are so in moderate use in saddle; but in either case the same amount of relief to the affected part cannot, by the changing from one kind of labour to another, be given to the diseases of the hind as to the fore limb.

"THE DIAGNOSTIC CHARACTERS of the disease affecting one leg only are the same as exist in both; but from the contrast which is afforded by the sound limb, these are much more recognizable than where both are affected; to these, however, one other characteristic must be added, the step of the *lame* leg being rather longer than that of the sound limb. The reason for this length of step I have before given, but that it should now exceed in one leg over the other arises from the necessity of stepping more quickly

with the sound leg, but which very quickness causes a shortening of the step: the effect of this is to give a horse a tendency to go round in a large circle, evinced by the horse bearing to the sound side; and so early does this occasionally shew itself, that it will be often the first intimation of the existence of lameness.

"There is a tendency to drop the fore quarters, but not to the same extent as where both joints are affected.

"The characters are very much akin to those considered to belong to shoulder lameness, but from which it may be readily distinguished; first, by the circumductive manner in which the leg is thrown forwards, and the straight knee; secondly, by the absence of the dragging or striking of the toe against the ground; thirdly, by the stepping on the heels and the greater firmness on standing; but, perhaps, one of the best guides in diagnosis is noting whichever joint is attempted to be least brought into use.

"I have sufficiently pointed out the distinction between carpitis and naviculartbritis; but there is one fact which I cannot clearly account for, that is the heat of the *foot* of the lame limb in carpitis: this at first I found a very considerable obstacle in diagnosis; but I have noticed its presence in so many instances, that all doubt respecting its existence has ceased.

"There are, however, instances in which I have noticed its absence: whether this depends upon a particular part of the carpus being affected, I am not prepared to say, though I believe such to be the case. I suppose it to arise from a similar cause to that which produces in man pain in the knee joint from disease of the hip, from pressure applied to or irritation affecting the trunk of the nerve, and which is referred to its extremities.

"THE HORSES MOST LIKELY TO BE THE SUBJECTS OF THIS DISEASE are those with straight upright legs and short pasterns, because in those the weight is thrown directly upon the bony column; and I have noticed that horses with legs of this description have generally but small knee joints.

"I am disposed to entertain a belief that there is in some horses an hereditary idiosyncrasy to this disease; be this as it may, half-bred are much more prone to it than thorough-bred horses.

"OF THE MORBID CONDITION OF THE JOINT, either

"1. Simple inflammation of the ligaments of the joint;

"2. Simple inflammation of the synovial membrane;

"3. Inflammation followed by deposit of osseous matter consolidating or obliterating one or more of the lower joints of the carpus;

"4. Inflammation extending to the articular cartilage or body of the bone or bones terminating in ulcerative absorption, accompanied with deposit of osseous matter around the diseased portion;

"5. Ulceration, absorption of synovial membrane, articular cartilage, and body of the bone, either together or separately, and progressing insidiously without shewing any very marked symptoms of the diseased state of the joint, and which state is considered to exist without the presence of inflammation;

"6. Combinations of the above.

"I have placed under the foregoing heads the different morbid conditions in which I have found the parts constituting the knee joint.

"The first and most simple I believe to be inflammation of the ligaments, and the one which perhaps the most frequently occurs: it is the result of either sudden injury, or most generally from over-exertion too long continued or too often repeated. Should this be overlooked, or not yield to treatment, from its oft recurrence, it will extend to the periosteum, and produce consolidation of one or more of the lower joints of the carpus, with or without a deposit of osseous matter externally.

"The inflammation of synovial membrane will generally be present with the foregoing state; but it may exist alone, in which case it is often a result of external injury, such as bruises on the front of the knee or from speedy-cutting. In the more advanced stages of disease the synovial membrane and the ligaments are both affected; and, as disease progresses, we find that the one is destroyed by ulcerative absorption, and the other absorbed and replaced by osseous matter: still advancing, we find that the articular cartilage is partaking of disease, the ulcerative absorption extends to it, and proceeds to the body of the bone itself, ending in caries.

"The fifth form is a curious one; but I am disposed to believe, from the observations I have made on some few particular cases, that such state will occur.

"In a joint like the knee, composed of parts but sparingly supplied with vessels and nerves, it cannot be expected to find much *heat;* this is more often manifested in a part which is well supplied with both vessels and nerves, the foot, as I have before remarked: there is, however, an addition of heat to be detected about the joint, which is more particularly observable when the disease exists in one joint only, by comparison with its opposite. Also, from the small quantity of cellular membrane, and the slight vascularity of the parts, but little if any *swelling* is present; and it is not until the disease has existed for some time that enlargement shews itself, and this not always: when it does, it arises from the deposit of lymph, the precursor of ossific deposit. The only form in which swelling occurs, I believe to be, where there is inflammation of the synovial membrane.

"When the carpal bones are united by ossific matter, the ligament, becoming useless, is consequently absorbed, as we find is the case in other component parts of the animal body; and further, when such consolidation of the minor joints has taken place, the lateral articular surfaces become in like manner useless, and the synovial membrane and articular cartilages are also replaced by bone; for we must consider, the disease having proceeded only so far as the consolidation of some of the carpal joints, that it is a process of Nature to make stronger that which has been found to be a weak part.

"Should the injury be repeated after this, the most favourable termination, or extend to other and more important articulations, we find that the result is ulcerative absorption, ending in caries of the body of the bone itself; and this arises from the transverse not admitting of rest like the lateral joints, and from the constant pressure keeping up the diseased action.

"The bones situate on the inner side of the joint are the most generally affected. From their being more under the centre of gravity they receive a larger portion of the weight sustained by the fore extremities than the bones on the outer side of the joint;

therefore the bones more especially the seat of disease are the scaphoid and lunar of the upper, and the trapezoid and os magnum of the lower row; also the head of the inner small metacarpal bone, and that portion of the articular surface of the large metacarpal which corresponds to the os magnum, more particularly towards its inner margin. I have often found that, while the bones situate on the inner side could only be separated by fracture, those on the outer have not been at all united by ossific matter.

"It will also frequently occur, that the trapezoid and os magnum are united by osseous deposit to the heads of the large and inner small metacarpal bones, and this without any connexion with splent. It is a common remark, that a splent is only of serious consequence when it is situate close to the knee joint: in fact, this form of carpitis has been confounded with splent; and though the disease will extend to the inner small metacarpal bone, it will be found to affect only the head and its articular surface, and must not be confounded with true splent.

"I think it probable that the existence of splent is the precursor of that form of carpitis which affects only the trapezoid and head of the inner small metacarpal. From this latter bone not being able to perform its function, the bone immediately resting upon it receives a greater degree of compression than it is capable of enduring, more especially during that period when the bones are still soft from not having arrived at maturity, or in those animals which have their bones naturally of a soft texture, such as is often seen in under-bred horses: in old horses, the bones of which are of a firm texture, and have been long the subjects of splent, Nature provides for this alteration by the diminution of that part of the body of the trapezoid which rests upon the head of the small metacarpal, or of the head of that bone itself, by which means much of the concussion which would otherwise occur is got rid of.

"It is but rare to find that the disease extends to the joint formed by the os brachii and upper row of the carpus.

"There is but one other observation I have to make, that is, to the disease of the joint dependent upon external injury. This is most frequently the result of broken knees, either from the severity of the injury, or from putting the animal too soon to work after

such injury: it will also arise from the frequent recurrence of bruising, whether from falling down without loss of continuity of the integuments, or from blows against the manger, or against timber in the hunting field. I have known instances to arise from all these causes: in fact, any cause which may induce inflammatory action, or a tendency thereto, may be a precursor to, if not a cause, under certain conditions, of carpitis.

"*The Treatment* is analogous to that for spavin; blood-letting from the foot or pastern, not the nominal bleeding which is generally adopted, but to the extent of two, three, or even four quarts—rest—cold lotions—physic—blisters—actual cautery: to these I have added of late years setons on each side of the joint, long and efficient, so as to extend from the upper to quite the lower part of the joint; this is followed by blisters, or the actual cautery. This severe mode of treatment I have found, in old chronic cases, of great benefit, and to have succeeded in restoring the animal to usefulness when all other means have failed."

## SPLINT.

Hitherto we have been engaged in searching into the nature of lameness resulting from disease of parts commonly known by the name of *joints*, and properly called so from their possessing that structure and motion which we naturally associate with such an appellation. Now, however, we have come to the consideration of disease in a part which likewise by the anatomist is regarded as a joint, although in structure it is totally different from the afore-mentioned *proper* joint, and is capable of so little motion that such is rather to be inferred than demonstrated. *The splint bones* are attached to the sides of the *cannon bone*, as well in the hind as in the fore leg, by an elastic substance partaking of the nature both of cartilage and ligament, called *fibro-cartilage*, the fibres composing which decussate one another in passing from one bone to the other after the manner of the letter X. There is not here, as in the proper or perfect joint, either capsular ligament or joint-oil. Still it is called a joint, and, by way of distinction, *a fibro-cartilaginous joint*.

Comparatively incomplete and small in importance as joints of this class appear to be, yet were they designed to answer a useful

end in the animal economy, and are they fully adequate to the purposes thereof, albeit they commonly are rendered, even at an early age, of none effect by the conversion of the fibro-cartilage composing them into osseous substance. So long as they retain their pristine structure, through the elasticity of their uniting medium are the splint bones capable, on the imposition of weight upon them, of descending against the sides of the cannon bone, and of springing up again into their places the instant such weight ceases to operate: from the moment, however, that their uniting material becomes osseous—inelastic, hard, brittle—all motion and spring is destroyed. The splint bones are then rendered fixtures; and it is more than probable that, in their being so, the foundation is laid for *spavin* in the hock, for *osselet* in the knee. These few preliminary observations will, it is hoped, render the pathology of splint not only more intelligible, but, in a practical point of view, more serviceable.

THE NAME of *splint*, or *splent*—derived from the Italian word *spinella*, a splint—would seem first to have been used to denote the bone in or upon which the disease so called is seated, and afterwards the disease itself. The eight small bones, in our modern nomenclature, called *metacarpal* and *metatarsal*, in their position along the sides of the *cannon bones*, or *great* metacarpal and metatarsal bones, have so much the aspect of splints (the old name for which is *splents*), or splinters off the shaft of the large bones to which they cling, that we can readily imagine how they came to be called *splint* or *splent bones*, and as easily understand how the appellation of the bone came to be transferred to the disease.

THE DEFINITION OF A SPLINT is simply this,—That it is an *exostosis*—i. e. a callous or osseous tumour—growing upon one, or contiguous to one, of the splint bones. Were the tumour not of such nature, or being of such nature not so situated, we should not call it a splint.

KINDS OR QUALITIES OF SPLINTS.—According to SOLLEYSELL—who here, as on most other horse subjects, displays a practical knowledge that at times no less surprises than amuses us—there are five kinds or qualities of splints. To give them (and more for the sake of gratifying curiosity than of approving of them all) in his own words—"The first is THE SIMPLE SPLINT, which

but adheres to the bone of the leg, and doth not at all touch the back sinew, and is also at a pretty distance from the knee. The second is THE PEGGED or DOUBLE SPLINT (*le sur-os double ou chevillé*), which is when there are two splints, one upon the outer, the other upon the inner side of the leg, directly opposite to one another, as though they were *pinned* together through the leg, from which they derive the denomination of *pegged*. The third is the splint which ascendeth to the knee, and almost always maketh a horse to halt. The fourth is the (*la tumeur*) FUSEE, which is two splints joined at the ends, one above the other. The last (the fifth) is the little bony excrescence, OSSELET, which is *upon* the knee, and may be taken for the very substance of the knee itself, unless a man have very great experience*."

THE ORDINARY SITE OF SPLINT is about the middle of the leg, rather nearer to the knee than to the fetlock. "A splint upon or immediately under the knee-joint is an affair of complication and danger compared to one in the ordinary situation, and so far we would and ought to make distinctions between splints: further than this, however, all specification appears groundless and useless.

A SPLINT IS DETECTED by grasping with the hand the horse's suspected leg in the ordinary manner in which we *feel* the leg, and tracing, with the fingers upon one side and the thumb upon the other, the inner and outer splint bones from their heads downwards to their tapering extremities. Any actual exostosis will at once arrest the hand; any rising or irregularity will create suspicion, and lead to closer examination.

THE NATURE OF SPLINT, from what has been already stated, may be said to have been anticipated. Conversion of that which originally was fibro-cartilage into bone, between the splint and cannon bones, constitutes *splint*, be tumour or *exostosis* the consequence, or be it not. Here, then, we have another kind of splint, one that we may call *insidious*, *invisible*, or *insensible* splint. We are not certain that a splint of this latter description ever gives rise to lameness; but that, *in essence*, it is a splint as much as the exostosis is which stands out an inch from the bone of the leg, is most certain. But what is

* Compleat Horseman, Hope's Translation, 2d edit. part ii, sect. 6, p. 95.

THE PATHOLOGICAL HISTORY OF SPLINT? How happens it that this useful fibro-cartilage becomes transubstantiated into useless bone? The immediate or proximate cause we believe to be, increased action, amounting in some instances to inflammation, set up in the vessels of the fibro-cartilage; whereby hypertrophy, or—in such an ossific diathesis as the horse species is known to possess—exostosis, is produced. Any violence or injury to bone, or appendage to bone, it is notorious enough, is in horses especially apt to be followed by exostosis; and if the hurt be to a joint, or in the vicinity of one, by anchylosis, partial or complete, as well: so prone is the economy of the horse to what medical men call ossific inflammation. Commonly, we believe, this increased or inflammatory action originates in, and for a time is confined to, the substance of the fibro-cartilage interposed between the cannon and splint bones: subsequently, in many instances, the periosteum partakes of the same morbid or hypertrophic action; and the consequence is, tumidity and acquired sensibility of that membrane, in which condition, should it be put on the stretch by the formation of tumour (splint) underneath it, pain and lameness result. This is precisely the same thing that happens in nodes in the human subject, and it was the theory upon it that led to the division of the stretched periosteum for the easement of pain, whence the application of periosteotomy for the relief of lameness in splint. It is not, however, in every instance that the osseous deposition which commences in the fibro-cartilage extends beyond the limits of that substance, and, when it does not, no tumour or *visible* splint of course results. Neither is it, perhaps, in every instance that the periosteum, even where tumour forms, participates in the inflammatory action; consequently, no pain is produced in it—not being sensible in the natural state—no lameness arises out of its tensity or augmentation of substance. Hence, as is ordinarily the case, splints exist without giving rise to lameness. What commonly, indeed, happens with horses having splints we believe to be this:—That the increased vascular action does not amount to inflammation, but is simply what may be termed super-alimentary or *hypertrophic;* and that under such influence the tumour of splint rises so gradually that the periosteal membrane, under the same sort of influence, grows as the tumour grows, and so accommodates

itself to the increased superficies it has to spread over, without suffering any tension. And by the absence of inflammation and tension do we account for the generality of horses having splints experiencing no manner of apparent inconvenience from them*.

SPLINTS BELONG TO THE FORE, SPAVINS TO THE HIND LEGS.—The late Professor Coleman used, in his "Lectures," to lay it down as a principle, that "spavin and splint were in nature the same;" the only difference between them being that one was "situated in the *hind*, the other in the *fore* leg." And scientific investigation into the subject will shew that, in so far as regards one description of spavin—the *low spavin*—the Professor was correct in his classification. It can matter nothing in a pathological view whether an exostosis existing between bones—correlative in site, structure, and use—be in the hind or in the fore limb. What is purely a splint in one case amounts to no more in the other, by which we mean, so long as the exostosis is confined to the splint and cannon bones. But, should the tumour be found placed against or having any connexion with the knee or the hock, inasmuch as those joints, though correspondent in respect to situation, differ materially one from the other both in structure and function, such an exostosis would have probably a different effect in the one joint from what it would in the other, and might on that account have a different importance attached to it, and a different name given to it. Therefore, we have no right to find fault with calling a "bony knot" upon or close under the hock a spavin instead of a splint; but surely we have a right to urge objection against the appellation of splint being still continued, when the "knot," instead of being in the ordinary site of splint, is upon or close under the knee. Should we not be justified in giving to such a tumour some other name? Mr. Cherry has given it the name of "spavin in the knee." Solleysell†, whose name for it was *osselet*, was well acquainted with this kind of splint. His description of such runs—"Simple splints," through long and violent exercise, "mount (upwards) to the knee;" adding, "some people maintain that a splint doth not mount upwards, but only burthens and extends itself to the knee, so that

* These remarks apply to ringbone, and to other exostoses as well.

† Op. cit.

Pl. IX.

Fig. 1.

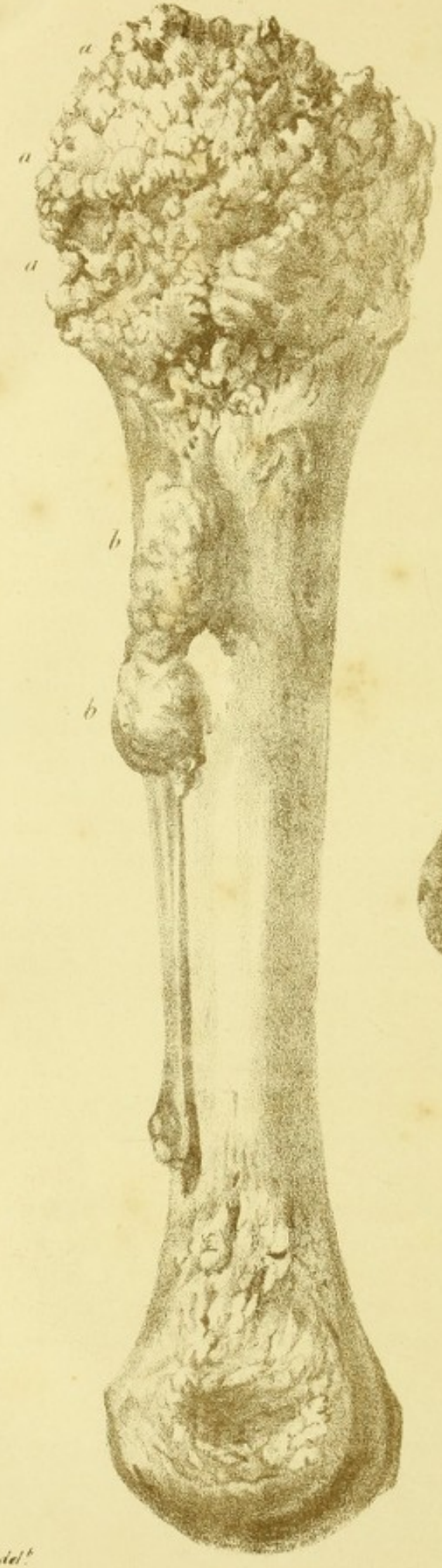



Fig. 2.

W.H. Lowney del.

Osselet. Splint. Carpitis.

# PLATE IX.

## OSSELET — CARPITIS — SPLINT.

(From dried bones in Mr. Field's Museum.)

*Fig.* 1 (*a*, *a*, *a*) represents a beautiful specimen of the disease described under the appellation of OSSELET, at page 257. The osseous tumour upon the inner side of the head of the cannon bone of the near fore leg, from which this drawing was made, is of the magnitude and shape of a very small orange, and exhibits the usual porous rugged aspect of exostoses after maceration and drying. The entire head, as well as the body of the cannon bone to the extent of an inch and a half down, is buried in the substance of the tumour, which likewise extends half way across the front of the bone.

A SPLINT (*b*, *b*) is exhibited upon the same cannon bone, uniting it firmly and fixedly with the internal splint-bone. It is here situated (in the natural bone) about two inches below the osselet. It will be observed that, below the part invested by the tumour of the splint, the small metacarpal or splint bone runs separate from the large metacarpal or cannon bone, there being in the recent subject between them a fibro-cartilage of an elastic nature.

*Fig.* 2 is the head of the cannon bone, represented in *Fig.* 1, with its splint bones still attached, sawn off, and having its articulatory surface turned towards the spectator. To adapt it to the space left for it, the figure has been turned with its outer side upward. The upper (i. e. *in situ*, the outer), two-thirds of this surface, upon which the inferior row of the bones of the knee lie, is smooth and polished, as in health; but the lower (*in situ*, the inner) third is in a state of disease. The articulatory surface upon the head of the internal splint bone is crowded with asperities and porosities, in the midst of which, near to the tumour of the osselet, is one deep rugged excavation. The adjoining (inner) surface of the cannon bone likewise displays similar asperous porosity. This morbid condition of the articulatory surfaces is the consequence of CARPITIS running into ulceration of the articular cartilages and caries of the bones.

it thereby interrupts the motion of the leg; but what way soever it come thither, it is certain that a splint joining to the knee lameth the horse." The "excrescence" *upon* the knee, Solleysell tells us, "is called an osselet:" adding, that such "grows upon the inner side of the knee, never upon the outer;" and that "some horses have two of them, one upon each leg." To splint or spavin, or by whatever name the disease may be called, in the form now under our consideration, there can be no doubt but that too little attention has been devoted by veterinary practitioners: we therefore invite their observation to the subject, while we refer them for further information on it to an excellent article on "Carpitis," published by Mr. Arthur Cherry, in THE VETERINARIAN, vol. xviii, p. 601-607.

THE CAUSE OF SPLINT, now that its nature has been developed, will on reflection strike us to consist in any thing that may occasion undue or sudden pressure upon the splint bone, whereby the fibro-cartilaginous union between it and the cannon bone is stretched or strained, and so has its capillary circulation increased in such manner or measure that conversion of it into bone is the result, followed or not by exostosis as the case may be. Overweight or over-action at a tender age is the ordinary cause of this. In the anxiety there is to bring young horses into use, in the precocious practice of breaking and racing and hunting that exists, we cannot feel surprised at unperfected parts giving way, or being re-constructed in a different manner from the original design. Nature is forced beyond her powers, and, finding that the soft and elastic material placed for a certain wise purpose between the splint and cannon bones insufficient against weight and force, osseous material is substituted for it. Even before breaking or using the colt commences, however, the mischief may be perpetrated. A gallop, a jump, a gambol in the field or the yard, may, even in the foal, occasion the throwing out of splint. Again, a blow or other external injury may produce a splint, though this is comparatively a rare case. To whatsoever cause, however, it be referrible, the fact is notorious enough, that hardly any horse completes his fifth year without splint, either latent or demonstrable; for, as

we have before remarked, exostosis or tumour is not absolutely necessary to constitute splint.

SPLINT IS PECULIAR TO THE FORE LIMB AND TO THE INNER SIDE OF IT.—Not that splint never is seen upon the *hind*, or that the *outer* side of the limb does not on occasions shew splint; but that these are its ordinary sites. And for the reasons—that the fore limbs have more weight imposed upon them than the hind, at the same time that they experience more concussion than the hind. Both which reasons apply to the inner sides of the limb, as compared with the outer, on the principle of the former being nearer to the central line of axis of the body. Added to which, the position of the limbs and the construction of their joints is such that weight pressing from above inclines to the inner sides, and from the articulations of the bones, makes more impression upon those parts.

SPLINT RARELY PRODUCES LAMENESS.—Not only has unaided observation taught this, but it is a fact based upon all the best veterinary experience. Formerly, splints were regarded as great grievances. Solleysell and other old writers viewed them in this light, explaining that they caused lameness whenever they "touched," or "interfered with the back sinews." What, however, did Mr. Apperley, the observant and reflecting "Nimrod," without pretending to any medical knowledge of them, say about splints?—why, that "from splint he had suffered very little. He never remembered *but one* horse out of work from that cause*." Still, is the old notion very prevalent among unprofessional people, that splints often lame horses; and to the groom who thinks so, or to the veterinary surgeon who chooses to prevail upon himself to believe so, is such doctrine often very acceptable and opportune, inasmuch as it serves to help him out of any embarrassment he may feel to say for certain whereabouts the horse's lameness is located. Young practitioners ought to be extremely wary how they pronounce a horse lame from splint; never, indeed, to venture to do so without unquestionable evidence that such is really the nature of the case. They will do well to bear

* VETERINARIAN, vol. x, p. 64

in mind the following narrative, published in THE VETERINARIAN for 1829, in a paper on the subject of "Splint," read by Mr. Henderson, during the same year, to the Veterinary Medical Society :—

"Early in the spring of 1827, a Norfolk breeder brought seven or eight horses to town for sale. I was requested by a gentleman to inspect one of them, of which he had made choice. They were a lot of very clever horses, and all got by old Pretender. There was one rather remarkable circumstance,—they had all splents, but situated on the shin bone, and, as far as regards lameness, they were all perfectly sound. I mean to say, not one of them was lame; and, therefore, I considered them sound. I passed the one in question (a mare), and she always remained sound, and gave great satisfaction.

"A few days after this, a gentleman called upon me to ask if I could recommend a horse to carry a lady. Having seen one belonging to the breeder to whom I have just alluded, I took the gentleman to the stable, accompanied by his friend and servant. After they had all three ridden the horse and approved of him, notwithstanding he had a splent on each leg of large dimensions, which was pointed out to them, they bought him. On the third day I found the whole party at my house, exceedingly angry : the horse was lame, and it was insisted that the dealer should take him back. It appeared that the horse was sent the day before to the College : it had left the gentleman's stables sound, but on arriving at the College he was discovered to be very lame. Mr. Sewell examined him, and said he was lame in consequence of the splent, and recommended the gentleman immediately to return him. When I saw him on the following day, he was still lame ; but I was soon satisfied the splents had nothing to do with the lameness. I had the shoe taken off, and could find nothing wrong in the foot; but, on pressing my thumb in the heel above the frog, the horse felt so much pain that he plunged from me with violence. On closer examination, I found it proceeded from a very trifling crack in the heel.

"After a great deal of angry contention between the dealer and

the gentleman, I persuaded them to consent to my keeping the horse three days, in which time I was to give him a dose of physic, and poultice his heel. If he was sound at the end of that period, the gentleman was to keep him; if he continued lame, he was to be returned. On the third day the horse was sound; but, instead of the party meeting as agreed, the gentleman sent his attorney to demand the purchase-money.

"Although I was perfectly satisfied as to the soundness of the horse, yet, to make assurance doubly sure, I advised the man to take the horse to Mr. Field for his opinion. Mr. Field examined him with the greatest minuteness, and gave a written certificate that he was sound. The dealer then resisted the payment, and an action at law was the consequence. The horse remained in my stable.

"About six weeks after this, Mr. Sewell, accompanied by the purchaser, called to see the horse; when, after having examined and ridden him, Mr. Sewell gave it as his decided opinion, that, although the horse was not lame, he was unsound, *because he had splents;* which splents were (according to Mr. Sewell's notions) precisely the same as nodes in the human subject!"

THE NODE AND THE SPLINT ARE DIFFERENT DISEASES.—"I consider them," says Mr. Henderson, in the same paper, "to be widely different. The one is produced by a local cause, and in many instances purely accidental; the other almost invariably arises from a vitiated constitution, produced by the venereal poison." Add to which, they are notoriously different in intrinsic nature.

SHOULD A HORSE REALLY BE LAME FROM SPLINT, we may expect to find that the splint and the lameness have both proved simultaneous, or thereabouts, in their appearance. An old splint is not likely to be the occasion of a new lameness; neither is it probable that the lameness should much precede the splint. The tumour will, on inquiry, most likely turn out to have been a discovery not made until the lameness was evinced; and, if felt or pressed with the fingers, it will prove warm,—hot even in comparison with the surrounding skin; and the horse will manifest tenderness in it, by flinching or catching up his leg every time the

tumour is pressed upon. With symptoms such as these present, and in the absence of any other palpable cause for the lameness, we may fairly ascribe it to the pain of the splint.

It has already been stated that the lameness arising from splint is referrible to one of two causes, or to both such causes; either to the tension the exostosis occasions to the periosteum enveloping it, or to the general inflammatory condition of the tumour, and of the periosteum perhaps as well. As to the alleged other cause, viz., that of the splint "touching" or "interfering with the back sinew," for our own part we must confess our lack of observation confirmatory of this point: we do not remember ever to have seen such a case; and we certainly, until one shall actually come under notice, must withhold our belief in its occurrence.

CUTTING MAY BE THE CONSEQUENCE OF SPLINT; and this might occasion lameness from time to time almost or quite equal to that which arises from speedy-cut. A horse who has never cut before may do so from having thrown out a splint. For such an evil the remedy assuredly would be the immediate removal of the splint by operation.

IS A HORSE HAVING SPLINT TO BE REGARDED AS UNSOUND? —Were this question to be answered in the affirmative, there would be, we are afraid, remaining but few horses that could be called sound after the completion of their adult period of life. That a horse going lame in consequence of splint, or that cuts from splint so as to occasion himself lameness, is unsound there can be no doubt whatever. Unless, however, one or other of these ill consequences could be shewn to result, no importance whatever need be attached to the presence of splint. It is possible, as now and then indeed happens, that splint may, from its magnitude and conspicuous situation, amount to an eye-sore or blemish: this might somewhat disturb the question of soundness, though we very much doubt, after all, that such case of magnitude simply could be construed as equivalent to unsoundness.

THE TREATMENT OF SPLINT, when it be consequential enough to require treatment, is, in general, a simple affair. Coleman averred that "no man ever cured either a spavin or a splint;" by which he meant it to be understood, that it was not within the

power of medicine to re-convert the osseous or callous matter of splint into the pristine fibro-cartilaginous tissue. What, however, is commonly understood by the *cure of splint*, is either the removal of the lameness it occasions, or the diminution or dispersion of the tumour which constitutes it. After all, however, the splint virtually remains, inasmuch as the union between the splint and cannon bones is not what it originally was, but for ever after remains bony.

Supposing inflammation to be present in or about the splint, topical blood-letting, could we any how manage its execution, would no doubt prove beneficial. After which, the best remedy is a counter-irritant to the skin: and nothing surpasses in efficacy a common blister. This however need not, in the generality of cases, be severe enough to blemish or even disturb the hair. The *acetum cantharidum* is a very good application; and this may be sponged off with warm water eight or ten hours after being applied, which sponging off ought to be repeated, morning and evening, so long as any discharge continues to issue from the blistered surface.

OPERATION may be resorted to, supposing it be an object to get rid of the tumour, either because it occasions cutting or on account of its magnitude. With a fine saw, such as is used for the removal of exostosis in the human subject, the tumour, after being denuded of its periosteal covering, might easily be sawn off.

PERIOSTEOTOMY has been extolled by Professor Sewell as everything we could desire by way of remedy for splint; and, doubtless, there do occur cases in which it may be practised with advantage. In the generality of cases, however, it may be said in respect to this, as to the sawing operation, that since relief is obtainable by much simpler, and we might add, safer means too, what need is there of such comparatively formidable measures? However, should any of our readers desire further information on this part of our subject, they will find it in what we have already given under "Remedies for Spavin," in THE VETERINARIAN, vol. xix, p. 423-5.

## RINGBONE.

The disease we are about to treat on will be found to be another form of *exostosis*, or rather exostosis in another situation, and can only be regarded as "a disease of joint" in so far as it has connexion, direct or indirect, with any joint; though this will be found to be generally the case whenever lameness is a consequence, and sometimes where such is not perceptible.

DEFINITION.—The appellation of *ringbone* is applicable to any osseous tumour upon the pastern bone, but with the greatest propriety to that which takes on the form of a *ring* round the bone: a shape which any continuous osseous deposit is likely to assume from the circumstance of its substratum being the rotund surface of a cylinder.

THE ORDINARY SITE OF RINGBONE is the pastern bone. It is possible, however, but a rare occurrence, for it to be confined to the coronet bone. It occurs more frequently upon the hind than upon the fore leg. And mostly we find the tumour approximating the pastern joint; and where such is the case, and the deposition of callus proceeds, we perceive the tumefaction gradually creeping over this joint, involving as well the bones above and below, more or less, in the disease. Sometimes the tumour occupies the middle of the pastern bone, having no immediate connexion with any joint. Rarely is it seen sufficiently high upon the pastern to disturb the fetlock-joint.

KINDS OF RINGBONE.—These various sites of exostosis have given rise to distinctions into *high ringbone* and *low ringbone;* the latter being the common or ordinary kind. Such distinctions, however, can serve little practical purpose, save in so far as, being high or low, the ossification involves the pastern or fetlock-joint in its spread, and implicates the cavity of the joint in the disease. It is any thing but uncommon to see the pastern joint in a state of anchylosis from ringbone; and in the different veterinary museums preparations enough will be found of the coffin joint from the spread of ossification being anchylosed as well. Any portion, however, of the exostosis which might occupy the lower half of the coronet bone would be included within *the coronary substance* (or coronary

*ligament*), in which situation it might probably not come under the denomination of ringbone.

But, without reference to its situation, a ringbone may be *large* or *small*. There will likewise, as already has had allusion made to it, be found variations in the form of the tumour. Very often, instead of being complete, the segment of the ring is defective. There exists tumour on either side of the pastern without any perceptible prominence in the middle, between the lateral eminences. Again, the tumour may be circumscribed or isolated. All this, however, we repeat, in nowise affects our prognosis or treatment save in so far as the joint, above or below, becomes a participator in the disease.

THE HORSES ESPECIALLY DISPOSED TO RINGBONE are those that have short upright pasterns, and from their low breed are coarse and fleshy legged, the bones of such horses being more disposed to exostosis in general. It was a knowledge of this fact that led Gibson to make the remark, "when a fine high-bred horse happens to have a ringbone, we may conclude it to proceed from some accident rather than from any *natural* fault*;" by which he appears to have meant, predisposition.

THE CAUSES OF RINGBONE may be said to be of three kinds, hereditary, structural, and incidental. Our attention was first drawn to the hereditary origin of ringbone from a remark made by an extensive dealer in horses resident in the north of England, in reply to a question put to him, how it happened that but few ringbones were now met with compared to the number that attracted notice in times past? The reply was, "Because no breeder of horses now-a-days will send a mare to a horse having ringbones." There appeared something like reason and truth in this; and we felt more inclined to attach faith to it when we came to read in Solleysell's work†, "The ringbone is sometimes *hereditary;* though it is usually occasioned by a strain taken in curvetting, bounding turns, and violent galloping or racing."

That *form,* as well as *breed,* is concerned in the production of ringbone, we have sufficient living demonstration. A coarse

* Gibson's "New Treatise on the Diseases of Horses." 2d edit. p. 268.

† "Compleat Horseman." Hope's Translation. 2d edit. part ii, p. 122.

or half-bred, fleshy or bony-legged horse, with short and upright pasterns, is, we have observed, the ordinary subject of the disease; and there exist satisfactory reasons why we should expect him to be so. The pastern and coffin bones constitute the nethermost parts—the pedestals—of the columns of bones composing the limbs; and, being so, they receive the entire weight and force transmitted from above. The pastern, when long and oblique in position, receives the superincumbent weight in such an indirect line, that, bending towards the ground with the fetlock, nothing like jar or concussion follows. The very reverse of this, however, is likely to happen every time the foot of a limb, having a short and upright pastern, comes to the ground. In it, instead of the weight descending obliquely upon the sesamoids, and the fetlock bending therewith, it descends *direct*, or nearly so, upon the pastern, making this bone entirely dependent upon the bone beneath it—the coffin—for counteractive spring; and should any thing occur to destroy or diminish this spring, or to throw more weight, or weight more suddenly, upon it than it (the coffin bone) can counteract, jar of the whole apparatus ensues; and an effort of Nature to strengthen the parts, by investing them with *callus* and ossification, is likely to be the ultimate result. For, we would view ringbone, disease though it most assuredly must be called, as frequently in young horses a resource Nature seems invariably to fly to whenever the (pastern) bones and joints are found unequal to the exertions or efforts required of them. And the reason why ringbone occurs oftener in the hind than in the fore limb, will probably be found in the greater stress or strain the hind pasterns undergo in unbacked young horses, particularly in such acts as galloping, jumping, &c., exercises which they are likely to take of their own accord while running out at pasture. Peculiarities of breed and form, however, may be looked upon as *predisposing causes:* we have yet to seek.

*The exciting causes* of ringbone. These may be said to consist in any acts or efforts of speed or strength productive of concussion to the bones of the pastern. Some have ascribed the presence of ringbone to "blows." Undoubtedly, a blow upon a bone would be very likely to produce exostosis; but the pastern, the hind pastern in

particular, is rather an unlikely part to be struck. After inflammation from any cause, even after that produced by a common blister, very often, we know, an enlargement of the pastern will be left; and though this is not called ringbone, it may be regarded as something extremely analogous to it.

IN NATURE, ringbone is but a species of exostosis. A bony tumour, which in one situation constitutes ringbone, in another constitutes splint, in another spavin. Yet the three differ, as well in their origin and in their effects. Ringbone has an external origin; and though it may from spreading interfere with the motion of a joint, still does it not, that we know of, produce any affection of the synovial membrane. Spavin, on the contrary, seldom confines itself to the external or ligamentary tissues, but affects the synovial membrane as well. And splint originates in the very joint—the *fibro-cartilaginous*—which it afterwards blocks up and grows from.

Ringbone is either a *ligamentary* or a *periosteal* affection, or both. From the situation in which we commonly find it, and from the causes which are known to give rise to it, we believe it usually to be ligamentary in its beginning; though, when once formed, and given to spread, no tissue, save the tendons, escapes conversion to contribute to the osseous mass; and even the tendons themselves have been known to become partially ossified. In fact, when the exciting cause has been great, or when there exists an evident proneness in the constitution to ossific action, such is the extensive and varied form ossification takes on, that we can hardly say where it will make an end, so long as any soft tissues yet remain to be converted. Writing in the year 1823 on this subject, with 150 morbid specimens of the kind upon the table before us, we find we were led at the time to make the following remarks:—

"By far the most common seats of (ossific) disease are the pastern, coronet, and coffin bones. Out of the (said) 150 specimens there are

"5 of complete anchylosis of the fetlock joint.

"40 of complete anchylosis of the pastern joint.

"18 of complete anchylosis of the coffin joint.

"The others are either simply encrusted, more particularly

# PLATE X.

## RINGBONE — NAVICULARTHRITIS — OSSIFIED CARTILAGES.

(From dried bones in Mr. Field's Museum.)

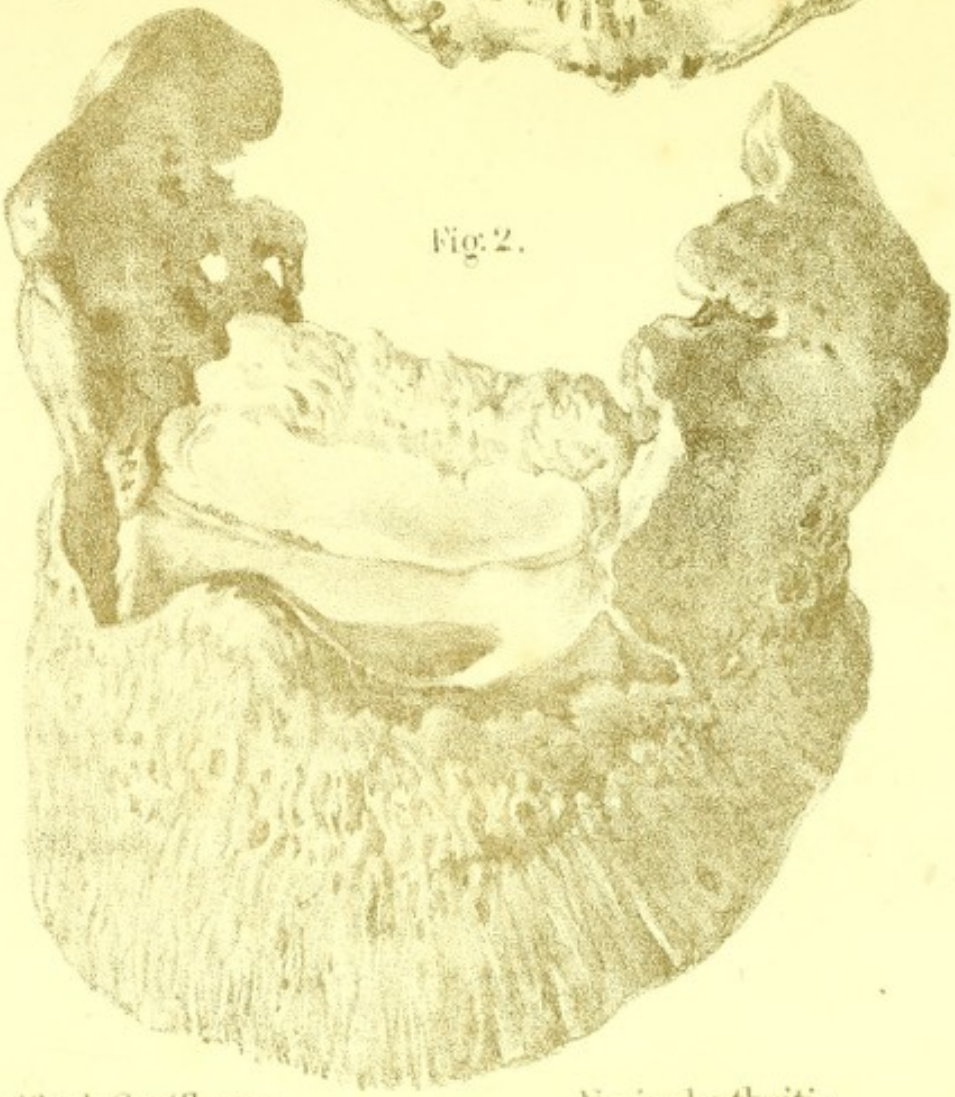
*Fig.* 1 represents a ringbone (*a, b, c, d*) more prominent on one side (*a, b*) than the other; but most conspicuous (in the dried bone) in front. The bony tumour extends completely round the fore and lateral parts of the pastern and coronet bones, uniting them together in ossific (and therefore immoveable) union, and thus completely anchylosing the joint naturally existing between them.

*Fig.* 2 is an admirable representation of ossification of the cartilages of the foot, with the navicular bone *in situ*, having its superior surface in a normal condition; notwithstanding its inferior surface (exhibited in *Fig.* 3) shews a deep caries in its middle, the effect of navicularthritis. In fact, this figure displays in the dried bone the disease represented in PLATE VII in the recent foot.

Pl. X.

Fig. 3.

Fig. 2.

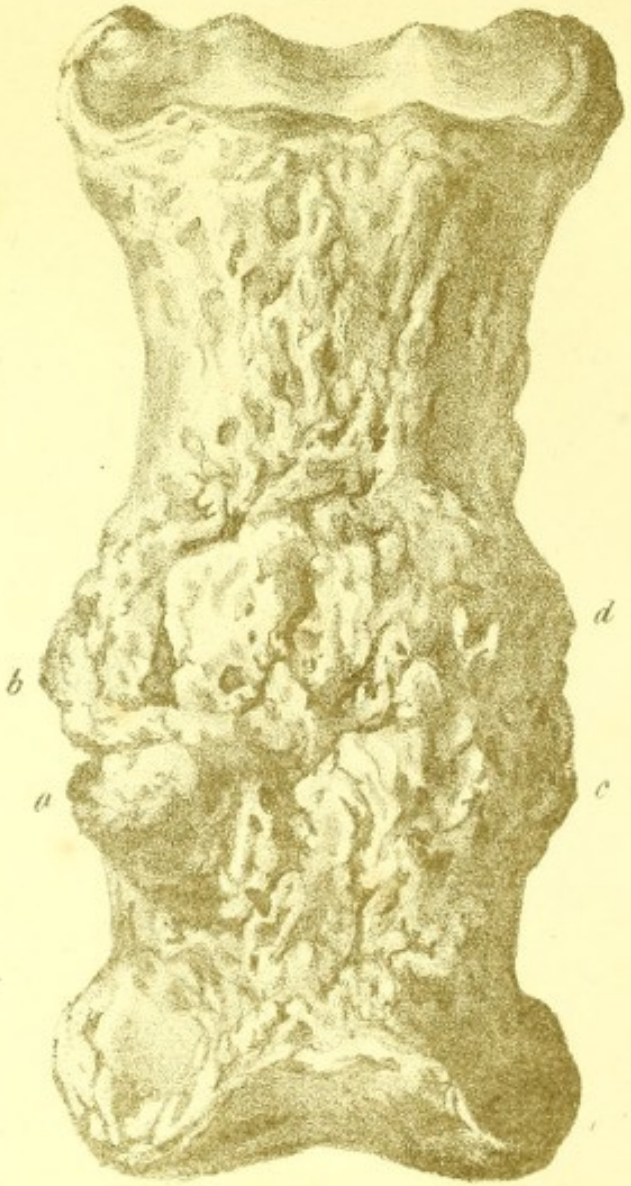


W.H. Kearney del.

Ossified Cartilages.

Navicularthritis.

Fig. 1.




Ringbone.

around their extremities, with layers of new bone, or are variously deformed by exostoses of different shapes, many of which are very large, and several of them confined to one side. Upon one of the pastern bones a complete osseous ring is formed, the result of ossification of the theca of the flexor *(perforatus)* tendon. In nearly all, the disease appears to have taken its rise at, and to have spread from, the pastern joint; there being but few specimens in which some (osseous) accretion is not to be observed *around the lower end of the pastern bone* and *the upper one of the coronet bone;* which is the kind of deposition that gives rise to ringbone*."

Here are facts which not only demonstrate the more common site of ringbone, but reflect a good amount of light upon its origin and nature and tendency as well. While the *nidus* of ringbone appears to be the ends of the two bones concurring to form the pastern joint, there exists a manifest disposition in parts adjacent to take on similar morbid action. Jar or concussion would, as we have endeavoured to shew, be likely to affect this joint, and, in case such amounted to injury, would excite inflammatory action, and this would be followed by ossification. The same result, viz. ossification, would be likely to ensue even though *weakness* only was experienced in the joint; Nature, as we have observed on another occasion, consolidating the parts to increase their strength. And, as many of the afore-mentioned specimens indicate, to such an extent is this ossification sometimes carried, that pastern, coronet, and foot, are involved in one deformed porous mass of ossification.

LAMENESS IS NOT AN ORDINARY CONSEQUENCE OF RINGBONE. Whether the tumour be productive of lameness or not will depend,—First, upon the presence of inflammatory action in it; Secondly, upon any tension it may create in the periosteum covering it; Thirdly, upon its proximity to a joint and consequent impediment it may offer to the motions thereof. In general, in young horses, ringbone forms so gradually and imperceptibly, that it is accompanied neither by inflammation nor by tension. It may, however, and frequently does in the course of time, so increase and spread that the pastern joint gets cramped and confined in its action, and ultimately becomes a fixture; and the consequence is,

* "Elementary Lectures on the Veterinary Art," vol. i, pp. 335-6.

lameness, or some approach thereto such as is familiarly known under the appellation of "stiffness."

The pastern and coronet bones—the two first phalanges of the foot—are, though of different magnitudes, so similar in form and use, that anybody looking casually at them might suppose that one continuous bone would have answered the purpose of the two; and so to a certain extent, perhaps, it might; but not to the extent to have afforded that flexibility and play which the pastern, as it is, possesses, and which is more particularly exhibited in oblique-pasterned horses at such times as they are observed cantering, or galloping, or curvetting upon their haunches. Then it is especially that the pastern joint is brought into action, and that a horse without such a joint, or with one in a stiff state from ringbone or other cause, would be found to fail. Not only, however, in such acts as these, but even in ordinary going, is the pastern joint of use, and will there be a difference in action when such is rendered immoveable; though that difference may not be detectible by the eye of the common observer, or may not, in his judgment, amount to any thing beyond "stiffness."

It is said, that sometimes lameness from ringbone becomes observable *antecedently* to the appearance of the tumour. Mr. Spooner (of Southampton), in his work "On the Foot and Leg of the Horse," informs us—"It often happens that a horse is lame, and it is somewhat difficult to discover the seat of lameness; but after awhile a ringbone forms." We are at a loss at the moment to recall to mind a case where such has occurred in our own practice: at the same time we have no right to question a fact which bears a strong analogy to what we ourselves have stated happens not so very infrequently in spavin, and we may add, we believe, in splint as well.

The *magnitude* of a ringbone is likely to influence any lameness that may attend it, only so far as the tumour may occasion tension of the periosteum, or may abut against or spread upon any contiguous joint. This latter was Solleysell's view of the matter, and observation has shewn it to be a correct one. "The longer the ringbone continues," says this observant writer, "it descends lower upon the coronet (pastern ?), and, increasing to a considerable

bigness, makes the horse lame; from whence 'tis plain that *the greatness of the danger that attends it must be measured by the nearness to the coronet**."

Generally speaking, actual or palpable lameness is not an accompaniment of ringbone: but there occur few cases in which stiffness, to a greater or less degree, of the pastern joint is not perceptibly present; though, as we have had occasion before to remark, this "stiffness" is not commonly noticed, or, if noticed at first, by use wears off to that degree that, being in a hind leg, after a time it is not by the ordinary rider felt or observed at all. In chronic cases of ringbone and other exostoses, in cases in which all inflammatory or hypertrophic action has passed away, it is surprising, after medical treatment has done its best, what use, when it is not carried to abuse, brings about for such horses, by way of creating motion in joints partially or completely stiff from anchylosis, and particularly when such has not been of too long standing.

THE TREATMENT OF RINGBONE, being by modern practitioners of veterinary medicine reduced to the principles laid down for the treatment of exostosis in general, has in their hands not only become divested of that cruel and useless practice, "drawing the sole," as recommended by Solleysell and others, but has undergone some improvement as well. It will occur to any veterinarian setting about to treat a case of the kind, that the object with which treatment is instituted should be the paramount one in his mind; seeing that he will meet with many cases of ringbone that call for no medical treatment at all. If lameness be present, we must inquire wherefrom the lameness proceeds, whether from any existing inflammation, or from over-stretched periosteum, or from proximity of the exostosis to, and consequent interference with, any joint or sinew; all which considerations may, in kind or degree, modify his plan of treatment.

For the relief of periosteal or ligamentary inflammation productive of callus, or for recent osseous effusion, nothing surpasses the local abstraction of blood, succeeded by a blister upon the part. Any vein of the limb—the principal one is generally to be preferred,

* Op. cit. sect. ii, pp. 121-122.

either the *femoral* or the *plat vein*—may be opened, and at the same time a brisk cathartic may be given; and as soon as that has worked off, a blister may be applied to the ringboned pastern; the part being first well heated, and particularly in cold weather, by previous soaking in hot water, or by a spongio-piline poultice.

When, however, the case, instead of being a recent is a chronic one, one consisting in hard and solid exostosis, and from which most, if not all, superficial at least, inflammatory action seems to have disappeared, it would be folly to expect that any remedies of an antiphlogistic character could do any good. The lameness here may arise from some deep-seated morbid action, probably in the vicinity of the pastern joint; and in such a case nothing is likely to be of so much service as potent counter-irritants in the shape of strong blistering, and sometimes in that of firing. Irritating applications to the skin, such as ol. thymi, antimony ointment, &c., are found little beneficial; and such as have a tendency to stimulate the absorbents into action, the iodine and mercurial ointments, are hardly applicable in a case like this. They may, when the horse is in a state to continue his work, be used to promote absorption of any remaining tumour; they will exert, however, but trifling power in the cure of lameness. Solleysell made the remark, that on colts and young horses ringbones "insensibly wear off of themselves*;" and he might have added, that not only ringbones, but spavins and splints, and other exostoses, as horses advance in years, likewise "wear off." Independently, however, of the influence of age on such like enlargements, it is, we would repeat, truly astonishing what good effect work, or forced use of the diseased joints, has on them; in proof whereof we might instance the many ringboned and spavined horses every-day's observation brings to our notice working in the streets of London and other populous towns; and it is incredible what labour such stiff-jointed or partially stiff-jointed horses are able to perform so long as the *cavities* of their joints remain uninvaded by disease.

PERIOSTEOTOMY.—Professor Sewell, whose highly commendable philanthropy has led him on all possible occasions to be the warm advocate of this operation, recommends its adoption in ring-

* Op. cit. vol. ii, p. 269.

bone, with the reservation that the tumour has no connexion with the *joints* or *ligaments* in the vicinity: then, says the Professor, may "the periosteotomy knife be employed with safety and success*." We should fear this limitation would very much restrict its applicability.

* In the discussion FIRING *v.* SETONING, VETERINARIAN for 1837, p. 173.

## DIRECTIONS TO THE BINDER.

PLATE I to face the Title, with Description before it.

PLATE II, to face p. 72.

PLATE III, to face p. 73.

PLATE IV, to face p. 78.

PLATE V, to face p. 80.

PLATE VI, to face p. 54.

PLATE VII, to face p. 175.

PLATE VIII, to face p. 219.

PLATE IX, to face p. 257.

PLATE X, to face p. 266.

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## ERRATA.

At page 84, line 22, *for* "anatomico-philological," *read* anatomico-physiological.

At page 234, heading, *for* "Shoulder Lameness," *read* "Shoulder JOINT Lameness."

Published by Longman & Co., price £1.

# THE ANATOMY OF THE HORSE, embracing the STRUCTURE OF THE FOOT.

By WILLIAM PERCIVALL, M.R.C.S.,
Veterinary Surgeon in the First Life Guards;
Member of the Apothecaries' Company;
Author of "Veterinary Lectures," &c. &c.

Also, by the same Author,

# HIPPOPATHOLOGY; or, SYSTEMATIC TREATISE on the DISORDERS and LAMENESSES of the HORSE.

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