

MAGNER'S
ABC
GUIDE TO
SENSIBLE
HORSE-SHOEING
—
ILLUSTRATED

Wm. A. Hooker



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MAGNER'S
A B C GUIDE

TO
SENSIBLE HORSESHOEING

A SIMPLE AND PRACTICAL TREATISE ON
THE ART OF SHOEING HORSES. INCLUD-
ING CHAPTERS ON—METHODS OF MAK-
ING A HORSE STAND TO BE SHOD. . . .
HOW TO TELL THE AGE OF A HORSE,
ETC., ETC.

OVER 200 ILLUSTRATIONS
SEVENTEEN COLORED PLATES

BY

D. MAGNER, D.V. S.

*Author of the "New System of Taming and Educating Horses,"
"Standard Horse and Stock Book," etc.*

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BAD TO SHOE.

THE average of these cases are very simple and easy to manage, but there will occasionally be found among them horses of the most difficult character to control. Ordinary cases of this character were of almost daily occurrence, and usually required but a few minutes' time to make them stand gently to have the feet handled as desired. But we were liable at any time to have a horse of this character that would test our power to the utmost, and such cases frequently made us a great deal of trouble. In the chapter on "Colt-Training" I have given instructions on



FIG. 255.—As a Vicious Horse will Sometimes Act while being Shod.

handling the feet, page 108, which may be referred to in connection with this.

By the use of a little patience and tact, it is rare that even very sensitive colts cannot be made to submit the feet to be handled and pounded upon as desired; and once done, unless there is some special cause for disturbance, it can always be done. It is true there is occasionally a young horse that is naturally so wild and vicious as to resist all ordinary good management in the effort to take up and handle the feet; but with our present methods of treatment, even these cases submit readily to control in a short time.

If a colt of ordinary good character, give a short lesson with the First Form of War Bridle, when the feet can be taken up without difficulty. The efficiency of this simple method of control, in making

colts submit to be ridden, led, or handled, is very remarkable ; and in no respect is it greater than in allowing the feet to be taken up and handled. Pull right and left sharply a few times with the War Bridle, or sufficiently to make the colt come around without being pulled upon ; then step back, holding the cord rather tight, pass the right hand lightly down the hip and leg to the fetlock, and lift the foot gently ; at the same time, with the left hand, press hard against the hip, so as to throw the weight of the body upon the opposite leg, which will enable taking up the foot more easily. If sensitive, lift it but a few inches at first, and then let it rest again upon the ground ; then again slide the hand lightly down the limb, and lift a little higher than before, repeating until in a position to rest upon the knees with the gambrel under the arm. With the right

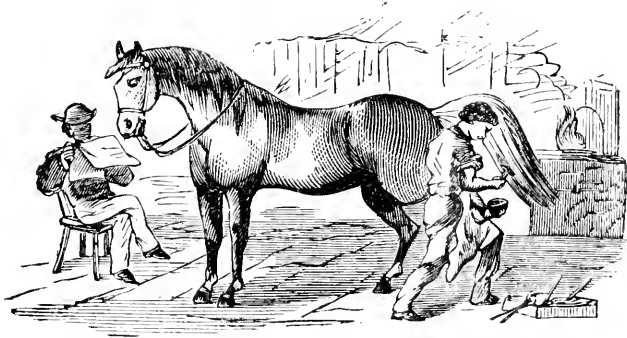


FIG. 256.—As the Horse will Stand after Treatment.

hand hammer the foot lightly, put it down and take it up a few times, then stop and caress.

This point made, bring the foot gently forward, in position as if to clinch down the nails. Should the colt at any time jerk or pull the foot away, let go and give a few sharp pulls with the cord, and go on as before until the foot can be taken up and hammered upon as desired. The opposite foot must be treated in the same way. To take up the fore foot, rest the left hand upon the shoulder, pass the right lightly down the limb to the fetlock, and at the instant of lifting the foot, as before explained, with the other hand press upon the shoulder to throw the weight upon the opposite leg, which will relax the near one, and make it easy to be taken up. Take up and let down a few times, tapping it lightly, and repeat until it can be pounded upon quite hard ; then bring forward upon the knees, and proceed the same as before. The foot should not be held at any time so long, or grasped so awkwardly, as to produce fatigue, or

frighten so that it would excite inclination to pull away. By being careful at first but little difficulty will be experienced in making any ordinary colt submit the feet to be taken up and hammered upon as desired. Should the colt be so wild or vicious as to resist the War Bridle, subject to Second Method until so dizzy and helpless that he stops turning.

While the head is still tied around, as before, rest one hand upon the hip, pass the other quickly from the gambrel down to the fetlock, and lift the foot forward. If submitted to, but little more need

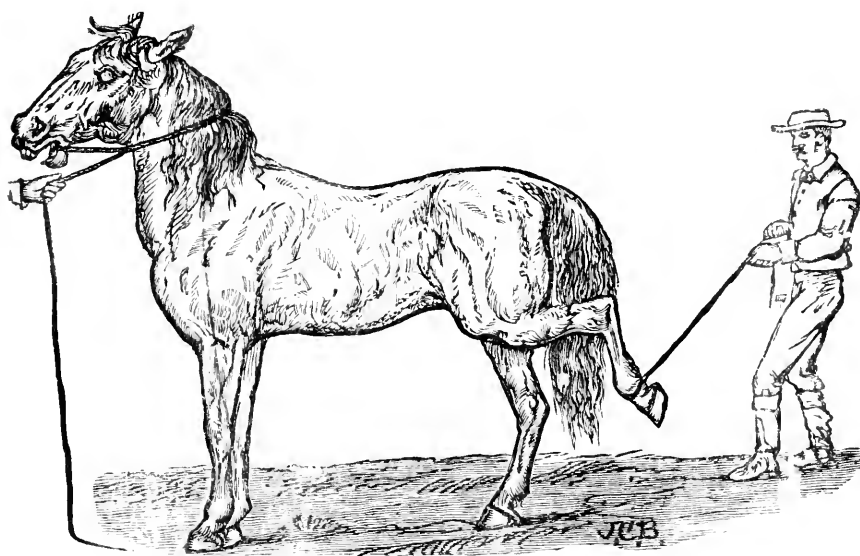


FIG. 237 - Pulling the Foot Back while Controlled with the War Bridle.

be done ; but if resisted, send around again until helpless, when the effort should be repeated. If submitted to, untie the halter and repeat the handling. Sometimes, after the head is given freedom and the dizziness passes off, the colt may, unexpectedly, kick violently. To avoid being struck, stand well forward, and far enough out from the hip to be out of range of the foot, and, as before, while balancing the body by resting the left hand upon the hip, with the right cautiously, but firmly, lift the foot forward. Should the colt kick now, the hand will simply be carried back with the foot without doing harm. When the foot is freely submitted, step forward so as to come well under the hip, bringing the foot upon the knees. If in this position he kicks, the foot will simply be thrown out and back from the knees, so that there will be no danger of ac-

cident. If the case is still unmanageable or doubtful, put on the double-draw hitch form of War Bridle. While an assistant is holding the cord (see Fig. 257), buckle a rein, or tie a cord around the foot below the fetlock. Get directly behind, out of reach, and pull the foot back. This will usually be responded to by a sharp kick, or the foot pulled forward with energy. If so, let the War Bridle be jerked upon once or twice as punishment. Repeat the pulling at short intervals until the foot will finally be given back freely,

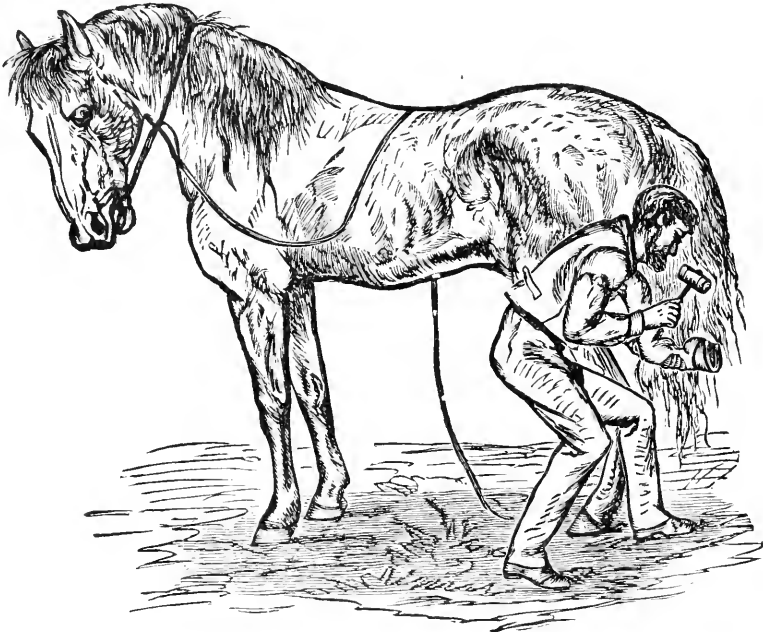


FIG. 258.—The Colt as He will Stand after Treatment.

and rested upon the toe. Now step forward to a point a little back of the shoulder, with one hand take a short hold of the strap, at the same time resting the other upon the horse's back, and pull the foot forward repeatedly. Usually this will be submitted to; if so, catch the foot and bring it forward and back, to test its flexibility or submission to control. If, however, it is resisted, or the control is still doubtful, pass the strap over the neck, back between the fore legs, and up under the part over the back. Pull short enough to bring the leg well forward under the body, and tie into a half-hitch knot. This will bring the weight and pulling of the leg directly across the back and neck in a way that disables greatly.

Next touch or lightly slap the leg until it is submitted to freely,

when more freedom should be given by giving loose a little. When freely given to the hand, untie, carry the leg back and forward to test it, when take in both hands and pound upon it, as before explained. After the foot is submitted unconditionally, keep on handling for some time, giving apples, etc. The opposite foot must, practically, be treated in the same manner, and according to the degree of resistance.

The blacksmith's shop is no place in which to handle colts. The fire and hammering add to the general excitement, and greatly increase the difficulty of making the horse submit the feet. In addition, it is not the blacksmith's duty to expose himself to be injured or hurt, or to lose

time in trying to shoe a wild, unbroken colt. Such colts should always be handled at home until proved gentle, which, by following out the instructions given, will not be found a difficult task. I have often found horses that, in consequence of fear or abuse in a blacksmith's shop, could not be shod there. I will refer here to but one of many cases in point.



FIG. 259.—Simplest Method of Making a Nervous Horse Stand to be Shod.



FIG. 260.—Blindfolding a Nervous Horse to be Shod.

apron became an object of intense fear. In a short time the colt became so violent that he would not allow any one with an apron to go near him.

During my early experience, while at a town in Southern Pennsylvania, a horse was brought forward for treatment that could not be shod, his particular cause of resistance being fear of the blacksmith's leather apron. When first taken to the shop for the purpose of being shod, the hammering and flying sparks greatly excited him, and as the smith came forward to take up his foot, the appearance of his leather

The owner and smith concluded they had a sure thing in this case with which to beat me, and came twelve miles for the purpose, leading the horse. They said they would both join the class provided I would make the horse sufficiently gentle to allow a man with a leather apron on to go near enough to handle him. At the same time they told their friends secretly that I could do nothing with the horse, and that they came there for the express purpose of showing me up as a humbug. All felt so sure that the horse would beat me that a large number joined the class to see the fun, expecting of course they would get their money back. I subjected the

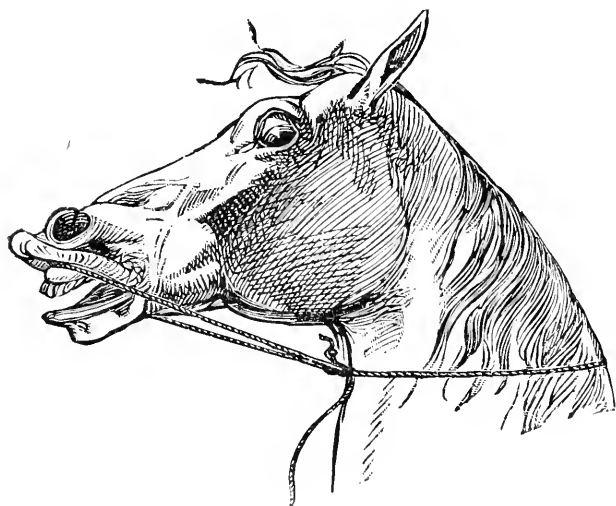


FIG. 261.—As the Cord may be Adjusted for Control of Simple Cases.

horse quickly to the Second Method and War Bridle, not requiring in all more than six or eight minutes, when he could be handled without the least difficulty, being perfectly regardless of the apron. I ordered the horse taken to the shop, and accustomed to the sparks and hammering;

to be treated kindly, giving apples, etc. also to be shod a few times outside the shop, to make sure of his docility.

To show the simplicity of what may appear difficult, it is worthy of mention that at the same place, a party of three men—a father and two sons—were employed over three hours in trying to lead a six-year-old colt, pulling, pushing, and backing him by main force, to the place of exhibition, a distance of not over one fourth of a mile. The conditions were that I must make him follow me freely across the barn floor. A few sharp pulls with the War Bridle were sufficient to make the horse run after me, not requiring in all more than two minutes, proving so conclusively the ignorance and bad management of the parties that they were laughed at and ridiculed by the entire class. (See Fig. 155.)

CONFIRMED IN THE HABIT.

As the main object in the management of most cases is to make them submit to be shod with the least trouble, I will first give the simplest treatment for doing so. Indeed, this simple treatment, with a little care, will often be sufficient for the control of even very bad cases.



FIG. 262.—Simple Method of Using the Cord for the Control of Horses Bad to Shoe, Harness, etc.

If there is resistance to this, try blindfolding. Tie a blanket, or something convenient, over the eyes, at the same time rubbing the nose, etc. With care on the part of the shoer, cases that have proved very difficult to shoe will submit at once to be shod as desired. If these expedients fail, put on the cord, the First, or Double-Draw Hitch Form, and make the horse feel its power by giving a few sharp pulls right and left. Then step back to the hips, pull the head around a little, keeping the cord taut, and take up the foot, punishing instantly for any resistance. Or, stand to the head, and keep the cord drawn rather tight to hold the attention of the horse while an assistant takes up

If the horse is very sensitive and excitable, but naturally gentle if given his own way, a great deal, of course, depends upon the good management of the shoer, but as much on the aid of the owner. Try the following course: When the smith is in position, and ready, his left hand resting on the horse's hip, let the owner, or some good, quiet man, catch the horse's ear with one hand, squeezing or twisting it a little; with the other stroke the nose, or grasp the muzzle, and hold firmly but gently, at the same time talking to the horse kindly.

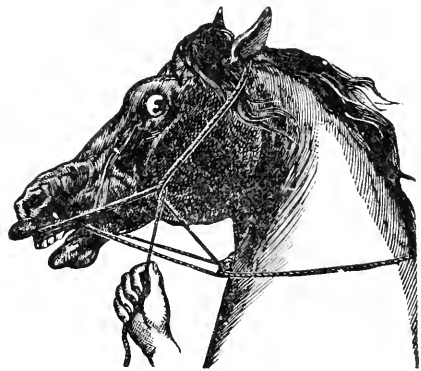


FIG. 263.—Method of Putting on the Cord when the Horse Proves Very Stubborn.

the foot. If the horse is very stubborn, bring the second turn of the cord over the upper jaw, under the lip. This part being very sensitive, a slight pressure hurts so severely as to disconcert the horse

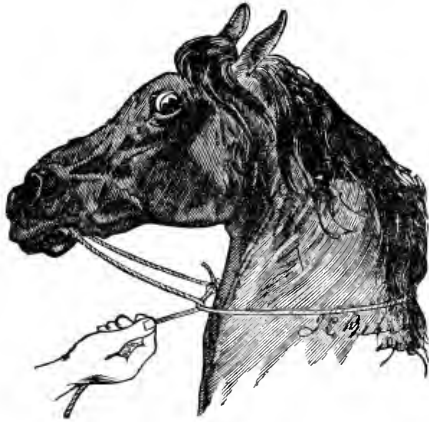


FIG. 264.—Showing the Manner of Letting up on the Cord as the Horse Submits.

sufficiently to make him submit. Or the cord, Second Form, can be put on, with the loop brought over the upper jaw, and pulled sufficiently taut to force submission. In either case, gradually let up as the horse submits. In no case should the cord be held tight more than half a minute at a time.

The four-ring bit properly used will sometimes work extremely well in making a horse submit to be shod. The bit is put into the mouth with an ordinary head-piece, and the strap closely adjusted across the nose. Now tie the end of the cord to the near ring, pass it around and tie to the opposite one back of the jaw; then pass over the neck, well back and down behind the jaw, as for second form of War Bridle. Now, by pulling down upon the cord, the joint of the bit will be forced up against the roof of the mouth, which hurts so severely that the horse is at once disconcerted, or disabled sufficiently to permit the foot to be taken up. The amount of pressure or force of the pulling must be regulated according to the resistance. If there is submission in a short time, the lightest pressure will be sufficient to make the horse stand quietly to be shod. There is this to be said about this method of treatment, as well as that of the War Bridle: If it works at all, it seems to work so well as to leave nothing to be desired. But if it fails, the failure will be equally marked. It is, however, but just to add that though in many cases failing, the power of the War Bridle

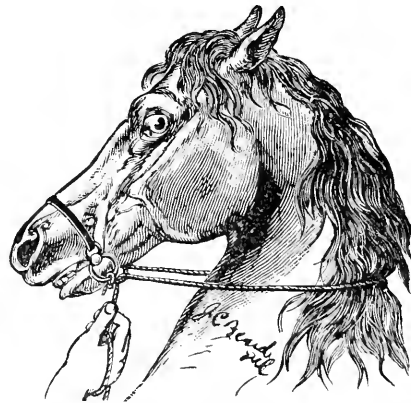


FIG. 265.—Four-ring Bit. Method of Pulling down on the Cord.

or four-ring bit, when properly used, is sometimes wonderful, the horse at once submitting unconditionally.

Tying the head to the tail so as to keep the head bent around pretty well, will sometimes make a horse submit to be shod, but not often. This means, with that of putting the cord under the upper lip, which I copy below, has been of late so extensively published as an infallible means of making the most vicious horses stand to be shod, ridden, etc., that I think it necessary to give some explanation of them here:—

“MASTERING VICIOUS HORSES.

“Recently an exhibition was given at the corner of Ninth and Howard streets of a new and very simple method of taming vicious horses, which is claimed to be superior to any in use. The first trial was with a kicking and bucking mare, which, her owner says, has allowed no rider on her back for five years. She became tame and gentle in as many minutes, and allowed herself to be ridden about without a sign of her former wildness. The means by which this result was accomplished consisted of a piece of light rope, which was passed around the front jaw of the mare, just above the upper teeth, crossed in her mouth, and then secured back of her neck. It is claimed that no horse will kick or jump when thus secured, and that a bucking horse, after receiving this treatment a few times, will abandon his vicious ways forever. A very simple method was also shown by which a kicking horse can be shod. It consisted in connecting the animal's head and tail by means of a rope fastened to the tail and then to the bit, and drawn tightly enough to incline the horse's head to one side. It is claimed that it is absolutely impossible for a horse to kick on the side of the rope. At the same exhibition a horse which for many years had to be bound on the ground to be shod, suffered the blacksmith to operate on him without attempting to kick while secured in the manner described.”

This is from the same piece as the Maine man's method of breaking a balking horse, referred to in “Balking.” As I brought both these methods of treatment into use, and have had almost unlimited experience with them, I think I am able to determine their value with more ac-

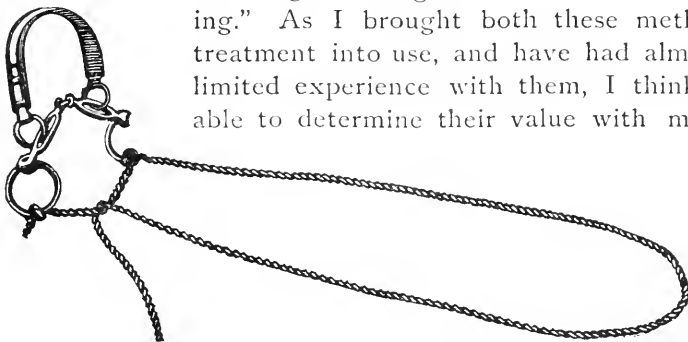


FIG. 266.—The Cord as Used with the Four-ring Bit.

curacy than it is possible for inexperienced persons to do. While they will secure the control of many, even quite bad cases, as ex-

plained, they cannot by any means be depended upon for the control of really difficult cases. They were used by me almost daily under circumstances like the following :—

After subjecting a horse to the Second Method, while still tied, the effort would frequently be made to take up the foot ; but it was rarely, unless thoroughly subdued, that the foot would be submitted. The same is true of the cord, or War Bridle. It was often a matter of considerable importance to be able to control some cases quickly, and I would, as an experiment, try the most simple and di-

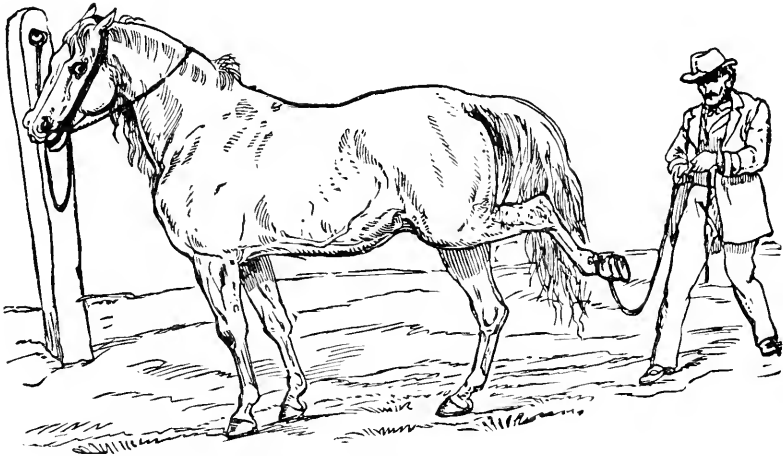


FIG. 267.—Pulling the Foot back to Test the Horse's Submission.

rect methods of management. I have experimented in this way thousands of times before and after regular subjective treatment with the War Bridle, and cannot regard it as more than palliative, since it would, in a great many cases, prove entirely inefficient. Even with the Double-Draw Hitch, its most powerful and effective form, which until recently we kept a secret, and used only as a reserve, we could not depend upon it. Twenty-five years ago the War Bridle was my principal resource for controlling colts and bucking horses to ride. But it is entirely inferior to the Second Method for the control of bad cases. Simply tying the head to the tail, and sending the horse around until dizzy, then mounting from the outside, so as not to get entangled by the strap, the horse will be found so helpless that he cannot buck ; should he attempt it, he would simply be carried around the more rapidly until submissive.

The matter of breaking bucking colts and horses was a common, and, sometimes, a very formidable difficulty to meet. One of the

worst cases I ever came across was a ten-year-old mule in Central Mississippi. It was proved absolutely impossible, even by the restraint of any kind of rigging, to mount or keep upon this brute's back. In fact, the case was so bad, and the people felt so sure that I could not ride her, that they made up a large class for me, knowing they would get their money back if I failed to do so. I simply subjected her to the Second Method sharply, and in less than fifteen minutes rode her as I pleased. This would have been impossible by the palliative means referred to. She was a good representative of the mustang nature. This is the only method of treatment by which

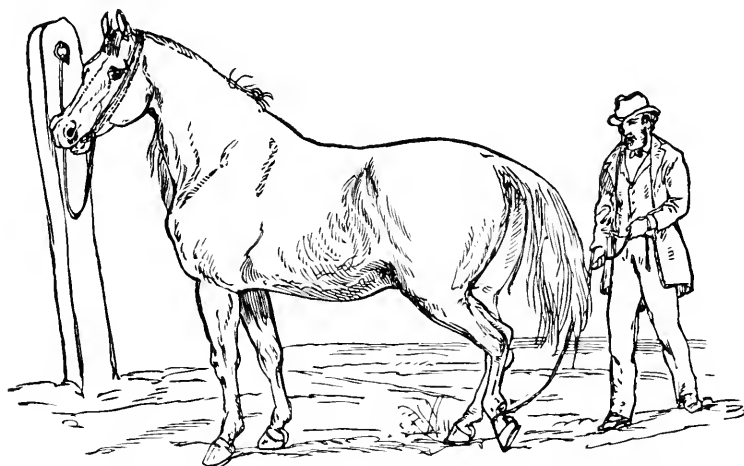


FIG. 268.—As the Foot will be Rested upon the Ground after Submitting.

a strong, determined buckner can be safely and easily mastered.

It was frequently the case that we would have for our main subject a horse that was particularly bad in shoeing. As a test of success, it would be often required that the horse be shod in a blacksmith's shop. Now after being subjected to regular treatment, there would usually be but little trouble in taking up and hammering upon the feet as much as desired at the place of treatment; while we would sometimes have all we could do, even by the most severe use of the War Bridle, to handle such in the shop.

TREATMENT FOR VERY VICIOUS CASES.

Very much depends upon the disposition of the horse and the treatment pursued. In most cases the following will be found easy and effectual: Subject to the Third Method, using more or less pressure, according to the case. While the cord is on, attach a

strap or rein to the hind foot, and pull back as previously explained. At first there will usually be great resistance, the horse kicking with great spitefulness, or pulling the foot forward energetically. But however much he may resist at first, it must not be accepted as a cause for discouragement. Simply keep pulling the foot back at short intervals until there is no resistance. When given freedom, it will be rested upon the toe, then pull forward and back as before explained. In some cases it may be necessary to tie forward by bringing the strap over the neck, back between the legs, and making fast to hold the foot firmly until all resistance is overcome. Treat the opposite foot in the same manner.

This was the treatment pursued by us with the most success in the management of the worst cases. A good deal of course will depend upon the use of tact and good management, as before explained. A coarse-grained, passionate man can very soon undo a great deal of good work. In the management of these critical cases a great point is made by having a good, quiet man to stand at the head and stroke the nose, and it is needless to state that the smith should be a man of considerable patience; but when the case is serious it should never be shod in the shop. All this should be done where free from the excitement and annoyance of such a place. This is a point I would particularly impress upon the reader—to attend to accomplishing your end well at home, then take such precaution as you can without exciting or annoying the horse much when it becomes necessary to shoe him at the shop.

To give an idea of the power of this treatment when properly applied, I will refer to its effects upon a few special cases.

At Bellows Falls, Vt., a paper-maker owned a fine horse, which, though otherwise very gentle, was extremely hard to shoe. A traveling horseman of much experience and a great deal of pretension, visited the place and made a small class. The owner, wishing to have his horse broken, brought him in to be experimented upon. According to the gentleman's statement to me, this man worked with the horse about half a day, injuring him very severely,—in the owner's language, "almost killed him." The result of it all was that the horse beat the man completely, and was more reckless and determined in his opposition than before. I requested the gentleman to let me see the horse. Finding him to be naturally of a good disposition, and that his resistance proceeded mainly from excitement, I told the owner we would have no difficulty at all with the horse, and succeeded in making him perfectly gentle in about fifteen minutes.

The day following, at the next point we found an eight-year-old mare, considered impossible to shoe. The temperament being suitable, we subjected her to Second Method and War Bridle, which made her entirely submissive in about ten minutes. The next day, at Putney, Vt., the kicking, runaway horse was presented. Reference is made to these consecutive cases to show the frequency with which exceptionally vicious horses were brought for experiment and the success in their treatment.

In the management of many cases, either or both the First and Second Methods may be used with advantage in connection with the Third Method, but it should always be done at home, where there is time and privacy to apply and carry out the treatment properly.

LEANING OVER.

There are occasionally horses that will allow the foot to be taken up, but will lie down or lean over upon the blacksmith while it is held. Usually a few pulls with the War Bridle, repeating them for each occurrence of lying over, until he learns to stand without leaning, will be sufficient. If this is resisted, subject to Second Method. While the head is tied around, take up the foot and test until he will stand squarely. If there is any inclination to lean over after the head is given freedom, disconcerting a little with the cord should be sufficient. Sometimes it is advisable to stand at the head ready to punish, while an assistant takes up and holds the foot as if to shoe. Though a horse may for some time be sullen and persistent in leaning over, it is not usually a difficult habit to overcome. Once compelled to stand, it is seldom necessary to repeat the lesson.

It should have been stated in the proper place that there must be no effort to push against the quarters; but the moment there is an effort to lean over, the foot should be instantly dropped, and the punishment with the War Bridle made somewhat severe, and this repeated until there is submission.

SHOEING.

PRELIMINARY EXPLANATIONS.



FIG. 429.—The Foot and Limb
with Hoof Skin Removed.

DURING my early experience I was induced, by the advice of friends, to give what instruction I could on shoeing. With this object, I had prepared models of the hoof, and the best forms of shoes, and was frequently led to give short lectures on the subject. It was not, however, until I visited New York City, in 1872, and had several conversations with Mr. Robert Bonner on shoeing, that I was able to obtain anything like a correct idea of the principles of doing this. I found that what was published in books accessible on the subject, was but the merest rubbish, calculated in many respects to seriously mislead and do harm. Mr. Bonner had just purchased the mare Princess, the famous old competitor of Flora Temple. Her feet were badly contracted, and the tendons of the legs greatly thickened, causing her to move almost as sore and stiff as a foundered horse. He assured me that before I left the city the feet would look entirely natural, and that she would travel with as much freedom and ease as a colt. From my knowledge of the subject, it seemed utterly impossible to cure such a case; and yet, to my astonishment, in less than three months afterward she was perfectly well. I was startled, first, to find that I knew nothing of the subject; second, that there was so little known about it practically; and third, that a gentleman for his own amusement proved to me that he had a far

deeper and more correct knowledge of it than doubtless any man of his time.*

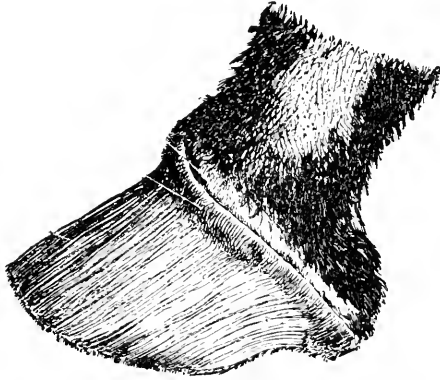


FIG. 430.—Lateral View of Horse's Foot after Removal of the Hoof.

structure of the foot as would show its various parts most clearly, with other features of most interest to shoers.

The bones of the foot are so nicely adjusted and balanced by the ligaments and tendons of the limb, that there is no unequal strain brought upon any joint, but each assists in supporting the others. But if the heels are raised too high, or the toe left too long, there will be correspondingly increased strain brought upon the ligaments and tendons supporting the back or front part. In like manner, raising or lowering the

At any rate, I was now led to study the subject in an entirely different light, and though far from being able to give the instruction on this subject I would like to do, for want of the requisite knowledge, I have done the best I could to make the instructions so simple and practical that they will at least serve to correct some of the wretchedly bad treatment practiced by shoers. I have tried also to include such illustrations of the

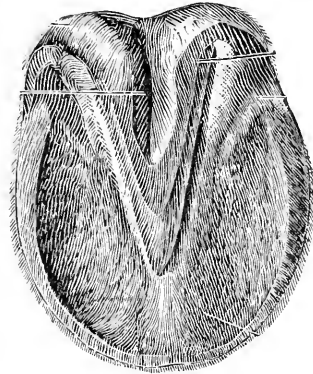


FIG. 431.—Inferior View of Foot with Hoof Removed.

* Indeed, this is conceded now by even the leading members of the veterinary profession, as will be seen by the following statement by Dr. Going, formerly veterinary editor of the *Spirit of the Times*, which I copy from his *Veterinary Dictionary*. He says:—

“It is said that no man has ever yet reached perfection in any branch of art, science, literature, industry, etc.; but while I am unprepared to join issue with the assertion, I can safely say that the nearest approach which has ever been made in this connection (horse-shoeing and the study of the horse's foot) has been made by Robert Bonner, Esq., of New York, who, had not the *Ledger* already made him famous, would undoubtedly have obtained widespread renown through his almost superhuman knowledge in this department. I have had the pleasure of conversing with him on this subject, and am pleased to have an opportunity of stating the impression the conversation made upon me.”

inner or outer quarter would produce a lateral strain upon the joints and ligaments, which must ultimately cause the foot to grow out of line, and induce serious injury. Consequently, the point to be attended to in removing excessive growth of the wall in preparing it for the shoe, is to preserve or restore the natural angle and direction of the hoof. This is one of

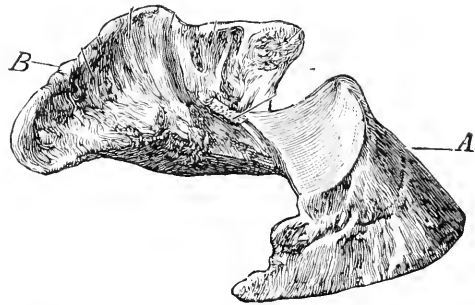


FIG. 432.—Coffin Bone Showing Internal Lateral Cartilage, Internal and Posterior View.

A, coffin bone; B, internal aspect of the lateral cartilage.

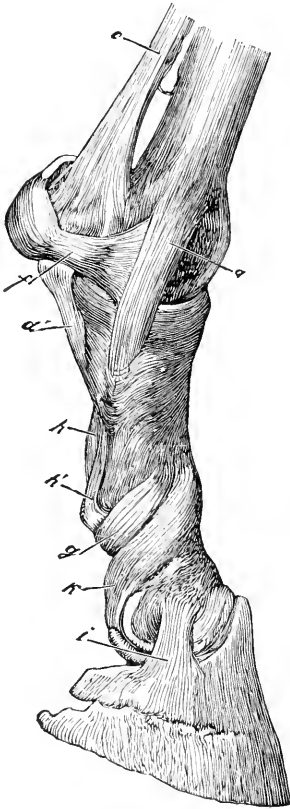


FIG. 433.—Lateral View of the Pastern Bones and Ligaments.

a, Lateral ligament of the fetlock; i, Anterior lateral ligament of the coffin joint; c, Suspensory ligament; f, Lateral sesamoidal ligament.

the important points, in doing which successfully the genius of true skill and success must be shown. A large number of illustrations are given showing good forms and positions of the feet and legs, with faulty forms. Also the various lines of movement of the feet when in motion. These are to be studied in paring the feet to change or modify the action as may be desired.

First, in preparing the foot for the shoe, the aim should be to cut away so much of the wall as would be a surplus of growth, or so much only as would bring it back to its natural form and adjustment. As a rule, the wall should be lowered to the level of the unpared sole. The sole and frog should on no account be pared or touched by the knife, nor should the heels be "opened." The horny sole and frog, unlike the wall, do not grow indefinitely; but when they have attained a certain thickness, they throw off the superfluous or old horn in flakes or scales. This natural thickness of the sole and frog-horn is an essential condition for the

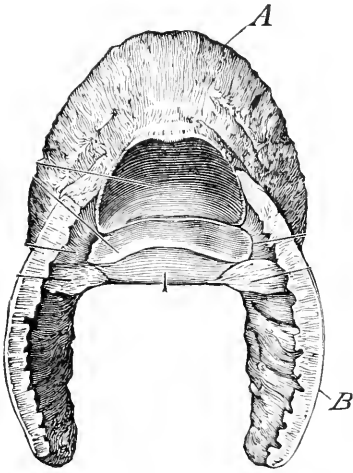


FIG. 434.

A, os pedis or coffin bone; B, transverse section of lateral cartilage.

Second, the shoe should be in form, so that when on, the adjustment of the foot, or its power to obtain hold or grasp upon the ground, will be what it was before being shod, and yet sustain the wear for the time it is intended to be on.

Third, it should be nailed on firmly, yet so as to break or weaken the wall of the hoof as little as possible, and not interfere with the freedom of the quarters or enlargement of the foot as it grows.

In its natural condition the outer rim or wall of the foot comes in contact with the ground first; second, the frog and outer edge of the sole; third, the center of the foot

maintenance of the foot in health and its protection from injury. In any event, about all that is necessary to do is to remove those loosened and detached flakes, which, were it not for the shoe, would have exfoliated themselves. Cutting away more than this becomes a serious cause of injury. The angles between the bars and crust should be moderately pared out, as accumulations here, with continued pressure of the shoe, are apt to induce corns. The frog does not require paring more than the removal of ragged parts, and even these better not be touched.

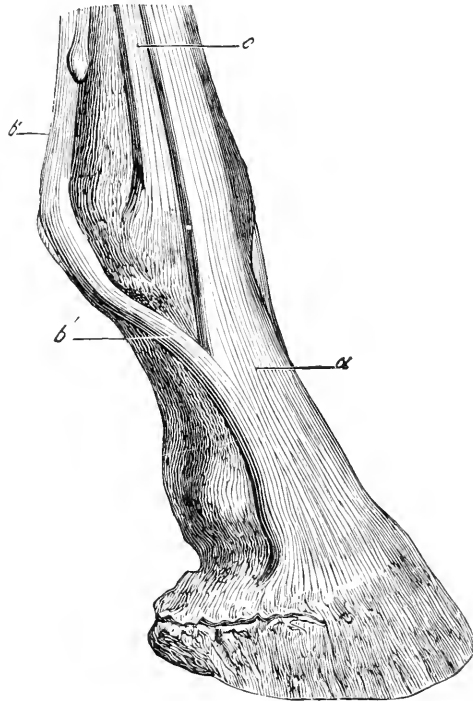


FIG. 435.—Anterior and External View of Right Front Foot.

a, Exterior pedis ligament; b, Suspensory ligament.

and spaces between the bars and frog. To show this more clearly, three sectional drawings are made from half-size casts, showing the concavity of the foot at different points between the heel and turn of the hoof, and the necessarily great disturbance of this relation by

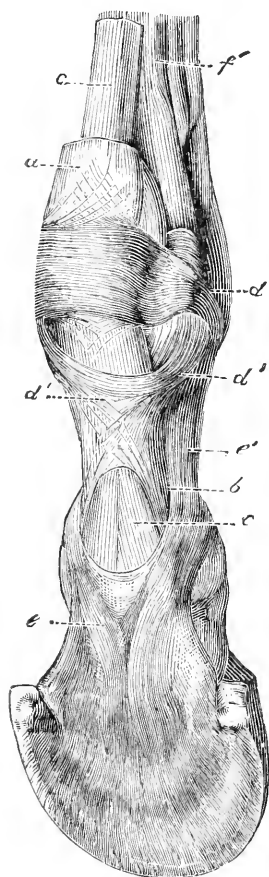


FIG. 436.—Right Front Foot, Posterior and Slightly Lateral View.

a, c, Perforans tendon; f, Suspensory ligament.

the form of shoe usually put on. Fig. A shows the foot at the point of the heels as it rests upon the ordinary thick shoe, with calks raising the frog and sole so unnaturally high from the ground that there can be no contact of those parts with it necessary for obtaining moisture and preserving a condition of health. In addition it will be noticed that in the way shoes are usually fitted, the bearing surface is very much concaved, tending to crowd the quarters together. Fig. B shows the same, with form and fitting of shoes as they

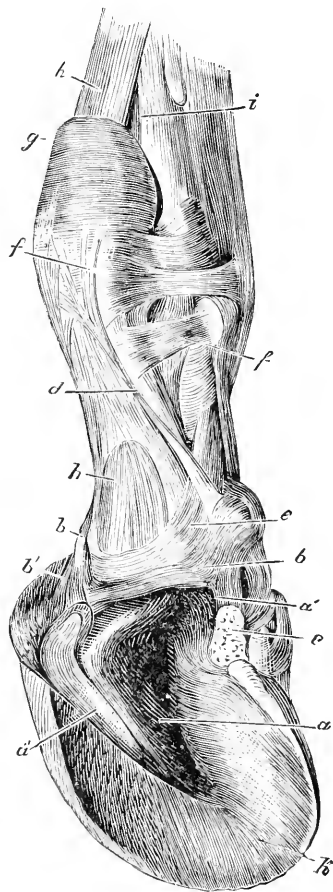


FIG. 437.—Inferior, Lateral, and Posterior View of the Right Front Foot, Showing Ligaments of Tendons.

a, Sensitive frog; b, Perforans tendon; f, Suspensory ligament.

should be; Figs. C and D show the same at relative distances between there and the turn of the foot; D, at the widest part, representing a heavy shoe. (See page 347, Figs. 472-475.)

If a colt's foot grows too long or out of line, it should be leveled down so as to make the adjustment natural, the outer edge

rounded a little, and the colt driven barefoot. It is noticeable that excessive wear is always at the toe, and

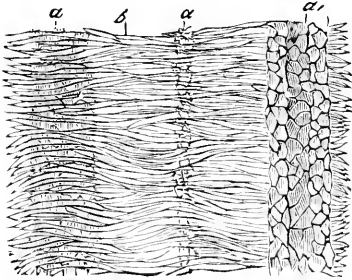


FIG. 438.—Horizontal Section of the Horny Frog.

a, Horn tubes; b, Cells between tubes.

that the heels rarely suffer, even on bad roads, and this being true, tips or thin steel plates only should be used, and that thick and high heeled shoes are not only certainly unnecessary but seriously injurious—that, in fact, in all cases the best shoeing for the feet, for all roads and seasons, when in a good condition of health, must be such as will permit them to be as nearly barefoot as possible, or, at least, that the posterior part is so, yet sustaining the attrition of wear to which they may be subjected, prevent slipping, and best preserve the natural adjustment of the feet.

TIPS OR THIN SHOES.

If tips or thin steel plates are to be used, simply trim off the wall in front down to a level with the sole, and adjust to, and nail on, with four small nails, a small thin strip of steel or iron a little broader than the thickness of the wall. Steel would be best, because it admits of being made lighter, and wears longer. The heels and frog should not be interfered with unless one heel is much higher than the other, when it should be lowered sufficiently to restore the proper adjustment. The objection to tips is that, as the toe is growing, the heels are wearing, which in time would be likely to increase the strain upon the flexor tendon and its appendages. This disproportion of wear would be more rapid and noticeable should the roads be wet and gravelly, as moisture and grit soften the horn and cause it to break and wear away more rapidly, but not so much as may be supposed on paved streets and mud roads. The writer saw

excessive wear is always at the toe, and that the heels rarely suffer, even on bad roads, and this being true, tips or thin steel plates only should be used, and that thick and high heeled shoes are not only certainly unnecessary but seriously injurious—that, in fact, in all cases the best shoeing for the feet, for all roads and seasons, when in a good condition of health, must be such as will permit them to be as nearly

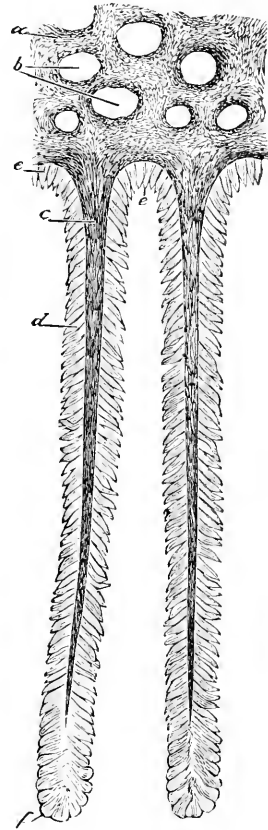


FIG. 439.—Horizontal Section of Horny Wall Enlarged.

a, Wall with horny tubes; b, Horn tubes; c, Horn laminae.

several horses in New York City that had been shod with tips with decided benefit to the health of the feet, and without any apparent disproportion or wearing down of the frog and quarters, though the iron was worn down fully a quarter of an inch. The parts became, as it were, hardened and polished, thereby resisting the wear almost as much as the iron.

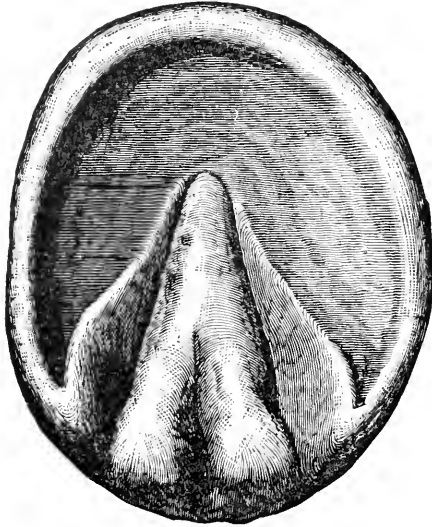


FIG. 440.—Colt's Foot Three Years Old.

As there has been much discussion among writers in relation to the use of tips, or thin-heeled shoes, I requested Dr. Hamill and Dr. McLellan, the two best veterinary authorities on this subject in this country, to give me a statement of the cases for which, in their judgment, tips would or would not be adapted. I give herewith the reply of each, and invite the attention of the reader to the points made, and the reasons given herefor. Prof. Hamill says:—

* * While I am a firm advocate of frog and sole pressure, and have driven my own horses for years over the pavements of New York City with nothing on the feet but what is known as the English tip or toe-piece shoe, which gives the foot the entire freedom of all its natural movements, yet I must say it would be absurd to attempt to shoe every horse in this way. There are any number of cases where this system would be *injurious* to the foot, and even to the limb. But as the foot, or rather that part of it inclosed within the hoof, is the object oftenest under consideration, I shall explain briefly how it may suffer from extreme frog-pressure. (One point which we should always keep in view is a due proportion, or equal distribution of the weight in all parts of the hoof, and by no other system can the foot be healthy.)

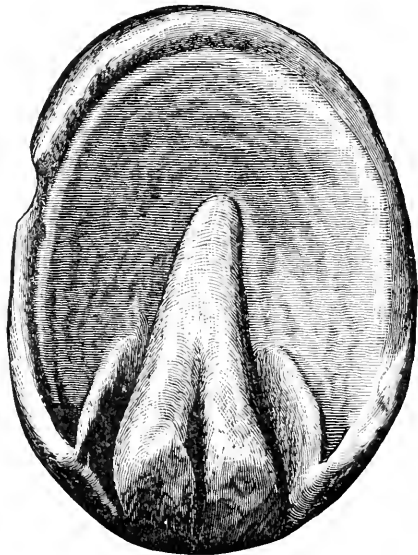


FIG. 441.—Colt's Foot Four Years Old.
From a Cast.

Any foot that is thin in its general structure, but more so in its vertical position, or from top to bottom, and with the frog full at its pyramidal eminence or body, is not a proper foot for frog-pressure. In such feet the plantar cushion, or what is

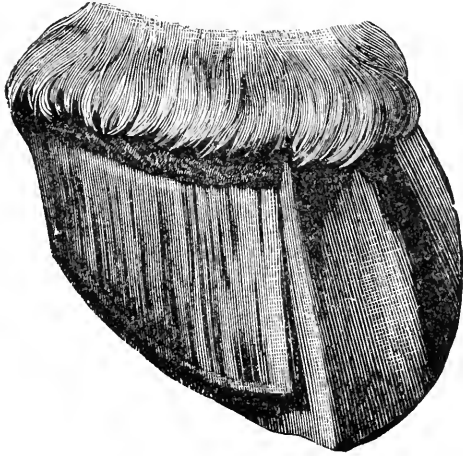


FIG. 442.—Half Hoof Removed.

known as the fibrous or fatty frog, is very thin, is easily made weaker by absorption through extreme pressure or irritation on the horny frog, and therefore offers very little protection to the great flexor tendon where it passes under the navicular bone.

But I may be asked, How could this in any way cause injury, if the navicular joint be perfect, as the tendon requires only a slight cushion underneath? My answer is, that there is a *double* impingement of the tendon, owing to the navicular bone descending on the tendon every time weight is thrown on the limb, the proof of which is the pain caused by this action on the internal structures of the hoof. I ask, Where is the shoeing-smith who has not seen the agony of a horse while standing on one bare foot on the level floor while the other foot is being shod, and the relief which followed when the shod foot was placed on the floor? I may be told that such feet have been previously weakened by bad shoeing and bad care, and that a horse which never had been shod would not suffer in this way. Those who make such assertions are entirely ignorant of the anatomy and physiology of the foot.

My answer is, that when a horse first comes to the world he has *no* frog development, and for the first year of his life, while walking on a level, can have *no* frog-pressure. It is only animals that are raised on low or marshy land that have a great development of frog. Horses belonging to mountainous countries have very little frog, and generally narrow or apparently contracted feet, which is no evidence of disease. Witness the ass and the mule for example; and I may add that although wide heels are generally desirable, they are no evidence in themselves of perfect health. I am well aware that most thin heels, and generally thin feet, have a large frog, but the depth of such a frog is more apparent than real, as it will be found on close investigation that the flexor tendon and navicular structure are lower or nearer the ground-surface in such a foot. Therefore we must discriminate in all cases, as

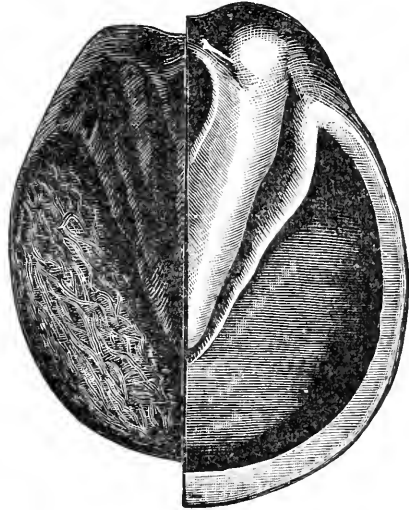


FIG. 443.—Inferior View of the Above.

one mistake may cause irreparable injury. To be definite, we can safely give extra frog and heel pressure in all cases where the hoof is deep at the quarters, where there is a tendency toward contraction and atrophy of the frog, where the obliquity of the pastern is not too great, *and where the feet and limbs are perfectly sound and well proportioned.* (This latter will narrow the circle more than most people are aware of.) No thoughtful man would dare to throw extra weight on the sole and frog of a foot that had long suffered with navicular disease, however excellent this would be as a preventive. Neither

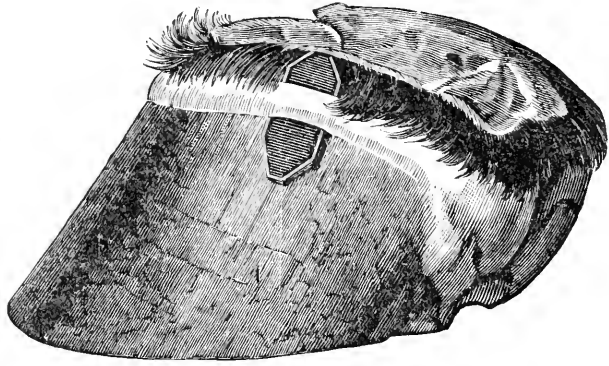


FIG. 444.—Showing the Coronary Band.

should we throw extra weight on the posterior parts of a foot or limb where there is any soreness of flexor muscles or tendons, or any ligament involved, as it would entail greater tension on the parts, while the opposite is what is required, *viz.*, flexion or relaxation.

I say distinctly, we should only carry frog-pressure to the extent of bringing into activity all the elastic structures of the foot, which increases the circulation of those parts so liable to atrophy, *and only through the circulation* can we keep up or restore the health, vigor, and growth of frog, sole, heels, and quarters of the horse's foot.



FIG. 445.—Showing Inside of Hoof.

Prof. McLellan says:—

In reference to the use of tips, I give you only an outline. They are useful in the case of corns, in quarter-cracks, in thrush, in interfering, and in fitting the horse to run at grass. They are not applicable to feet that have thin, flat soles, with low heels. They are not applicable to heavy work horses with flat feet and prominent frogs (such frogs are liable to suffer bruises when so exposed, the resulting inflammation extending frequently to deeper and more vital structures). They are not applicable to feet having navicular disease. They are not applicable when, in applying them, it is necessary to disturb the normal relation of the bones of the limb.

They will be found particularly useful in strong feet that have corns in both heels, and in the case of bad interferers.

TRIMMING.

Before preparing the foot for the shoe, the smith should go in front and look at it, so as to determine better its adjustment. Sometimes the foot may be run over by having one side too high or the toe worn off excessively. If it is desired to be particular, he

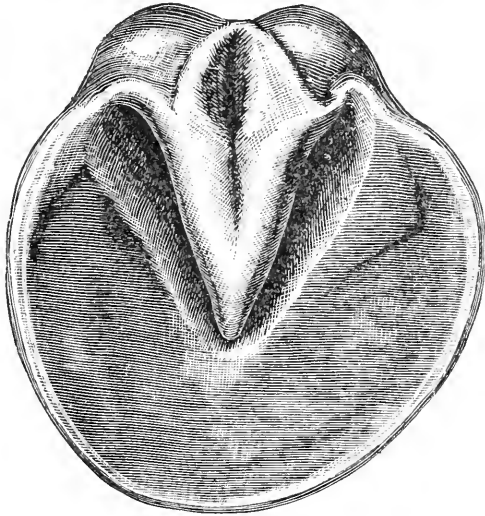


FIG. 446.—The Foot Natural.

should see how the feet are carried in a sharp trot; whether too high or too low; or whether he travels too close, endangering interfering or cutting—using the words of a high authority, “to see whether there are any traces of bruising or cutting on the inner sides of hoofs, fetlocks, or knees.” He should also see how the old shoe has been worn. The foot can then be taken up, when a look from the heel forward will enable an observing shoer to determine how much and

what part is to be cut away to level it to the proper proportion, and the faults, if any, that can be modified or corrected. If the horse travels high, the shoes must be light; if low and subject to stumbling, they may be increased in weight a little, and the toe somewhat rounded; if liable to strike, then set close under the wall with edges filed smooth.

The point is to cut away or remove the surplus growth in the easiest and best manner, which depends more upon the deftness and ingenuity of the man than upon the use of any special means. The wall should be reduced to nearly or quite on a level with the outer margin of the sole. The bearing surface of the entire wall should be made level, so that an even bearing surface of the shoe will rest upon it fully. The rasp should now be passed around the toe, to cut away the sharp edges and bring it to the size required. Practically, this should be little more than rounding off the sharp edges of horn to prevent splitting.

The principle is the same of leveling and preparing the feet of horses that have previously been shod. In such cases, to take off the shoe the best method is, after the clinchers are cut off, to raise both heels slightly with the pincers, then pry forward and across the foot a little, when the nails can be pulled out one by one. It is seriously objectionable, as generally done, to pull off the shoe by force, as the severe wrenching endangers tearing the hoof and straining and injuring the foot. This would be especially objectionable if the hoof be thin and the horse sensitive. Next, any stubs or nails should be removed.

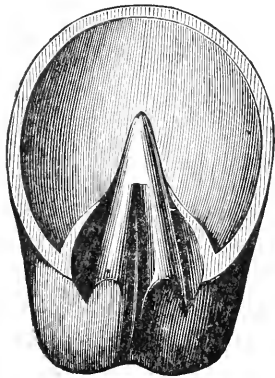


FIG. 447.—Foot Excessively Pared.

While it is simply intended to pare down the wall to its natural form, if it is thin and weak, growing but little, especially at the heels, where there is great difficulty to grow sufficient wall for the support of the foot, no more should be removed than is barely necessary to level it. As before stated, there should be no interference with sole or frog, excepting to chip or cut away the portion of the old horn which could not be exfoliated. Frequently the heels are too high, or the toe too long; in either case, whatever the excessive accumulation or growth of horn, it should be cut away until the foot is brought back to its natural form and adjustment. Sometimes there is excessive accumulation to the amount of half an inch or more at the heels, or even of the whole wall of strong, upright feet, yet to the ordinary observing shoeing-smith it may not appear excessive, because cutting away so much would make the foot appear to him to be unnaturally small. Several specimens of abnormal growth of feet are given. Fig. 495, page 355, taken from life, is a good representative case, and was seen by the writer at

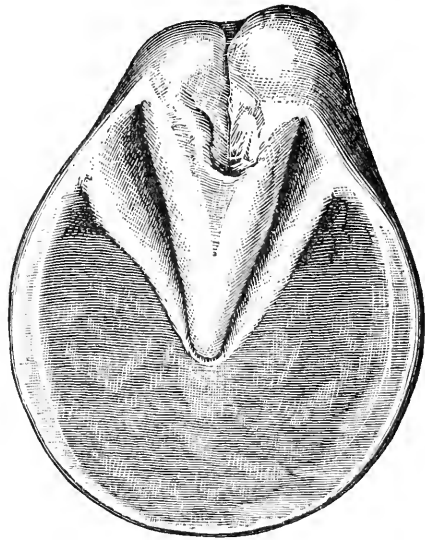


FIG. 448.—Foot after Four Years' Shoeing.

Fulton Ferry, New York City. It is that of a pony mare driven before a huckster's wagon. The right foot was so contracted by this excessive accumulation of horn, that its mobility was entirely destroyed. It will be noticed that the toe of the shoe is carried forward something like a sled crook, to enable a rolling motion upon the ground. It was pitiable to witness the pain and misery this poor animal exhibited. She walked with a crippled, sensitive motion, and while standing would put out one foot, then the other, but mostly the right one. The case could have been easily relieved of pain



FIG. 449.



FIG. 450.—Too Short and Upright.

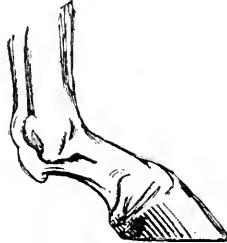


FIG. 451.—Too Oblique.

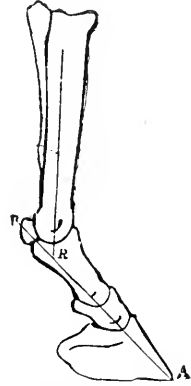


FIG. 452.—Natural Obliquity of Ankle.

and soreness, by simply cutting down the feet and thoroughly soaking and opening the quarters, as explained in treatment for "Contraction." The dotted lines represent the point to which the horn should be cut away, showing an excess of accumulation of over three inches.

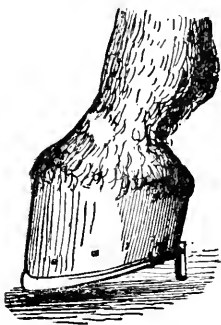


FIG. 453.—Heels too High.



FIG. 454.—Too High on One Side.

THE SHOE.

The shoe should, in form and size, little more than cover the wall, excepting at the heels where it should be so much wider and longer as to compensate for the growth of the foot, and be heavy enough to sustain the attrition, or wear, for the time it is expected to be on. But should this require an excessive thickness, then the bar may be made wider, to permit more wearing surface. It should fit closely all the way around to the bearing surface prepared for its reception, so that it may give to the crust all the support it can receive, and

carry out in its ground surface, as nearly as possible, the form of the wall before it was cut away. It is a rule, recognized by the best authorities, that the sole should not rest upon the shoe, except around the toe where the outer edge is left full and natural. But if the wall is cut down close, and the sole rather thin (which, as explained before, in no case should be done except for pathological reasons), it is advisable, if it comes too near the iron, to lower the part coming under it. As a rule, the bearing surface should be level, and the ground surface concave, or the inner edge of the ground surface so beveled off that it will not harbor stones and dirt, and be so stiff that it will not bend.

As before stated, if the horse is expected to be driven only occasionally, and upon common dirt roads, the wear will be but little,

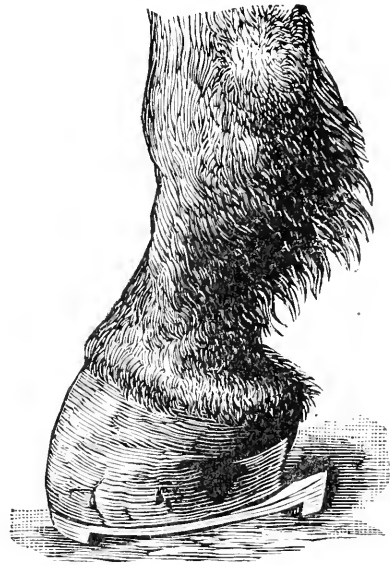


FIG. 455.—Too Short.



FIG. 456.—Foot too Long.

and the shoes should be correspondingly light ; but if much travel is required, on stony or macadamized roads, the weight should be sufficient to sustain such wear. The addition of a small bit of steel, hammered well into the toe, and tempered, would add greatly to its durability. It would be much better to make them wholly of steel, as they would be very much lighter, equally stiff, and less liable to bend.

In a condition of health, from a light family driver to the heavy draught horse, the principle of shoeing is the same ; the size, thickness, and weight only differing so as to adapt to each case, with the difference

that when exceptional power is necessary, as for draught horses, or to prevent slipping, calkins must be used. As a rule, nothing more is wanting, unless necessary for extra wear, than just iron enough to protect the outer crust of the foot, and prevent its breaking. More iron than this becomes extra weight, and causes fatigue in carrying, like thick, heavy-soled shoes or clogs.

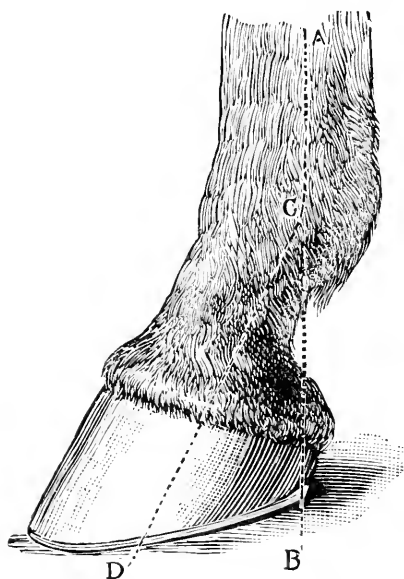


FIG. 457.—Shoe Properly Adjusted.

It is a question among English authorities whether a shoe should be "rounded at the toe" (a practice known as the French system) to aid mobility.

A moderate rounding at the toe would seem desirable in all cases where there is want of mobility. It is especially desirable when the horse is a little stiff or sore, as it enables him to travel much easier. This is proved when

the mobility of the foot is destroyed, and there is necessity for using a rounded shoe to conform with the action. Illustrations of a large variety of shoes of different forms are given, which can be studied.

Prof. Williams, of Edinburgh Veterinary College, advises that the calkins and toe-pieces should be done away with for all kinds of horses except those used for

heavy draught in towns where the streets are paved and steep. It is urged that all horses required to go beyond a walking pace are injured by shoes with turned-up heels and toes. Farm horses and



FIG. 458.—Thin Shoe for Light Work.

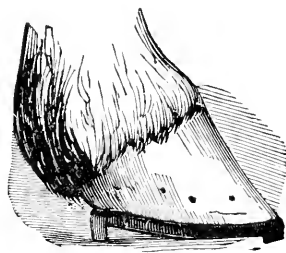


FIG. 459.—Faulty, Bad Form of Shoe.

those employed on macadamized roads are better without than with toe-pieces, although the pace at which they are required to go is never faster than a walk. In fact, all horses, when possible, should be shod with a flat shoe.

NAILING.

The object of nailing should be to hold the shoe firmly to the foot without injuring the wall, and leave the foot as independent of the restraint of the shoe at the quarters as possible. The nails should be driven where there will be most secure nail-hold; more or less as well as heavier nails being necessary, in proportion to the thickness of the wall, weight of the shoe, and severity of the work. The wall is thickest and strongest at the toe or front, and becomes thinner and more flexible toward the quarters and heels, especially at the inner heels, where it is sometimes extremely thin and flexible.

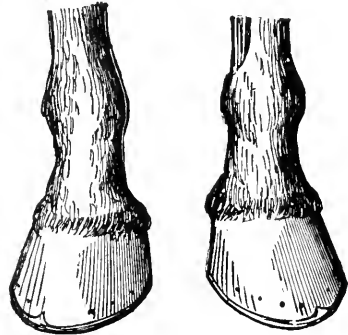


FIG. 460.—Toes too Wide.

There has been much speculation during the past few years in relation to the cause of this quarter's giving out before the other, as nature evidently intended it to stand strain and wear equally with other parts. The cause, undoubtedly, is the interference in its mobility by bad-fitting shoes and nailing so far back as to interfere with the flexibility of the quarter. This being true, it is evident that the principal nailing should be at the toe and front, because there is more horn there to nail to, and less liability to do harm by separating and breaking the fibers of the wall. They should not extend any farther back into the quarters than is barely necessary to give a safe hold of the shoe to the foot. The fewer and

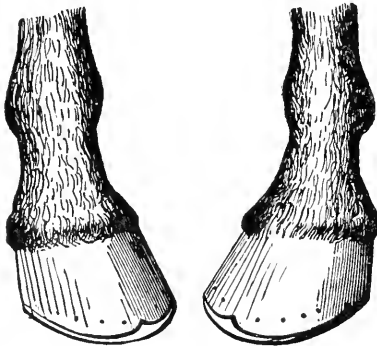
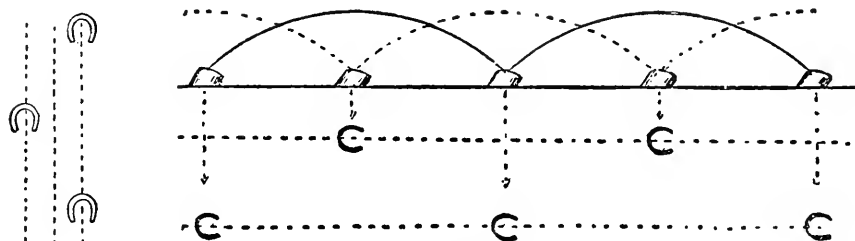


FIG. 461.—Extreme Toeing In.

smaller the nails driven, the better, providing they are sufficient to hold the shoe. But much will depend, in doing this, on the accuracy of the fitting, thickness of the wall, and weight of the shoe.

If the nails are driven well back on the outer quarter, and only round in the toe of the inner side, for the purpose of affording more

freedom to the quarters, it will be found that as the foot grows, the shoe will be carried to the outside quarter and toe to such an extent that the inner heel of the shoe will be drawn inside of the wall at the



*FIG. 463.—Perfect Action.

heel, and rest upon the sole, causing a bruise or corn. In addition, so much of the shoe being left unnailed, makes it liable to get loose and work under the quarter, which would cause a rapid wearing or breaking down of structure. All things considered, the best way is to nail back to the turn of the wall securely. Or the nailing may be extended a little farther back on the outside, and shortened a little on the inner side, in any case giving both quarters all the freedom compatible with security, in retaining a firm hold of the shoe. As the foot grows, the shoe will be brought forward so evenly under it as not to do harm.

For ordinary light shoes, six to seven nails, evenly distributed around the front part, should be sufficient, sometimes extending the outer nail a little beyond or nearer the quarter than the inner one.

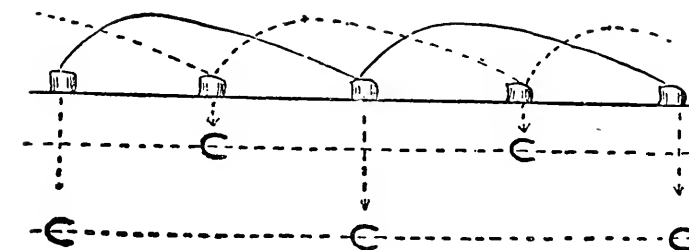


FIG. 464.—Short Upright Fetlock.

But if the shoes are heavy, and the work hard, as for draught horses, heavier nails, and from seven

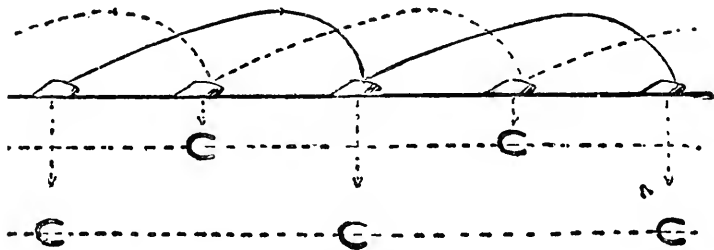
to eight in number, will in most cases be required. A small, thin clip turned up at the toe, and one at the outer quarter, will help greatly in holding the shoe firmly in position; but they should be turned up thin, and set well out on the edge of the shoe.

* In connection with figures 462, 463, see page 328.

But very little of the wall should be cut away, so as not to **weaken** or injure it; but sufficient to enable bringing the shoe to its position. The shoes should not be hammered down tight to the wall, but simply sufficient to rest easily against it. Next, if the foot is broken, or much weakened by old nail-holes, punch the holes where there is soundest horn to nail to, as shown by Fig. 596. A thin shoe will not admit of any fullering, because it weakens the shoe, without giving any special advantage in nailing. The stamp form of punching the holes should be used; that is, the hole made larger at the surface and smaller at the bot-



* FIG. 465.
Too Close.



* FIG. 466.—Action with Low Heels and Oblique Fetlock.

tom, so that the nail-heads will fit into it exactly.

The method of driving the nails is next worthy of consideration. There are two methods; one, starting the nail rather near the outer surface and driving high, called the English method, which is practiced very generally in this country; the other, starting the nail deep and bringing out low, known as the French method, which leading authorities concede to be the best. If the nail is driven very near the surface, it is liable to chip or break the horn out, which injures and weakens the wall very much; whereas driving deep and bringing out low, insures a good hold, and the wall will be almost grown out by the next shoeing. Consequently they should be punched deep over those points where the wall is thickest, and less so toward the quarters where it is thinnest, or proportionately farther from the outer margin of the shoe.



* FIG. 467.
Action that Strikes.

The common method of fullering all shoes alike, and bringing the nails at the same distance from the edge, can be no more adapted for all kinds of feet than can the size of the shoe itself. This straight-jacket way of punching

* In connection with figures 465, 466, 467, and 470, see page 327.

all alike, brings the nail-holes at the same location at each repetition of shoeing, so that if the shoe becomes loose, or is pulled off, this part of the wall is liable to be torn off, or so split and broken



FIG. 468.

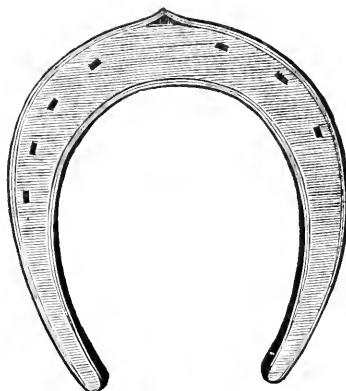


FIG. 469.

Thin-heeled Shoe Advised by Prof. Williams of Edinburgh Veterinary College.

as to leave only a soft, imperfect horn. In resetting such a shoe, it becomes necessary to put it farther back under the foot in order to gain secure nail-hold. Not only this, but the portion of the projecting wall being cut down to the shoe, leaves it deformed and

injured to an extent that several months' growth cannot repair. But if the holes be punched over parts that would give as secure hold, the shoe can be nailed on sufficiently firm to hold it without doing harm, and thereby preserve the symmetry of the foot. In such a case it may be necessary to nail rather close to the heels; but even this had better be done for a short time than risk injury and malformation by the method named.



* FIG. 470.
Faulty Action.
Too Wide.



FIG. 471.—Foot Prepared for Shoe.

If by carelessness or otherwise a nail should be driven into the quick, which will usually be known by the horse's flinching, it should be pulled out at once; or should a horse show soreness after being

taken out of the shop, the foot should be examined carefully by tapping over the part, and the nail at the point of soreness pulled out. (For more details, see treatment for Pricking and Rucking.)

CLINCHING DOWN THE NAILS.

When the nail is twisted off, the end should be filed down to the proper length, and, with the corner of the rasp or little punch, cut out the pith or raised part under the clinch, and turn down lightly but firmly. The common custom is to make a deep notch with the corner of the rasp, which extends across the face of the hoof from one nail to the other.

This is so injurious that it should not be permitted even to the smallest degree. No rasping of the outer surface of the wall should be allowed, excepting to touch or smooth any roughness of the clinches, and to round of the edge of the wall down near the shoe. It has been explained under the proper head, that the inner surface of the wall soft and spongy, and that as it approaches the outer surface, it becomes hard and

bony, and the fibers closer and denser, and that over the surface is a sort of skin or thin covering of enamel, that prevents too rapid evaporation of moisture; and it is necessary to retain intact this strong fibrous horn, as well as its outer covering, so as to hold the nails firmly, as well as to prevent the excessive evaporation of moisture which would follow.

Should the shoe be too short, which is liable to happen, to remedy the difficulty it is the common custom to set it back under the wall, and rasp the thick, strong wall, extending out over the

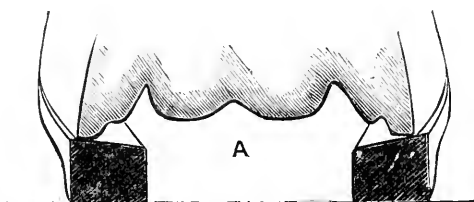


FIG. 472.—Foot at Point of Heel on Thick Shoes.

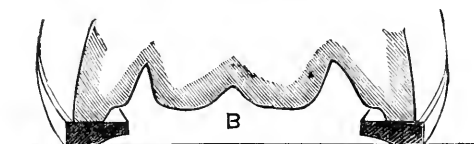


FIG. 473.—Shoe Filled as it Should Be.

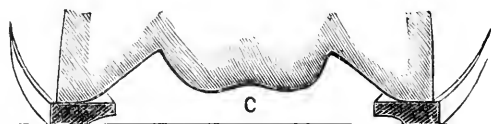


FIG. 474.—Adjustment between Heel and Turn of Foot.

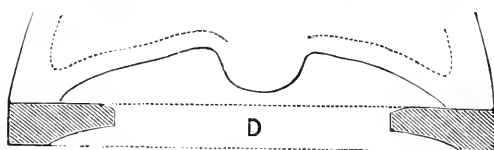


FIG. 475.—Adjustment at Turn of Foot.

shoe, down to it. Or, should the shoe be too straight or narrow for the foot across the points of nailing, to drive the nails so deeply as not only to endanger pricking, but greatly to weaken the wall.

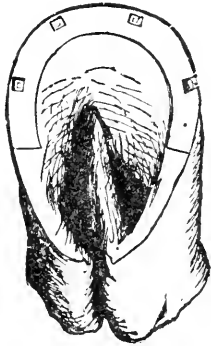


FIG. 476.—Tips. From the French.

The excessive rasping not only destroys the strongest part of the wall, that best able to retain the nail-holes and support concussion, but causes a serious internal disease not usually understood, which shows its effect in an absorption of the

bone beneath. Fig. 523 is a good illustration of this. The specimen from which it is drawn was obtained from Dr. Hamill. The small sketch is full size, and shows the exact appearance of its surface, and small points of horn which are over a quarter of an inch long, extending out like pegs.

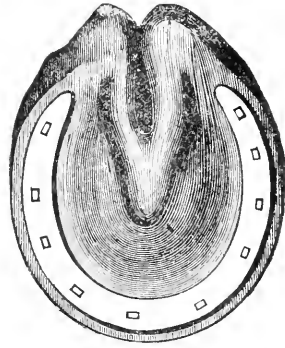


FIG. 477.—Thin Strip Set in Hoof. From Lafosse.

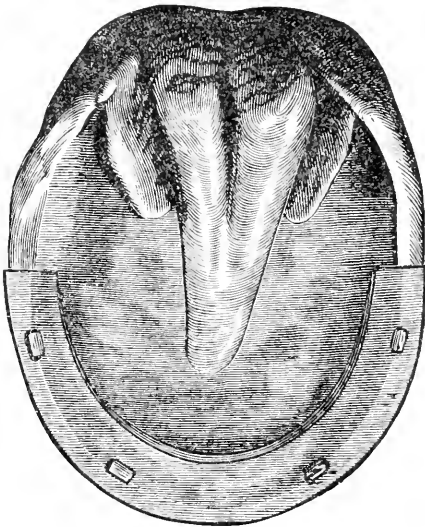


FIG. 478.—Tips Applied to the Colt's Foot.

SHOEING THE HIND FEET.

There is usually so little

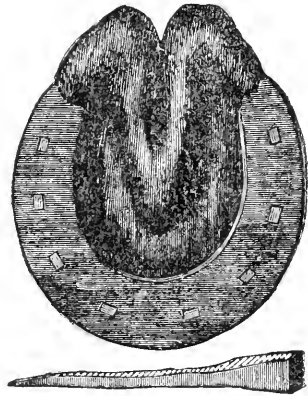


FIG. 479.—Thin Shoe. From Lafosse.

trouble with the hind feet, that it is scarcely necessary to give any directions as to their management. The horn is thickest at the quarters, and the principal nailing should be done there. Some-

times there is a curling under or contracting of the heels, which may be the cause of more or less inflammation, extending to the sheaths of tendons and other parts of the leg; in such a case, if thought advisable, either or both quarters can be treated as explained under that head in "Contraction."

PRICKING AND RUCKING.

I think it advisable, in this connection, to say a few words about pricking, which is more common than many suppose. It is not unusual, indeed it is a very common occurrence, to drive the nail too near the quick or into it, and thus by a little carelessness cause great harm. First, if the nail be driven so as to go to the quick, in which case the horse may show it by flinching, it should in all cases be pulled out at once, and the hole

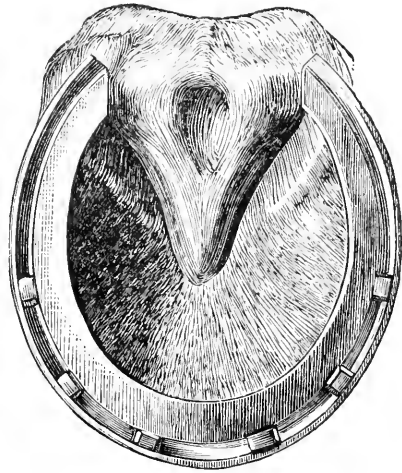


FIG. 480.—Shoe Adjusted. From the German.

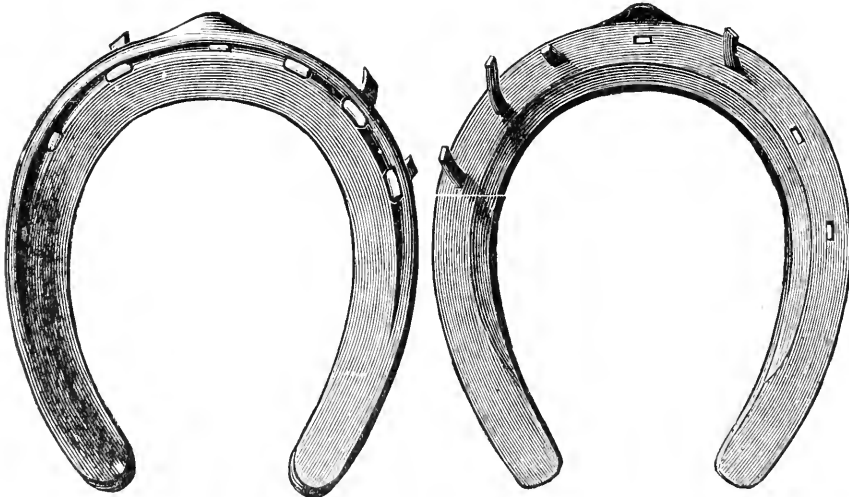


FIG. 481.—Model Shoes.

FIG. 482.—Showing Location of Nails.

be left vacant. If this is done, no harm will follow. Sometimes the smith, especially if he expects to be scolded, will drive the nail down, which in a few hours or next day will show itself by

making the horse lame ; or the nail may be driven so deeply as to go near the soft parts of the inner edge, and when the point strikes

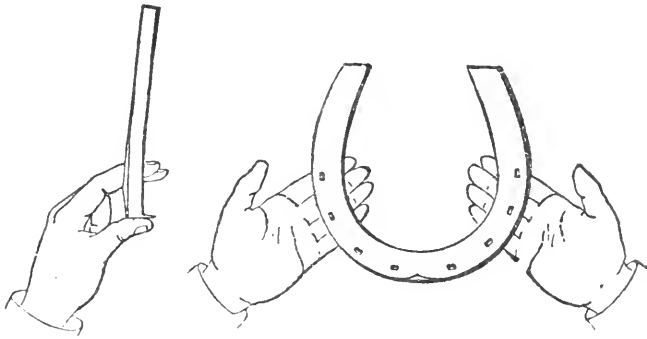


FIG. 483. — Examining the Shoe.

the hard horn of the outer surface, it may bend inward or press upon and break through to the sensitive parts. This is called rucking, as shown in Fig. 508. The nail should be pulled out at once.

Another cause of harm is what is termed fitting and drawing the nails too closely. If the nails are driven rather deep, and clinched down firmly, they are liable to bend inward and press upon the sensitive parts. This is called pinching. If present when the horse is shod, and it is noticed that the nails are driven rather deep for the thickness of the wall, insist upon their being driven farther out.

An ignorant or thoughtless man may claim there is no danger, though he is driving the nails much too deep. Should the horse show soreness or lameness within three or four days after being shod, especially if he puts

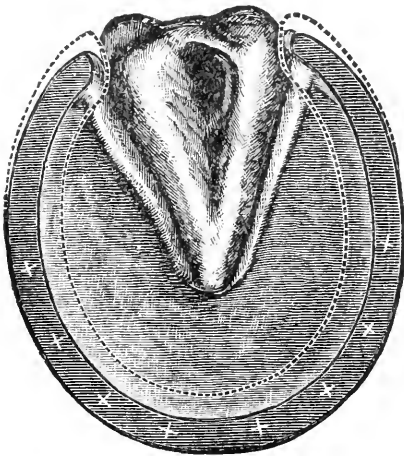


FIG 484.—Location of Nails.

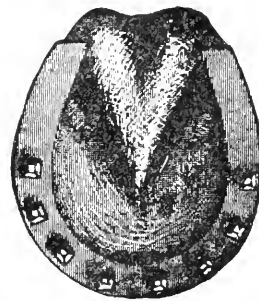


FIG. 485.—French Method of Nailing

the foot forward to ease it, give the matter attention at once. First rest the hand lightly upon the hoof to discover whether there is any unusual heat, and if so, at what point ; next take a light hammer or small stone, and tap lightly round over the nails, until the horse

flinches, when the offending nail or nails can be discovered and pulled out. If this is done soon after being shod or during the same day, all that may be necessary to do is to leave the nail out.

I have had excellent success by pouring a little callendula into the hole. In one case, where there was considerable soreness a few hours after being shod, though the horse was quite lame on account of the nail being driven too deep, after pulling out then ail, a little callendula was poured in, and the shoe again put on, and the horse in a few hours was free from lameness. But if he shows lameness in a day or so after being shod, cut away the wall from around

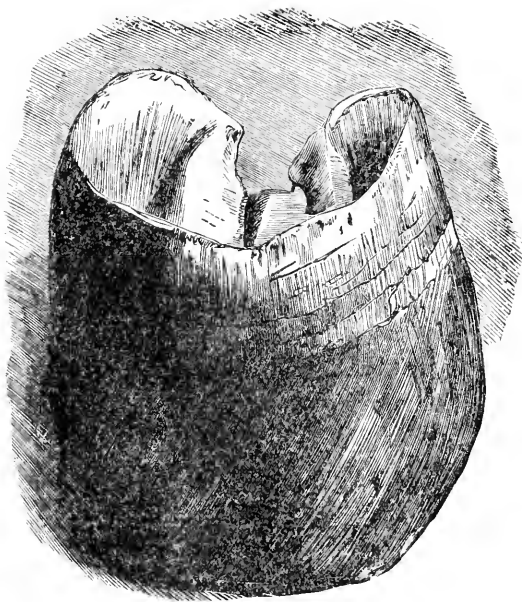


FIG. 486.—The Hoof of a Fore Foot Showing the Bad Effects of Excessive Rasping.

the hole, so as to let out any matter which may have formed. Next poultice the foot until the inflammation subsides, then cover the hole with a little digestive ointment (which is made by melting together equal parts of tar and hog's lard, and

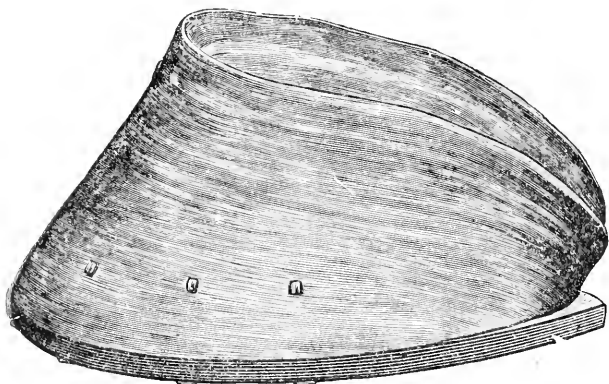


FIG. 487.—Shoe Properly Adjusted and Nailed.

stirring till cool), over which put a little tow and put on the shoe.

CONTRACTION. ITS CURE.

For hundreds of years there has been great effort made to pre-

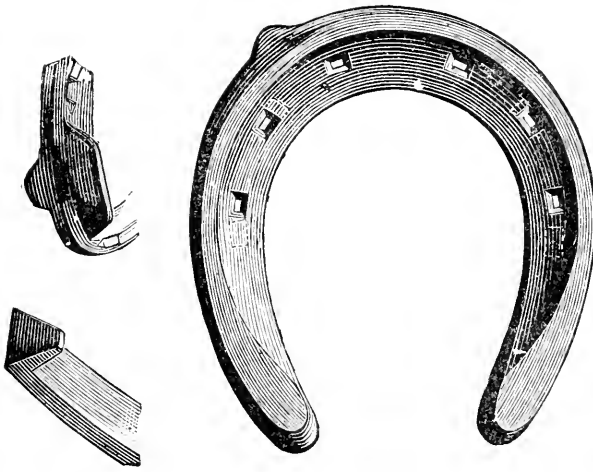


FIG. 488.—Good Model of Concave Shoe.

one or both quarters are drawn in; 3. When the heels are curled in, or pushed forward under the foot. The prevention and cure of contraction must depend upon removing excess of horn, frog-pressure, freedom of the quarters, or, if necessary, opening them mechanically as desired, and upon moisture. Any of these conditions lacking, there must in serious cases be partial or entire failure, no matter what the means or methods used. If the feet could have conditions that would afford natural moisture, and the shoes be

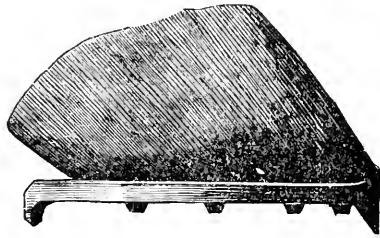


FIG. 489.—Ordinary Calks.

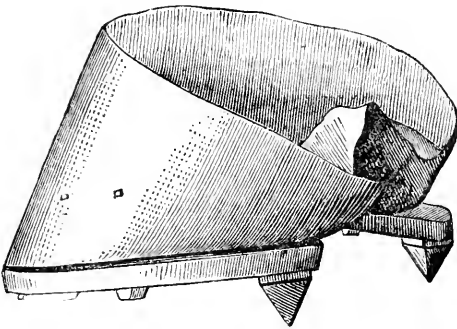


FIG. 490.—Adjustable Calk.

vent and cure contraction. I give a variety of figures showing some forms of shoes and methods of expanding the quarters.

Contraction may be divided into three classes: 1. A general compression, or drawing in of the wall upon the vascular structure; 2. When but

the frog and sole could have reasonable contact with the ground, the quarters so free that they could expand with the growth of the feet, there could be but little if any contraction.

FROG-PRESSURE.

We see that in all cases where there is reasonable

frog-pressure, the frog becomes larger, firmer, and more elastic; while raising the frog from contact causes it to become small and hard, the quarters to draw in, and the whole foot to diminish more or less in size. But if not accustomed to pressure, it should be given gradually, in connection with keeping the feet thoroughly softened, so as not to excite inflammation or soreness. It would not do for a man accustomed to wearing boots for years to suddenly go barefoot on rough, hard ground. The skin on the feet is so thin that they would be made sore, and would be liable to serious inflammation. In like manner it would not be prudent to bring the heels and frog of a horse's

foot that has long been protected by shoes, suddenly to the ground. If there is but little contraction, with fairly good condition of the feet, all that will be necessary to do is to level down the feet, and

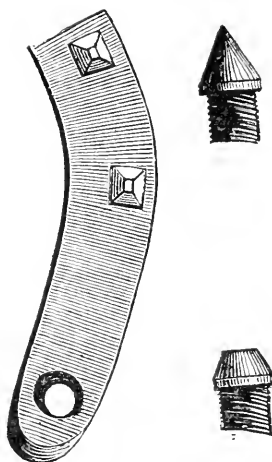


FIG. 491.—Adjustable Calks.

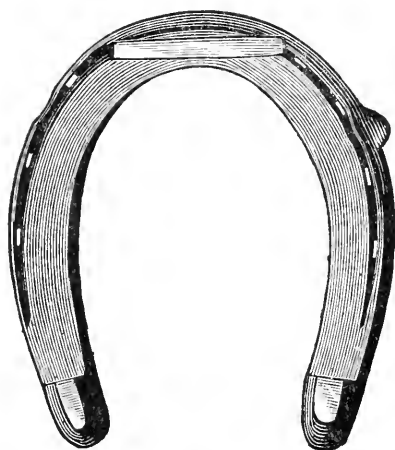


FIG. 492.—Model of Shoe for Express Horses.
From Dr. Hamill's Collection.

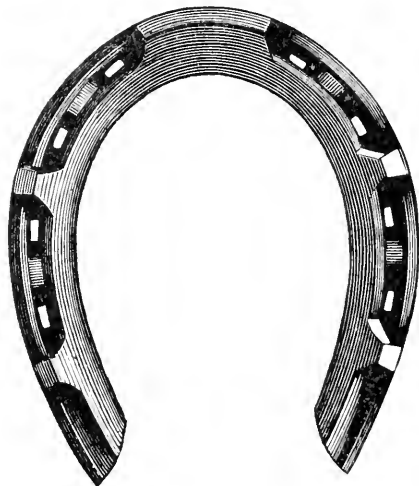


FIG. 493.—The Goodenough Shoe.

remove any surplus of old horn from the sole, put on thin-heeled shoes, and keep the feet soft by moisture.

The next simplest and best method would be to use the convex shoe. See Figs. 552-554. After leveling and trimming out the foot properly, as before explained, cut away or weaken the arch be-

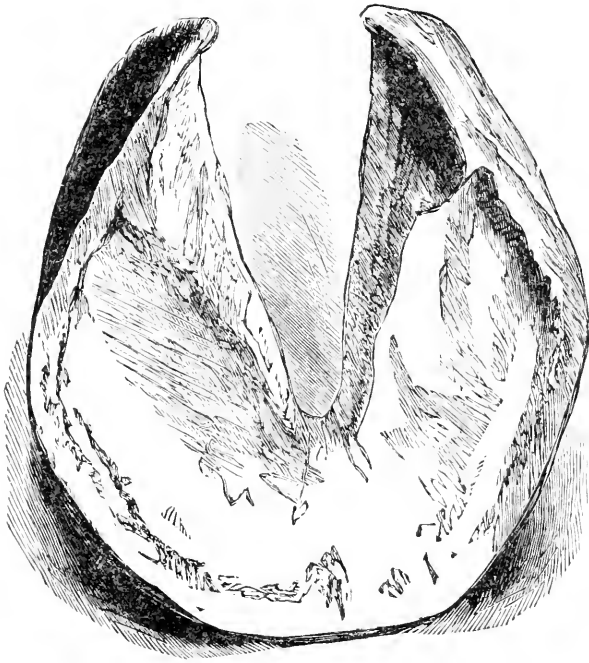


FIG. 494.—A Dried Hoof with Frog Removed.

and prevent the heels from spreading. Of course, no nails should be driven back in the quarters. As before explained, the frog should gradually be given contact with the ground. As the quarters are opened, the shoe can be taken off, made larger, and reset, until the foot is reasonably expanded, when a level bearing-surface may again be used.

But for anything like a bad condition of contraction, more direct and positive treatment will be necessary. For example, if the foot is badly contracted, the frog small, and sole forced upward acutely, the whole internal structure, in fact, locked and tied, as it were, by the severe compression of the wall, three conditions are necessary: First, complete elasticity of quarters and sole; second, power to open quarter so as to relieve pressure, and allow the sole to settle back to its natural position; third, gradual frog-pressure so as to restore a

tween the bars and frog sufficiently to allow of some elasticity of the quarters, then fit the heels nicely to the bearing surface of the shoe. In doing this, care should be taken to leave them sufficiently deep to enable matching the bevel of the shoe nicely without cutting away or lowering the wall too much. No horn should be left projecting inside, as it would form a wall against the inner edge of the shoe,

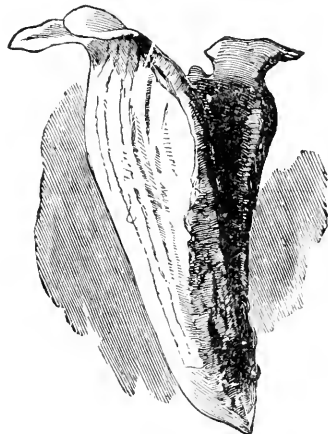


FIG. 495.—The Frog.

healthy condition of circulation and strength of parts. The first important step in the treatment is to thoroughly soften the feet. The simplest way of doing this in the stables is by tying two or three thicknesses of blanket around the feet and keeping them wet about twenty-four hours; or better, fill two small bags with bran, put a foot into each, and tie a string loosely around the top of the bag and leg above the fetlock. Put each foot into a bucket of water, and afterward pour on water to keep wet; or the horse can be made to stand in mud till the feet are soft.

There is usually a large accumulation of horn, especially at the heel, all of which must be removed, and the wall leveled down to its proper dimensions. Next, with the drawing-knife pare out the sole; not enough to make it bend to pressure, but more than beyond the removal of the old horn. Then with a small knife, which should be made expressly for the purpose,—let the blade be made straight, with a cutting edge on both sides, and the end turned



FIG. 496.—Mobility entirely Destroyed in Right Foot.

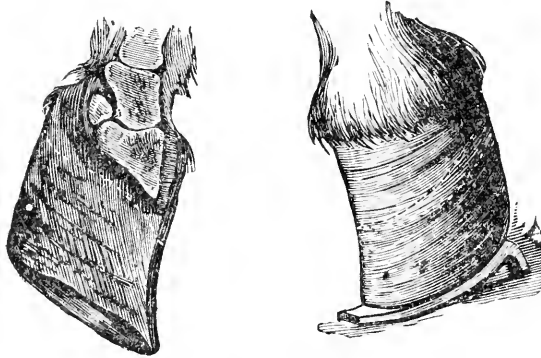


FIG. 497.—Showing Great Excess of Horn.

about a quarter of an inch, tempered and ground down to a keen edge, so as not to cut a channel much more than one eighth to three sixteenths of an inch wide,—weaken the wall between the bars and frog, by scraping or cutting out the bottom of the channel back to the point of the heel so much that when pressure is brought upon the heels outward, there will be no impediment to their opening freely at their upper edge. To do this, commence well forward near the point of the frog, and cut back, following the line of the arch carefully. Particu-

lar care should be taken not to cut so much at any part as to cause

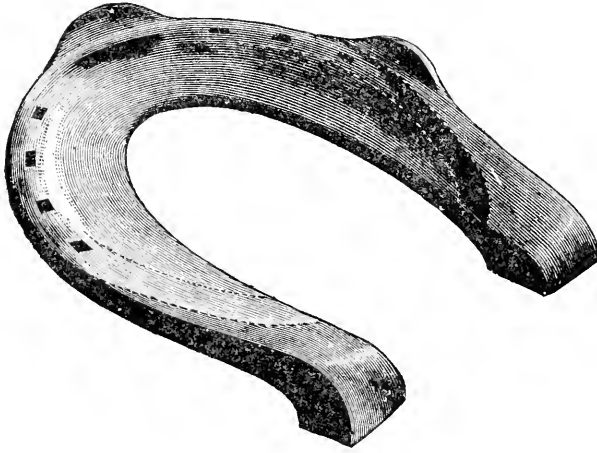


FIG. 498.—Shoe too Wide and Long. Bearing-surface too Concave.

bleeding. On this account the operator should feel his way cautiously, cutting deeper as he goes back. The bar should be cut away to within three quarters of an inch from the point of the heel. No more should be cut away from the rest of the bar, or part coming under the clip, than

may be necessary to give a straight shoulder for it to rest against. Both sides must be treated alike. If the part has been cut through in the least, it should be protected after the shoe is on by melting a little resin and tallow into it, and covering with tow.

There have been many ignorant and pretentious quacks, who have presumed to weaken the heel by sawing in between the bars and frog. Only a very small point can be reached in this way,

without cutting to the quick. The saw cannot be used here at all with advantage. The point is to weaken the horn at the bottom of the cleft so that it will spread freely, and this can be done properly only with the cutting-knife. The proper flexibility of the heels can be judged by a slight pressure with the hand.

This done, our next object is to remove the compression of the wall. To do this, fit to it a rather thin, flat shoe, made of good iron. At the heels it should be made a little wider and longer than the

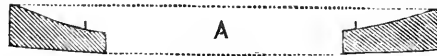


FIG. 499.—Concave Bearing-surface of Shoe 498 at Heel.

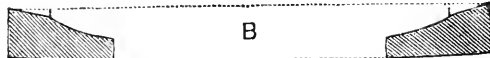


FIG. 500.—Concave Bearing-surface of Shoe 498 between Heel and Turn of Foot.

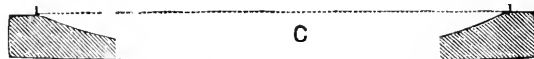


FIG. 501.—Concave Bearing-surface of Same at Turn of Foot.

foot, and the nail-holes punched, as in Fig. 565. Lay on the shoe as intended to be nailed, and with a pencil make a mark over the inside of the bar at the point of the heel on both sides. This done, accurately punch or drill two holes through the iron, about three sixteenths of an inch in diameter. If it can be done, it would be better to have the holes beveled on the inside of the bar, extending up and back at the point of the heel. Next, take two little pieces

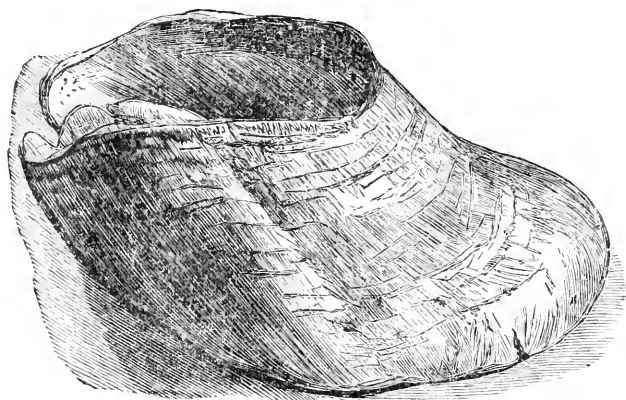


FIG. 502.—View of Hoof with Marked Depression across the Front, and a Corresponding Bulging downwards of the Sole.

of good iron or steel, about three fourths to seven eighths of an inch long, by about three sixteenths thick, and about five eighths of an inch wide. Cut down the end until it will fit the hole in the



FIG. 503.—Model Thin-heeled Shoe.

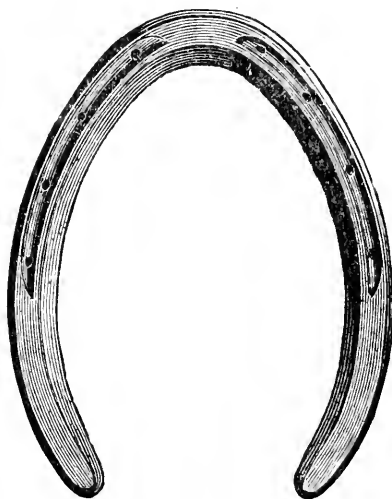


FIG. 504.—Light Hind Shoe.

shoe, and rivet it, as shown in Fig. 557. These are now to be warmed and bent, and, if necessary, filed so as to lie flat against

both heels, and just long enough to come a little short of touching the soft horn above it. Next weaken the shoe a little on both sides, which may be extended over a much larger space than shown in Fig. 558; or if the shoe is not very heavy, it may be spread

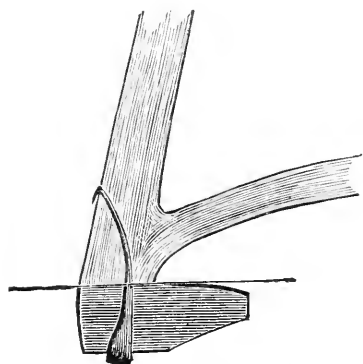


FIG. 505.—Sole and Wall Cut away too much.

without weakening. Regulate so as to come a little forward of the point where the hoof begins to draw in. If the shoe is thin, the inner edge should be turned up and formed into a clip, which, with a little care, can be filed and fitted. But if the shoe is at all thick, it would be somewhat difficult to do this; for if the clip is turned up so that the shoe is too large or too small, a very tedious, annoying bungle would be the result. In addition, it would be difficult to make the clips sufficiently long to enable bringing pressure as high up against the wall as it will admit, which is a very important point toward opening the upper part of the hoof.

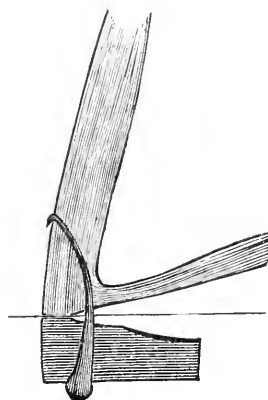


FIG. 506.—Wall not Cut away Quite Enough.

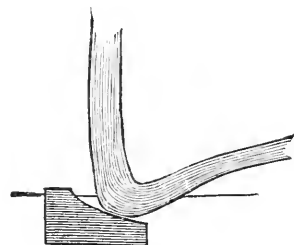


FIG. 507.—Heel as it Usually Rests on the Shoe.

The method before given, which necessity compelled me to devise and adopt, makes this simple and easy to do; and except the shoe is so thin as not to admit of punching or drilling, it will be found by far the simplest and best method of forming the clips. When properly adjusted, nail on carefully. The nails around the toe may be larger than those driven in the quarters; and while driven so as to give a good hold, and rather high, if the feet are at all sore and tender, great care should be taken that the hammering is not too heavy, nor the nails driven deep. The clinches should simply be turned down lightly. If the hoof extends out over the shoe at any point, it should be no reason for more rasping than merely to round off the edges of the horn. Let

it alone. It is frequently the case that one quarter is more contracted than the other; in fact, it is not unusual to have one side of the heel very much drawn in, while the other may be very little, if any, contracted; so that two conditions must be met; namely,

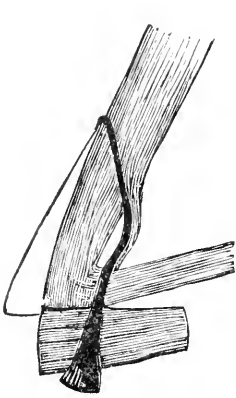


FIG. 508.—Bad Nailing.

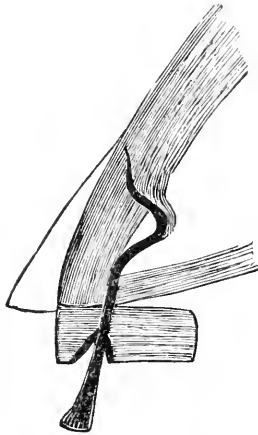


FIG. 509.—Nail Rucked.

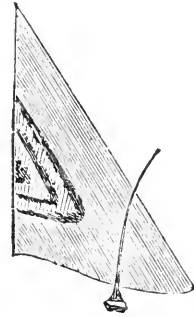


FIG. 510.—Good Nailing.

first, to open either heel as little or as much as may be desired, independent of the other. This the spreaders (which have been devised and patented by the writer) will enable doing in the most perfect manner. Simple as these spreaders are, the writer has found it very difficult to have them made properly. On this account he has found it necessary to have them made according to an

exact pattern, and they will be furnished at a moderate price to those desiring them.



FIG. 511.—Transverse Section of the Hoof of the Fore Foot of a Work Horse in which the Sole had Become Convex.

However necessary it may be to have this part of the work well done, it is, in reality, but a preparatory step for what follows.

First, if tongs or a screw be used to spread the shoe, the pressure being made equal on both sides, the side which is weakest must do

all the bending—opening that quarter too much without affecting the other at all. Another cause of difficulty is not having the tongs convenient with which to spread the shoe, and it is put off too long; and when finally attempted, done so roughly, or opened

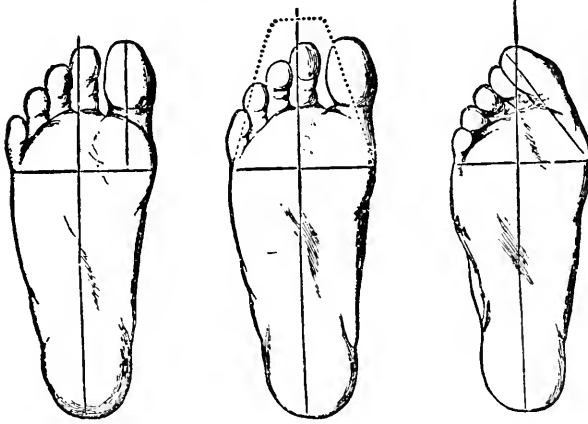


FIG. 512.

FIG. 513.

FIG. 514.

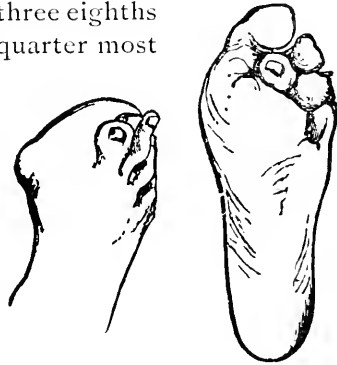
Shoe Should Conform to Foot. The Shoe Being too Small and Badly Adjusted, the Foot is Compressed and Necessarily Injured.

so much as to cause violent inflammation and lameness. With the spreaders, this difficulty is entirely overcome.

OPENING THE HEELS.

The method of doing this should be about as follows: First, measure between the heels of the shoe carefully, by cutting a bit of straw

or stick the exact length between them, and then estimate how much each heel will bear opening without causing soreness. Unless the foot is very soft and elastic, it is hardly prudent the first time to open them more than a quarter or three eighths of an inch. It is well to first open the quarter most contracted, which, until brought out to balance with the other, should be opened the most. Then measure again and spread the opposite side. If opened too much, or enough to cause soreness, a few light taps of the hammer against the outside will set it back. The feet should be kept soft by stopping with flaxseed-meal, and tying two or three thicknesses of blanket around, and wetting occasionally. In the course of an hour or two examine the condition of the feet carefully. If the horse puts out one foot, or indicates the least soreness, the quarters have been opened too much,



FIGS. 515, 516.—Very Common Result of Wearing Small, Bad Fitting Shoes.

and they must be at once knocked back sufficiently to relieve the undue pressure, and be kept wet. It is rarely, however, that the spreading of a quarter, or even three eighths, of an inch, will at first cause any soreness. On the contrary, it always gives relief. Still I think it necessary to use care. The horse can be driven or worked moderately, if desired. In two or three days the spreading can be repeated, but now not so much as before, and again in three or four days following, and so on at longer intervals.

If the foot has been properly prepared, two points will be accomplished by this spreading, namely, the severe compression upon



FIG. 517.—Natural Position.
Good Shoeing.



FIG. 518.—Effect of Contraction
and Soreness.

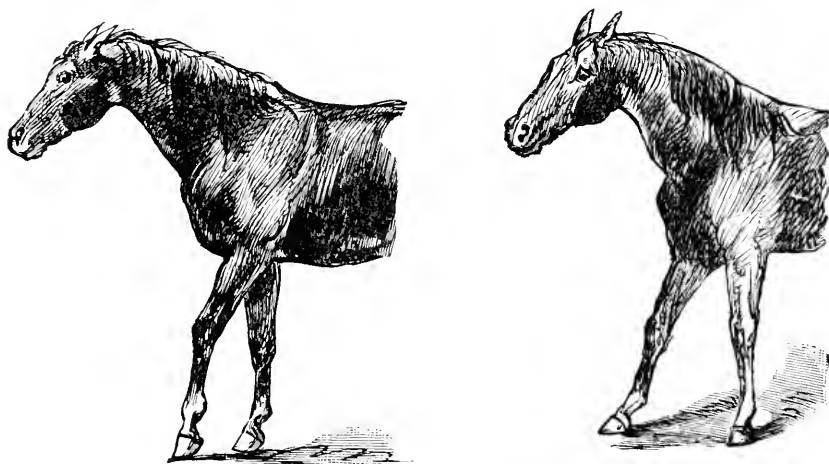


FIG. 519.—Extreme Case
of Contraction and Soreness.

the vascular structure and coronary ring will be immediately relieved, and the sole, which in all cases of this character has been forced up, as shown, to an acute angle, will straighten and let down. To aid this, the sole must, by paring, be made so flexible that, as the foot is opened, it will settle down and come back to its natural condition. The soreness resulting from the compression of the parts will be removed, and a better condition of circulation and nutrition result. By this course the mobility will not only be restored, the horse travel with more freedom and confidence, but as the hoof grows down it will become thicker and of a better fiber.

As before explained, to bring about a healthy condition of circulation and nutrition, the frog must necessarily be given contact with the ground to the degree it will bear, which should be provided

for by the thinness of the shoe. In some simple cases, nailing the shoe to the heel, as shown in Fig. 558, may be sufficient to hold the quarters firmly enough to enable spreading them as desired. The objection is that the wall is so thin at the point of the heels, that it may be difficult to get a good nail-hold without pricking or breaking out; besides, the nailing cannot be repeated. The nails should be small and driven very carefully, getting as much hold as the horn will admit of. The supposed objection to this plan of opening the quarters is, that it prevents their natural elasticity by their undue confinement. But this is not a valid objection; because in the di-



FIGS. 520, 521.—How a Horse Stands when Sore-footed or Lame.

rection it is desired to give them freedom outward, it only facilitates it, while at the same time it gives a certainty and positiveness of relief that cannot well be secured in any other way.

In fact, herein lies most of the success in the management of all conditions of contraction. In my experience I never have found a smith who could catch the points of properly preparing the foot and fitting the shoes for such cases. In every instance I have been compelled to stand over the shoer and dictate every movement or do part of the work myself. First, the want of judgment in preparing the foot; second, in adapting the weight of the shoe to the foot, and fitting the clips so as to enable opening the quarters easily and surely as desired.

MR. ROBERGE'S METHOD.

Since writing the foregoing my attention has been called to a

very simple and practical method of opening the quarters for the cure of contraction, which is used with marked success, and illustrated in Fig. 566, devised by Mr. David Roberge, a practical horse-shoer of great ingenuity and skill, located at No. 106 West Thirtieth Street, New York City. Various methods of opening the heels on this plan are given, which are from French and other authorities, to show the great effort that has been made by mechanical means to overcome this difficulty. But Mr. Roberge, by giving more length to the spring, and simplifying its construction, makes it all that can be desired. The

spring is made of steel, the exact proportion and adjustment of which is shown in Fig. 567. The wall is first weakened by sawing down slightly between the heel and frog, when the spring is placed

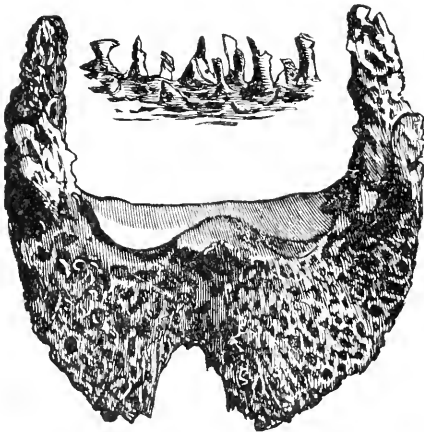


FIG. 523.—The Effect of Internal Inflammation.
Caused by Excessive Rasping and
Other Causes of Injury



FIG. 522.—Anterior Section of a Hind Hoof Made
Vertically across the Center, Showing the
Thickness of Wall.

in position with so much force given to it as may be thought necessary to press the heels outward as desired. The shoe is then nailed on over it, as ordinarily done. The pressure is gradual and constant, and must prove just the thing where both quarters will admit of equal pressure. But should one quarter be much more contracted or unyielding than the other, it does not seem to the writer that it would work so well, because the full pressure would then be thrown on the weaker quarter. But this, it is claimed, can be

obviated by nailing the shoe well back on the quarter of the opposite side, which would prevent that side from being acted upon

This spring, with particulars, can be obtained by addressing the patentee, Mr. Roberge.

ROLLING MOTION SHOE.

I also give illustrations of a form of shoe devised and largely used by him with great success, which he has patented. The object

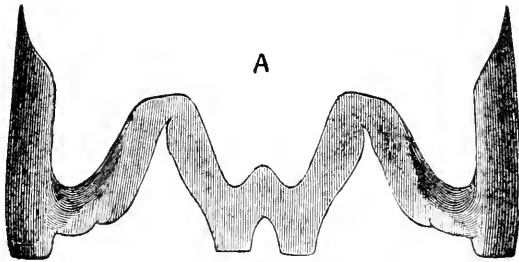


FIG. 524.—Transverse Section of a Model Hoof at the Quarters.

to be attained is, where there is want of mobility, or much soreness and inflammation, to so form and adjust the shoe that the foot will partly roll upon the ground, thereby relieving the strain and irritation. To use Mr. Roberge's words, "This shoe, by allowing

the foot to roll upon the ground, gives the foot the advantage of an extra joint, and to that degree relieves the strain or want of mobility, which causes lameness or soreness." Consequently, it not only enables the horse to travel easier, but aids in making a cure. This principle of treatment he has studied very closely, and it is remarkably successful.

This principle of treatment has long been in use. I give an illustration from Lafosse, showing a side view of the hoof fitted for the



FIG. 525.—Showing the Usual Arch of the Sole.

FIG. 526.—Showing Effect of a Little Contraction.

FIG. 527.—Sole Bent Upwards. Effect of Contraction.

shoe; also a specimen of the French shoe. The principle is to turn up the shoe at the heel and toe about the thickness of the iron. Mr. Roberge's shoe differs essentially from this, in that he gives a curvature sideways as well as with the length of the foot. What he terms his "best shoe," and which is the most unusual, is Fig. 568, which is a thin plate hammered into a rounded or bowl shape, the

exact proportions of which are preserved in the drawings given. Fig. 570 is a side view, which will give a good idea of the relative proportion of the curve. By this form of shoe the foot has perfect

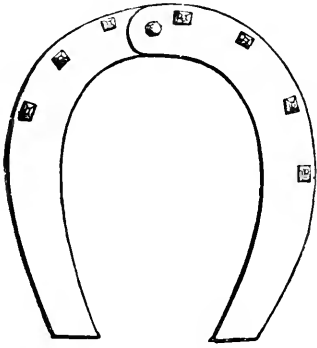


FIG. 528.—Hinge Shoe. From the French.

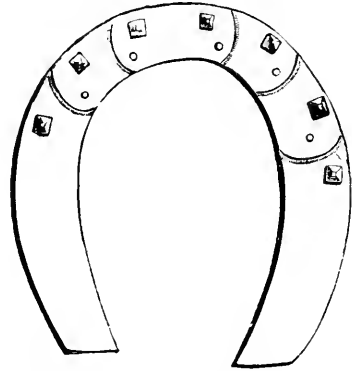


FIG. 529.—Form of Shoe Devised in England for Preventing Contraction.

freedom of motion either way. If the foot is feverish or dry, wet sponge or oakum is pushed in between the shoe and bottom of the foot. Fig. 572 is a view of the same made a little heavier, the same form of circle being preserved, with the difference of the central part being removed with cross-section of the same. The shoe from which this drawing was made was claimed to be the same that was worn by Dexter when he made his fastest time to road wagon. Figs. 575, 576, show the method of putting on calkins. In conversation with the writer, Mr. Bonner stated that David Roberge was one of the very foremost living students of the principles of shoeing. He is an unassuming, practical man, but is wonderfully successful.

QUARTER-CRACK.

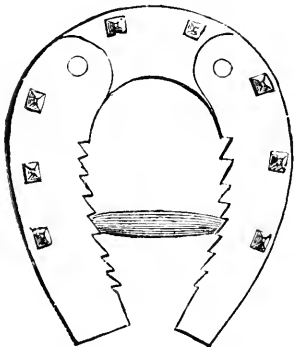


FIG. 530.—Form of Shoe Used by the French for the Cure of Contraction.

This is the one difficulty next to contraction which seems to have baffled the skill of the best veterinary authorities and horsemen to prevent or cure; because in extreme cases they had no practical treatment beyond that of a bar shoe, cutting away the horn so that the part back of the split would have no bearing upon it, or supporting the weak parts by drawing the edges together with nails, or fastening on a plate with screws, all of which are merely palliative, and not to be depended upon. It would, of course,

be easy to grow the foot down by keeping the horse in a stall or small yard where the ground is soft, but when put to work it would be liable to split down again as before. Consequently it has been one of the most vexatious and annoying of difficulties, because to do this it was necessary to keep the horse idle from three to six

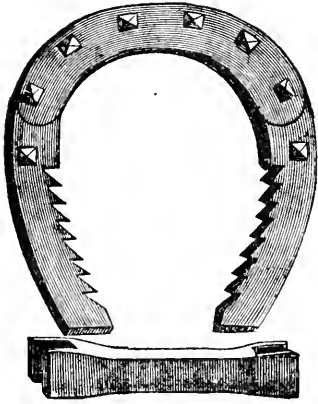


FIG. 531.

months; and then, when put to work, if by chance he were driven sharply over hard or frozen roads, the quarter was liable to burst, which would again make the loss of use necessary. Or it became necessary to resort to the palliative measures referred to, and thus in time the value of an otherwise

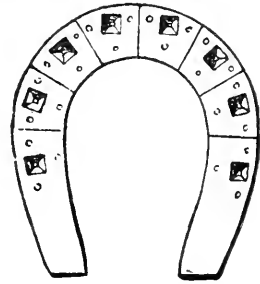
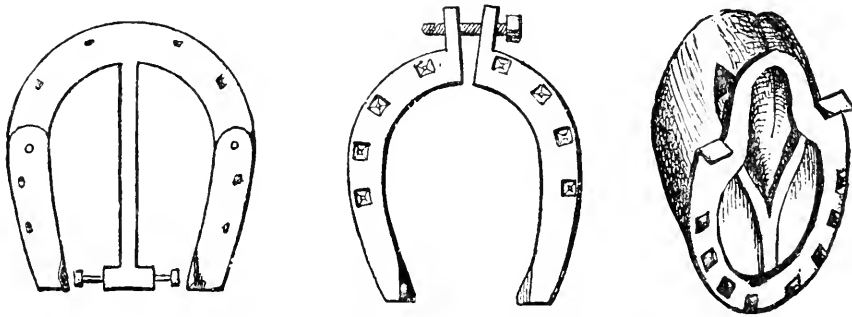


FIG. 532.—Shoe Made in Sections and Riveted together to Prevent Contraction.

good horse would be destroyed.

We see, in the first place, that the whole trouble arises from the hoof becoming contracted or too small for the internal parts. This will be most noticeable at the inner quarter by the wall becoming straight or drawn in sharply a little below the hair, the part at which the split invariably occurs. This is proved by the fact that the



FIGS. 533, 534, 535.—Different Forms of Shoes for Cure of Contraction.

quarter is most liable to burst or split when the hoof is dry and hard, or when concussion is increased by driving on hard roads. This tendency to split is also increased by the inferior quality of horn grown; because the contraction of the parts, or pressing of the wall in against the soft parts, so obstructs the circulation that there

is not sufficient blood to grow sound, tough, healthy horn. On this account the only reliable and practical cure is opening the quarters sufficiently to remove pressure until the new horn is grown, which can be done to any degree desired, as follows: First, cut down between the bar and the frog of the inner quarter, as explained for contraction, until it will yield readily to pressure. Next cut



FIG. 536.—Ordinary English Shoe.

away the edges of the wall to the end of the split; then make a crease with the firing-iron at the edge of the hair. If the split extends well up into the coronary band, this can be omitted, and instead, the iron touched lengthways with the split. If, however, the

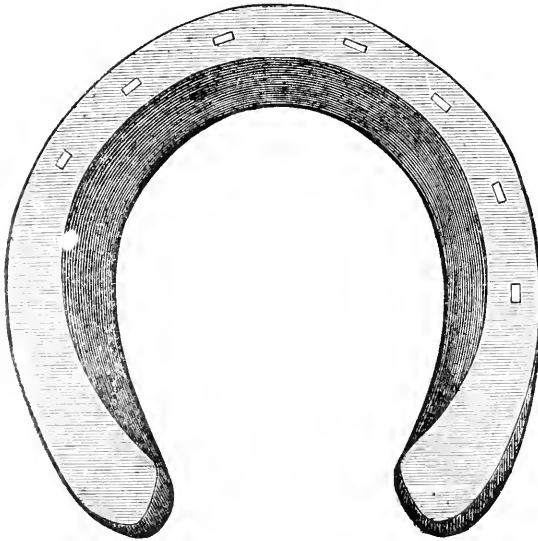


FIG. 537.—Bearing-surface of Ordinary English Shoe.

quarter is properly opened, such interference with the firing-iron will be unnecessary, as the horn would usually grow down sound without it. Now, fit a shoe as explained for contraction, putting a clip only upon the inner side (as shown in Fig. 585). The opposite side is to be nailed well back to counter-balance it. When the shoes are nailed on, with the spreaders open the quarter all

it will bear without producing soreness, or about a quarter of an inch. This done, fill the crack with a little melted resin or tallow, over which put a little tow to prevent gravel or dirt from working into the quick. It is next advisable to stimulate the growth of tough, healthy horn. This can be done with hoof liniment, which should be put on, as explained, two or three times a week. The hoof should not be permitted to become dry or hard, which can be easily prevented by stopping with flaxseed-meal and tying two or three thicknesses of blanket around the foot, and keeping wet while standing in the stable. The horse, if necessary, can be put to work as usual. In the course of a few days, spread a little more, or as

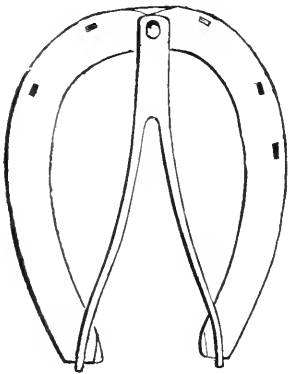


FIG. 538.



FIG. 539.

Forms of Spring Used for Spreading the Quarters.

much as may be necessary to make the hoof sufficiently wide to remove all pressure from the weak part. When grown down, the cause will be removed.

If an ordinary case, with but little drawing in of the quarters, simply lower the inside quarter a little so as to remove pressure from the upper edge of the wall, and put on a level shoe. Next, with a firing-iron burn a slight crease across the upper edge of the wall, keeping the foot soft, and stimulating the growth by applications of hoof liniment. This will enable growing the wall down without its splitting back. But if the quarter is drawn in perceptibly, then in addition to the creasing, the quarter must be given entire freedom, by cutting down between the bar and frog. The details of a very interesting case, and explanations of how I learned this method of treatment, and its success, will be found in connection with this part of treatment in my special work on the horse.

SAND CRACK, OR FISSURE AT THE TOE.

This is usually the result of a diseased condition or ulceration of the upper anterior part of the coffin-bone, caused by injury to the part. In a large number of dissections made by Mr. Gamgee, to whom I am indebted for treatment here given, he found cases of the pyramidal process to be common, and a depression down in front to be also frequent. The front of such feet is weak and deficient both in hoof and bone. The bottom of the foot must have nothing removed from it except to level it down at the quarters. The front of the hoof should be left rather long and deep, the shoe to come well back under the quarters, and clips to be taken up, one on each side of the toe. When the shoe is applied, the clips are neither to be let into the wall nor roughly hammered up to it, but to be drawn just tight enough to support and

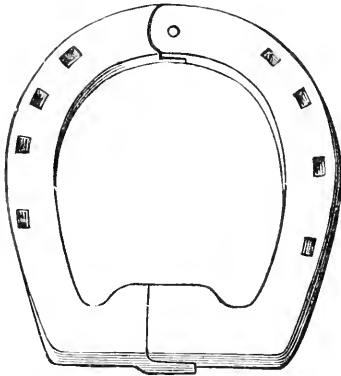


FIG. 540.—Hinge Bar Shoe for Cure of Contraction.

hold the part firm. For treatment of the fissure, take tar and resin one ounce and tallow a quarter of an ounce, and melt together. Apply this while warm to the fissure of the hoof and coronet, then place a layer of tow over this dressing, and bind the wall of the foot with a broad tape, to support its position and keep the part firm. A cure in bad cases is not to be expected.

CORNS.

Corns are usually to be found at the inner heel, or at the angle between the bar and the crust, and are caused by the shoe pressing upon the part. This will be most likely to occur should the wall break down, or be cut away so much as to let the shoe rest upon the sole, or should the shoe be nailed well back on the outside and toe, as then, if left on too long, it will be drawn outward and forward so much that the inner heel will be



FIG. 541.—Spring Inside Shoe Riveted to Toe Part for Expanding Quarters.

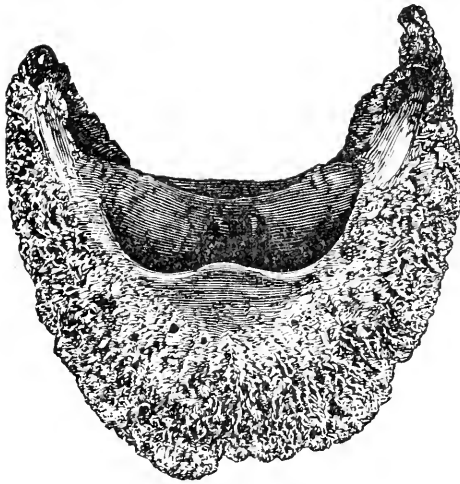


FIG. 542.—Showing the Effect upon the Pedal Bone of Sole Bulging Down.

the quarter is very much contracted, the space between the bar and quarter being greatly lessened, it causes such bruising or pressure upon the soft parts as to excite inflammation, or cause a corn. The usual remedy is to cut away the parts so that the shoe will not rest upon it, and put on a little caustic, or touch it with a hot iron, which destroys sensibility, and changes the condition of secretion. Butter of antimony or salts of niter are favorite remedies; then melt in a little tar, resin, and tallow, and cover with a little tow to prevent gravel or dirt working into the tender part. The usual way in severe cases, is to put on a bar shoe, so as to enable removing all pressure from the sore part. This mode of treatment, however, as usually done, is only palliative, not curative. The horse will travel better, but if the shoe is left on a little too long, or presses upon the part in the least, or should gravel or

drawn under the quarter, and rest upon this part, bruising it. When the sensitive sole is thus bruised, the effused blood mixes with the horny matter and makes a red spot, and if the irritation is continued so as to produce very much inflammation, ulceration may take place, which would, in some cases, be sufficient to affect the inner wing of the coffin-bone, and cause matter to break out at the coronet. Sometimes when



FIG. 543.—Representation of the Last Six Bones of the Foot, Showing Great Change of Structure.

dirt accumulate between the part and the shoe, inflammation and lameness will follow. The only remedy for this is to remove the pressure. But in time by this treatment the difficulty is only aggravated and made worse. Hence the usual assertion that "corns cannot be cured."

Gifford, one of my old performing horses, had a very bad bruise (corn) on one of his inner heels, which, if not carefully attended to, caused serious lameness. After being troubled with it about seven years, it had grown to such proportions as to involve the entire angle at the heel, so that the horn was broken quite through, and the sensitive structure partly

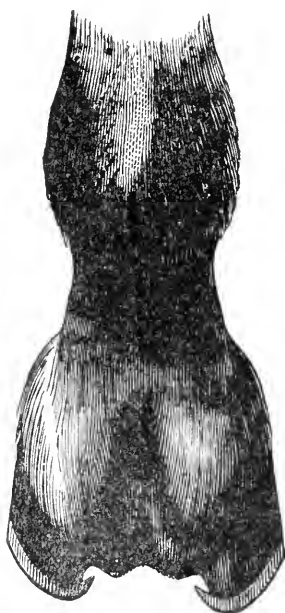


FIG. 545.—Form of Concave Shoe Used by the French for Expanding the Quarters.

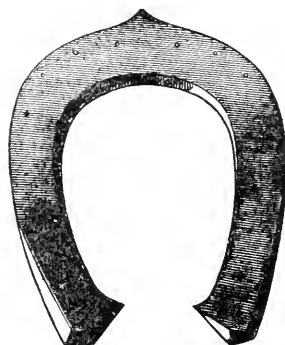


FIG. 544.—Showing Bearing-surface of Shoe Shown in Fig. 544.

ulcerated. At the close of the season's business, there was considerable inflammation and soreness in the entire foot. All palliative measures having failed, it finally occurred to me to try the experiment of removing all pressure from the part, and turning the horse out to grass. But there was another serious difficulty, to which, in part, some of the soreness might be attributed. By the contraction or curling under of the outer heel, it had become so weak that it could scarcely be made to support his weight in traveling, so I decided to treat this at the same time. The division between the bar and frog of this side was well thinned out to make the quarter flexible. Next a thin shoe of untempered steel, a little more than an eighth of an inch thick, was made to fit accurately to the wall (as shown by Fig. 588), the end being turned up for a clip, and fitted nicely to its place. The part of the opposite heel of the shoe coming over the

corn, was entirely cut away, leaving simply sufficient to cover the wall, which at this point was very thin. The shoe was now fastened on sufficiently to hold it firmly in place, but with very small nails.

There was no rasping or attempt to beautify the foot in any way.

Figs. 586 and 589 give a very good idea of the appearance of the foot before and after the shoe was put on. The quarter was now carefully opened about three eighths of

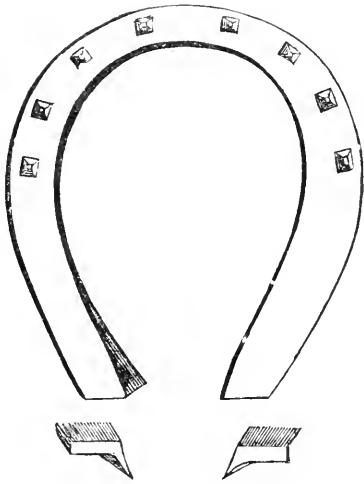


FIG. 546.

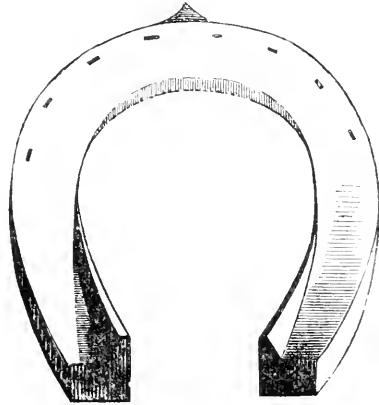


FIG. 547.

Devices for Cure of Contraction Used by the French.

an inch, without causing any irritation. Nothing was put over the bruise or corn, nor was it meddled with in any way. The horse was now turned out to grass daily. At first he moved very tenderly, though not lame. In a week the heel was again opened a little more, and again at intervals until opened out as desired. In a few weeks the tenderness, fever, and inflammation subsided; and at the expiration of three months the corn was entirely cured, there being a healthy growth of sole over the part, leaving only a slight appearance



FIG. 548.—Screw for Spreading Shoe.

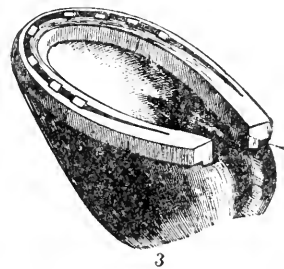


FIG. 549.—The Shoe as Adjusted.

of redness, on account of not being entirely grown out. The contracted quarter was also out to its natural position, the change for the better in all respects being very gratifying. An ordinary flat shoe was now put on, when he traveled as well as ever. The ma-

jority of such cases can be easily cured while the horse is kept at his usual work, by putting on an open shoe if the foot will bear it, if not, a light bar shoe, with the part coming under the corn entirely cut away, leaving only sufficient to cover the wall. It will not matter whether the bar is cut away or not, as there will be nothing over it to harbor gravel or dirt. It would be advisable to fit the shoe carefully, or even drive two or three nails, to know exactly the position of the shoe upon the wall. Then mark the part to be cut out, when the nails can be pulled out, the part cut or filed away properly, and the shoe again nailed in place.

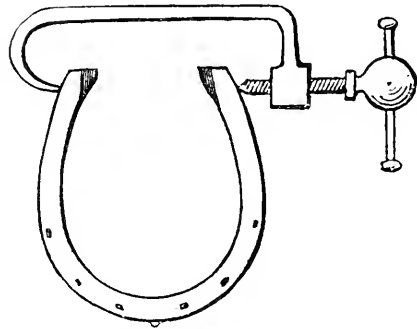


FIG. 550.—The Shoe Made Wider than Foot, with Clips at the Heels for Opening the Quarters. A French Device.

The success in the treatment of the case referred to, led me to believe I had made an important

discovery, as I had not found it laid down by any authorities on shoeing. Since then, upon investigation, I have found that the principle was well understood by many old authorities, though the method of treatment, as will be seen, was slightly different.

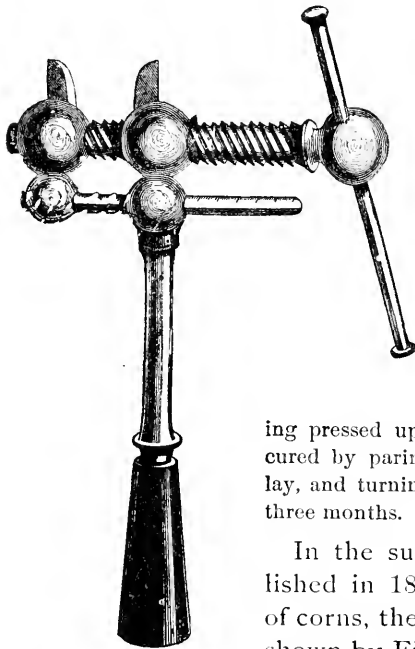


FIG. 551.—Form of Screw Used by the French for Spreading the Shoe.

On page 96 of Freeman's work on "Shoeing," published in 1796, he says:—

I have frequently bought horses whose feet, on examination, proved to have corns, occasioned by ill-made shoes having pressed upon them. These were, in general, easily cured by paring the feet properly where the grievance lay, and turning the horse out without shoes for two or three months.

In the supplement to Coleman's work, published in 1802, the writer found, for the cure of corns, the shoe cut away over the corn, as shown by Fig. 587.

Bracy Clark's work, published in 1809, gives an illustration of a shoe with that part which would come over the corn entirely cut away.

The half-moon shoe, or tip, by Lafosse, referred to hereafter, is claimed to cure corns. Cæsar Fiaschi, of the sixteenth century, gives a figure of a three-quarter shoe, almost the same form as that of Bracy Clark's, for this trouble. White's work, published in 1820, says:—

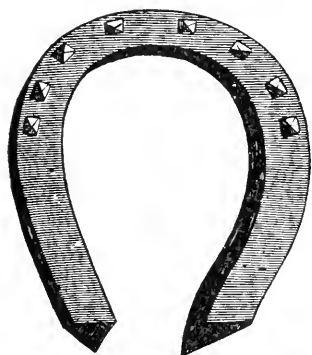


FIG. 552.—French Convex Shoe.

The only thing to be done is to take off the shoe, and turn the horse out to grass. In slight cases, however, this may not be absolutely necessary, and is often inconvenient, but it is by far the best plan, and I may add, *perhaps the only effectual one*, when a radical cure is desired.

WEAK HEELS.

If from any cause there has been much fever in the feet for some time, in consequence of being driven on hard roads, or being partially foundered, there will be diminished supply of horn, so that the wall will not only grow slower, but thinner. (See reference to inflammation and Figs. 555, 556.)

Sometimes the heels are cut down so closely that should the shoe work loose, and wear or break down the quarters, it would be

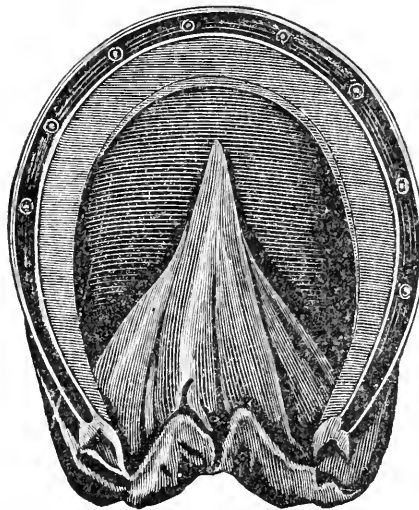


FIG. 553.—Bracy Clark's Convex Shoe.
From his Book Published in 1819.

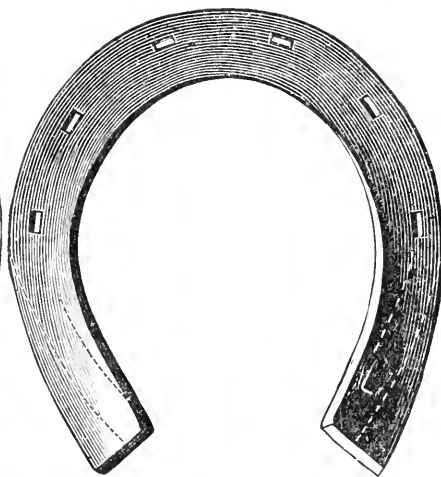


FIG. 554.—Ordinary Convex Shoe.

easy to produce a weak, low condition of the heels. This may cause a great deal of trouble, on account of the slowness with which the horn grows to supply the increased wear. This morbid condition of

inflammation also produces another very marked effect, namely, that of separating the wall from the sole, or what is termed becoming shelly. Sometimes, if the shoes are badly fitted and made too wide at the heels (as explained under the head of "Contraction"), they will soon cause a weak, bad condition of the heels, the quarter gradually giving way or breaking down; and if the foot is at all flat, the sole and frog become liable to settle, or are made convex.

One of the most marked cases of this kind the writer ever saw was that of a cart-horse, brought to his notice in Central Pennsylvania. The feet were broad and flat, with the heels drawn in to a point so that there was scarcely any bearing of them upon the shoe.

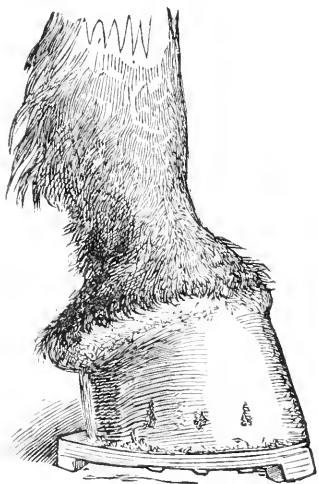


FIG. 556.—The Foot Drawn in and Deformed from Long-continued Inflammation Caused by a Nail being Driven into the Foot, the Hoof Growing About Half an Inch Larger after the Inflammation Subsided.

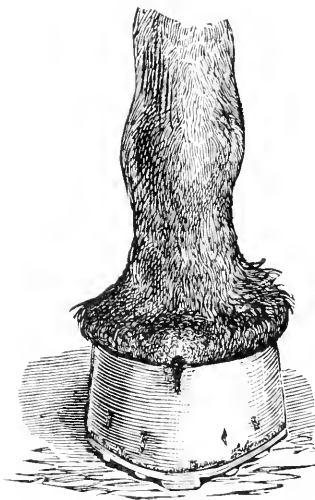


FIG. 555.—The Foot of a Pony that had been Calked, Referred to in Text, after the Inflammation had Subsided, Growing Nearly a Quarter of an Inch Larger.

The result

of this was that the horn wore or broke away until the line of bearing was over an inch above that of the frog. To remedy the difficulty the calks were raised correspondingly high to keep the frog from the ground. (See Fig. 594.) This horse traveled with great difficulty, even on a walk.

The course most likely to give success in the management of these cases, is to use a wide shoe that will give a large bearing-surface to the weak parts, and sustain them. Of course, nothing more should be cut away from the heels than is sufficient to only level them a little. Special care should be taken to prevent them from breaking and wearing down by the shoe, which may be done by placing a piece of leather between the bearing-surface and shoe. As the horn will usually be

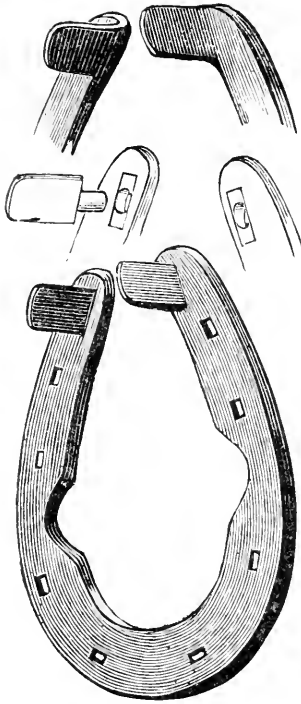


FIG. 557.—Shoe for Cure of Contraction. Devised by the Writer.

sole. Some time afterward my attention was called to a very high indorsement from this gentleman of a certain form of patent shoe that had been used on this horse. It stated that it enabled the horse to travel as well as ever, and that its utility was all that could be desired. I was interested to know just what kind of a shoe had been used, and when again in that vicinity, I found one at considerable trouble, of which I give an accurate drawing. (See Fig. 598.) While it may be evident that in many such cases the shoe could be made to support the entire sole, if hammered out of iron,

very brittle and weak, it is advisable to use great care in fitting the shoe, with thin clips on each side. At any rate, the shoe must be fastened on so firmly that it will not get loose. In some cases it may be necessary to bring the bar down so as to enable a more accurate line of adjustment to the shoe and frog.

When in Massachusetts, in 1876, a leading horseman called my attention to a fast-trotting stallion that had weak feet, and which caused him a great deal of trouble. He wished to know how to shoe them so as to improve their condition. I found the feet in good shape, but the sole and wall were very thin and weak, the effect, undoubtedly, of the horse being slightly foundered or overheated. I advised putting on a shoe that would support the sole and frog, the space between the shoe and frog to be packed with oakum. He objected that this would not do, as the horse would not bear any pressure at all upon the

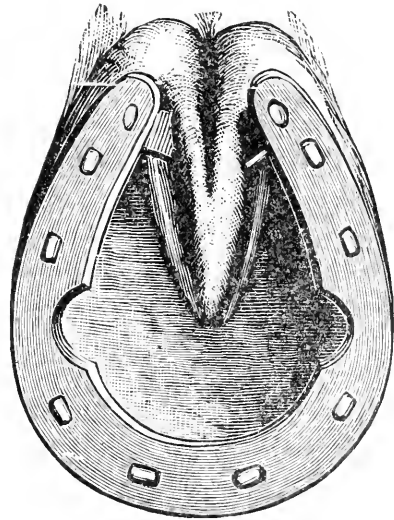


FIG. 558.—The Shoe Adjusted.

the increased weight would make it seriously objectionable. The fitting of a thin piece of steel plate, as shown in Fig. 598, would enable this to be done with but little addition to its weight. The manner of putting it on was simply by bringing the whole surface of the wall and frog to an even bearing, to which the shoe was carefully adjusted.



FIG. 559.—Spreaders in Position to Open the Heels.

ness, etc., for which it was advertised as a cure, it cannot benefit beyond the effect of slightly breaking concussion, as explained. It would be just the thing for weak heels and for any condition

Next, the space between the shoe and bottom of the foot was filled with oakum, to which was added a little tar and resin, so as to form an even but firm support all the way round.* The drawing of the oakum, as it appears in Fig. 601, is an exact illustration of that which was used upon the shoe named, though only the back part of it is shown. Parties who had used the shoe upon feet which had become sore and tender from driving upon hard, stony roads in the city and neighborhood, stated that it enabled the horses to travel much better. If the foot is sore and sensitive, supporting it with a bed of oakum in this way will serve to break concussion, and consequently make the horse go better for a time. But for contraction, quarter-crack, coffin-joint lame-

*A preparation of tar, beeswax, hard soap, and resin, melted and formed into a salve, to be used with oakum as a packing, was given the writer by a horseman of much experience, as the best for this purpose, claiming that it softened the feet and stimulated the secretion of horn.

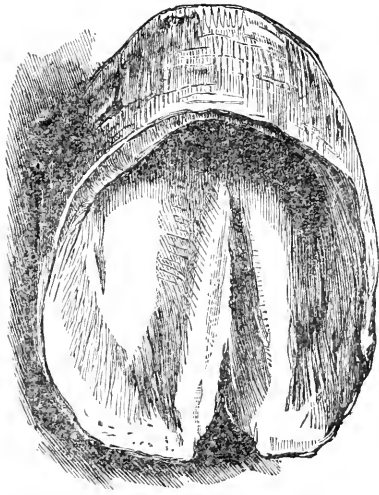


FIG. 560.—Back View of a Hoof Greatly Contracted, the Effect of Long-continued Inflammation.

where the sole and frog need support. As it is, however, seriously objectionable to cover the whole bottom of the foot when it can be avoided, I include cuts of an improvement by which the whole bearing-surface of the frog and heels, the important parts, can be supported without the sole being excluded from moisture or air, which is important for the secretion of healthy horn. In such a case, if desired, the plate instead of being let to the inner edge, can be extended across the quarter so that the upper surface will come even with the shoe, and be riveted on.

INTERFERING.

The main point in the management of interfering is to have the shoe close under the wall at the point of striking, and the offending part shortened or straightened a little, and to have no nails driven there, the clinches of which would soon rise and cause cutting. The edge of the shoe should be beveled under a little, and filed smooth. There is usually a good deal of carelessness in letting the shoe extend outside the crust at the point of the heel. It should set well under the wall all the way round, and the wall be filed smoothly to it. In addition, in some cases, the horse will travel better to lower the inside heel a little; in others, to raise it. It is in all cases advisable, however, if the horse

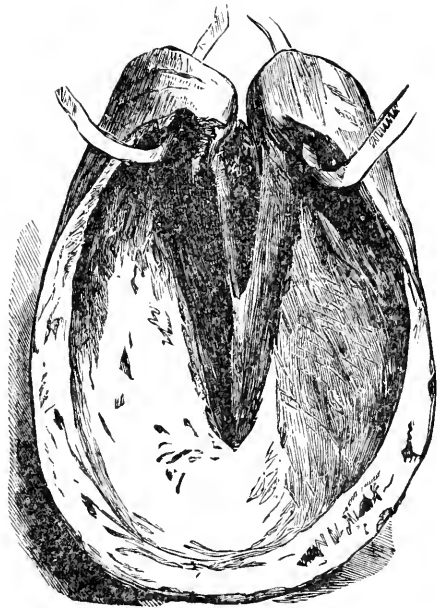


FIG. 561.—Showing two Openings Caused by Corns.

can be made to travel without striking, to keep the adjustment natural by paring the foot level and making the shoe of an equal thickness all the way round, with perhaps the inner part straightened a little.

Sometimes colts driven to a sulky, when a little leg-weary, may strike badly; in such a case the ankle must be protected. In all cases where the ankle is cut, the swelling and soreness increase the difficulty, and should be guarded against by covering. If the irritation is kept up, and this is not done, it may result in permanent enlargement of the part, which would afterward increase the liability to be hit. This can be prevented only by coverings, or by being protected by the ordinary simple means, until the inflammation subsides and the injury heals. Prof. McLellan says on this subject:—

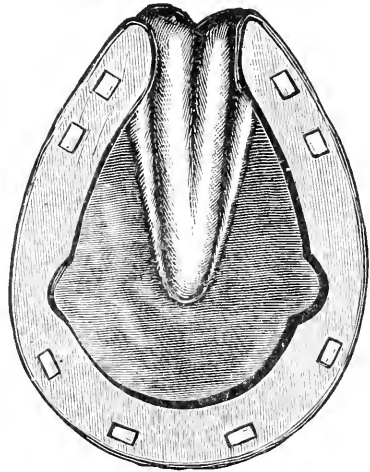


FIG. 562.—Shoe as Nailed on to be Spread.

Treatment for interfering, to be rational, must take into account the causations. Thus, if the toes turn out—a very common cause of interfering—they should be inclined in all that is possible. This can be accomplished by bending the outside web

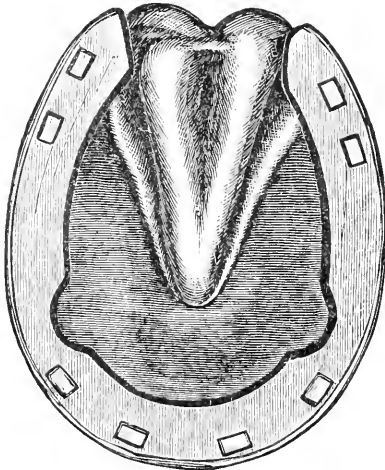


FIG. 563.—As the Heels Appear after Being Spread.

of the shoe from its inner to its outer border, making the edge through which the nails are driven, quite thin. Or if calks are used, the toe-calk can be welded nearer the inside than the outside toe, and the toe-calk beveled at the expense of its outer extremity. If the knee is banged, but light shoes are indicated. Lightness in the shoe is always desirable in the hind feet, and if the season of the year permits, tips will be found very effective in prevention of interfering. The nails should be left out of the hoof at the point where it strikes, because the clinches are liable to become raised or loosened, and do injury.

CLICKING, OR OVERREACHING.*

This is a term applied to the striking of the hind shoes against the forward ones during progression. It may be due either

* Contributed by Prof. McLellan.

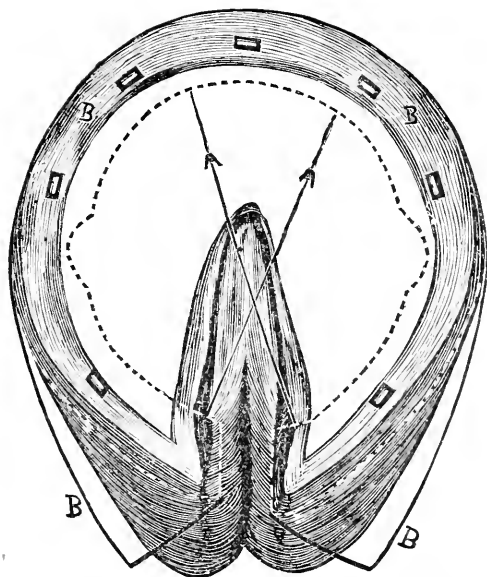


FIG. 564.—Badly Contracted Foot. The Lines B B Show the Degree to which the Foot may in Time be Spread.

that have diseased hind feet. In the first, the animal is not able, or has not learned, to dwell upon the hind feet to give to the body that forward impulse that comes from the *long push*; in the second, pain prevents the extension. In the case of the colt, shoeing must be supplemented by good driving,—the animal should be kept up to the bit, and the head well checked up, and should not be fatigued by overdriving. In the case where the clicking depends upon a diseased condition of the foot or leg, the removal of the cause is the indication. As general rules for the prevention of clicking, the toe of the forward hoof should be reduced all that it will bear; the shoe should be short, both at the toe and heel; the heels of the shoe should be beveled at the expense of its ground surface; when the toe should be beveled, giving the shoe, when applied, the appearance of one partly worn. In many cases concaving the ground surface of the shoe is useful. If the toes are long and the heels extremely low, thick-heeled shoes or heel-calks are indicated.

The hind shoes should be light, and long at the heels, giving the heels of the shoe as wide a bearing as possible. In case the toe

to a faulty conformation, to weakness, or to disease. In seeking to remedy the defect, we must endeavor to discover its cause. If it is due to defective form, we may so adjust the hoofs and apply the shoes that the feet shall be placed upon the ground in such relation to the body as to modify in some measure the fault of form. In some cases the toes of the forward feet must be reduced all that is possible, and the toes of the hind feet lengthened. In others, weights or heavy shoes upon the forward feet answer a good purpose. In some, weights upon the outside of the hind feet overcome the difficulty.

If the hind feet are placed upon the ground well forward when the animal is at rest, heel-calks of extra length will be found useful.

Weakness, as a cause of clicking, is shown in colts and in horses

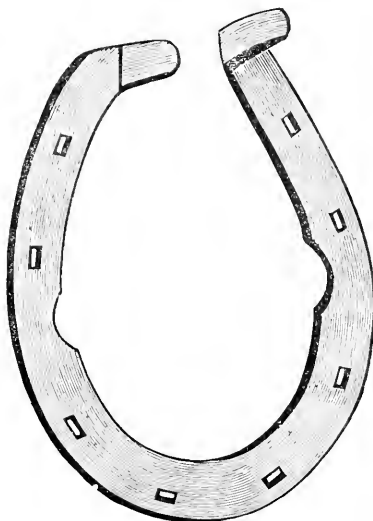


FIG. 565.—Simple Form of Shoe for Spreading the Quarters.

of the hind foot is much worn, and as a consequence the hoof spread at its plantar surface, clips should be drawn up from each side of the shoe, so as to grasp the wall at its widest part. No attempt should be made to fit the shoe to the squared and shortened toe; but give it the natural form, and let it project at the toe to that extent that would indicate the length of the hoof were it unworn. Heel-calks upon the hind shoes are applicable to nearly all cases.

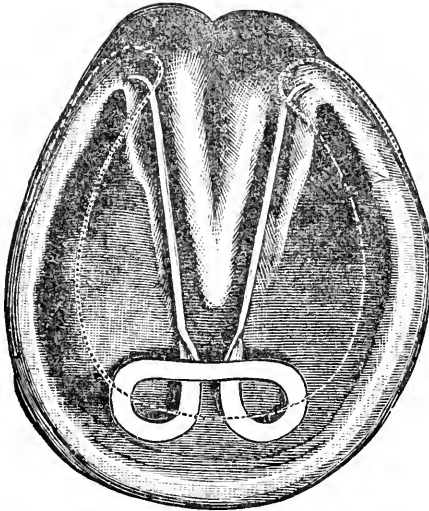


FIG. 566.—An Outline of Mr. Roberge's Spring, with its Position on the Foot.

In all cases of overreaching or clicking, adjusting the hoof and shoe so that the inside quarter and toe of the hoof are higher than the outside, will assist in overcoming the difficulty.

STUMBLING.

Stumbling is usually associated with some diseased condition of the foot. In the prevention of this disagreeable



FIG. 567.—Thickness of Spring, Full Size.



FIG. 568.—Width of Bar, Full Size.

and dangerous habit, particular attention must be given to cutting the hoof. Reduce the hoof all it will bear without injury; see that the hoof is of equal depth on each side of the toe. This you can ascertain best by standing in front of the horse and comparing the two sides. In fitting the shoe, bend up the toe, giving it the rounded appearance of one well worn. If calks must be used, weld toe-calk back to inner margin of web, making it low. In the stable use wet swabs to the feet.

SHOEING FOUNDERED HORSES.

If the mobility of the foot is destroyed, as the result of chronic founder, or other cause of morbid inflammation, mobility must be aided by rounding the entire shoe or toe. If the foot is entirely stiff, the shoe must be so formed that it will roll upon the ground, which can be easily done by leaving the inner edge of each side wide, and turning down in a half circle, as shown in Fig. 609.

If the sole is broken down, or the wall separated at the toe, the result of acute inflammation or founder, weight will be thrown more upon the heels. For such cases the shoe must be so fitted as to extend well back under the heels; and if the sole is thin at the toe—bulging down—it may be supported by letting a thin flange of iron

extend well back under it ; or fitting a steel plate across the part so as to give an even support all the way round, and the adjustment made easy by packing with oakum, though in most cases the sole will not bear pressure, and is simply to be protected by a wide shoe. The shoeing of such feet must be in a great measure experimental ; consequently the ingenuity of the owner or smith must be exercised to conform with best advantage to the condition of the case. First, do nothing that will irritate or make the foot sore. It simply must be supported to the best advantage, and the mobility aided by rounding the toe, or setting the calks well back under it.

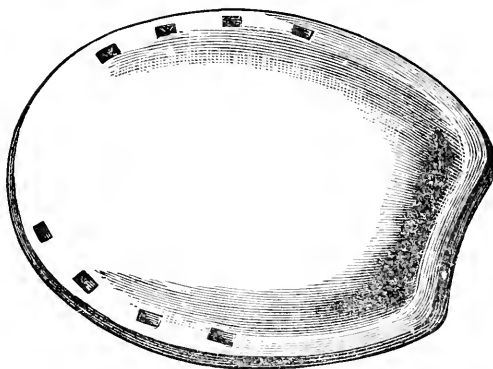


FIG. 569.—Roberge's Best Form of Shoe to Aid the Mobility of the Foot in Lameness.

SPECIAL CAUSES OF INJURY.*

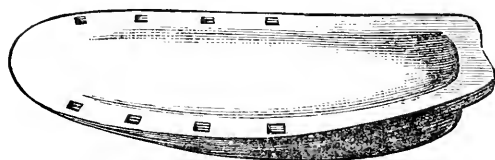


FIG. 570.—Side View of the Above, Showing the Curve.

I add references to a few authorities, showing the bad effect of paring the sole and frog excessively, rasping the outer surface of the hoof, and the use of thick, badly-fitting shoes.

I will call attention first

to the most prominent authority, Prof. Coleman, from whose teachings all the modern works in this country have been principally guided in their instruction. In January, 1792, a Veterinary College was started in London. A short time afterward Edward Coleman was appointed Chief Professor. I cannot do better here than to copy from Prof. Gamgee's work on "Shoeing," pub-



FIG. 571.—An Exact Scale of the Curve of the Above Shoe.



FIG. 572.—Cross-section of the Same.

* The illustrations in this article overrun the text, and this will explain why they are not placed opposite the matter referring to them.

lished in London in 1874, in relation to Coleman's teaching. He says:—

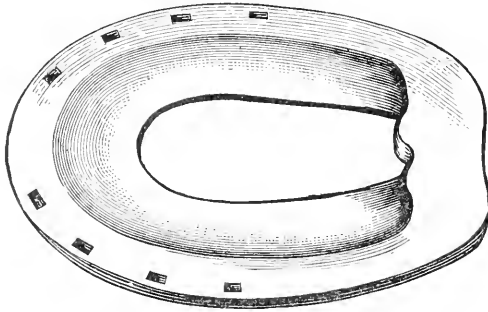


FIG. 573.—Ordinary Form of Rolling Motion Shoe.

the incalculable and, I fear, almost irreparable damage which has brought suffering



FIG. 574.—Cross-section of the Same.

“One change, among others introduced by Mr. Coleman, has entailed, I believe, a more lasting damage on the art farriery than any of his many other crochets, which have unfortunately become thoroughly parts of English horse-shoeing. He introduced the drawing-knife, and made it supercede the buttress for preparing the feet for shoeing. The buttress is the instrument still in use for paring down the wall

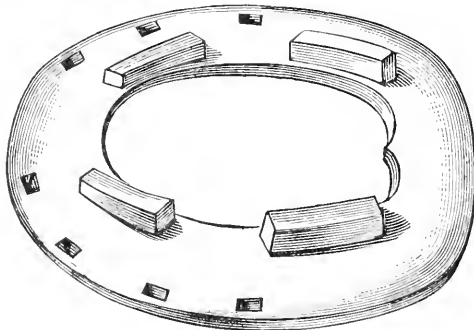


FIG. 576.—Ground Surface of Above, Showing Method of Putting on Calkins.

“In England, since Prof. Coleman ruthlessly destroyed the empirical knowledge of the old masters, and substituted for it a system of fantastic and often cruel notions, we have been a prey to endless speculative theories. The result is that with the best horses in the world, we have a far larger proportion of lame ones than are to be found in any other country. * * *

“It was a kind of teaching on the foot and on shoeing that did the suffering on horses and shortened their existence, which has spoiled farriers, by leading them astray on false pretexts, and has entailed discredit on the English Veterinary School. * * *

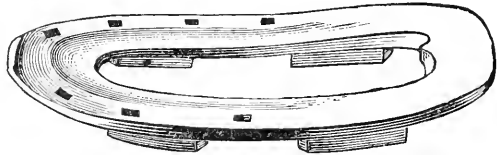


FIG. 575.—Side View, Showing Degree of Curve.

in England and parts of the New World, to which English hands and language have carried our modes of shoeing, such as it has become only within the present century.

“Old men can remember the buttress's being in general use throughout Great Britain; but the way it was banished from English practice is known to few; and its supercedence, and these remarks on the effects of the change, may astonish many. The drawing-knife, or searcher, as it was called, a small, hooked,

crooked little instrument, was formerly kept for the purpose of exploring wounds and extracting foreign bodies from the foot, and was to that extent in vogue on the Continent as well as in England. But theorizing, and a fancy for a change, led the professor to order the general use of the little hooked knife instead of such a broad, level tool as the buttress. He had unfortunately conceived such notions as that the sole of the foot did not bear the weight of the animal, that it was necessary to pare

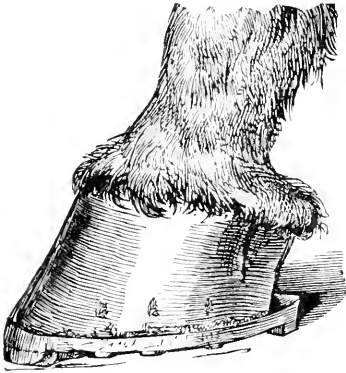


FIG. 577.—Quarter-crack.

it thin every time the horse was shod, and that the broad, level buttress was not suited for that; hence the preference for the little scooping, crooked searcher. As these incidents have had a disastrous effect on shoeing, which we have scarcely in any degree begun to relieve, I will quote from Mr. Coleman's work of 1798:—

“Those who supposed that the weight of the animal was chiefly supported by the horny sole, have attributed a function to that organ which it does not possess; but, although the laminae are capable of sustaining the animal, yet, as they are elastic, and at every step elongate, the horny sole is necessarily pressed down in the same degree, and by first descending and then ascending, as the laminae dilate and contract, the horny sole contributes very materially to prevent concussion. This union of the crust with the coffin-bone sustains the weight of the animal; the crust supports the weight even when the horny sole and frog are removed; if the sole and frog in reality supported the weight, then the foot would slip through the crust when the frog and sole were taken away.

“The sole, frog, and bars were taken away from both the fore feet of a horse; the feet were then alternately lifted by placing the hands on the loins of the horse; he kicked, all his weight was then sustained by the laminae of the fore feet, and yet this made not the smallest degree of change in the situations of the bones.

“From this experiment, therefore, it is, that the union of the sensitive laminae with the horny laminae is sufficiently strong to support the whole weight of the animal on two feet.

“The first thing to be attended to is to take away the portion of the sole with the drawing-knife; and to avoid pressure, the sole should be made concave or hollow. If there be any one

part of the practice of shoeing more important than the rest, it is this removal of the sole between the bars and the crust. In common practice these parts are removed by an instrument called the buttress.

“The removal of a proper quantity of horny sole has been represented to be a

“Those who supposed that the weight of the animal was chiefly supported by the horny sole, have attributed a function to that organ which it does not possess; but, although the laminae are capable of sustaining the animal, yet, as they are elastic, and at every step elongate, the horny sole is necessarily pressed down in the same degree, and by first descending and then ascending, as the laminae dilate and contract, the horny sole contributes very materially to prevent concussion. This union of the crust with the coffin-bone sustains the weight of the animal; the crust supports the weight even when the horny sole and frog are removed; if the sole and frog in reality supported the weight, then the foot would slip through the crust when the frog and sole were taken away.

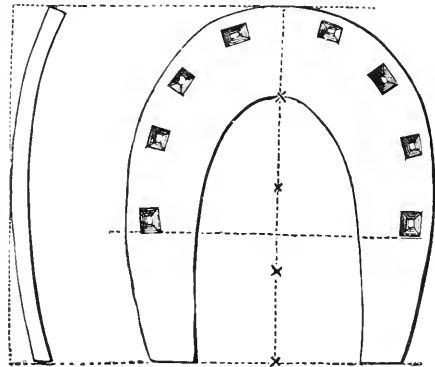


FIG. 578.—French Shoe.

delicate operation, and in the hands of common smiths liable to do mischief. But any smith capable of paring a hoof cannot fail to be equal to removing part of the sole with the drawing-knife. That the practice may be faithfully executed in the army, a farrier from each regiment of cavalry has been permitted to attend the college to learn the practical part of shoeing.'

"The foregoing passages, abounding as they do in errors, give evidence of the manner in which some of the greatest changes in the practice of horse-shoeing have occurred since its history has been written, and changes which have led to the worst possible results. Once, however, the notion got possession of the minds of the men at the wheel, that the bottom of the foot, its arched sole, was not designed to support the weight, but to yield to pressure downward; everything had to give way to that idea. The sole and frog were torn away, and because, during the barbarous experiment, the connection did not yield, and the bone protrude like a finger through a torn glove, negative evidence was taken in confirmation of the theory framed; the paring away of the horses' soles with the drawing-knife was thus established, and the army, by sending farriers to learn the new system, became the means of enforcing the absurd and cruel practice of thinning the sole throughout this kingdom and the colonies.

"It is interesting to see the differently constituted mind of Mr. Moorcroft on the natural bearing of the question in 1800. He says:—

"The sole ties the lower edge of the crust together, and by its upper part forming a strong arch, it affords a firm basis to the bone of the foot, and by its strength it defends the sensitive parts within the hoof.'

"This is true. We fail to discover a single passage in any work or any traditional account to show that any objection was raised to the continuance of the use of the buttress in England, any more than over the rest of the world, where it had been adopted from time immemorial, until, along with his other new theories about shoeing, Mr. Coleman believed it to be the wrong thing to employ, and then a crooked knife and a coarse rasp were adopted as weapons that might do more destructive execution than the one dismissed."

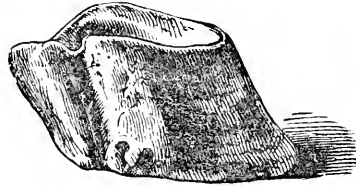


FIG. 579.—An Old Quarter-crack Grown Down.



FIG. 580.—Quarter-crack.



FIG. 581.—Toe-crack.

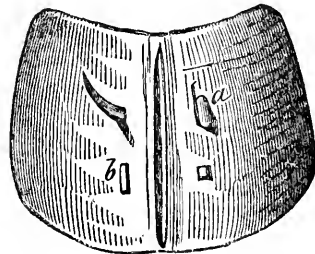


FIG. 582.—Toe-crack.

George Fleming, in his work on "Shoes and Horse-shoeing," says:—

"This evil of paring or rasping must be looked upon as the greatest and most destructive of all that pertains to shoeing, or even to our management of the horse.

Nine tenths of the workmen who resort to this practice cannot explain its object, and those who have written in defense of it say it is to allow the descent of the sole and facilitate the lateral expansion of the hoof.

“Fancy our gardeners cutting and rasping the bark off our fruit-trees, to assist them in their natural functions, and improve their appearance; and yet the bark is of no more vital importance to the tree than the horn of the sole wall and frog are to the horse’s foot.

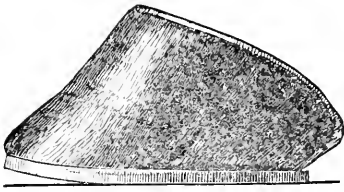


FIG. 583.—Quarter-crack.



FIG. 584.—Effect of Founder.

“The sole, frog, and bars must on no account, nor under any conditions, unless those of a pathological nature, be interfered with in any way by knife or rasp. As certainly as they are interfered with, and their substance reduced, so surely will the hoof be injured. Nature has made every provision for the defense. They will support the contact of hard, soft, rugged, or even sharp bodies, if allowed to escape the drawing-knife; while hot, cold, wet, or even dry weather has little or no influence on the interior of the foot, or on the tender horn, if man does not step in to beautify the feet by robbing them of their protection, perhaps merely to please the fancy of an ignorant groom or coachman.

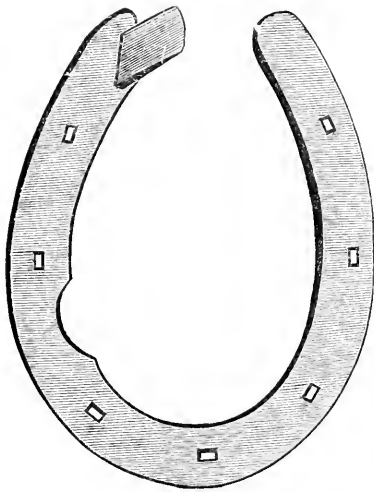


FIG. 585.—Shoe for Quarter-crack.

“If we closely examine the upper surface of the sole of a hoof that has been separated from its contents by maceration, we will find it perforated everywhere by myriads of minute apertures, which look as if they had been formed by the point of a fine needle. If we look also at the vascular parts of the foot that have been in contact with this horny surface, it will be observed that they have been closely studded with exceedingly fine, yet somewhat long, filaments, as thickly set as a pile of the richest Genoa velvet. These are the villi, or papillæ, which enter the horny cavity, and fitting into them like so many fingers into a glove, constitute the secretory apparatus of the frog as well as the sole. Each of the filaments forms a horn tube or fibre, and passes to a certain depth in a protecting canal whose corneous wall it builds. When injected with some colored preparation, one of them

makes a beautiful microscopical object, appearing as a long, tapering net-work of blood-vessels, surrounding one or two parent trunks, and communicating with each other in a most wonderful manner. These filaments are also organs of tact, each

containing a sensitive nerve, destined to endow the foot with the attributes of a tactile organ.

“This distribution will enable us to realize, to some extent, the amount of injury done by paring. The horn thrown out for their defense and support being removed by the farrier’s knife, and perhaps the ends of these villi cut through, the meager pellicle remaining rapidly shrivels up, the containing cavity of each vascular tuft as quickly contracts on the vessels and nerves, which, in their turn, diminish in volume, disappear, or become morbidly sensitive, through this squeezing influence. The feet of a horse so treated are always hot, the soles are dry and stony, and become unnaturally concave. The animal goes tender after each shoeing, and it is not until the horn has been regenerated to a certain extent, that he steps with anything like ease. Until the new material has been formed, each papilli experiences the same amount of inconvenience and suffering that a human foot does in a new, tight boot.

“This tenderness is usually ascribed to the nails and other causes ; and the horse, in the stable, rests on one foot, then on the other, as if he suffered uneasiness or pain. * * *

“All the preparation any kind of foot usually requires for the shoe may be summed up in a few words ; leveling the crust in conformity with the limb and foot, and removing as much of its margin as will restore it to its natural length, rounding its outer edge at the same time, and leaving the sole, bars, frog, and heels in all their natural integrity.”

Osmer, an old writer of good standing, in 1751 said :—



FIG. 587.—Shoe Fitted for Curing Corns. From Coleman.

of the hoof would most certainly split.”

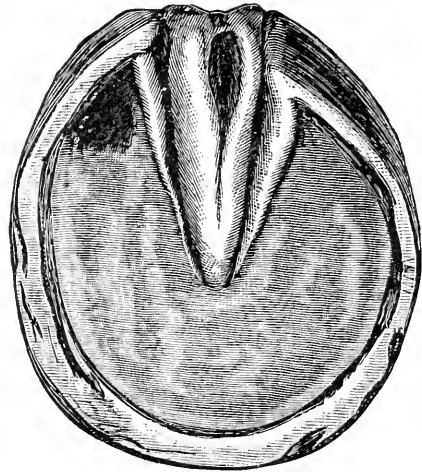


FIG. 586.—Gifford's Foot as it Appeared Before Treatment.

“I believe there are many horses that might travel their whole lifetime unshod on any road, if they were rasped round and short on the toe ; because all feet exposed to hard objects become thereby more obdurate, if the sole be never pared : and some, by their particular form, depth, and strength, are able to resist them quite, and to support the weight without breaking ; and here a very little reflection will teach us whence the custom arose of shoeing horses in one part of the world and not in another. In Asia there is no such custom of shoeing the horse at all, because the feet acquire a very obdurate and firm texture from the dryness of the climate and the soil, and do really want no defense. But every rider has a rasp to shorten his horse's feet, which would otherwise grow long and rude, and the crust

He continues by saying,—

“From the good that was found to arise from putting shoes on horses which have naturally weak feet from being brought up on wet land, the custom of putting shoes on all kinds of feet became general in some countries. Our ancestors, the

original shoers, proposed nothing more, I dare say, in their first efforts, than to preserve the crust from breaking way, and thought themselves happy that they had skill enough so to do. The moderns also are wisely content with this in the racing way.

“In process of time the fertility of invention and the vanity of mankind have produced a variety of methods; almost all of which are productive of lameness; and I am thoroughly convinced from observation and experience, that nineteen lame horses out of every twenty are lame of the artist, which is owing to the form of the shoe, his ignorance of the design of nature, and maltreatment of the foot, every

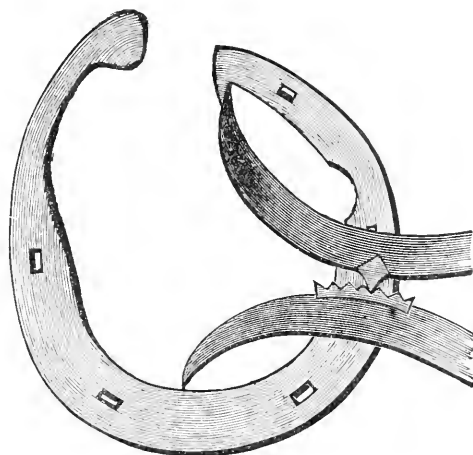


FIG. 588.—Position of the Spreaders for Opening the Quarter.

part of which is made for some purpose or other, though he does not know it.

“I suppose it will be universally assented to, that whatever method of shoeing approaches nearest to the law of nature, such is likely to be the most perfect method.* * *

“The superficies of the foot around the outside, now made plane and smooth, the shoe is to be made quite flat, of an equal thickness all around the outside, and open and most narrow backward at the extremities of the heels; for the generality of horses, those whose frogs are diseased, either from natural or incidental causes, require the shoe to be wider backwards; and to prevent this flat shoe from pressing on the sole of the horse, the outer part thereof is to be made thickest, and the inside gradually thinner. In such a shoe the frog is permitted to touch the ground, the necessity of which has already been seen. Added to this, the horse stands more firmly upon the ground, having the same points of support as in a natural state.

“Make the shoes as light as you can according to the size of your horse, because heavy shoes spoil the back sinews and weary the horse; and if he happen to overreach, the shoes, being heavy, are all the more rapidly pulled off.

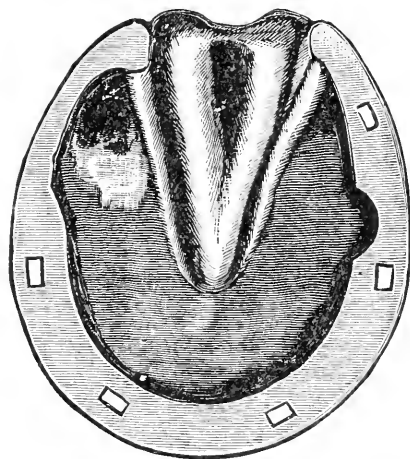


FIG. 589.—The Shoe as it Appeared when on, with the Quarters Opened Out.

“Those who think it frugality to shoe with thick and heavy shoes, and seldom, are deceived, for they lose more by it than they gain; for thereby they not only spoil the back sinews, but lose more by it than if they had been light.”

It is conceded by all the best modern authorities that the French author above referred to, whose work was published in 1750, was the great father of a correct system of reform in shoeing. It was supposed in his day, as it is in a great measure now, that a

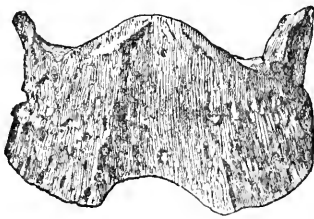


FIG. 590, 591.—Sand-crack, or Fissure in Front of Hoof.

A deep substance of horn is found beneath the fissure at the lower part of the hoof, where a corresponding cavity is formed by absorption in the coffin-bone.

horse could not travel without having heavy, unwieldy shoes on, and that the greatest skill was exhibited in the amount of cutting and rasping done on the feet.

He boldly proclaimed that all this was injurious, and tried to prove it by the most convincing arguments. The principles of treatment, though given a hundred and thirty years ago, are just as important now as they were then. He says:—

“In the state of nature, all the inferior parts of the foot concur to sustain the weight of the body; then we observe that the heels and frog, the parts said to be most exposed, are never damaged by wear, that the wall or crust is alone worn on going on hard ground, and that it is only this part which must be protected, leaving the other parts free and unfettered in their natural movements.”

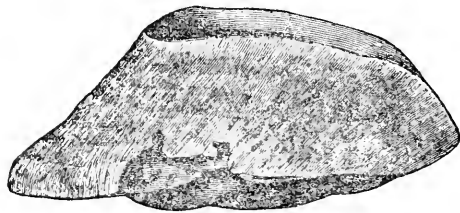


FIG. 592.—Flat, Convex Sole.

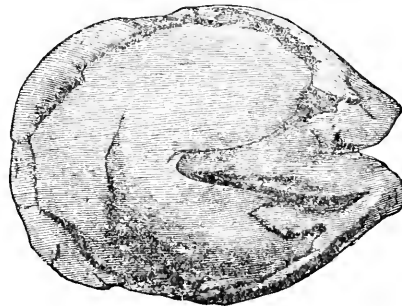


FIG. 593.—Flat, Weak Sole.

In advising tips or thin-heeled shoes, he says:—

“Thin tips extending back to the middle of the quarters, allow the heels to bear upon the ground, and the weight to be sustained behind and before, but particularly in the latter, because the weight of the body falls heaviest there.

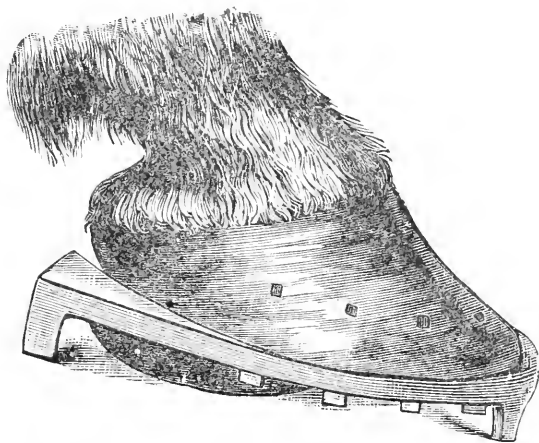


FIG. 594.—Foot Referred to in Text as it Appeared.

ing the ground. This is the only true method of preserving the foot and restoring it. A horse which has its feet weak and sensitive, ought to be shod as short as possible, and with thin branches, so that the frog comes in contact with the ground; because the heels, having nothing between them, are benefited and relieved. (See Fig. 479.)

“Crescent shoes are all the more needful for a horse which has weak, incurvated quarters, as they not only relieve them, but also restore them to their natural condition. Horses which have contusion at the heels (blains, corns), should also be shod in this way; and for cracks (seime, sand-cracks) at the quarter, it is also advantageous.

“The sole or frog should never be pared; the wall alone should be cut down, if it is too long. When a horse cuts himself with the opposite foot, the inner branch of the shoe ought to be shorter and thinner than the outer.

“Rasping the foot destroys the strength of the hoof, and consequently causes its horn to become dry, and the horny laminae beneath to grow weak; from this often arises an internal inflammation, which renders the foot painful, and makes the horse go lame. * * *

“The shorter the shoe is, the less the horse slips, and the frog has the same influence in preventing this that an old hat placed under our own shoes would have in protecting us from slipping on the ice. * * *

“It is necessary, nevertheless, that hoofs which have weak walls should be a little longer shod, so that the gradually thinning branches reach to the heels, though not resting upon them. For horses which have convex soles, these long shoes should also be used, and the toes should be more covered to prevent the sole touch-

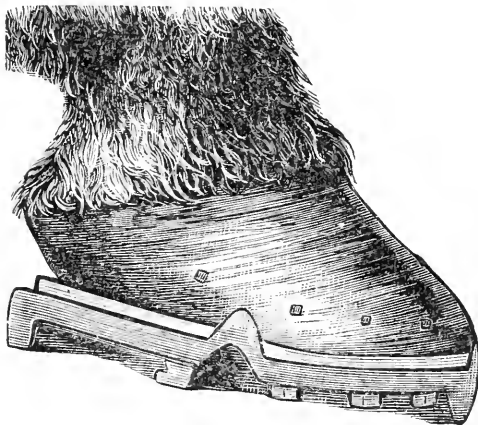


FIG. 595.—The Shoe as it may be Fitted to Support Weak Heels.

“When a horse loses a shoe, a circumstance often occurring, if the hoof is pared, the animal cannot walk a hundred steps without going lame; because in this state the lower surface of the foot being hollowed, the horse’s weight falls upon the crust, and this, having no support from the horny sole, is quickly broken and worn away; and if he meets hard substances on the road, he all the more speedily becomes lame. It is not so when the sole is allowed to retain its whole strength. The shoe comes off, but the sole and frog resting on the ground, assist the crust in bearing the whole weight of the body, and the animal, though unshod, is able to pursue his journey safe and sound. . . . It is necessary to be convinced of another fact: that is, it is rare that a horse goes at his ease and is not promptly fatigued, if the frog does not touch the ground. As it is the only point of support, if you raise it from the ground by paring it, there arises an inordinate extension of the tendon, caused by the pushing of the coronary against the navicular bone, as has been mentioned above, and which, being repeated at every step the animal takes, fatigues it and induces inflammation. From thence often arises distentions of the sheaths of tendons (moletts-vulgo, ‘windgalls’) engorgements, and swelling of tendons, etc., that are observed after long or rapid journeys. These accidents arise less from the length of the journey, as has been currently believed,

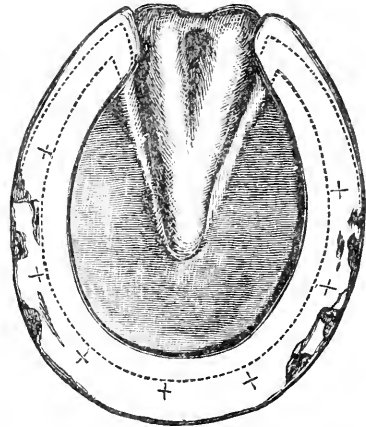


FIG. 596.—Points Showing where the Horn is Strongest to Drive the Nails In.

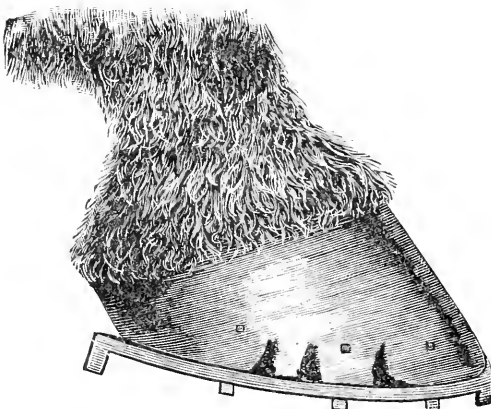


FIG. 597.—The Same as would Appear with the Shoe On.

than from the false practice of paring the sole. . . . We always find ourselves more active and nimble when we wear easy shoes; but a wide, long, and thick shoe will do for horses what clogs do for us,—render them heavy, clumsy, and unsteady. * * *

“The feet become convex by hollowing the shoes to relieve the heel and frog, because the more the shoes are arched from the sole, the more the wall of the hoof is squeezed and rolled inward, particularly toward the inner quarter, which is the weakest; the sole of the foot becomes convex, and the horse is nearly al-

ways unfit for service. * * *

“The reason why it is dangerous to pare the feet of horses is, that when the sole is pared, and the horses tands in a dry place, the horn becomes desiccated by the air which enters it, and removes its moisture and its suppleness, and often causes the animal to be lame. * * *

“It is the pared foot that is more affected with what is termed contracted or weak inside quarter, and which also lames the horse.

“It also happens that one or both quarters contract, and sometimes even the whole hoof, when, in consequence of its smallness, all the internal parts are confined in their movements: this is due to paring, and lames the horse.

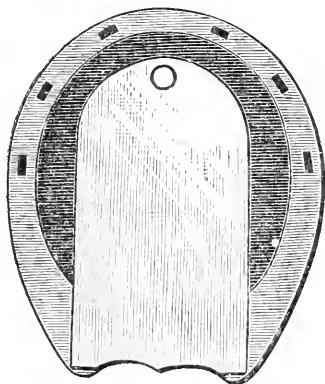


FIG. 598.—Original Shoe Fitted with Plate On.

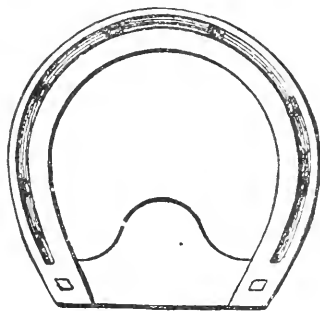


FIG. 599.—Form of Bar Shoe which would be a Good Support for Weak Heels.

“There also occurs another accident: when the quarter becomes contracted, the hoof splits in its lateral aspects, and the horse is lame. This accident is termed a sand-crack (*seime*).”—*Lafosse*.

Though not generally known, this system of shoeing has long been in use in India. Freeman, in his work published in 1796, who

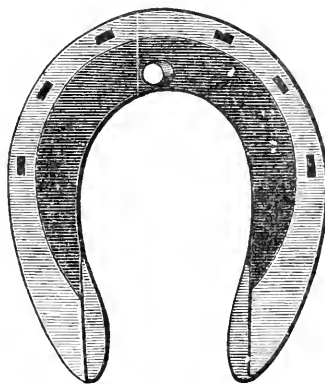


FIG. 600.—Same as 598 with Plate Removed.

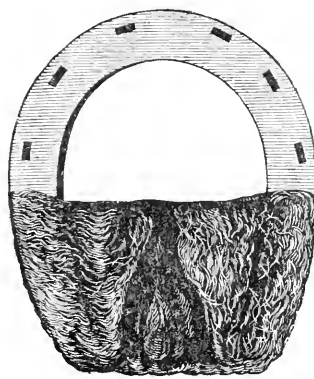


FIG. 601.—Heel of Shoe 598 with Pad of Oakum Attached.

is yet considered good authority, strongly advocated this system of shoeing. He gives the following statement, which explains itself:—

“The instance in which I was disappointed was that of a horse kept entirely for a riding-horse, and which was consequently almost daily under my own inspection.

This horse had very strong feet, one of which was smaller than the other, with the toe turning out and the frog almost wasted. The bars of the foot, before he was turned out, were scarcely visible, but upon examining them after he had been out

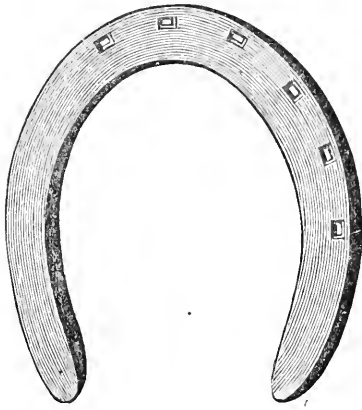


FIG. 602.—Bearing-surface of Shoe to Prevent Striking.

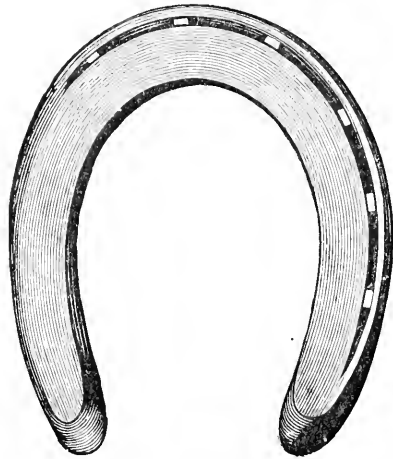


FIG. 603.—Forward Shoe to Prevent Striking.

about three months, they were found to have increased surprisingly. Notwithstanding this, they were not strong enough to counteract the pressure of the quarters; and the foot itself seemed to be rather decreased, which is contrary to what is usual; for after having been turned out for a certain time, they generally become larger. So particular a case led me to turn my mind to a particular method of cure. This I should hardly have found out, if chance had not at that time put into my hands Lieutenant Moor's "Narrative of Captain Little's Detachment." On page 93 of this book is the following passage:—

"The bigotry with which all sects of the Hindoos adhere to their own customs is very well known; still when these customs are strikingly injudicious, and totally abstracted from all religious prejudices, perseverance degenerates into obstinacy, and simplicity into ignorance. So it is with the Mahrattas in abiding by their present practice of cutting the hoof and shoeing horses; they cut away the hinder part of the hoof in such a manner that the pastern almost touches the ground, and the frog is suffered to grow so that the hoof is nearly a circle, in which form the shoes are made, the hinder parts almost touching, and so thin that a person of ordinary strength can easily twist them. Instead of making the back part of the shoe thickest, they hammer it quite thin, making the fore part thickest, and the shoe, gradually becoming thinner, ends in an edge."

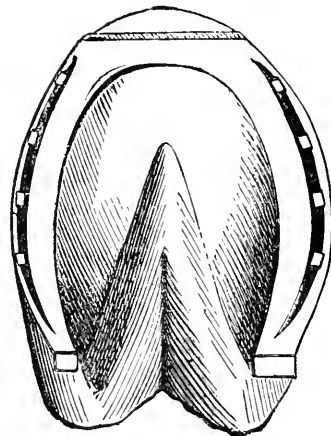


FIG. 604.—Shoe to Prevent Interfering or Clicking.

“This mode of shoeing in a country where, from the nature of the climate, the horse’s feet probably are very strong, did not strike me to be quite so injudicious as the author above mentioned represents it. I determined, therefore, to try on this particular horse a shoe in some respects similar to those described, that I might see whether it would alter the shape of his foot ; since it is said to make ‘the frog grow so

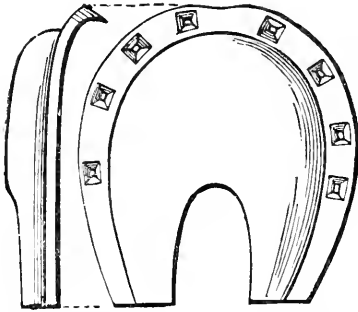


FIG. 605.—Form of Shoe Adapted for Protection of the Foot and Aiding Mobility—From the French.

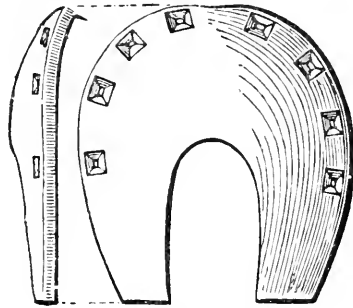


FIG. 606.
Ground View of Same.

that the hoof is nearly a circle,’ which was the very effect that in this case I wished to produce. I therefore ordered my sraith to make a shoe at my own forge in the form I generally use (which will be hereafter described), with the following exceptions: The web of it was to almost cover the sole, room being given to admit a picker ; and as it proceeded to the heels, the web on each side was to be continued as far as the cleft which separates the bars from the frog. He was to make the fore part the ‘thickest,’ and to hammer it so thin at the heels that it would ‘end in an edge,’ by which a person of ordinary strength could easily twist it.

‘I own I apprehended that this shoe, from being so thin at the heels, would bend in different places, and thereby injure the foot. But as it was constantly under my own eye, I knew that if that circumstance should happen, the injury could not be material in the short time it

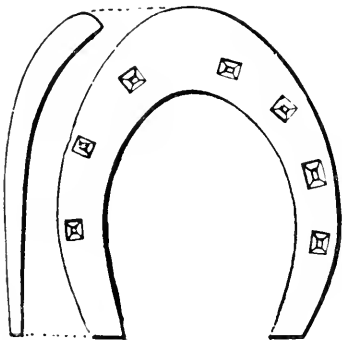


FIG. 607.—Form of Shoe Adapted to Hind Foot to Aid Mobility. Used by the French.

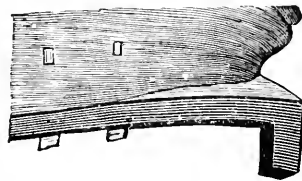


FIG. 608.
Shoe Raised from the Heel.

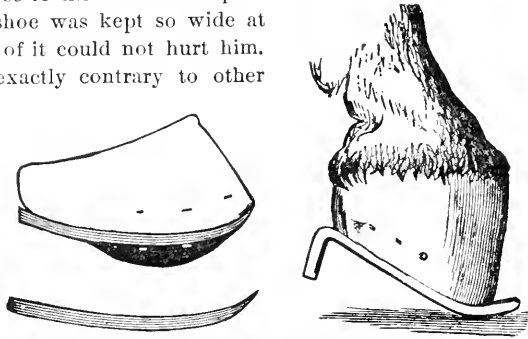
would be permitted to go unnoticed. But this did not prove to be the case. After the horse had worn this shoe a day or two only, I found the action of the leg was more free than it had ever been before ; for the bars with their covering touched the ground ; the extremities of the web on each side, by being so very thin, having

bent a little over them, but they were prevented from injuring them by being extended to the cleft which separated the bars from the frog. This pressure of the web on the bars was an assistance to them in the expansion of the quarters; and the shoe was kept so wide at the heels that the exterior parts of it could not hurt him. This shoe, therefore, acted exactly contrary to other shoes, which, as I before mentioned, are generally an impediment to the expansion of the heels, whereas this became an assistance to it.

"In three weeks I took off this shoe to examine the state of the foot. His frog was found to be increased, and in a better condition than I had before seen it. The same shoe

was therefore replaced for three weeks more, at the end of which time his foot had become considerably larger and straighter. In a week or ten days more the horse was to go thirty-six miles on a turnpike road.

"Although this kind of shoe had succeeded so well in a riding-horse, I had some doubts about venturing it on the road. However, I at last determined to risk it, and had another shoe put on of exactly the same pattern, in which he performed his journey without any injury, so that I have ever since continued to adopt it, having found it to answer beyond any expectation I had formed of it; for that foot which was before smaller than the other, with the toe turning out, has, by the use of this shoe, become of the same size, and so straight that there is now scarcely any difference between the two feet."



FIGS. 609, 610.—Shoes Adapted for Stiff Joints.

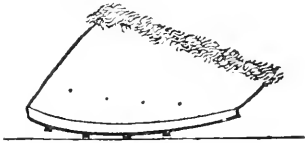


FIG. 611.—French Shoe for Aiding Mobility.

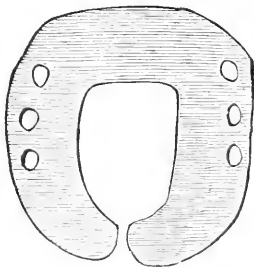


FIG. 612.



African Shoes.

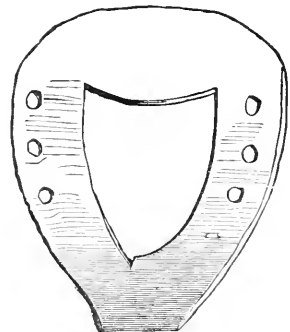
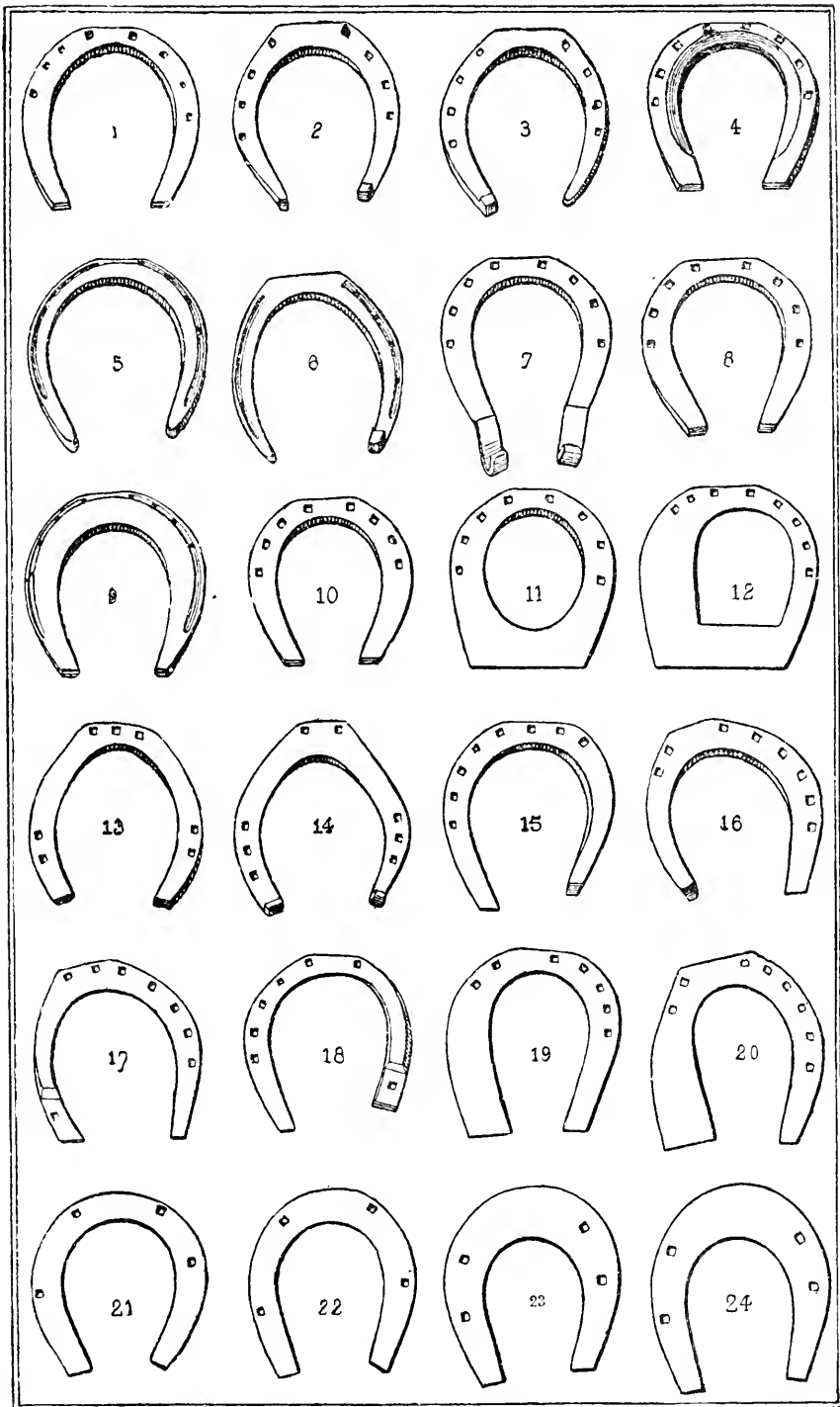
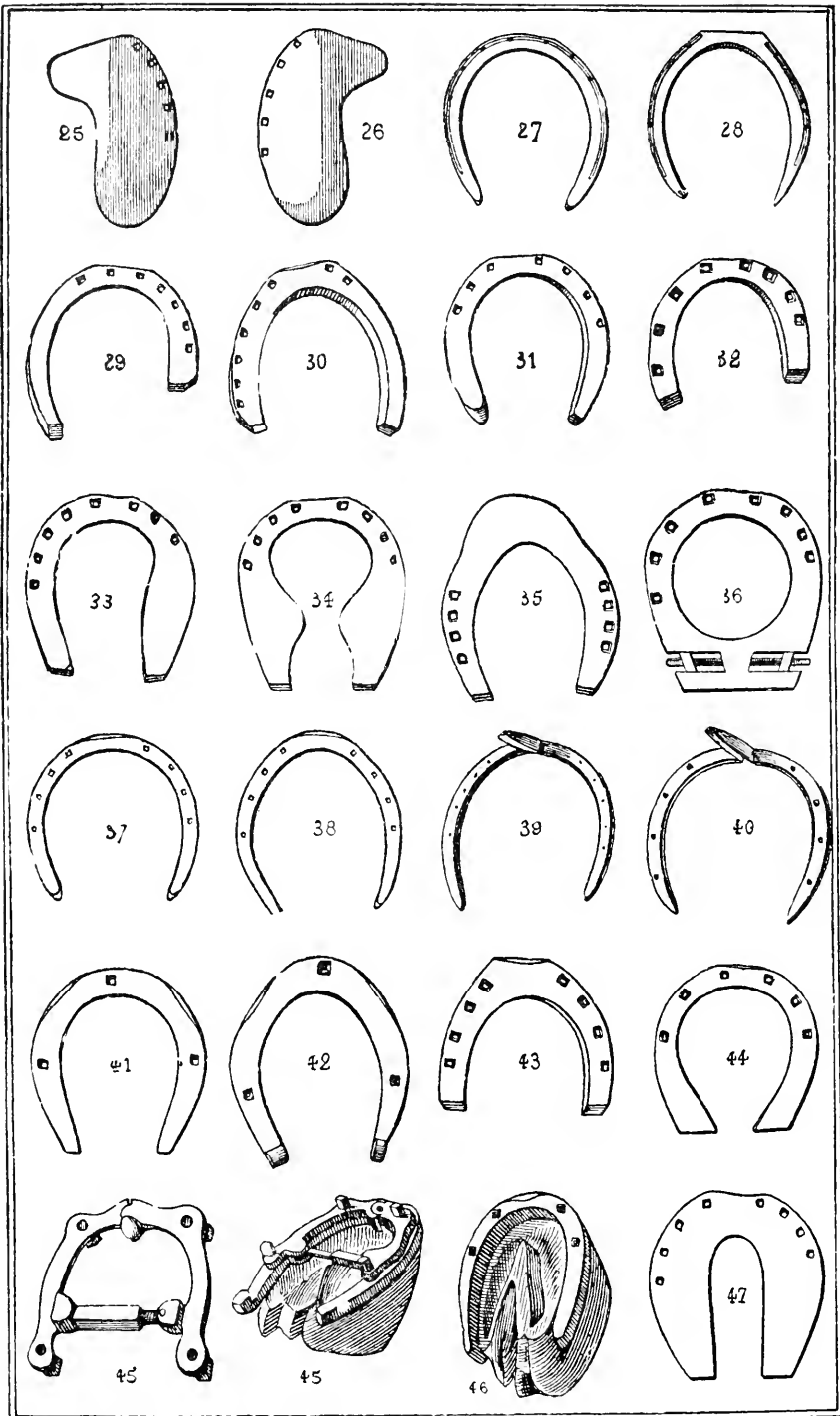


FIG. 613.

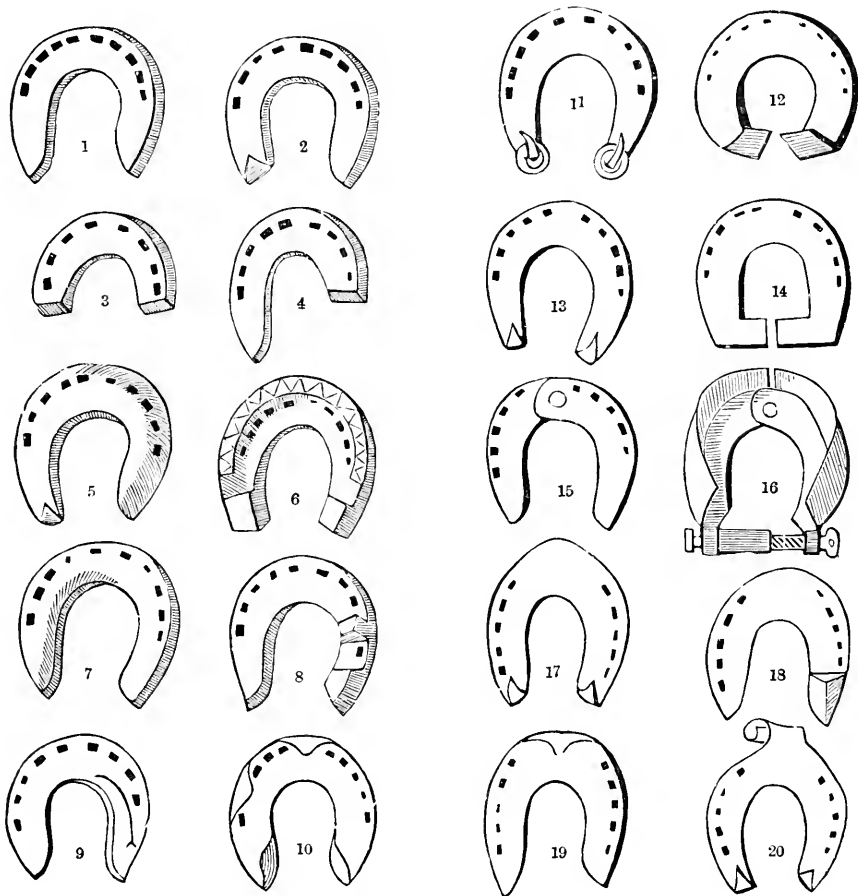


Representative Model Shoes of Different Kinds. From the French. [83]



[84] Representative Model Shoes of Different Kinds. From the French.

We give here a few specimens of shoes from Cæsar Fiaschi's work, published in England in the 16th century. The figures of shoes he gives are twenty in number. No. 1. Fore-shoe without calkin ; 2. Shoe with the calkin ; *à l' Aragonaise* on one side, and the other side thickened ; 3. *Lunette* shoe, or "tip" ; 4. Three-quarter shoe ; 5. Beveled shoe, with the *Aragonaise* calkin on one



FIGS. 662—681.

branch, and the other thick at the heel ; 6. Shoe with *sciettes*, or projecting toothed border, thickened toward each heel to prevent slipping ; 7. Thick-sided shoe, thin toward the inner border, and seated like the English shoe ; 8. Shoe with buttons, or raised catches on the inner branch, and thickened on the heel of the same side ; 9. A shoe which has the inside heel and quarter much thicker and

narrower than usual; 10. A shoe with crests or points toward the ground surface on the toe and quarter, and *barbettes* at the heels; 11. A shoe with the calkins doubled over, and provided with rings; 12. The foot surface of a shoe with the heels turning up toward the foot; 13. Shoe with two calkins; 14. A *bar* shoe; 15. A jointed shoe to suit any size of foot; 16. A jointed shoe without nails, and secured by the lateral border and the heel-screw; 17. A hind shoe with calkins; 18. A shoe with one of the branches greatly thickened at the heel; 19. A hind shoe with a crest or toe-piece; 20. A hind shoe with the toe elongated and curled upward, probably for a foot the back tendons of which were contracted, causing the horse to walk on the point of the toe.

Below, in Figs. 682-685, are given a variety of old Roman shoes found in England, France, and Switzerland, and supposed to be from nineteen hundred to over two thousand years old.



FIG. 682.



FIG. 683.

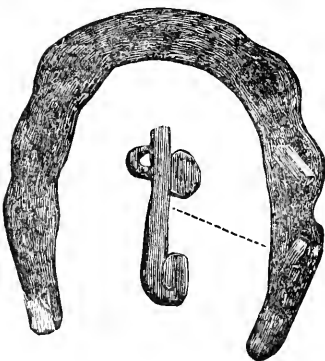


FIG. 684.

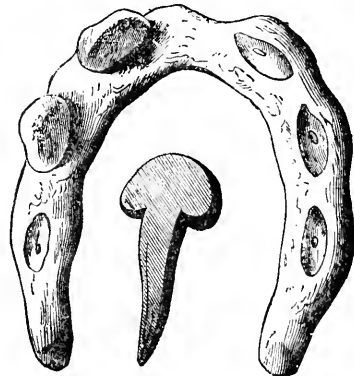


FIG. 685.



FIG. 686.—Forged Steel Shoe, Specimen from a Variety Manufactured by the Bryden Forged Horse Shoe Works, Catasauqua, Pa.*



FIG. 687.—Syrian Shoe.

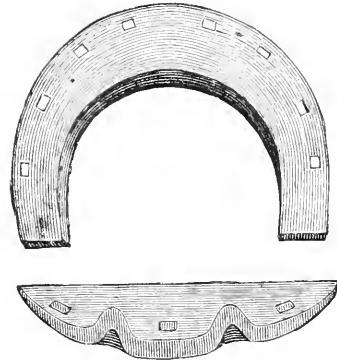


FIG. 688.—Lafosse's Half-moon Shoe, and Tip of Steel.

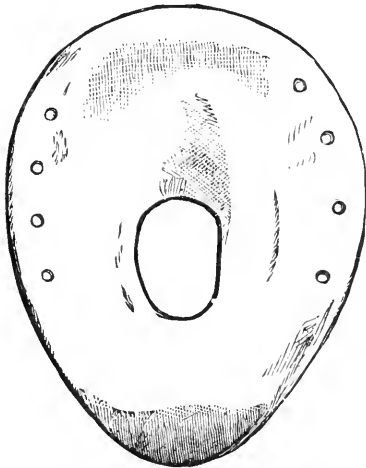


FIG. 689.—Arabian Shoe.

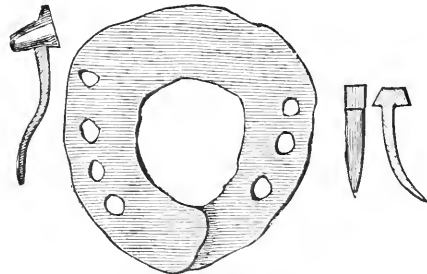


FIG. 690.—Syrian Shoe.

* This, with other cuts of model shoes manufactured by this company, were by special request forwarded to me for insertion among models of good working shoes, but were received too late to be put in proper place. The patentee, Mr. Bryden, is known to me personally as a man of rare skill as a student of the foot. I am indebted to him for many valuable points on the treatment of the foot, and the shoes manufactured under his supervision are so good in all respects that I would strongly urge upon shoers and others interested to give them a trial.

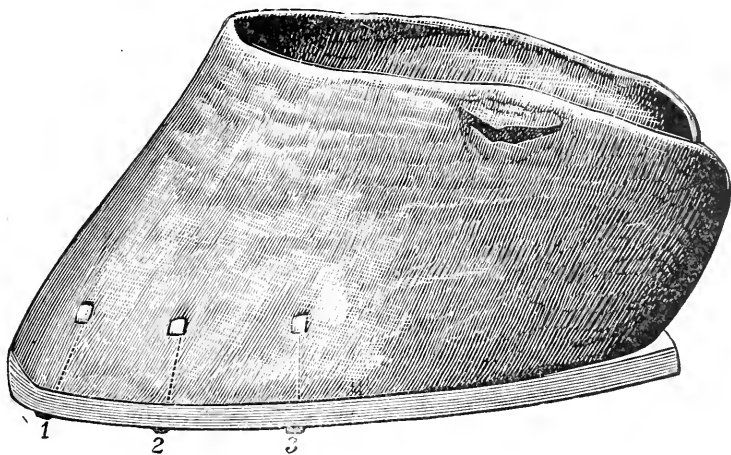


Fig. I.

The shoe properly formed, adjusted, and nailed on the hoof of a five-year-old horse that had never been shod but once.

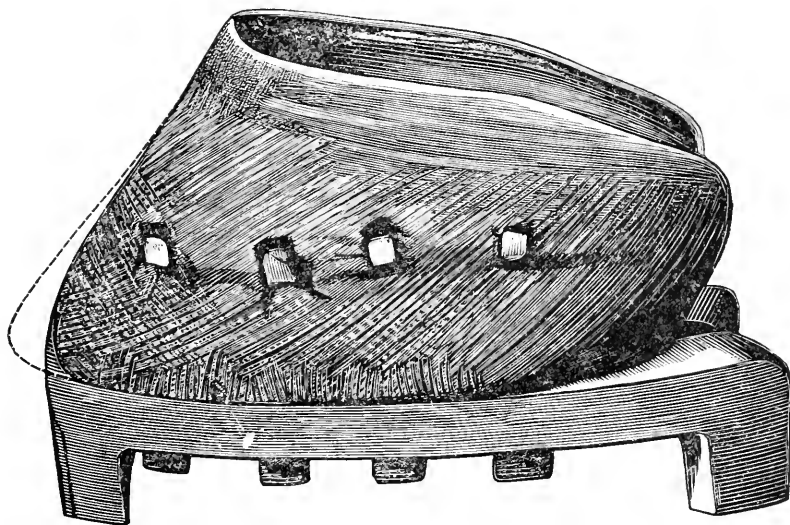


Fig. II.

The foot as it is ruined by bad treatment. The shoe and nails are too large; the nails too many in number and driven too deep. The shoe is set back too far. The hoof is rasped away so much as to weaken it and destroy its symmetry.

PLATE I.

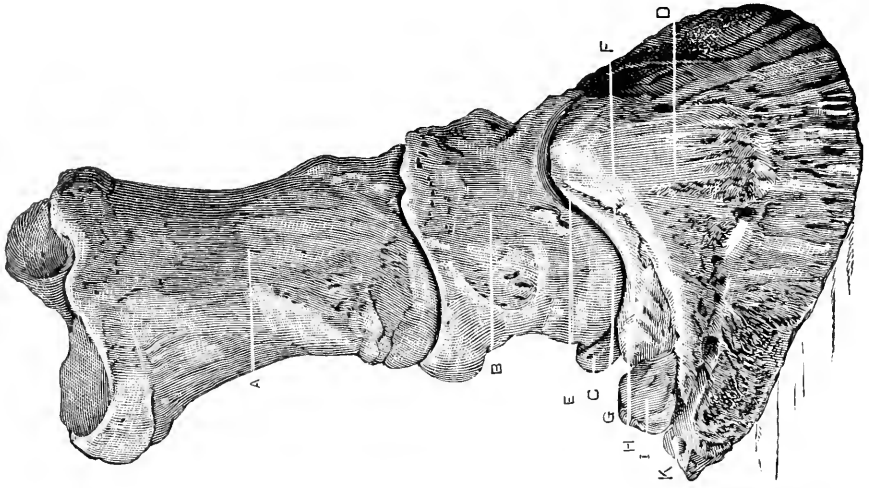


PLATE II.

PLATE II.*

A front view of the bones of the fore feet of a horse in their relative position.

- A. The pastern bone.
- B. The coronary bone.
- C. The navicular bone.
- D. The foot bone.
- E. The point of insertion of the tendon of the extensor muscle.
- F. A concavity to give attachment to the ligament which unites the foot bone to the coronary bone at G.
- G. Coronary bone.
- H. A continuation of the same concavity, to which the cartilage of the foot bone is attached.
- I. I. The upper and lower processes of the foot bone.
- K. K. A groove in the foot bone, which receives a division of the main artery, coming round from behind.
- K. L. A groove receiving another division of that artery, which proceeds round the extreme edges of the foot bone.

*The plates here given are selected from the author's special book on the horse, "Facts for Horse Owners," in which are forty plates. In the extra edition these plates are printed in colors.

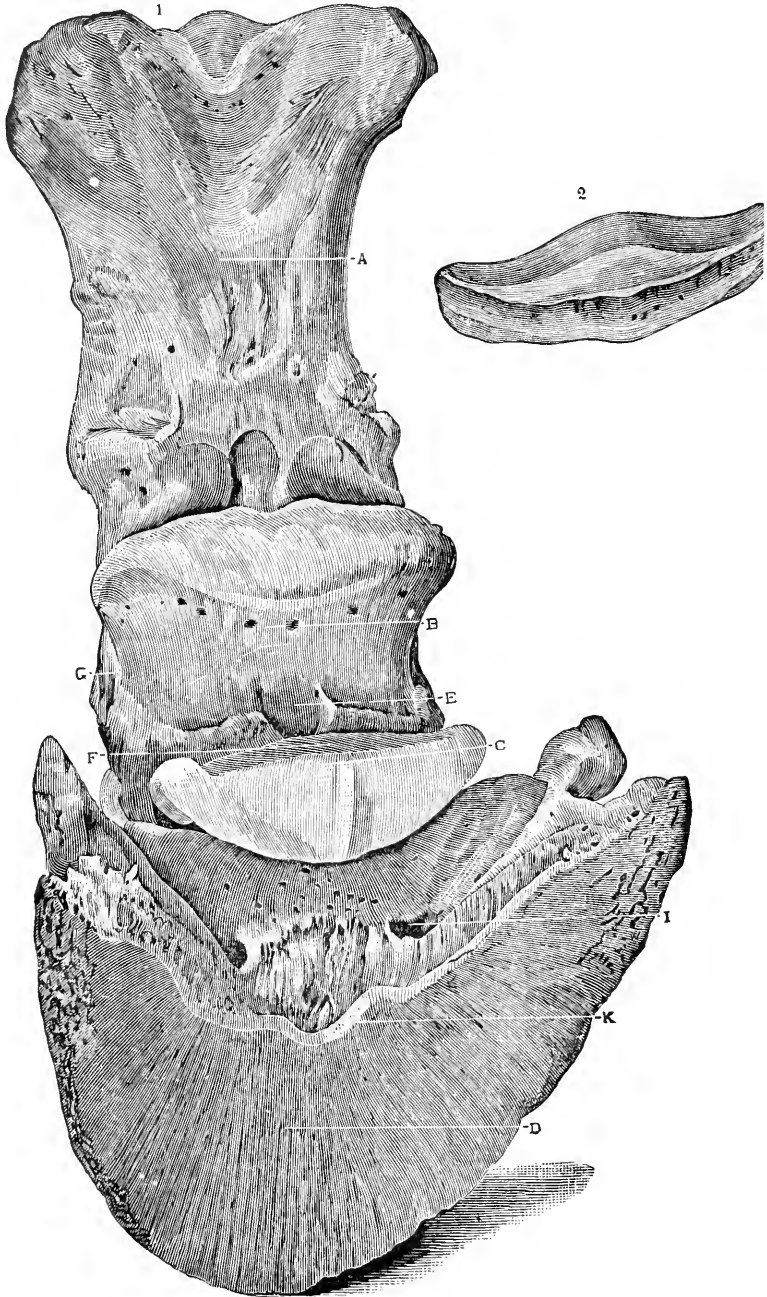


PLATE III.

PLATE III.

Fig. I.

A back view of the bones of the fore foot in their relative situation.

- A. Pastern bone.
- B. Coronary bone.
- C. Navicular bone.
- D. Foot bone.
- E. A cavity which in the natural state is filled with fat.
- F. The upper surface of the navicular bone, from which two ligaments arise, and pass round the lateral depression in the coronary bone, marked G.
- G. Points of attachment on each side of the ligament which unites the navicular bone to the foot bone.
- I. Two grooves in which two main trunks of the arteries are continued into the foot bone.
- K. The line of insertion of the tendon of the flexor muscle.

Fig. II.

A view of the anterior and inferior surfaces of the navicular bone detached from the other bones.

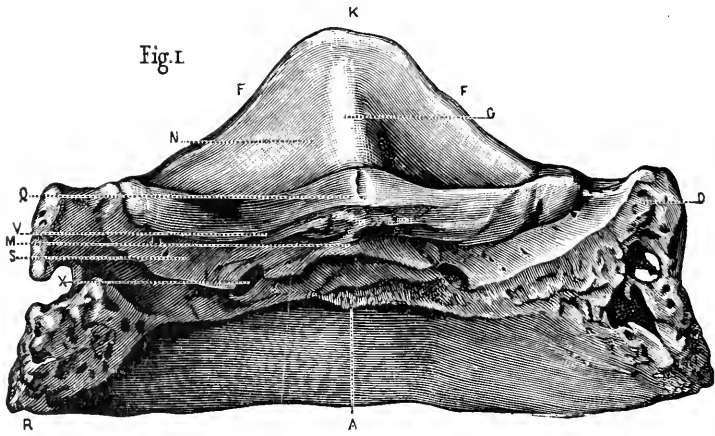


Fig. II.

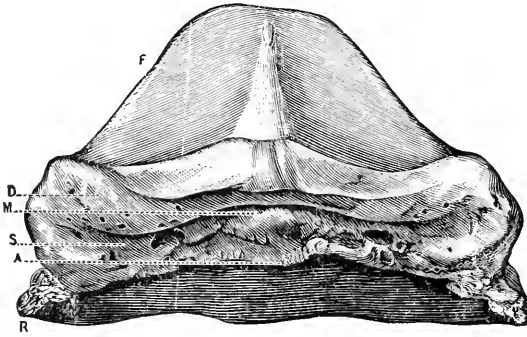


Fig. III.

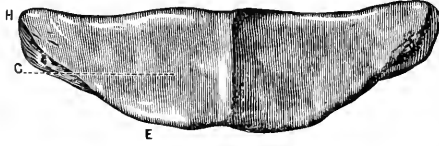


Fig. IV.

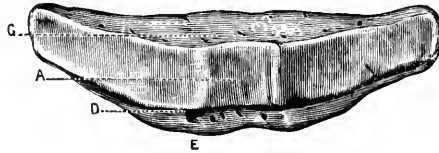


Fig. V.



PLATE IV.

PLATE IV.

This cut represents the third phalanx seen from its posterior part; and the navicular bone,—inferior, superior, and anterior views.

Fig. I.

Posterior Part of the Third Phalanx (ADULT).

- A. Semi-lunar crest.
- D. Basilar process.
- F. Superior border.
- G. Spreading out of the articular face.
- K. Anterior view of the pyramidal eminence.
- M. Posterior view of the inferior face.
- N. Glenoid cavity of the superior face.
- Q. Portion of the articular surface corresponding to the anterior border of the navicular bone.
- R. Retrossal process.
- S. Edge of the plantar fissure.
- V. Posterior border of the third phalanx.
- X. Plantar orifice for passage of blood vessels.

Fig. II.

Posterior Part of the Third Phalanx (COLT).

- A. Semi-lunar crest.
- D. Basilar process.
- F. Superior border.
- M. Posterior view of the bone.
- R. Retrossal process.
- S. Plantar fissure.

Fig. III.

Inferior Face of Navicular.

- C. Transverse ridge.
- E. Anterior border.
- H. Extremity of the bone.

Fig. IV.

- A. Median ridge or bulge of the superior face.
- D. Anterior superior border.
- E. Anterior inferior border.
- G. Posterior border (is very thick, and cribbled or pierced with vascular orifices).

Fig. V.

Anterior Face of Navicular.

- E. Soft part hollowed under the anterior articular facet.
- H. Articular facet corresponding to the posterior facet of the third phalanx.

Fig I

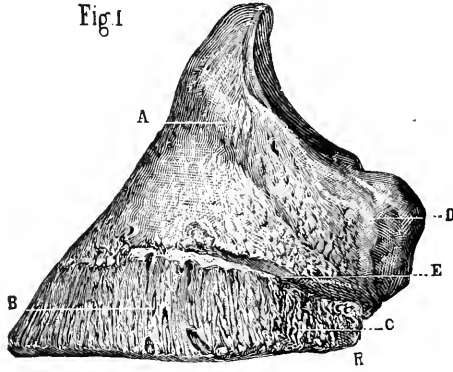


Fig III.

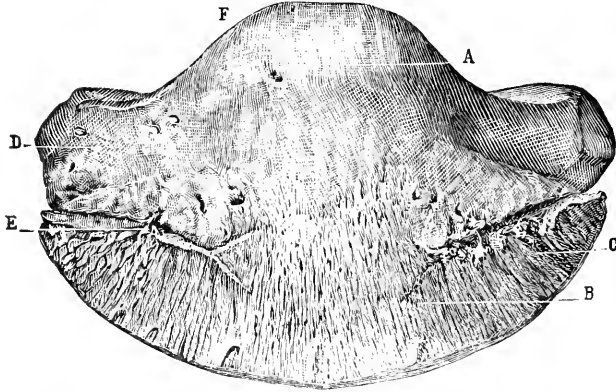


Fig II

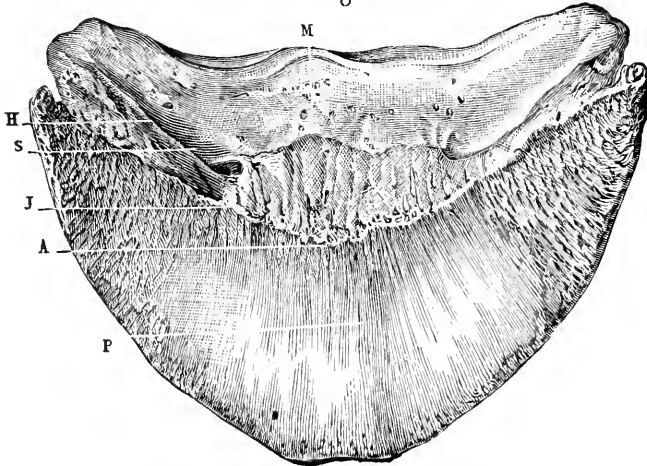


PLATE V.

This plate represents the third phalanx of the colt, seen from its lateral, anterior, and inferior faces.

Fig. I.

Lateral Face.

- A. Base of the pyramidal eminence.
- B. Vascular porosities.
- C. Patilobe eminence.
- E. Pre-plantar fissure.
- D. Basilar process.
- K. Pyramidal eminence.
- R. Retrossal process.

Fig. II.

Anterior Face.

- A. Pyramidal eminence.
- B. Porosities and vascular imprints
- C. Patilobe eminence.
- D. Basilar process.
- E. Pre-plantar fissure.
- F. Superior border.

Fig. III.

Inferior Face.

- A. Semi-lunar crest.
- H. Plantar fissure.
- J. Imprint of the insertion of the perforans.
- P. Inferior face.
- S. Edge of the plantar fissure.

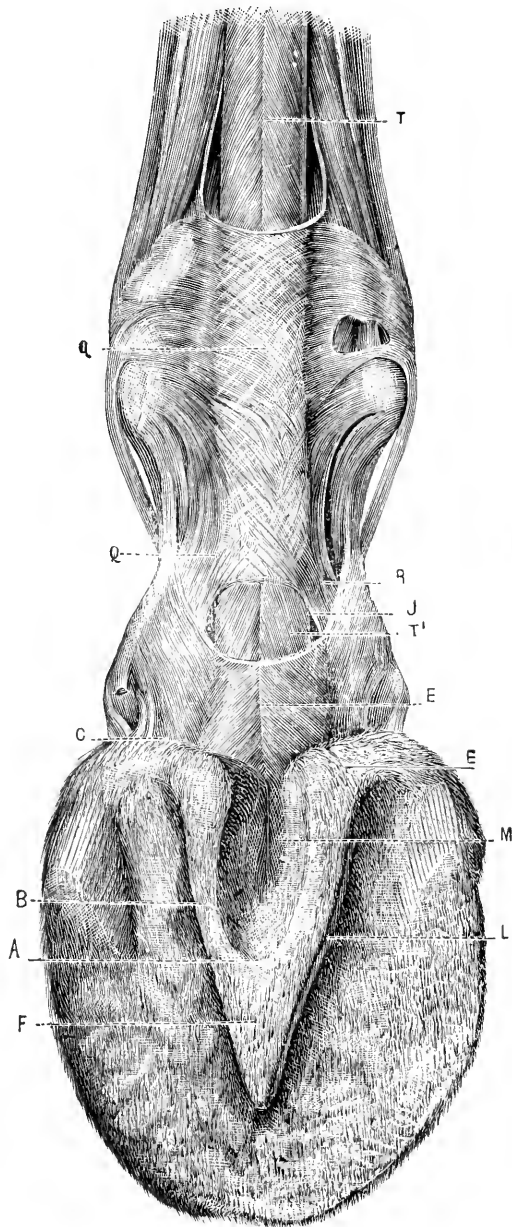


PLATE VI.

PLATE VI.

This figure represents the posterior face of the digital region, flexed backward in a manner to show in its full extent the inferior or plantar face of the foot.

The skin has been lifted from above the third phalanx, and the enveloping sheaths of the tendons are dissected. The velvety tissue is preserved.

- A. Median part of the pyramidal body (fleshy frog) of plantar cushion, or sensitive tissue of the sole.
- B. Branches of the pyramidal body.
- C. Cartilaginous bulb.
- E. Angle of inflection of the branches of the pyramidal body.
- F. Point or apex of the fleshy frog.
- J. Interval of separation of the two branches of the perforatus.
- L. Lateral lacunæ of the pyramidal body.
- M. Median lacunæ of the pyramidal body.
- Q. Q. Fibrous sheath of union of the two branches of the perforatus
- R. Branches of the perforatus directing themselves toward their point of insertion at the second phalanx.
- T. Tendon of the perforatus.
- T'. Tendon of the perforans at its passage between the branches of the perforatus.
- V. Strengthening sheath of the plantar aponeurosis.
- X. Lateral bands of the strengthening sheath of the plantar aponeurosis, which cross the direction of the branches of the perforatus to go and attach themselves on the lateral parts of the first phalanx.

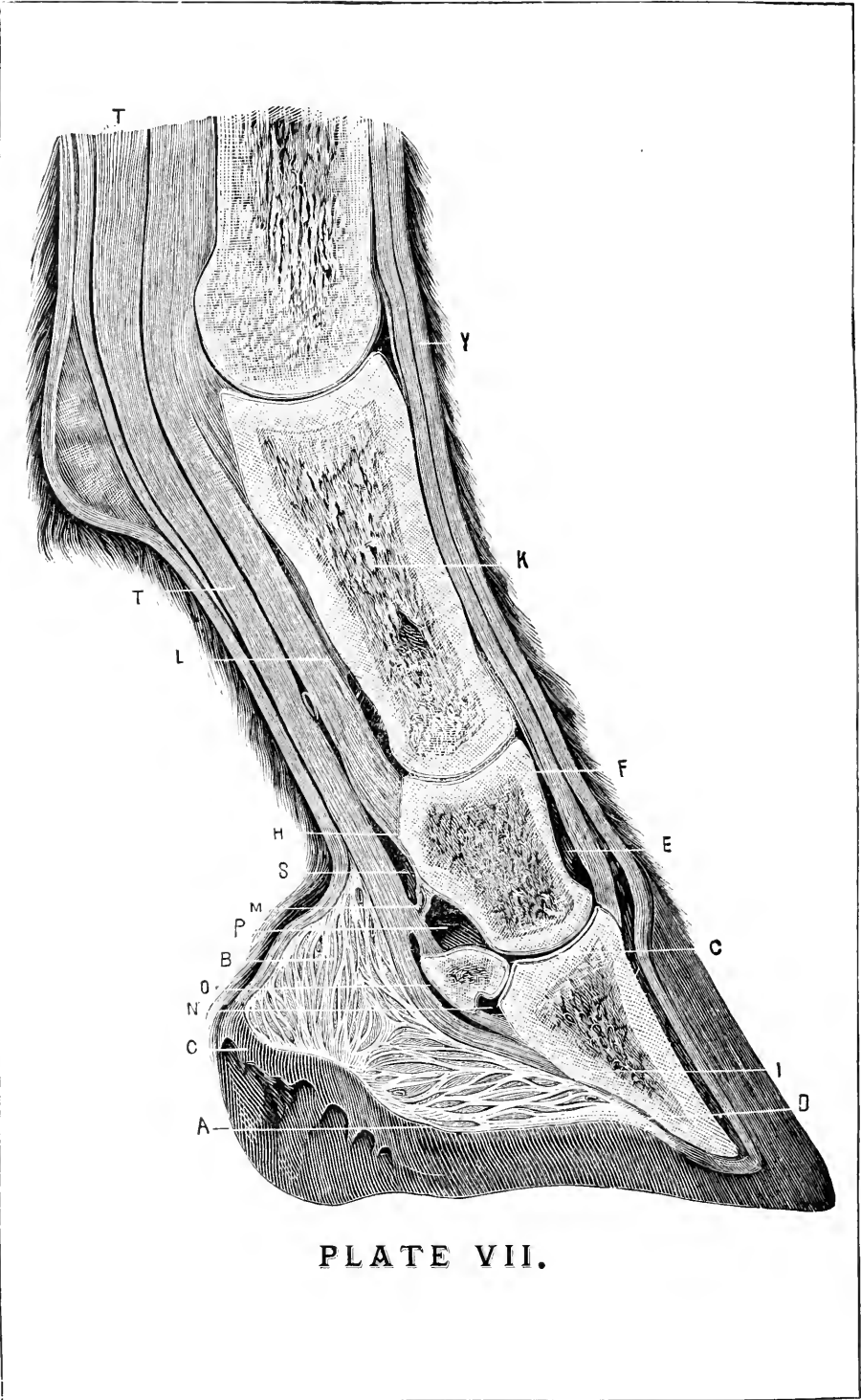


PLATE VII.

PLATE VII.

This plate shows a longitudinal section of the digital region in its median plane.

Its object is to show the spongy substance in the interior of the bone, the fibrous intersections in the plantar cushion of the articular and tendinous synovial sheaths, and of the plantar cushion (or pad) in the interior of the hoof under the third phalanx and the navicular bone.

- A. Inferior part of the pad (cushion).
- B. Ligamentous bands (filaments) representing the structure of the fibrous body forming the plantar pad.
- C. Enveloping fibrous membrane of the plantar pad.
- D. Point of insertion of the plantar pad to the inferior face of the bone of the foot.
- E. Spongy substance of the interior of the second phalanx.
- F. Articulation of the first phalanx with the second.
- H. Branches of the perforatus at its insertion to the lateral parts of the second phalanx, or small pastern bone.
- I. Insertion of the plantar aponeurosis to the semi-lunar crest.
- K. Interior of the first phalanx.
- L. Section of the perforatus tendon.
- M. Transverse ligament of the yellow fibrous tissue uniting the anterior face of the perforans to the posterior face of the os coronae, etc. (2d phalanx).
- N. Diverticulum of the sheath of the articulation of the foot between the little sesamoid and the third phalanx.
- O. Little sesamoid sheath.
- P. Capsule of the articulation of the foot set superiorly against the *cul du sac* of the great sesamoid sheath.
- T. Perforans tendon.
- Y. Metacarpo-phalangial articulation, or fetlock joint.

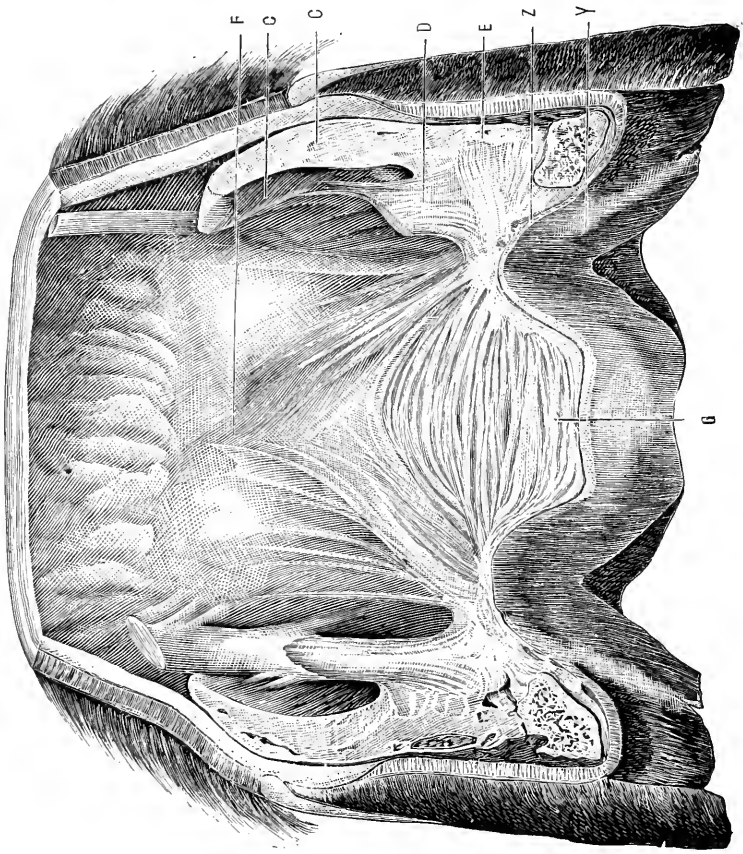


PLATE VIII.

PLATE VIII.

This plate represents a transverse section of the posterior part of the foot behind the phlanges, between the two fibro-cartilages.

It shows the disposition of the bulbs of the plantar pad, or cushion, the stratified layers of the pyramidal body, the height of the cartilages of the hoof, and the direction of the bars.

- B. Bulb of the plantar pad (or cushion).
- C. Internal face of the fibro-cartilages, or lateral cartilages.
- C'. Height of the hoof.
- D. Part of the lateral band of the reinforcing sheath of the perforans.
- E. Point of junction of the inferior border of the cartilages with the substance of the plantar pad, or cushion.
- F. Longitudinal depression of the anterior face of the plantar pad.
- G. Stratified layers of the plantar pad in the pyramidal body.
- Z. Superior surface of the bars.
- Y. Thickness and direction of the bars.

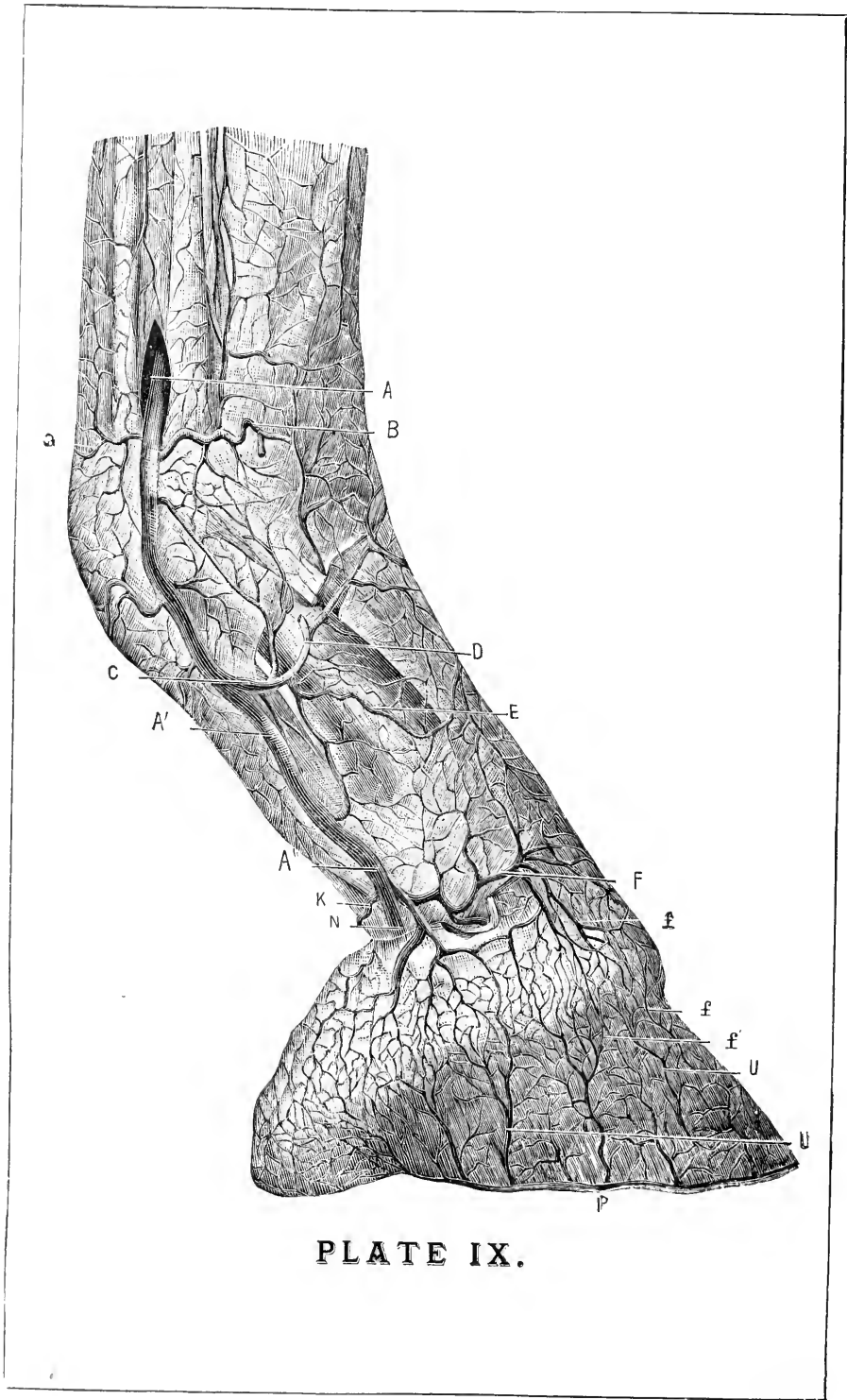


PLATE IX.

PLATE IX.

Arterial Vessels.

The figure shows the superficial disposition of the digital artery on the lateral face of the phalanges.

- A, A', A'. Digital artery from its emerging point above the great sesamoids to the point where it disappears under the plate of cartilages in X.
- B. Anterior transverse branch at the metacarpo-phalangeal articulation.
- C. Perpendicular artery.
- D. Ascending branch of the perpendicular artery.
- E. Descending branch of the perpendicular artery.
- F. Transverse branch forming with the corresponding one the superficial coronary circle.
- f. Descending ramuscles in the pad of the superficial coronary circle.
- f'. Ascending ramuscles of the podophyllous tissue, or sensitive laminae.
- G. Posterior transverse branches of the metacarpo-phalangeal articulation.
- K. Artery of the plantar pad, or cushion.
- P. Circumflex artery.
- U, U. Ascending terminal divisions of the digital artery; they emerge from the porosities of the third phalanx, and send ramifications to the podophyllous tissue.

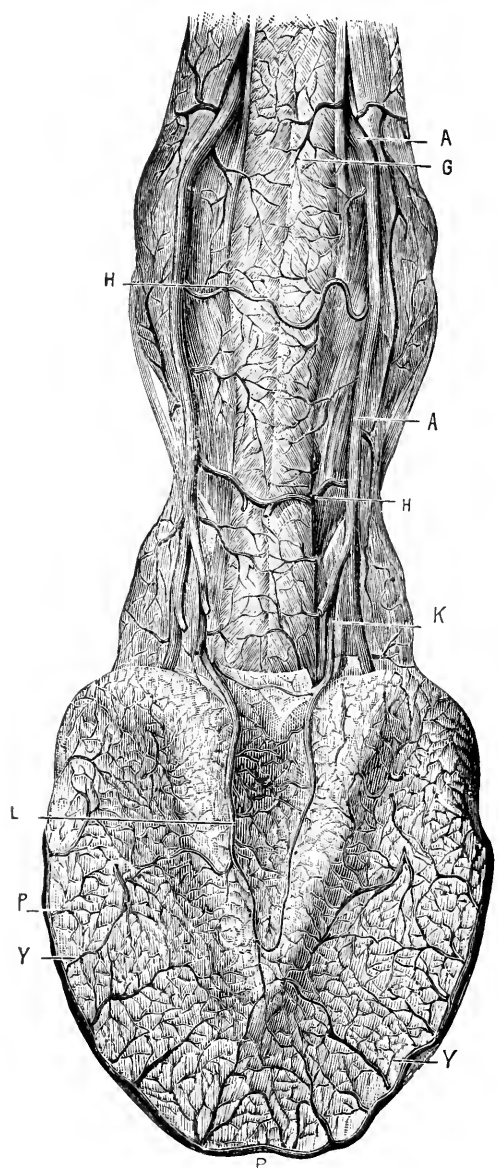


PLATE X.

PLATE X.

Arterial Vessels.

The figure represents the superficial disposition of the digital artery at the superior face of the first two phalanges and at the inferior face of the third.

- A, A'. Digital artery in its passage along the phalanges.
- G. Posterior transverse branches of the metacarpo-phalangeal articulation.
- H. Branches above one another at intervals.
- K. Artery of the plantar pad, or cushion.
- L. Internal branch of the artery of the plantar pad.
- P, P, P. Circumflex artery.
- Y, Y. Solar arteries, or arteries of plantar surface.

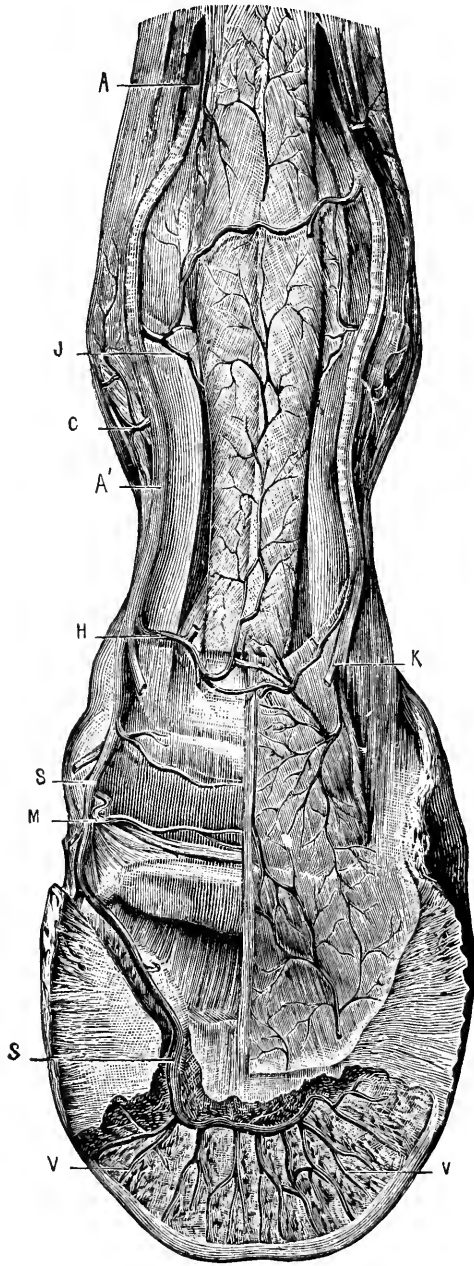


PLATE XI.

PLATE XI.

Arterial Vessels.

The figure shows the deep disposition of the digital artery at the posterior face of the first two phalanges, and in the interior of the third seen from its inferior face.

- A, A'. Digital artery.
- C. Perpendicular artery at its point of origin.
- H. One of the branches running posteriorly, destined to the perforans tendon, in which it ramifies itself.
- J. Deep-seated branch.
- K. Point of origin of the artery of the plantar pad.
- M. Deep transverse branch, completing behind the front superficial coronary circle.
- S. *Plantar* artery or posterior terminal branch, in the plantar fissure, and in the semi-lunar sinus, where it forms with its analogue the *semi-lunar* anastomosis.
- V, V. *Radiated* divisions of the digital artery emanating from the convexity of the semi-lunar anastomosis, and following the direction of the descending canals of the third phalanx to go and contribute to the formation of the circumflex artery at the exterior circumference of the notched border of the bone.

PLATE XII.

This figure represents the principle nerves of the digital region.

The plantar nerve occupies the same situation, but the divisions which emanate from it are more numerous and more anastomotic.

- P. Plantar nerve.
- A. Point of emergence of the plantar nerve above the sesamoids.
- B, B. Cartilaginous branch.
- C, C. Cutaneous branch.
- D. Digital artery.
- F. Bulbous branch.
- G. Transverse branch behind the metacarpo-phalangeal articulation.
- I. Nerve of the plantar pad.
- L. Lateral band, or filamentous stay, of the proper tunic of the plantar pad. It crosses obliquely from backward forward, and from upward downward, the direction of the plantar nerve.
- V. Digital vein.

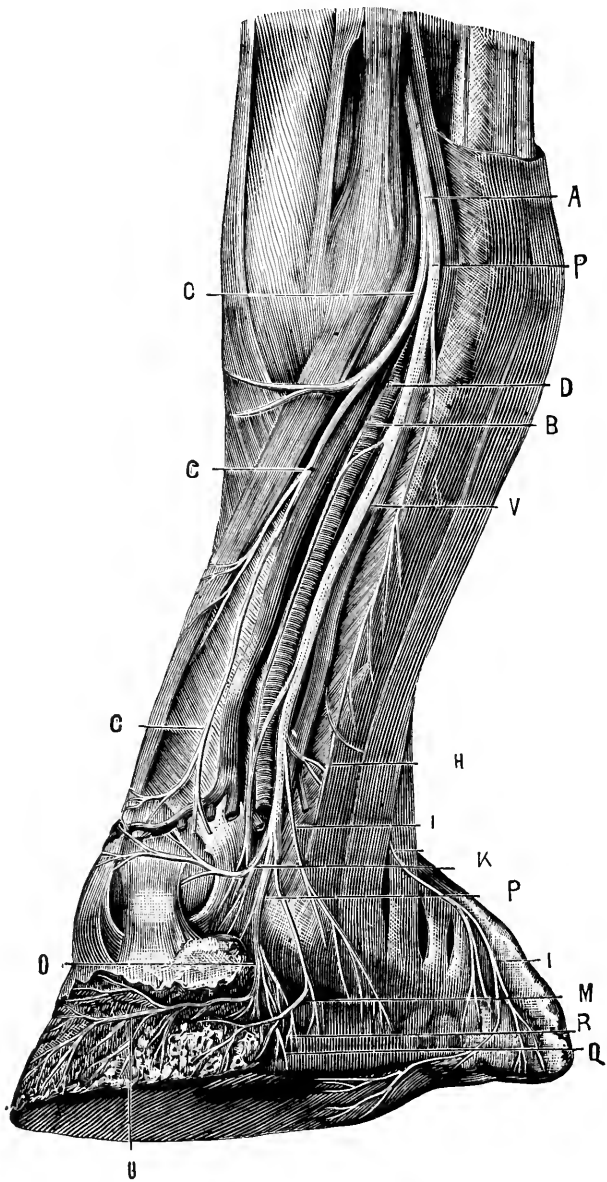


PLATE XIII.

PLATE XIII.

This figure represents on the digital region, seen from three-fourths behind, the disposition of the plantar nerve on the posterior face of the phalanges of the terminal divisions in the interior of the bone of the foot.

- P. Plantar nerve.
- A. Point of emergence of the plantar nerve above the sesamoids.
- B. Cartilaginous branch.
- C. Cutaneous branch.
- D. Digital artery.
- H. Occasional division destined to the cartilaginous bulbs.
- I. I. Branch of the plantar pad.
- K. Transverse coronary branch.
- M. Podophyllous division.
- O. Pre-plantar nerve.
- Q. Descending branch in the patilobe fissure.
- R. Arterial ramuscules accompanying the digital artery in the plantar fissure.
- V. Vein following sometimes behind the plantar nerve in all its phalangeal course. This vessel does not always exist.

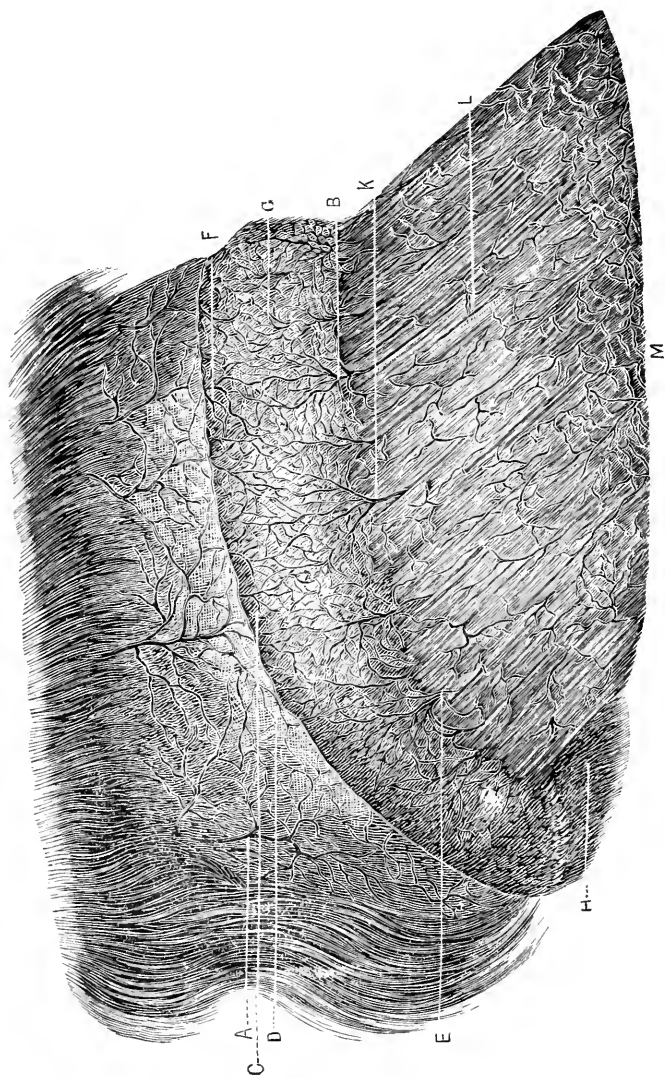


PLATE XIV.

PLATE XIV.

The object of this figure is to show the disposition of the capillary vessels in the tegument of the digital region seen sidewise.

A, A. Arterial vessels of the skin.

B, B'. Arterial vessels of the coronary band, or cushion.

R. Villosities of the coronary cushion. This vessel does not always exist.

This figure represents the principal perioplic bourrelet, the coronary groove and the podophyllous tissue or sensitive laminae.

A, B. Principal corone (or cutidura) with the villosities covering it.

C. Superior border of the coronary cushion.

D. Perioplic coronary groove.

B. Perioplic (pad) covered with little horny substance.

F. Inferior border of the cushion.

G. Podophyllous tissue, or sensitive laminae.

H. Villosities of the inferior extremity of the podophyllous laminae.

E. Arterial vessels.

K. Small arterial branches.

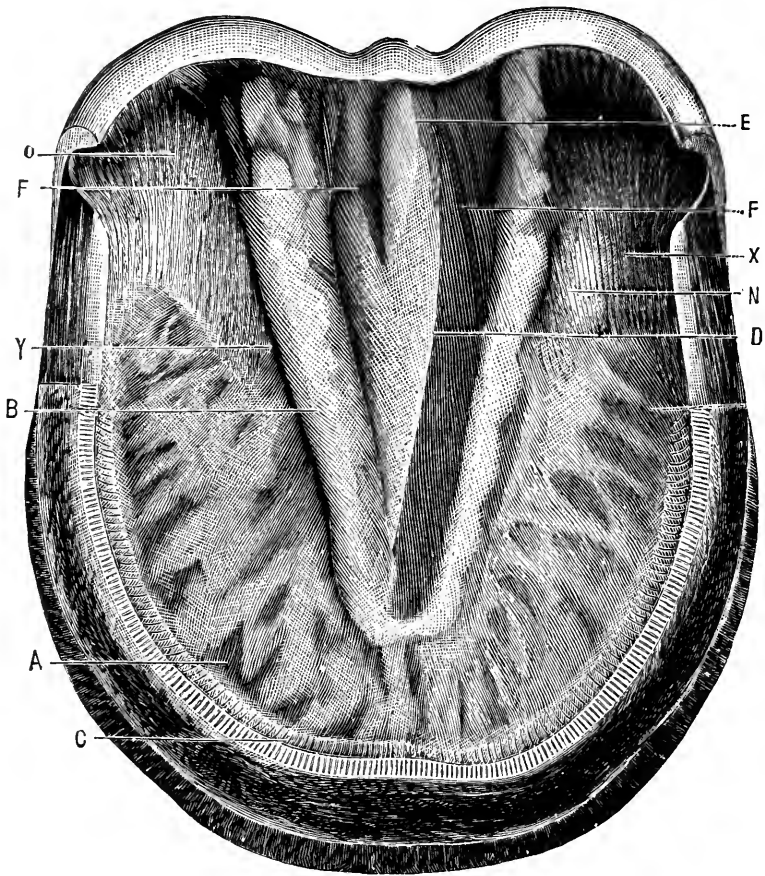


PLATE XV.

PLATE XV.

This figure represents the superior face of the floor of the hoof, formed by the sole and the frog. The wall has been cut at the level of the sole, in order to show the termination of the horny leaves in the edge, or border of the sole

- A. Circular digital cavity at the point of reunion of the sole and the wall.
- B. Superior border of the frog.
- C. Termination of the horny leaves in the edge of the sole.
- D. Cavity formed by the superior face of the frog.
- E. Ridge of the frog, or frog stay.
- F. Groove of the superior face of the frog.
- G. External face of the glomes of the frog.
- N. Keraphyllous tissue at the internal face of the bars.
- O. Cutigeral cavity at the level of the angles of inflection.
- X. Bottom of the angle of inflection.
- Y. Point of termination of the bars at the lateral parts of the frog.

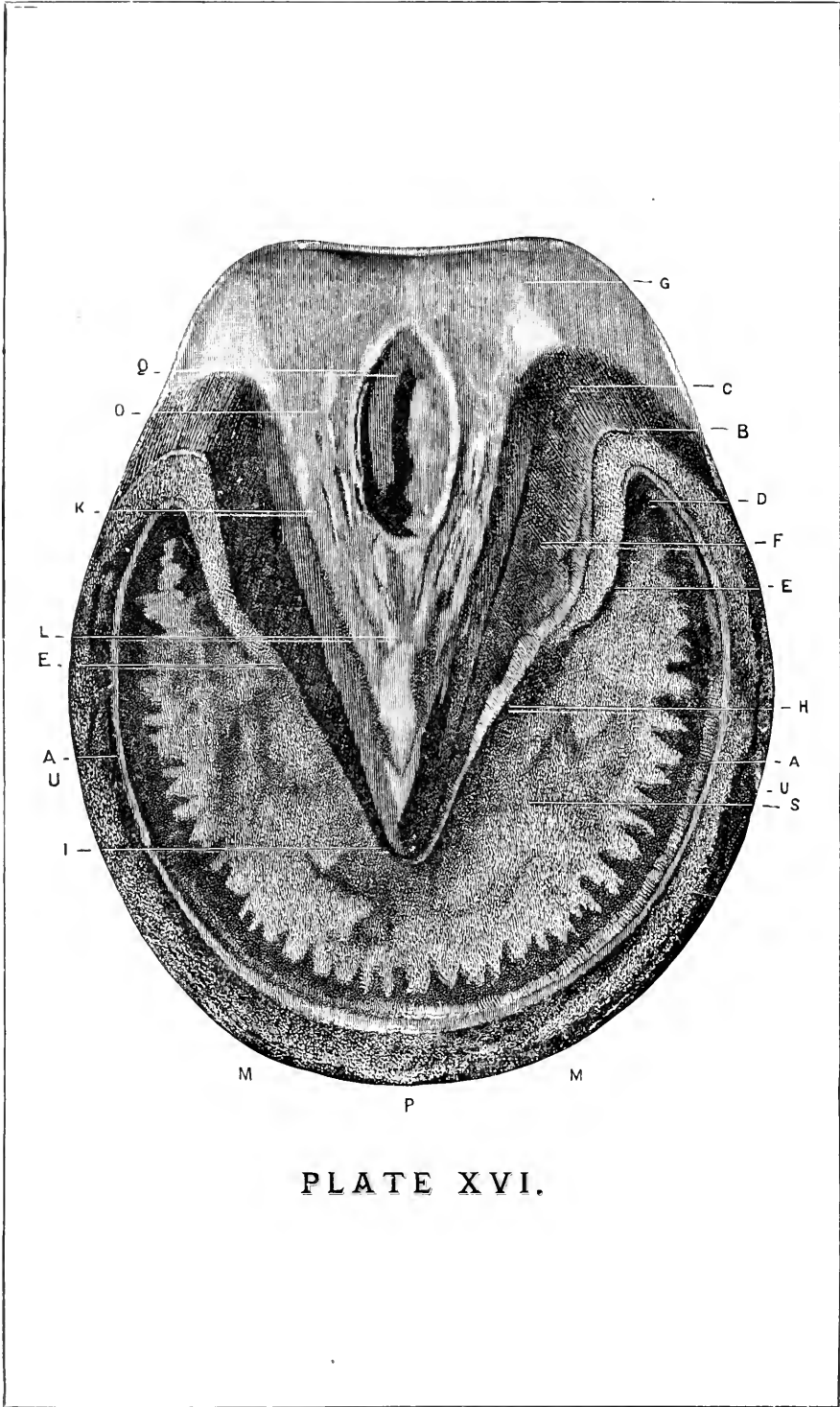
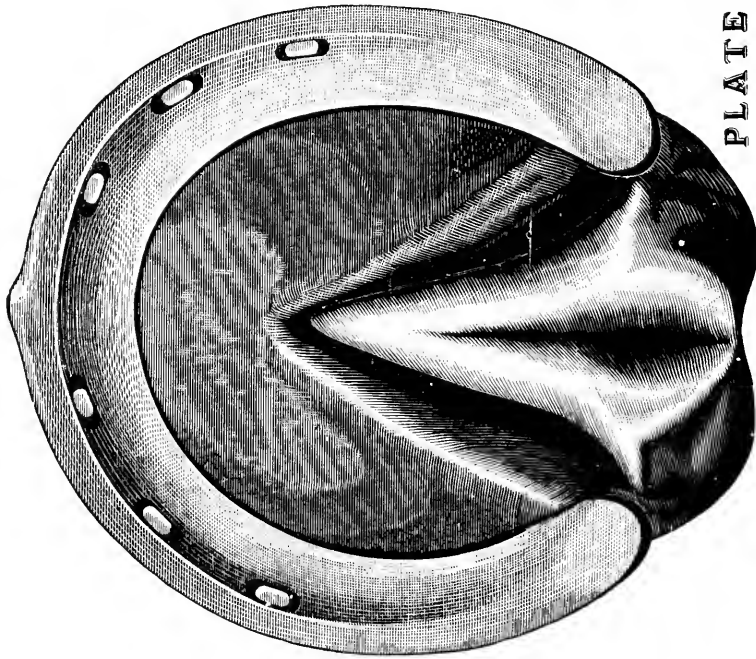


PLATE XVI.

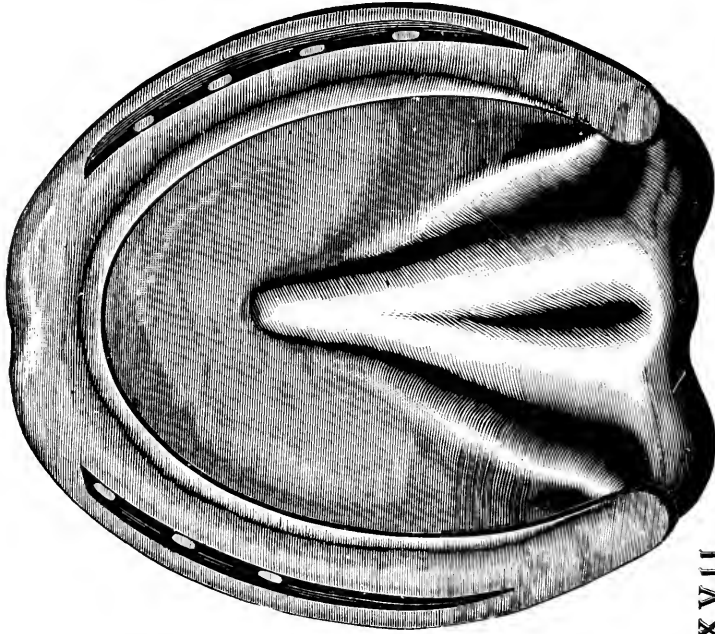
PLATE XVI.

View of the hoof from its inferior face.

- P. The wall.
- S. The sole.
- L. The frog.
- A. Line indicating the commissure of the sole and the wall, known as the *linea alba*, or white line.
- B. Angle of inflection of wall of the heels (buttress).
- C. Superior border of buttress.
- D. Region of the heels of the foot within the angle known as seat of corn.
- E. Inferior border of the bars.
- F. External face of the bars lining the lateral lacunæ of the frog.
- G. Glomes of the frog, or bulbs of the heels.
- H. Terminal extremity of the bars at the sides of the frog.
- I. Point of the frog.
- K. Branches of the frog.
- M. Regions of the *mamellæ* of the hoof.
- P. Region of the toe of the hoof.
- Q. Median lacuna of the frog.
- U. Region of the quarters.



Right fore foot with shoe properly adjusted.



Left hind foot with shoe properly adjusted.

PLATE XVII.

HOW TO TELL THE AGE.

IT is sometimes very important to be able to determine the age of a horse ; and as this is indicated most surely by the teeth, I have had made, under my special supervision, a large proportion of the illustrations here given, which will be found the fullest and most

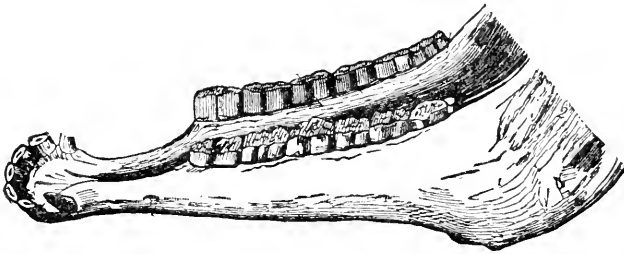


FIG. 372.—The Teeth.

complete published in this country. I encountered very serious difficulties in obtaining these illustrations, as I found it next to impossible to give the artist an idea of the changes occurring in the teeth and form of the jaw with age, but they are as accurate as I could se-

ecure. I have tried also to make the description so simple as to enable any ordinary person to determine the age of horses with considerable accuracy, or so nearly as to prevent being seriously imposed upon. In doing this, I have not hesitated to appropriate the language of others when adapted to my purpose.



FIG. 373.—One Week Old.

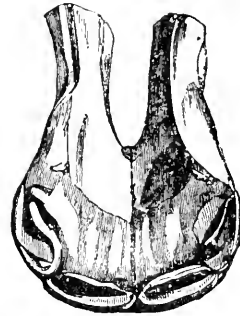


FIG. 374.—Six Weeks.

At first the jaw is small, and to accommodate the position, temporary, or what is termed milk teeth, are grown ; these are succeeded by permanent teeth, as the jaws become larger and stronger. As the front teeth, or nippers, only are usually studied to note the changes which determine the

age of a horse up to eight years, I will try to give such an explanation of them as will serve to aid the general reader in catching the points of these changes most clearly.

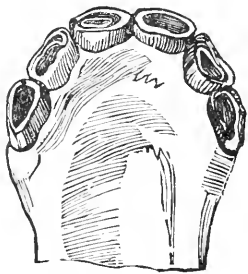


FIG. 375.—One Year Old.

When the colt is one week old, the two central nippers are grown about as represented in Fig. 373. In from five to six weeks, another incisor will appear on either side of the two first, and the mouth will appear something like Fig. 374. At two months' they will have reached their natural level, and between the second and third months the second pair will have overtaken them. They will then begin to wear away a little, and the outer edge, which was at first somewhat raised and sharp, is brought to a level with the inner one; and so the mouth continues until some time between the sixth and ninth months, when another nipper begins to appear on each side of the two first, making six above and below, and completing the colt's mouth; after which the only observable difference, until between the second and third years, is in the wear of these teeth.

The teeth are covered with a polished, hard substance, called enamel. It spreads over that portion of the teeth which appears above the gum; and not only so, but as they are to be so much employed in nipping the grass, and gathering up the animal's food (and in such employment even this hard substance must be gradually worn away), a portion of it, as it passes over the upper surface of the teeth, is bent inward and sunk into the body of the teeth, and forms a little pit in them. The inside and bottom of this pit being blackened by the food, constitutes the *mark* of the teeth, by the gradual disappearance of which, in consequence of the wearing down of the edges, we are enabled for several years to

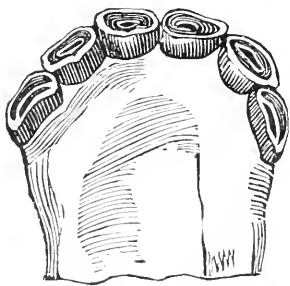


FIG. 377.—Two Years.

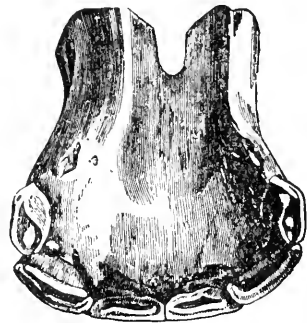


FIG. 376.—Twenty Months.

determine the age of the horse.

The colt's nipping-teeth are rounded in front, somewhat hollow toward the mouth, and present at first a cutting surface, with the

outer edge rising in a slanting direction above the inner edge. This, however, soon begins to wear down, until both surfaces are level, and the *mark*, which was originally long and narrow, becomes

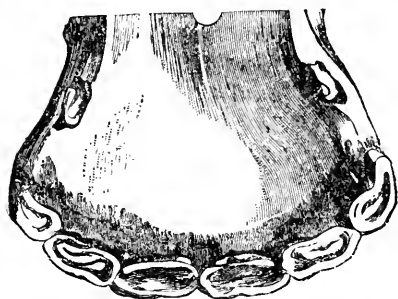


FIG. 378.—From Two and One Half to Three Years.

shorter, and wider, and fainter. At six months the four nippers are beginning to wear to a level. Fig. 375 will convey a good idea of the appearance of the teeth at twelve months. The four middle teeth are almost level, and the corner ones becoming so. The mark in the two middle teeth is wide and faint; in the two next teeth it is darker, and longer, and narrower; and in the corner teeth it is dark-

est, and longest, and narrowest. At the age of one year and a half, the mark in the central nippers will be much shorter and fainter; that in the other two pairs will have undergone considerable change, and all the nippers will be flat. At two years this will be more plainly marked. Fig. 377 is intended to show the appearance of the mouth at this stage.

Fig. 378 is intended to show the appearance of the mouth at two and a half to three years old. The next is intended to show it at three and a half years old. The two central permanent teeth are growing down, and are larger than the others, with two grooves in the outer convex surface, and the mark is long, narrow, deep, and black. Not having yet attained their full growth, they are lower than the others. The mark in the two next nippers is nearly worn out, and is wearing away in the corner nippers.

Between three and a half and four years the central nippers have attained to nearly their full growth, and the second pair will have so far displaced the temporary teeth as to appear through the gums, while the corner ones will be diminished in breadth, worn down, and the mark become small and faint.

At four years the central nippers will be fully developed; the



FIG. 379.—About Three and One Half Years.

sharp edge somewhat worn off, and the mark shorter, wider, and fainter. The next pair will be up, but they will be small, with the mark deep, and extending quite across them.

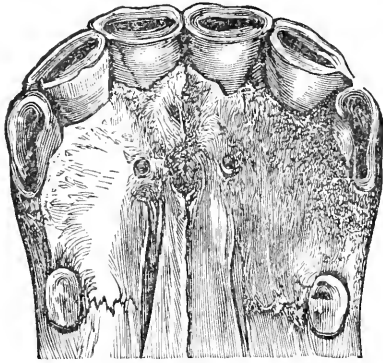


FIG. 380.—At Four to Four and One Half Years.

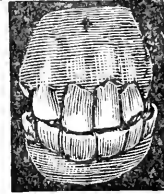
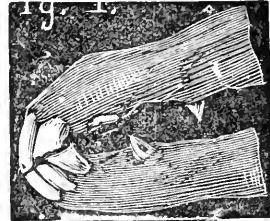


FIG. 381.—At Four Years.

At four years and a half, or between that and five, the corner nippers are shed, and the permanent ones begin to appear, something like Fig. 380. The central nippers are considerably worn, and the next pair are commencing to show the marks of usage. The tush has now protruded, and is fully a half inch in height; externally it has a rounded prominence, with a groove or hollow in the inside.

At five years the horse's mouth is almost perfect. The corner nippers are quite up, with a long, deep, irregular mark on the inside, and the other nippers are showing the effects of increased wear. The tush is much grown, the grooves on the inside have almost or quite disappeared, and the outer surface is regularly convex. It is still as concave within, and the edge nearly as sharp as it was six months before.

At six years the mark on the central nippers is worn out. In the next pair the mark is shorter, broader, and fainter; and in the corner teeth the edges of the enamel are more regular, and the surface is evidently worn. The tush has attained its full growth, being nearly or quite an inch in length; convex outward, concave within; tending to a point, and the extremity somewhat curved. The horse may now be said to have a perfect mouth, as all the teeth are produced and fully grown

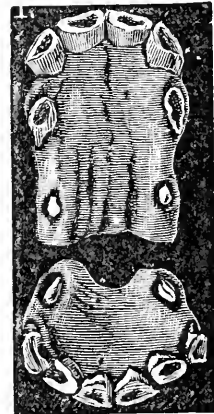


FIG. 382.—About Four Years.

At seven years, the mark, in the way in which we have described it, is worn out in the central nippers, and fast wearing away in the corner teeth; the tush also is beginning to be altered. It is rounded at the point, rounded at the edges, still round without, and beginning to get round inside.

At eight years the tush is rounder in every way; the mark is gone from all the bottom nippers, and it may almost be said to be out of the mouth. There is nothing remaining in the bottom nippers that can afterward clearly show the age of the horse. The upper nippers will give some indications, but nothing certain.

After the age of eight years, there are no points that will enable determining age with any degree of accuracy. A horse that is fed on corn will show an older mouth than one that is fed on oats and sloppy feed.



FIG. 383.—At Five Years.

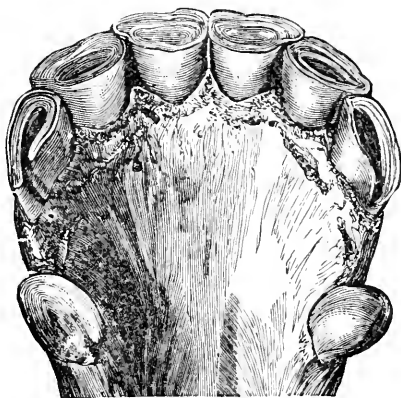


FIG. 384.—At Six Years.

The usual time for determining a horse's age is in May; but a colt may come any time between then and fall, so that the wearing away of the teeth or disappearing of the marks or cups may in some cases indicate the horse to be older or younger than he really is. These conditions must be taken into consideration.

At six years the teeth are rather short, flat, or wide, and the gums run across them horizontally, something like Fig. 384. After the eighth year the gums begin to recede from the center, and the teeth become longer in appearance. By looking at Fig. 390, showing twelve years, we can see that the gum is receded and run to a sharp point at the center of the teeth. At twenty years, the teeth are considerably narrower and longer, and the gums are drawn back sharper.

By observing the face of the teeth, there will gradually be seen a change to the triangular form, which can best be seen and de-

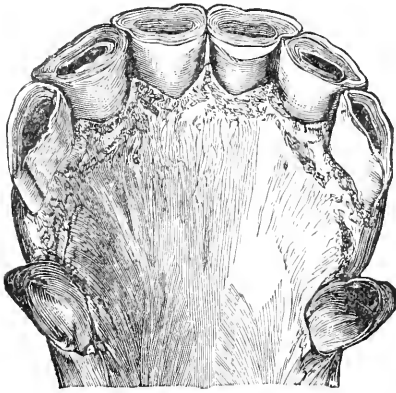


FIG. 385.—About Seven Years.

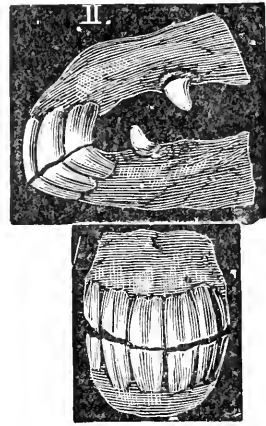


FIG. 386.—At Eight Years.

scribed by Figs. 395, 396. From the age of fourteen, we see this is more noticeable, the middle nippers gradually increasing and extending out to the corner ones, as indicated by Fig. 397. From fifteen to eighteen this triangular form becomes laterally contracted, so that at about twenty and afterward the teeth become biangular. As before explained, there are great peculiarities in the form of the teeth with advanced age. The most common is shown by Fig. 397. I include

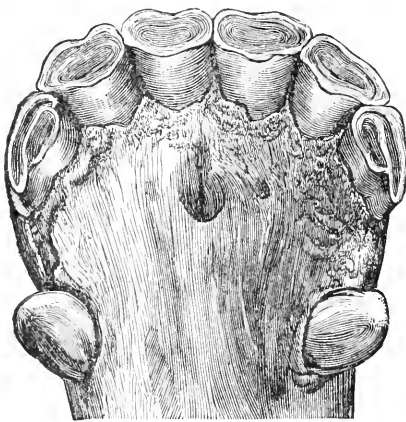


FIG. 388.—About Eight Years.

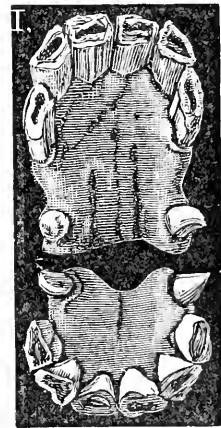


FIG. 387.—At Eight Years.

a somewhat rare form shown by extreme age. (See Fig. 398.)

Many curious tricks and methods of telling the horse's age after eight years old have been shown the writer at various times, such as wrinkles about the eyes, root of the tail, etc., none of which give the idea so correctly as the general appearance of the teeth and absorption of the jaws. In young

horses the edge of the lower jaw is round and full; as the horse becomes older, this edge becomes sharper and thinner.

The most unique trick shown the writer of telling the age was the following:—

If a gold ring be attached to a hair pulled from the tail or mane of a horse, and suspended directly above his head between his ears, it will oscillate, like a pendulum, just the number of times the horse is years old, then stop and repeat. I have repeatedly made the experiment, and it certainly seemed to repeat the age of the horse; but I could not feel

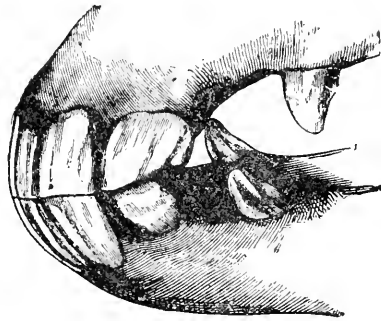


FIG. 389.—About Six Years Old.

satisfied that the motion of the ring was not in a great measure controlled by the involuntary movement of the hand. The man who gave the idea made the experiment in the presence of the writer, with apparent success.

Jockeys frequently resort to cutting down the teeth of aged horses, so as to simulate as much as possible the appearance of age. This was formerly

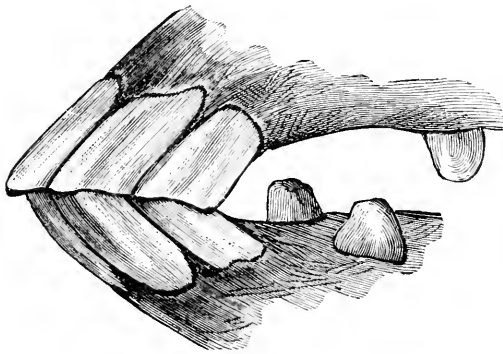


FIG. 390.—About Twelve Years Old.

of the mouth at eight or nine years of age. This was formerly done by sawing or filing, but more recently there has been invented, by Dr. Lancer, a leading veterinary surgeon of New Jersey, a very ingenious instrument for chipping off the teeth, so that the front nippers can be cut down very quickly and easily by any amateur. But the breadth of the teeth and other changes of form, as explained, will expose the deception; also the deep hollow and gray hair about the eyes. with the under lip con-

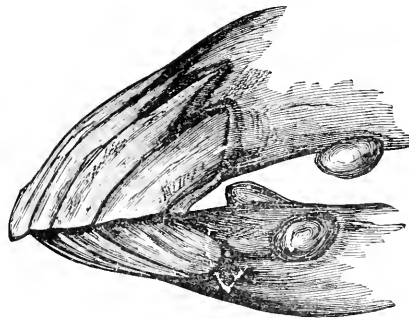


FIG. 391.—About Twenty Years Old.

siderably pendant. This treatment is called "Bishoping," from the name of the man who introduced it in England, and is practiced very largely by jockeys in the larger cities of this country, especially in New York.

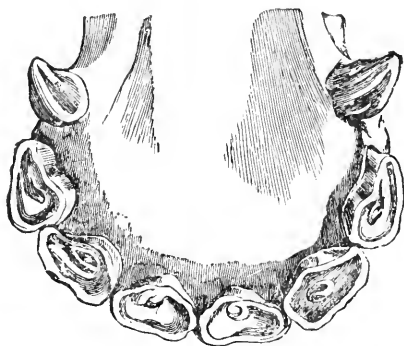


FIG. 392.—About Eleven Years of Age.

I wish to call attention to the fact that horses, especially those advanced in years, are liable to have the teeth in wearing overlap one another, become very rough, and wound the inside of the cheeks; or the grinders become irregular in length when they do not come opposite each other in shutting, or the teeth become carious and break away when not correspondingly worn with the others, shoot up to a degree to penetrate the jaw, causing soreness and inflammation, and seriously interfering with eating.

The writer saw a very interesting case of this kind at the Columbia Veterinary College, in which the unobstructed tooth had seriously penetrated into the upper jaw. In the endeavor to relieve the pressure of the parts, the animal evidently masticated the food wholly upon the opposite side of the mouth; in consequence of this the teeth on this side were so worn down that both upper and lower jaws were twisted around more than an inch out of line.

Sometimes caries, or ulceration of a tooth, produces such serious disturbance that there may be an enlargement of the parts, growth of fungus, or necrosis of the parts. This, too, is much more common than is suspected. Prof. Cressy, of Hartford, called my attention to a case in which a back tooth in the lower jaw became ulcer-

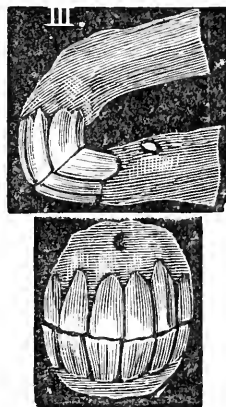


FIG. 393.—Mouth of the Mare at Thirteen Years.



FIG. 394.—Mouth of the Mare at Thirteen Years.

ated, causing much enlargement of the jaw. He first removed the tooth, then divided the skin at the lower edge of the jaw, and with a drill made a hole through the bone. Through this hole he put a seton to keep the parts open until a healthy healing process should be produced. A strong preparation of carbolic acid was put upon the seton, and dressed once a day, which finally effected a perfect cure.

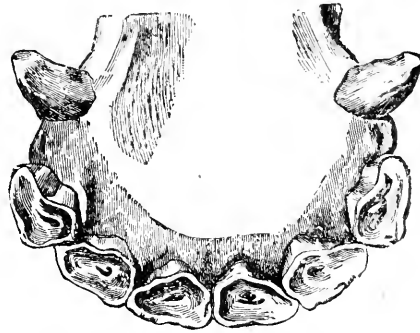


FIG. 395.—At Fourteen Years Old.

When the horse, without any apparent cause, is running down, munching, or eating his food but slowly, especially if there is any lateral action of the jaw, examine

the mouth carefully to see whether there is any noticeable cause of trouble in the teeth. If rough and irregular, they should be rasped down. The method of doing this is now so well understood as to scarcely need explanation.

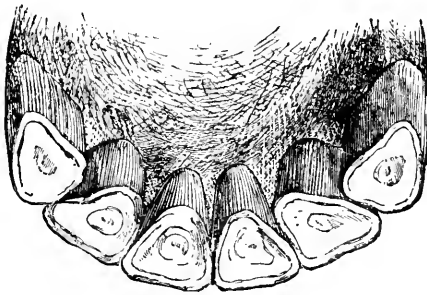


FIG. 396.—At Sixteen Years Old.

The rasping down of all irregularities should be carefully done, and if there is a decayed tooth it should be removed by a veterinary surgeon who is

conversant with the simplest and best method of doing it. There are regular horse-dentistry implements in general use for this purpose, which can be easily obtained. If the tooth has grown down below the level of the others, it should be rasped or sawed off to the proper dimensions, and carefully watched afterward so as to remove any undue growth harmful to the opposite parts.

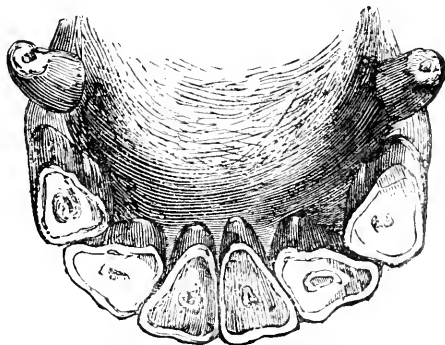


FIG. 397.—From Seventeen to Eighteen Years.

If there is any enlargement of either jaw, more especially of the upper one, with perhaps a running sore offensive to the smell; and if in addition there is offensive matter running from the nostril on that side, the trouble may be suspected as arising from a carious tooth, and the jaw on that side must be carefully examined.

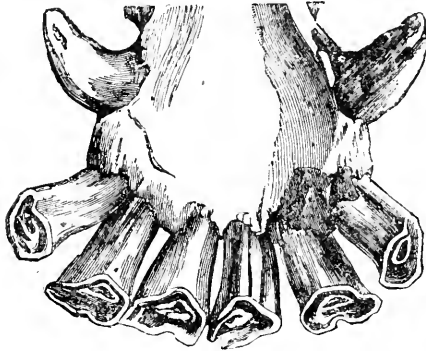


FIG. 398.—Extreme Age.

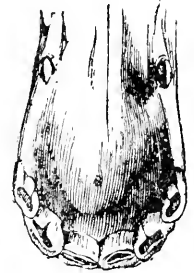


FIG. 399.—Ideal Colt's Mouth.

It may be asked, How is it, if the trouble arises from a carious tooth, that the matter comes from the nostrils?

Answer: By the imprisoned matter forming a sinus into the nasal cavity.

The treatment for all such cases is, first, in the removing of the offending cause, namely, the tooth itself, and also, as far as possible, the dead or diseased parts, and favoring a healthy condition of growth by cleansing out the parts with a strong solution of carbolic acid or chloride of lime, or any good disinfectant.

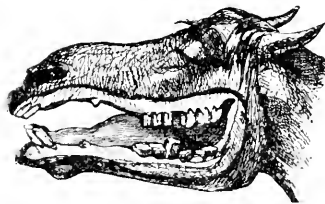


FIG. 400.—Irregular Growth of Teeth.

Next, protect the parts from the lodgment of particles of food, by filling with a pledget of tow saturated with the tincture of myrrh, or any good healing astringent, and dress once a day. If there is diseased bone or fungus growth, it should be treated the same as for other difficulties of the same kind.*

* Since writing the above, my attention has been called to an article in the *Journal of Comparative Medicine and Surgery*, of April, 1883, by Dr. Robert Jennings, of Detroit, Mich., in which he refers to a large number of cases of this description.

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