A plain treatise on horse-shoeing

"Trifles make perfection; but perfection is no trifle."

—

A PLAIN TREATISE

ON

HORSE-SHOEING,

WITH ILLUSTRATIONS,

BY

WILLIAM MILES, ESQ.

AUTHOR OF "THE HORSES' FOOT," "STABLES AND STABLE FITTINGS," "REMARKS ON HORSES' TEETH," &c.

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PREFACE TO THE SECOND EDITION.

The first issue of the "Plain Treatise on Horse-Shoeing" has been so favourably received both at home and abroad, and has been honoured by such unmistakable marks of approbation, that I am induced to publish a second edition in a cheaper form, in the hope of effecting a further spread of sound principles in horse-shoeing, by placing it within the reach of many persons, whose attention may not hitherto have been directed to the importance of the subject, and to whom it may prove interesting, as regards the future comfort of their horses, and also as it affects their own personal safety, and their pockets.

I have been favoured by so many communications, which bear direct testimony to the value of the system, from all classes of persons ranging from masters of hounds to country smiths, that its utility and practicability may be considered as placed beyond dispute; and if indirect testimony were needed, I think it might fairly be drawn from the fact of my having received "The Treatise" by post from Frankfort, translated into German by an unknown hand (clearly not by M. Guitard, who obtained my permission to translate and publish my work on the Horses' Foot); and also by "Frank Forester" having imported it bodily, prefaced by some most complimentary remarks, into his elaborate work on "The Horse of America," lately published at New York.

I can scarcely be expected in a work, which is chiefly designed for the use of shoeing smiths, to enter into, or attempt to confute, the groundless fears of those, who are content to form speculative

theories at home, rather than appeal to their reason at the forge; indeed the large amount of experience of the benefit of the system to the Horse's Foot, which has been obtained by myself and others, would render such a course unnecessary, even if I thought it desirable; I have therefore confined myself entirely to practical details and directions, accompanied by such observations upon them, as are calculated to enable any smith, possessed of a willing mind, and ordinary capacity, to make himself a good shoer, to the great advantage of himself, his employers, and their horses.

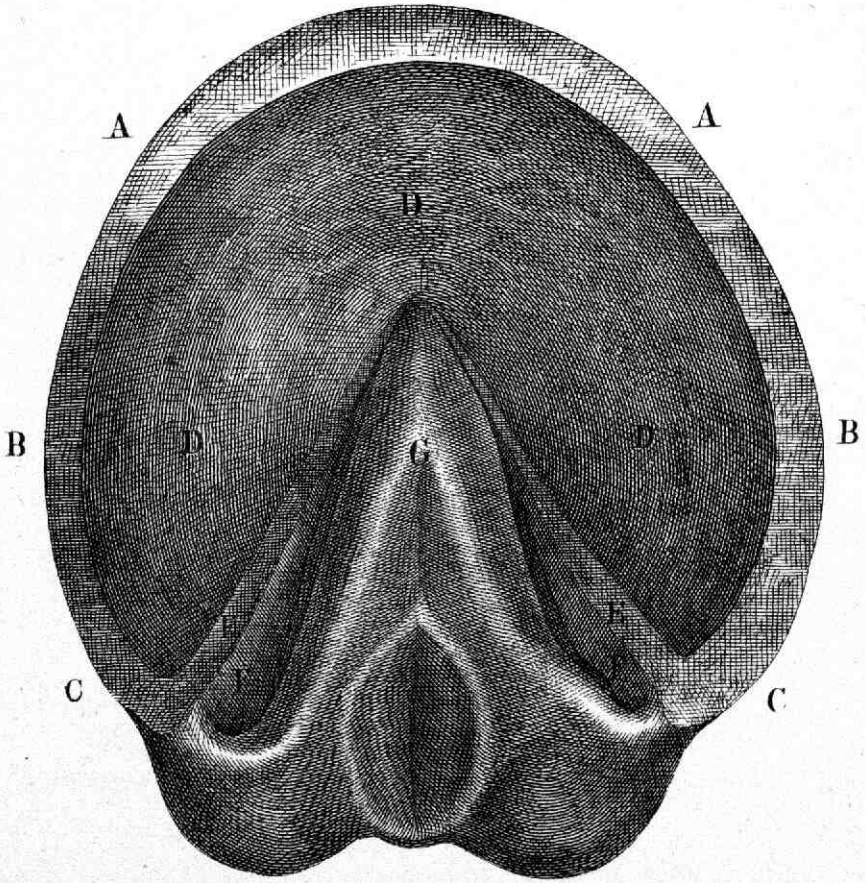
Dixfield, Exeter,
June 18th, 1858.

HORSE-SHOEING.

It was suggested to me several years ago by divers correspondents, that a plain, practical treatise on Horse-Shoeing, freed from all other matters, connected with the soundness of the horse's foot, would be very acceptable to many working smiths, who have neither the time, nor the inclination to wade through a work, where what they want to find, is mixed up with other things, which do not bear upon their vocation.

To the production of such a treatise I then set myself in the hope, that however much I might fall short of my wishes, I might still in some degree supply a want, which had long been felt by many; and I think I may safely point to

PLATE 1.



the present call for a seventh edition of my little book as evidence, that the want was not an imaginary one.

The books, at present in use, are written in a style, that many smiths find it difficult to follow; my aim therefore shall be to convey the information, I have to offer, in the simplest language, I can command, and such, as the least informed among them are familiar with. But, before I enter on the subject of shoeing, I must notice two things, which we must not only believe, but act upon, if we ever hope to arrive at really good shoeing; the first is, that nature has given, to what horsemen call a good shaped foot, the form, best suited to the horse's wants; and the second is, that the hoof expands, when the horse's weight is thrown upon it, and contracts, when it is taken off again; but the mere belief in these things will be of no use, unless we make the shoe to fit the foot, and nail it on in such a

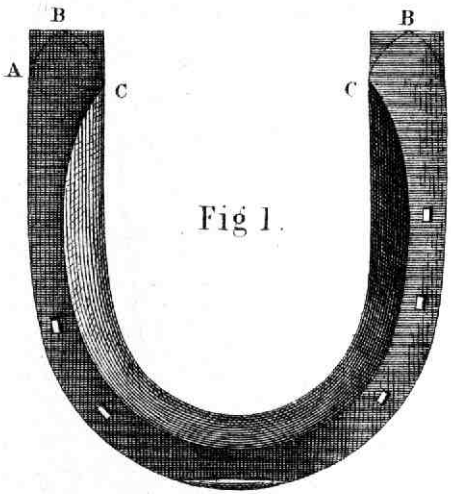


Fig 1.

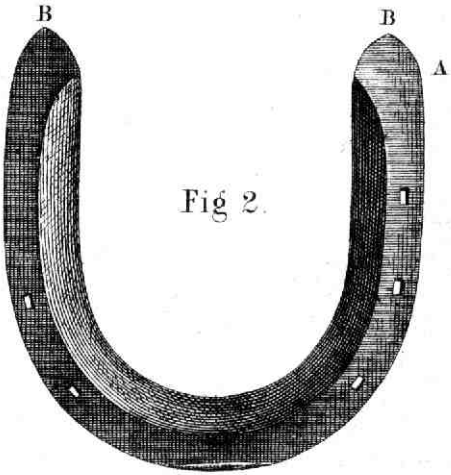


Fig 2.

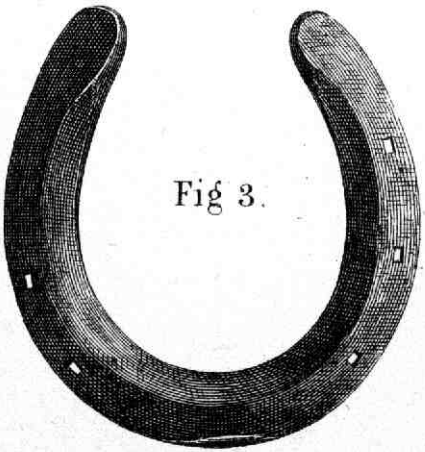


Fig 3.

manner, as will *allow* the hoof to expand and contract; for we might as well not believe at all, as believe a thing to be right, and not do it.

Nailing an iron shoe to a living horse's foot is a very unnatural thing to do, but, as it must be done, it is our duty to see, how we can do it with the least damage to the horse. To show this, I will suppose myself addressing a young smith, who is about to shoe his first horse.

PREPARING THE FOOT.

You must begin by taking off one of the old shoes, and I say *one*, because the others should always be left on, for the horse to rest upon: all horses stand quieter on shod feet, than they can on bare ones; and they are less likely to break the crust: many tender footed horses are in positive agony, when forced to rest on a bare foot, while the opposite one is held up, to be shod.

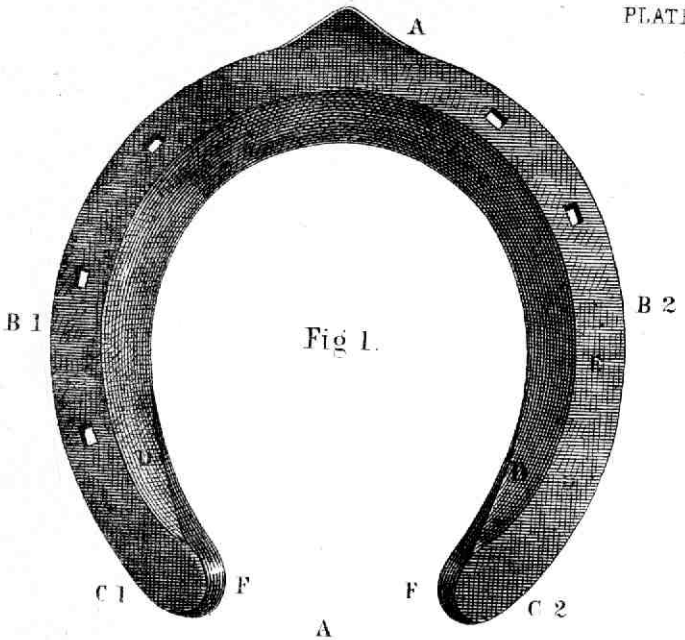


Fig 1.

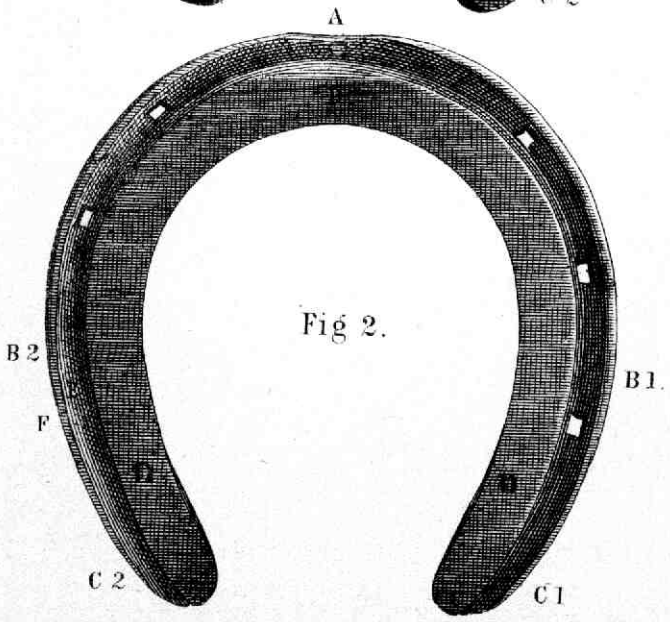


Fig 2.

First raise all the clenches with the buffer, and if the shoe will not then come off easily, loosen some of the nails with the punch; but never tear the shoe off by main force; it splits the crust, widens the nail holes, and destroys the horn.

The shoe being off, you should rasp the *edge* of the hoof all round, and take out any stubs, that may be left in the crust. Then you must pare out the foot; and this requires both care and thought. If the horse has a strong foot with plenty of horn, you should shorten the toe, lower the heels and crust, and remove the dead horn from the sole, and also from the corners between the heels and the bars; the best way of doing this is to pare the bars down nearly level with the sole, and then you can get at the dead horn in the corners more easily. The part of the bar, which stands up above the sole, would have been worn away, or broken down, if the shoe had not kept the hoof off the ground; therefore

you had better always pare it down; but on no account ever cut anything away from the *sides* of the bars, nor, what is called, "open out the heels"; and be sure, that you never touch the frog with a knife. Now remember, that there are three things, which you must *never* do in paring out a foot; you must never cut the sides of the bars, nor open out the heels, nor pare the frog; and I will tell you, why you must never do them.

The bars are placed, where they are, to keep the heels from closing in upon the frog, and, if you thin them by cutting their sides, you weaken them, and they can no longer do it, and the foot begins to contract.

Opening out the heels does exactly the same thing by weakening the very parts, which nature placed there, to keep the heels apart. It takes some time to contract a horse's foot so much, as to lame him; and because the contraction comes on by slow degrees, no one notices it, until the

horse falls lame, and then every one wonders, what can have done it; but very few hit upon the right cause.

The frog is a thick, springy cushion, whose chief use is to protect a very important joint, called the navicular joint, and it is covered by a thin layer of horn, which keeps in the moisture; and every time you slice off any of the frog, you lay bare a part, that was never meant to be exposed to the air, and it dries, and cracks, and forms rags; and if these rags are cut off at every fresh shoeing, the whole frog becomes as dry, and hard, as a board; and the horse gets an incurable disease, called "navicular disease"; therefore I say, leave the frog alone; it will never grow too large; for long before that would happen, the outer covering will shell off, and a new, horny covering will be found beneath; and as to the rags, leave them alone also, and they will fall off of themselves.

A weak, flat foot will bear very little paring, or

rasping; the crust of such a foot is sure to be thin at the toe, and low at the heels, with a thin and weak sole; therefore the less you do to it the better, beyond making the crust level, where it is to bear upon the shoe; this must be done to all feet, and as the inner quarter, where there should be no nails, does not wear away as fast, as the outer quarter, where the nails are driven, you should always place a rasp upon its edge across the foot, to be quite sure, that the two sides are level. I have known shoes lost from the inside quarter being higher, than the outside; which caused the foot to bear unevenly on the shoe.

Before you pare out a foot, you should always think of the state of the roads, and, if they are dry, and covered with loose stones, or have been lately repaired, you should take very little off the sole of any foot, because, if you thin it, the stones will bruise it; but, when the season is wet, and the stones worn in, you may pare the sole of a

strong foot a little, until it will yield in a very slight degree to the heaviest pressure, you can make upon it with your thumbs; but you must never pare it thin enough to yield to less pressure, than the very heaviest you can bring to bear upon it.

Plate I. shows a good shaped near fore foot, pared out ready for shoeing. I have placed letters against the different parts. The toe reaches from A to A, the letter B shows the middle of each quarter, and C marks the heels. You will observe, that the crust is thicker on the outer quarter, where the nails should be, than it is on the inner quarter, where a nail must never be driven; and you will also see, that the hoof is not a circle, as many persons suppose it to be, but is straighter on the inside, than it is on the outside. D marks the sole, E shows the upper parts of the bars, pared down nearly level with the sole. F shows *that* part of the bars, which must never be touched by a knife, G marks

the frog, and is placed just over the situation of the navicular joint. I would advise you to examine this frog well, because it is, what every horse's frog should look like, plump, and full, and even, with a broad, shallow cleft, not split through at the back part; and, if you shoe your horses properly, and never pare the frog, it is, what their frogs will come to in time.

THE SHOE.

Before I talk about the shoe, I must settle names for the upper and under surfaces; because I fear, I should mislead those, who are not smiths, if I call the part, that rests upon the ground "the upper surface," as smiths do; I shall therefore call that part of the shoe "the ground surface;" and the part which goes next the foot, I shall call "the foot surface;" and then there can be no mistake, as to which surface I mean.

In turning your store shoes "in the rough," you should leave them longer at the heels, than smiths generally do: we shall see the reason for it, when we come to "fitting the shoe;" and you should make the web as wide at the heels, as it is at the toe, and of the same thickness throughout from the toe back to the heels. The "fuller" should be carried quite round the shoe to the heels, and the fullering iron should have both sides alike. It is a far better tool, than the one-sided iron, in common use, which is generally so narrow and sharp, that it not only makes the groove too small for the heads of the nails to sink into, but it often splits the shoe. A narrow groove may look neater, than a wide one; but you will find a wide one much more useful.

CHOOSING A SHOE.

The first thing to look to in choosing a shoe is the kind of foot, you have to deal with. If the foot be a strong, good shaped one, it will be an easy matter to find a shoe for it; only take care, that the web is not too narrow, and that the shoe is not too light. A light shoe is apt to bend, before it is half worn out; and the pain, caused by the pressure of the bent nails against the tender lining of the hoof, throws the horse down, and most likely breaks his knees. If the foot should be flat with a weak, brittle crust, you must still choose a stout shoe; for a horse with such a foot could not go at all on a bent shoe; and the shoe must have a wide web, because the sole is sure to be thin, and will need plenty of cover, to protect it.

You must also look at the seating, for, if the foot is weak and flat, the shoe must be well seated

out, to prevent it pressing upon and bruising the sole; but, if the foot is strong, and the sole arched, there need not be more seating, than will allow the point of a picker to pass freely round between the sole and the shoe; otherwise dirt and small stones will get in and bruise the sole as much, as the shoe would do, if it pressed upon it.

CUTTING OFF THE HEELS.

Having fixed on a shoe to your mind, begin by cutting off the heels; and you will find a half round chisel a better tool for the purpose, than a straight one, because you should never cut them off square; if you do, you will find it impossible to fit the shoe properly to the heels, and at the same time keep the web as wide at the heels, as it is at the toe; for one of the corners of the shoe will be

sticking into the frog, while the other stands out beyond the crust; but, if you cut them off, as shown in Fig. 1, you will have no difficulty in bringing every part of the shoe into its proper place on the foot. Fig. 1, is a near fore shoe turned in the *rough*; and the dotted lines show the direction, in which the heels should be cut off. The side next the frog should be cut off from C to B, and the outer corner from A to B, and then the shoe will look like Fig. 2, which with a little hammering over the beak of the anvil will soon come like Fig. 3: you will see, that the points, marked A in Fig. 2, have disappeared in Fig. 3, and that the parts between A and B on each side have become a portion of the outer rim of the shoe; whereby the outer rim is lengthened, and the inner rim shortened; and there are no corners left to prevent your fitting the shoe to the exact sweep of the crust at the heels, and you are also enabled to keep the web

as wide at the heels, as it is at the toe. I have introduced Fig. 3 in this place, because it gave me the opportunity of explaining the reason for cutting off the heels, as I have directed; but at this stage of the business it is a good plan always to leave the quarters and heels rather straight, and wide apart, until you have fitted the toe; because it is less trouble to bring them in, than it is to open them out, after the front has been fitted.

THE NAIL HOLES.

You must next open the nail holes; but be sure, that they have been stamped so, as to pass *straight* through the shoe, and come out on the foot surface in the flat part of the web, and not partly in the flat, and partly in the seating. It is a very bad plan to make them slant inwards, as most smiths do; for in driving a nail, they

have first to pitch the point inwards, then turn it outwards, driving it all the time *with* the grain of the crust, and at last they bring it out high up in the thinnest part of the hoof, and have the weakest part of the nail for a clench. Now instead of all this, if you make the holes straight through the shoe, you have only to drive the nail straight, and it will go through the shoe *across* the grain of the crust, and come out low down in the thickest part of the hoof, and give you a strong clench, made out of the shank of the nail, instead of a weak one made out of the point. The advantage of straight holding is, that you are sure never to prick the foot in driving a nail, and you get a firmer hold for the shoe; every body knows, that a short purchase *across* the line of the strain is stronger, than a *longer* one in the direction of the strain.

The soundness of the horse's foot, so far as shoeing is concerned, depends more upon the num-

ber of nails, and where they are placed, than upon anything else; for, if the shoe is ever so badly formed and the nail holes are rightly placed, very little harm will happen to the foot beyond the loss of a shoe; but, if the shoe is of the best possible shape, and fitted to the foot in the most perfect manner, unless the nail holes are placed so, that the foot can expand, it must in the end become unsound.

The portion of hoof, which expands the most, is the inner quarter and heel; you must therefore leave those parts free from nails; and the way to do it is never to stamp more than two holes on the *inside* of the shoe, one about an inch and a quarter from the centre of the toe, and the other about three quarters of an inch behind it. It is quite clear, that, if you nail both sides of a horse's hoof to an iron shoe, the hoof will be held fast, and cannot expand; and when the horse's weight forces the bones of the foot into the hoof, the

tender lining of the hoof will be squeezed against the shanks of the nail, and cause pain to the horse at every step, he takes. The whole number of nail holes should *never* exceed five; three on the outside, and two on the inside. I have proved over and over again, that five nails will hold on a fore shoe at any kind of work, in any country, and at any pace. When a shoe is properly fitted to the foot, and fastened by five nails, nothing but the smith's pincers can pull it off.

Having cut off the heels, and opened the nail holes; you must next turn up a clip at the toe; every shoe should have one at the toe, it keeps the shoe steady, and prevents its being forced back; but you should never put one at either side, for if it were put on the inside, it would prevent the hoof expanding; and on the outside it is worse than useless, for the nails there are quite sufficient to keep the shoe from working across the foot, and

the clip will interfere with the placing of one of the nails, and will destroy more of the crust, than *two* nails would have done.

FITTING THE SHOE.

You must always bear in mind, that "fitting the shoe" means fitting the shoe to the foot, and not fitting the foot to the shoe, as is too often done in many forges.

It is a bad plan for a beginner to try to fit the whole of the shoe at once; it is much better, until you have had a good deal of practice, to fit the toe first, then the quarters, and lastly the heels; but, before you begin to fit the toe, take a look at the old shoe, and see, how much of the toe of it is worn away; because just so much of the new shoe should be turned up from the ground, to remove it out of the line of wear.

We all know, that horses go better and stumble

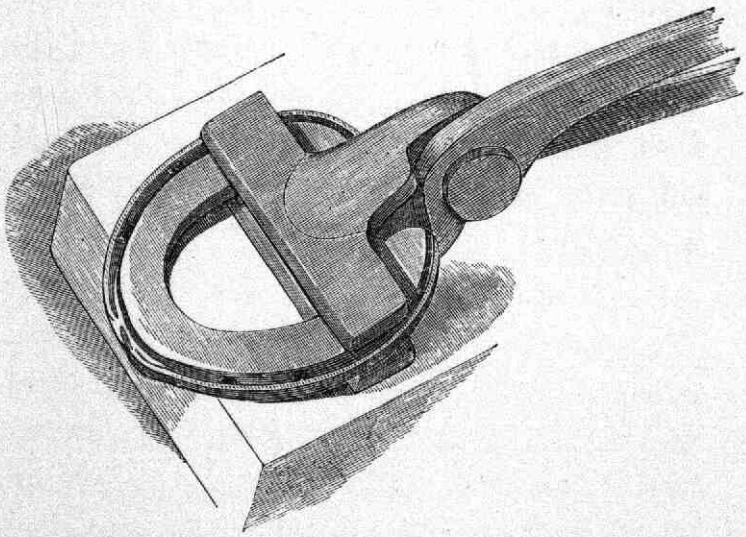
less in old shoes, than they do in new ones, and the reason, why they do so, is, because they have worn away the toe, and no longer jar the foot by striking the toe against hard substances in the road. A new shoe, *turned up* at the toe, is the same thing to the horse, as an old one, *worn down;* but with this great difference to his comfort, that he is easy upon the new one, from the time it is first put on, whereas he was never easy upon the old one, until he had worn away the toe.

When a horse wears his shoe *hard* at the toe, it is the custom of most smiths to weld a lump of steel on to it, to make him longer in wearing it away; but this only increases the jar to his foot; whereas turning up the toe makes the shoe last quite as long, and saves the horse from a great deal of unnecessary suffering. A strong foot will bear the toe to be turned up a good deal; but a flat foot is always weak at the toe, and cannot bear the removal of any of the horn from it; the best

way therefore of dealing with a very flat foot is to fit the shoe to it without turning up the toe, then to make the toe of the shoe red hot, and place it in the vice with the ground surface towards you, and in that position rasp the iron away from that part of the toe, which would have rested on the ground; the horse will travel safer and better for it, and the loss of a little iron from the toe will not cause the shoe to wear out faster; for a flat-footed horse will generally wear away the heels of a shoe, long before he has worn out the toe.

You can make a very handy tool for turning up the toe of a shoe by "shutting" a piece of iron five inches long and one inch broad, crosswise on to each blade of a pair of smith's tongs; with this tool you will be able to grasp both limbs of the shoe at once, and not only turn up the toe over the end of the anvil, but restore the seating at the toe without bending the shoe, or putting it out of shape; which you could not do without

a great deal of trouble by holding one limb at a time in common tongs. The accompanying figure shows you this tool in use with the ground surface of the shoe uppermost, for turning up the



toe, and you have only to reverse it, keeping the same grasp of the shoe, and the foot surface will come uppermost, ready to have the seating made good.

I will now suppose, that you have turned up

the toe of the shoe, shortened the toe of the hoof, rasped the crust, to receive the turned up shoe, and cut a notch for the clip; you had better next, until you have gained experience in fitting a shoe, "spring" the heels, to prevent their burning the back part of the crust, while you are fitting the shoe to the fore part; but you must bring them down again, before you fit the quarters and heels, and never leave them "sprung," when the shoe is nailed on.

You must now put the toe of the shoe in the fire, and make it hot enough to mark the uneven portions of horn, which should be lightly removed by the rasp, until an even bed is left for the shoe to rest upon. You need not fear to burn the toe of a strong foot; it can do no harm; but a weak foot with a thin crust of course will not bear much burning, still the shoe should be made hot enough to scorch the horn, and show, where the hoof fails to bear upon it.

When the toe is once properly fitted, there will be very little trouble in fitting the quarters and heels; you have only to bring them in over the beak of the anvil, until the edge of the shoe ranges with the edge of the hoof back to the furthest point of the heel on each side, and continue the same sweep, until it nearly touches the frog: there must be none of the shoe left sticking out beyond the hoof either behind, or at the sides of the heels.

I know, that a great many smiths are very fond of, what are called "open heeled shoes," which means shoes with straight heels, wide apart, and projecting beyond the hoof both behind, and at the sides; and the only reason, I have ever heard in favour of such shoes, is a very bad one, viz.: that the horse requires more support at the heels, than he gets from the hoof; but you may depend upon it, that nature has made no mistake about it; and if the horse really wanted more support, than he gets from the heels of the hoof, he would have had

it; but I think, I shall prove to you, that this kind of shoe instead of being a benefit to the horse is a positive evil to him; it interferes with his action, and exposes his sole and frog to serious injury from stones in the road; and the projecting portions of the shoe become ledges, for stiff ground to cling to, and pull the shoe off. More shoes are lost through these mischievous projections at the heels, than from all other causes put together.

Let us see, how it is, that these projecting heels interfere with the horse's action. It is not necessary for this purpose to trouble you with the anatomy of the foot, but merely to state, that all its parts are joined to each other in such a manner, as to form one great spring, and that the foot is joined to the leg by the pastern and coronet bones in a direction slanting forward, which brings the foot a little in advance of the leg, and places the heels in front of a line, dropped from the centre of the fetlock joint to the ground.

1 The shank or cannon bone.

2 The pastern bone.

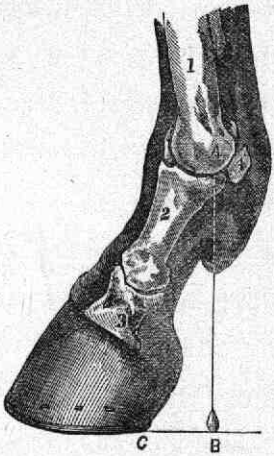
3 The coronet bone.

4 The sessamoid bone.

A. The point where the weight of the horse would fall on the upper end of the pastern bone.

B. The point where a line dropped from A would meet the ground.

C. The heel of the hoof.



Now it is clear, that the weight of the horse will fall upon the upper end of this slanting pastern bone at every step, and the bone having a joint at each end of it, will sink to the weight, thus thrown upon it, and break the force of the shock both to the leg and foot; but, if the heels of the shoe are longer, than the heels of the hoof, the projecting pieces of iron will meet the ground further back, than the natural heels would have

done, and will check the sinking of the pastern bone, just as an upright pastern does, by bringing the heels too much under the centre of the weight, which causes the horse to step short, and go stumpy.

If you wish to avoid these evils, and keep the horse's shoes on his feet, you must bring in the heels, and let the shoe strictly follow the form of the foot, whatever that form may be.

The part of the foot, that needs protection from injury more, than any other, is the "navicular joint," which rests upon the frog about an inch, or an inch and a quarter behind its point; and the only way, to protect it, is to keep the web of the shoe as wide at the heels, as it is at the toe, and to bring in the heels, until they nearly touch the frog; by so doing you lessen the opening of the shoe, and the web of one side, or the other will strike upon the stones in the road, and save the frog from coming with full force upon them. But open-heeled shoes leave

the frog entirely exposed to very large stones, and are the cause of many a severe bruise to the navicular joint, which lays the foundation of future incurable lameness.

I have often seen shoes so wide at the heels, that I have placed my clenched hand within the opening of the shoe without touching either side of it; and where my fist could go, a stone, *as large*, could go.

Another great advantage of bringing in the heels, and fitting the shoe close is the certainty, that the horse will not cast his shoe: you leave nothing for stiff ground to lay hold of, and if you slightly bevel the inside quarter and heel of the shoe from the foot downwards, as is sometimes done to prevent a horse cutting, no ground in the world can pull it off; for the foot, expanding to the weight of the horse, enlarges the hole, made by the shoe, and leaves more space for the shoe to come out of, than it made for itself to go in at; but, if the shoe projects beyond the hoof at any part, and more

particularly at the heels, the foot cannot fill the hole, made by the shoe, and stiff clay will cling round the projection, and pull the shoe off.

Having so far finished the shoe; place it on the face of the anvil with the toe hanging over the side, and see, that the foot surface of the quarters and heels are quite level; then make it hot enough to scorch the hoof all round, and form a bed for itself; without this it would be next to impossible to insure close fitting, for, after you have made the foot as level, as you can with the rasp, and the shoe as level, as you can on the anvil, the chances are very much against their fitting like two planed boards, as they ought to do; and the quantity of horn, to be thus removed, is so small, as not to be worth thinking about. It is a mistake to suppose, that a hot shoe injures the hoof; it does nothing of the kind, and you cannot possibly fit a shoe properly without making it hot. I would not have you burn a shoe into its place on the

foot, before you had taken care to make both the foot and the shoe as level, as you could, but, when you have done that, the small quantity of burning, that is necessary to make them come close together, can do no harm. I have said before, that a weak, thin crust will not bear as much heat, as a strong one, and that the shoe should be applied less hot to it, nevertheless it must be scorched, that you may be sure, the shoe fits properly.

When you have cooled the shoe, you should "back hole" it, that is, make free openings on the foot surface for the nails to pass through; and these openings should be large enough to take the shanks of the nails, and not merely the thin part towards their points, and mind, that in opening them, you do not make the holes incline inwards; but take great care to make them pass straight through the shoe.

Before you "file up" the shoe, hold it firmly in its place on the foot with both hands, and examine carefully, whether any light appears between the

foot and the shoe, and if you should percieve any, alter the shoe at once; for the crust must bear upon the shoe all round, before you can say, that the shoe fits the foot, as it ought to do.

FILING UP THE SHOE.

Much time is often wasted in polishing the shoe with the file, before it is nailed on; but all, that is really needed, is to remove the burs about the nail holes, file off the sharp edges of the shoe, and round the heels; taking care to apply the file hard to that part of both heels, which comes next to the frog, so as to slant it from the ground upward away from the frog; but you must be careful not to make the *ground* surface of the web at the heels narrower in so doing; Fig. 1 shows the foot surface, and Fig. 2 the ground surface of a near fore shoe.

In Fig. 1 A is the clip at the toe, B 1 the outer

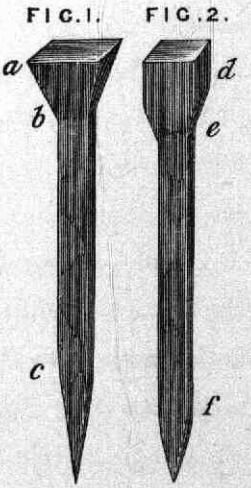
quarter, B 2 the inner quarter, C 1 the outer heel, C 2 the inner heel, D the seating, E the flat surface for the crust to bear upon, F the heels, bevelled off away from the frog.

In Fig. 2 A is the toe, turned up out of the line of wear, B 1 the outer, and B 2 the inner quarter, C 1 the outer, and C 2 the inner heel, D the ground surface of the web, as wide at the heels, as it is at the toe, E the fuller, carried all round the shoe, F the inner quarter and heel slightly bevelled from the foot to the ground.

NAILS.

I must say a few words about the nails, before we come to nailing on the shoe; because the nails, in common use, Fig. 1, are as badly formed, as they well can be; their short, wedge-shaped heads, wide at the top, *a*, and narrow at the bottom, *b*, with shanks springing suddenly from the head

without any shoulder, and ending in a long, narrow point, *c*, are most unsafe to trust a shoe to. The head of such a nail can never perfectly fill the hole in the shoe, for the wide tops gets tied either in the fuller, or the upper part of the hole, before the lower part has reached the bottom; and when the shoe is about half worn out, the head of the nail is gone, and the shank alone is left in the hole, to keep the shoe on. Now the nails, I advise you to use, and you had better always make them for yourself, Fig. 2, should have heads, which are straight-sided at the upper part, *d*, and gradually die away at the lower part into the shank, so as to form a shoulder, *e*, which will entirely block the bottom of the nail hole; the point *f*, at the end of the shank should be short and broad, to



enable you to form good stout clenches, which will assist in keeping the shoe firmly in its place, until it is quite worn out.

If you compare the head of the nail Fig. 2 at *d* and *e* with the head of the nail Fig. 1 at *a* and *b*, you will at once see, that the head of Fig. 2 is better calculated to fill every part of the nail-hole than the head of Fig. 1 with its broad top and narrow neck could possibly do; and if you compare the points of the two nails at *f* and *c*, you will readily perceive which promises the firmer clench.

Your nails should be made of the very best nail rods, you can get, and they should not be cooled too quickly, but left spread about to cool by degrees; the longer in reason they are cooling, the tougher they will become; they should not however be allowed to lie in a heap to cool; the mass keeps in the heat too long, and makes them almost as brittle, as if they had been cooled too suddenly.

NAILING ON THE SHOE.

If the nails are of a proper shape, the holes straight through the shoe, and the shoe fits the foot, it requires very little skill to nail it on; only put the point of the nail in the middle of the hole, keep the nail upright, and drive it straight, it must come out in the right place, low down in the crust, without the possibility of wounding the sensitive parts of the foot. The shank of the nail will pass straight through the substance of the crust, and gain a good, firm hold of it, leaving you the strongest part, from which to form a clench. The clenches should be short and broad, and not thinned by rasping away any of their substance, but hammered at once into a slight notch, made in the hoof under each; and the rasp should never be allowed to go over them, after they have been hammered down; for the sharp steel rasp is

almost sure to cut through the soft iron clench, just where it turns down, and leave the appearance of a clench, when in truth it has been cut off at the bend, and the loose end only remains, buried in the notch in the hoof. You will do good by rasping *below* the clenches, because you will thereby remove the broken horn, that the former nails have destroyed; but on no account ever use the rasp *above* the clenches; if you do, you will tear off the thin outer covering of the hoof, which is placed there to prevent the escape of the natural moisture, and to keep the horn tough; and, if you rasp it away, you will expose the horn to the air, and it will soon become dry and brittle, and make the hoof difficult to nail to. This thin covering of the hoof is like the shining covering of a man's finger nail; and most people know from experience, how dry and brittle, and easily broken a finger nail becomes, when by any accident it loses that covering.

Fig. 1 represents the ground surface of a near fore foot with the shoe nailed on by five nails, and shows, how the shoe should look in its place on the foot; Fig. 2 represents the same shoe, made transparent, so that the parts of the foot, that are covered by it, are seen through it. A shows the crust, B the bars, and C the heels of the hoof, supported by the shoe. By this plan of shoeing, the whole of the inner quarter and heel are left free, to expand; and I have invariably found in consequence of this freedom of expansion, that corns, however long they may have existed in the feet, disappear altogether, after a horse has been shod a few times in this manner; and never return, while the same plan of shoeing is continued.

I may here observe, that the nature of a corn in a horse's foot is very little understood. It is generally supposed to resemble a corn on a man's foot, and like it, to be caused by pressure from

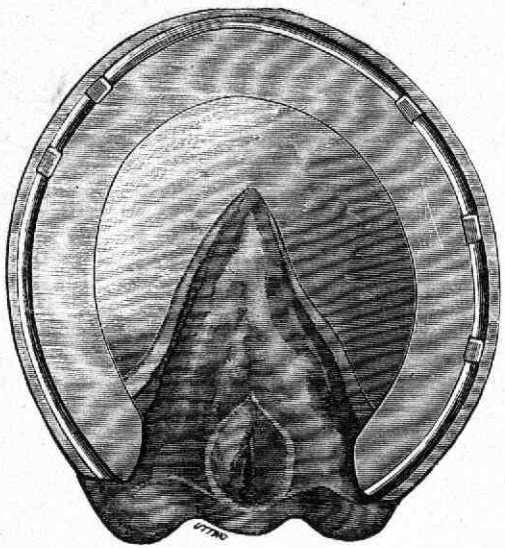


Fig. 1

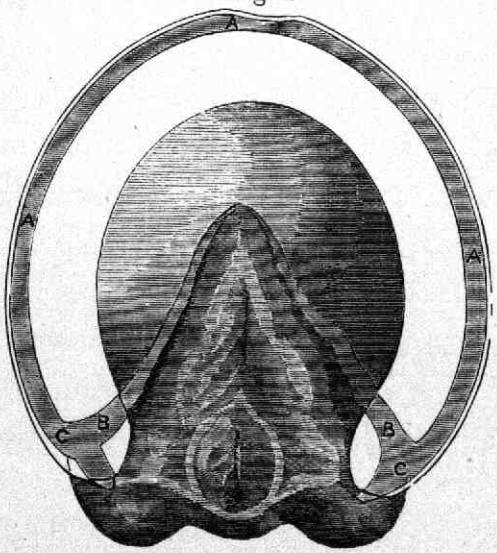


Fig. 2.

a shoe; whereas it is a totally different thing, and is caused in a totally different manner. It is a bruise of the sensitive sole, which lies above the horny sole, and is not caused by the heel of the shoe at all, but by the heel of the coffin bone, which is forced into the hoof by the weight of the horse, when in action; and, as the hoof from bad shoeing is not able to expand and make room for it, some of the small blood-vessels become wounded, and the blood, which escapes from them, filters through the horny sole, and at last shows itself on its under surface at the corner of the inner heel; leading most persons to believe, that the bruise *began* there, whereas in truth it *ends* there.

SHOEING WITH LEATHER.

Many tender footed horses travel best with a covering over the sole, and leather is commonly used for the purpose. In former editions of my

book I recommended gutta percha, and waterproofed felt, as being far preferable to leather in consequence of their power of resisting wet, and thereby retaining their form under every change of circumstance; but I am sorry to say, that the gutta percha of commerce is *now* so sadly adulterated, as to be utterly useless for horse shoeing purposes; and waterproofed felt, such as I formerly used, is no longer to be procured. I have endeavoured to find some other substitute but hitherto without success, and I am obliged to submit to using leather again in spite of its defects, which are certainly great; for when it is wetted, it becomes soft, and heavy, and yielding, but in drying again it contracts and hardens, causing frequent changes of pressure, which are very undesirable qualities in the covering for a horse's frog; still whatever covering you use, must be put on in the same way; so I will at once tell you how to do it. You must fit the shoe

to the foot with as much care, as if nothing were to be put under it; and when it is "filed up" and ready to be put on, lay it with the foot surface downward on the covering, whatever it may be, and mark the form of the shoe upon it with the end of the drawing knife; then cut the piece out, put it in its place upon the shoe, and fix them both in the vice, which will hold them close together, while you carefully cut the edge of the covering, until it agrees with the edge of the shoe; then turn them in the vice together so, as to bring the heels of the shoe uppermost, and cut out a piece from heel to heel, slightly curved downward in the centre, that nothing may be left projecting for the ground to lay hold of. The next thing to be done, is to smear the whole of the under surface of the foot with common tar mixed with a little grease, but be sure that you never use Gas tar instead of the other, for it dries up the horn, and makes it as hard, as flint, whereas

common tar keeps it moist and tough: then you must fill the hollow between the frog and the crust on both sides with oakum (which is better for the purpose, than tow) dipped in the tar, pressing it well into the hollow, until the mass rises above the level of the frog on each side, but never put any oakum upon the frog itself, excepting a piece in the cleft, to prevent the dirt and grit working in; very little is ever wanted on the sole in front of the frog. The use of the oakum is to protect the foot, but more especially the navicular joint, which lies above and across the frog, from being jarred by stones on a hard road; and the best way of doing this is to fill the space on each side of the frog with oakum in such a manner, that it shall share the pressure with the frog, and prevent the full force of the shock from falling on the navicular joint.

The usual mode of stopping a foot is to place a thick wad of tow over the whole surface of the

sole and frog, making bad, worse by adding to the projection of the frog, and causing it to meet the ground sooner, and receive the full force of the jar.

Fig. 3 shows a foot properly stopped, and ready for shoeing. The ends of the oakum, that is placed in the cleft of the frog, are collected together, and carried across the body of the frog, to be mixed with the oakum on one side, which keeps it in its place in the cleft, and prevents it working out behind.

You must now nail on the shoe with five nails, exactly as you would do if there was nothing under it, and, if you have attended to the fitting, there will be no fear of the shoe shifting, or coming off.

Fig. 4 shows a foot, properly shod with leather; and also the shape to which the leather should be cut between the heels of the shoe.

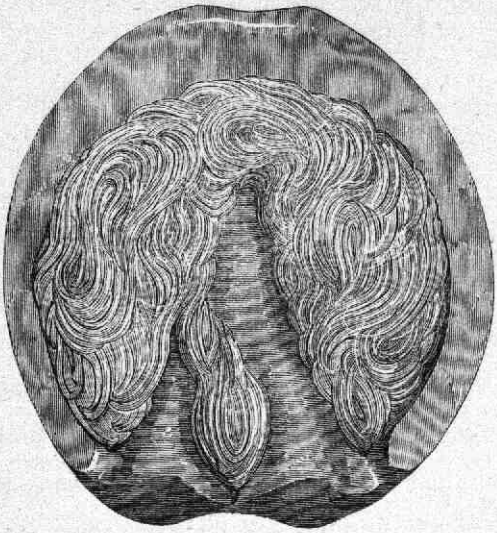


Fig 3.

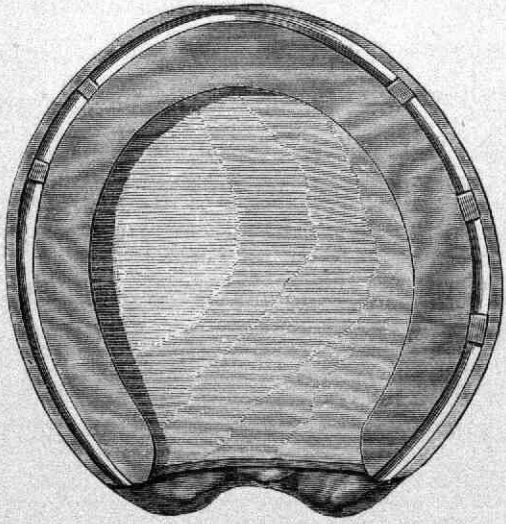


Fig. 4.

THE HIND SHOE.

The hind shoe, like the fore shoe, should be brought in at the heels, and be made to follow the exact shape of the hoof; but, as the weight of the horse falls differently on the hind feet, to what it does on the fore feet, and as the rider often obliges the horse to stop suddenly and without warning, when he is least prepared to do so, it becomes necessary to guard against strains of the hock and back sinews by raising the heels of the shoe, but this should be done in such a manner, as will give both heels an even bearing on the ground. Calkins may be, and I believe are, useful to heavy draught horses, but they are objectionable for fast work; and turning down the outside heel alone should never be done; it throws the weight upon the inner quarter, which is the least able to bear it, and strains the fetlock joint. The plan, I

have adopted for many years, is to have the last inch and a half toward the heel forged deeper and thicker, than any other part of the shoe; the heels are then made red hot, and the shoe is put in the vice with the hot heels projecting, which are beaten down with a hammer, until they are about an inch long, and then the sides are made even, and the foot and ground surfaces level on the anvil. I have found horses travel pleasanter, and receive less damage to their hocks, back sinews, and fetlock joints with these heels to their hind shoes, than they have with any others, that I have tried.

The toe of the hind shoe is exposed to great wear, and should be made stout, and thick, and rather pointed, with a small clip in the middle to prevent the shoe from being driven backward; and the back edge of the web should be rounded off, to guard against "over-reach." The toe should rest fairly on the ground, to enable the horse to get a good purchase for throwing his weight forward.

It is a bad plan to make the toe broad, and to place clips at the side of it; it is nearly certain to cause the very evil it was intended to prevent, by making the horse "forge," as it is called.

Many persons think, that "forging" is caused by the front of the toe of the hind shoe striking against the heel of the fore shoe, but that is a mistake; the sound is produced in this way; when the horse raises his fore-foot from the ground, and does not instantly throw it forward, but dwells in the action, the hind foot, following quickly, is forced into the opening of the fore shoe, before the fore foot gets out of the way, and the corners of the broad toe, made still broader by the clips at the sides, are struck against the inner rim of the web of the fore shoe on each side just behind the quarters, and cause the unpleasant clicking sound. The way to avoid this disagreeable noise is to make the hind shoe narrow at the toe, and rather pointed with a small clip in the centre, and to

leave the hoof projecting beyond the shoe across the toe; then the projecting horn of the hind foot will enter the opening of the fore shoe, held up to receive it, and be stopped by the sole, or frog, before any part of the two shoes can come together; and the noise will cease.

I have said, that you should round off the back edge of the web at the toe, to prevent an "over-reach." It is commonly supposed, that this also is done by the *front* of the toe; whereas it is always done by the *back edge*, which in a well worn shoe becomes as sharp as a knife. Now if the horse in galloping does not lift his fore foot from the ground, and throw it forward in time to make way for the hind foot, the hind foot over-reaches it, and cuts a piece out of the soft parts above the heel, and produces a very troublesome wound.

The hind foot expands less than the fore foot; still you should place the nail holes so as not to

confine the foot. For some years I shod my light horses as an experiment with only six nails in each hind shoe, and I found it to answer very well for them, but six were not enough to prevent the hind shoes of my large carriage horses from occasionally shifting on their feet; I therefore shod them with seven; and I recommend you, as a general rule to put seven nails into the hind shoes of all hunters and other horses, that are likely to be frequently called upon to exert the muscular powers of their hind quarters to their fullest extent. The holes on the inside should be stamped closer together, than those on the outside, and they should be placed forward toward the toe so, as to leave the inside quarter and heel free to expand. A small foot can be safely shod with six nails; and no foot can ever require more than seven.

Fig. 1 represents the side view of a near hind shoe with the foot surface uppermost showing a level portion for the crust to rest upon; the heels

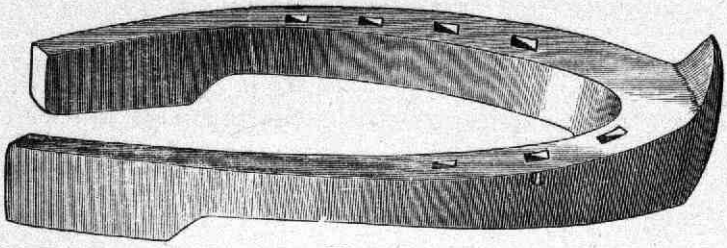


Fig. 1.

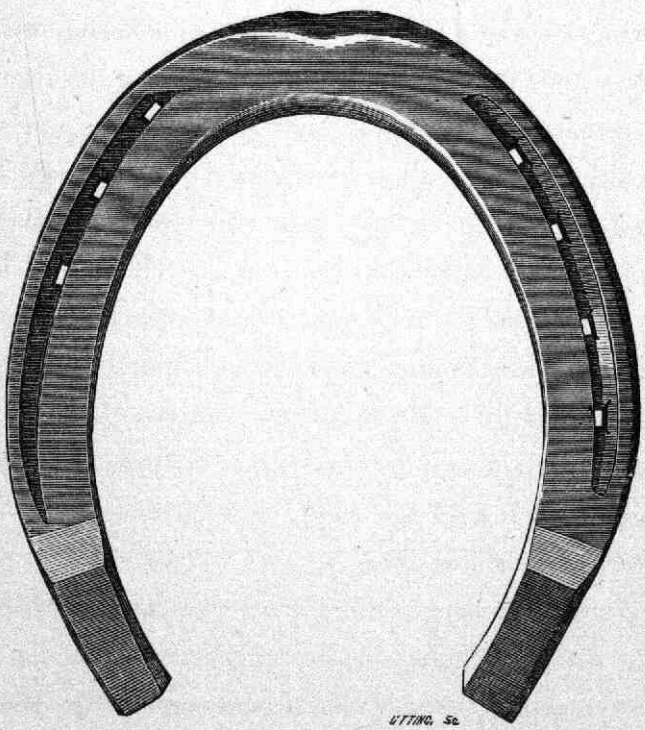


Fig. 2.

having been raised in the manner I have described above; and the toe made stout and pointed, with a small clip in the centre.

Fig. 2 shows the ground surface of a near hind shoe with the toe rather pointed, and the back edge rounded; and the nail holes properly placed, when the foot is large enough to require seven.

CUTTING.

Horses strike their feet against the opposite leg in such a variety of ways both before, and behind, that it is impossible to form a shoe, that would suit every case of "cutting"; I therefore advise you, whether the horse cuts before, or behind, to fasten something like a boot, covered thickly with wetted pipeclay, over the place, where he strikes the leg, and then trot him along the road; he will soon pick off some of the pipeclay with the opposite

foot, and show you the exact part of the shoe, he strikes with, which you can easily alter in the new shoe; and you will often be surprised to see, how small a matter, causes the mischief.

REMOVING.

The time, at which a horse's shoes should be removed, must depend very much upon circumstances. If a horse wears his shoes out in less than a month, they had better not be removed; and horses with thin, weak horn, which grows slowly, are likewise better left alone between each shoeing, unless their shoes last seven or eight weeks, in which case they should be removed once within the time: but horses with strong feet, and plenty of horn, that wear their shoes four or five weeks, should have them removed at the end of a fortnight; and when horses are doing so little work, or wear

their shoes so lightly, that they last over two months, they should be removed every two or three weeks, and at the second removal the shoes should be put in the fire, and refitted, or the feet will out-grow the shoes; as the horn grows much quicker, when a horse is idle, than it does when he is in full work.

Having now gone carefully through all the circumstances, necessary to good shoeing, and stated the reasons, why certain things should *always* be done, and certain other things *never* done, I will repeat shortly the few things which *are to be done*, in the order in which they occur; and you will find that they are really very few, when separated from the reasons and explanations.

Raise the clenches with the buffer.
Have only one foot bare at a time.
Pare out the foot; but leave the frog alone.
Cut off the heels of the shoe, as I have directed.

Open the nail holes *straight* through the shoe.

Form a clip at the toe, and turn up the toe of the shoe.

Fit the shoe with great care to the toe, quarters, and heels.

Heat the shoe, and apply it to the foot, to see that the crust has a fair bearing upon it.

Cool the shoe, "back hole" it, and file it up.

Nail it on with five nails, coming out low in the crust.

Hammer down the clenches without rasping them, and only rasp the hoof *below* them.

GENERAL OBSERVATIONS.

I have said, that five nails are sufficient to hold on a fore shoe at any kind of work, in any country, and at any pace; and I *again advise you to employ that number*, placing three on the outside

of the shoe, and two on the inside; because, I know from experience, that with the very commonest care on the part of the smith, they will hold a shoe through any difficulty of ground, or pace; but I am prepared to prove, that they are *more* than sufficient for the purpose; and to show, that many smiths *can*, and *do* keep on a fore shoe by *three* nails only; *two* placed on the outside, and *one* on the inside.

For sixteen years I never, in a single instance, had more than three nails in the fore shoe of any one of my six horses, and they have all been shod with leather, or some other covering to the sole during the whole time; some of them did not particularly require it, but having commenced it as an experiment, and finding no inconvenience from it, I went on with it, even with a carriage horse, which had grown to rather more than seventeen hands high; and he too continued to carry his shoes, leather and all quite safely with

only three nails in each fore shoe during the four years, that he remained in my possession.

In a former work I published several cases of horses having done a variety of work with only three nails in each fore shoe; and I will now add another, which happened to a horse of my own, and which ought to set the question at rest, supposing any doubt still to exist, as to the capability of three nails to hold a shoe. The horse was twenty-eight years old at the time; he was a high stepper, and impetuous in company, and had large, flat feet, which grew horn very sparingly, so that it was quite necessary to protect his feet by a stout shoe with leather and stopping under it. He happend to be a particularly good lady's horse, for one who had plenty of nerve, and could ride well, and I lent him to join in a large riding party of ladies and gentlemen, on a visit at a friend's house, who took long daily rides in a very hilly district, regardless of pace, over commons covered

with heath, furze, and stones, through rough stony lanes, and in every variety of ground; and although his shoes had been on ten days, when I sent him away, he returned to me at the end of five weeks, with his shoes worn out certainly, but firm on his feet, and the clenches all close. I mention this last circumstance, because it is a proof, that his shoes had been put on with proper care, for whenever you find a clench rise, you may be certain, that you have done something wrong; either the crust did not bear upon the shoe all round, or the nail holes did not pass straight through the shoe, or the heads of the nails did not fill the bottom of the holes; any one of these things may cause a clench to rise; and a risen clench is a sure sign of careless shoeing.

I may mention, as further proof of the sufficiency of three nails to keep on a shoe, that Major-General Key, when in command of the 15th Hussars, stationed at Exeter, now twenty-two years ago, had

four horses shod with three nails only in each fore shoe. Finding how my horses were shod, he was induced to try the plan upon his hack, and felt so satisfied with the result, that he immediately had the others similarly shod; and an officer in the Prussian Hussars, who did me the honor to translate my book on the Horse's Foot into German, and publish it at his own expense at Frankfort sur Maine, wrote me, that *his* horses also were shod with three nails only in each fore shoe, and that he found no difficulty whatever in keeping their shoes on.

But in order still further to test the power of three nails to hold a shoe, I obtained permission of a builder to have one of his horses, which was employed in drawing heavy building materials through a deep, clay meadow, shod with three nails only in each fore shoe. The horse in question was fifteen hands three and a half inches high, and the shoes that were put on him, were common waggon-horse shoes with stamped holes

and no fullering, and each shoe weighed one pound fourteen ounces; and he carried them safely for a month, notwithstanding the heavy loads he daily drew through the deep, clinging clay, in which he worked.

I could state several other cases of successful shoeing with three nails, if it were necessary, but as I have no intention of recommending you to trust to such slender fastening as your *general* plan of shoeing, I may content myself with those which I have already recorded; nevertheless I would advise you not to be perfectly satisfied with yourself, until you have tried your hand at keeping on some shoes by three nails only; because a bad fitter *cannot* do it, but a good fitter always *can*. The principal use of such an experiment will be to show you, that you may safely leave out one, or even two nails in a case of broken crust, or a "shaky" place, or indeed whenever from any cause you may think it desirable to do so.

I think I have proved beyond dispute, that a fore shoe *can* be kept on by *three* nails; therefore *he* must be a sorry bungler indeed, who cannot manage it with FIVE.

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The following appeared as a Preface to the Third Edition, published towards the end of the hunting season of 1860; but it has since occurred to me, that it is better suited to form the termination, than the commencement of a treatise, especially designed for learners; I have therefore removed it from the beginning of the book to the end of the General Observations.

Although I have nothing new to offer, and nothing to alter as regards the principles of Horse-Shoeing, which I have endeavoured to inculcate in the preceding editions of my book, I considered that, it would not be altogether uninteresting to those, whose fears still deter them from adopting it, if in putting forth another edition I recorded

some few of the confirmatory results of the further experience, since the former editions were published, but more especially those derived from the hunting field towards the close of such a season, as 1860, marked as it was, by an unprecedented quantity of wet, rendering the country heavier and deeper, and more trying to the security of horses' shoes, than any that had preceded it for several years. I found on referring to the register, kept at the Devon and Exeter Institution, that the quantity of rain, which fell during the three months of November, December, and January, of that winter amounted to $11\frac{1}{4}$ inches, while the average for the same three months of the preceding five years showed less than half that quantity, the amount being only $5\frac{1}{4}$ inches.

It may perhaps suffice, without enumerating all the horses which had carried their shoes safely through that Season with five nails, if I confine my remarks to four, belonging to two gentlemen

who are both above the average weight, and one of them considerably above the average height of their compeers; they are both good men across country, ride well to hounds, and are always to be found in the best places during a run; one of them had shod his horses on my plan for four or five years, relieving their feet occasionally in the summer by omitting two of the five nails; he therefore had no fears, and was not at all surprised, that he had lost no shoes; but the other, to whom it was an experiment, showed great misgiving at first, but two or three shoeings convinced him, that his fears were groundless, and he soon had more confidence in five nails, than he had a year before in seven or eight; because *then* the loss of a shoe was no uncommon thing with him, but afterwards the thought of such an occurrence never entered his head. The first horse, he asked me to see shod for him, was one that had gained for himself a high character in Ireland as a steeple-

chase horse, and I must say, that his legs bore ample testimony to their familiarity with stone walls, they were perfectly round, and disfigured by sundry bony lumps; nevertheless his owner had given a large price for him. He is a powerful, lasting horse, and is not to be stopped by a six foot wall. When I saw him first, he was very badly shod, and had seven nails in each fore shoe, which clearly had a good deal to do with the weak horn, and round legs he possessed at that time; for very soon after his feet had been freed from the confinement caused by the inside nails, his legs became less round, although he had been regularly hunted in turn with the other horse; and at the third shoeing the suspensory ligaments could be distinctly traced by the finger; and some weeks afterwards, when I next saw him shod, they were perfectly visible, and his legs had become almost flat; he had moreover a very fair quantity of dead horn in his feet, showing that the growth of horn

had begun to increase, which at previous shoeings had been very deficient; and I had no doubt, when the hunting Season was quite over, that the relief, afforded by the withdrawal of two nails, would cause very considerable further improvement both in his legs and feet. But the most satisfactory result of the Season was furnished by the other horse, belonging to the same gentleman, which he had regularly ridden in turn with the one above mentioned; this horse, although undeniable in the hunting field, had large, flat, brittle feet, which made riding him in some places rather nervous work, and I recommended his owner to try him with five nails and leather, and after indulging in the expression of numerous doubts and fears, he consented, provided I would see it done, which of course I did, and great was his relief at the end of the first day to find, that his horse had not only carried him more pleasantly, than usual, through very deep ground, but that he had brought his

shoes home safe and unmoved on his feet; this gave him confidence, and he continued to hunt him in leather, secured by five nails; and he told me, that he verily believed, the horse had scarcely ever been less than fetlock deep during any day he was out in the preceding three months, frequently knee deep, and on the day previous to our conversation he was bogged up to his tail, but he had not lost a shoe, and he would not take double the money, that he offered to sell him for in the early part of the Season.

I will add one other case for the purpose of showing the amount of relief, that was obtained from the removal of one nail from the inner quarter of each fore foot of an old, thorough-bred hunter which one of the above-named gentlemen had purchased in the early part of the Season; he was the very beau ideal of what a weight carrying hunter should be; perfect master of his business, and well known in most of the best hunting

counties in England; but time and hard work had somewhat told on him, and prevented his recovering the effects of a severe day quite as readily, as he used to do in times past. All this my friend was fully prepared for, but he was not prepared for the state, in which he found him on the morning after the first severe day, he had encountered; and he begged me to come and look at his "poor horse" with him, which I did, and it has rarely fallen to my lot to behold a more pitiable object, than that poor beast presented; he was standing in the middle of his box, apparently unable, and most unquestionably unwilling to move; his fore legs slightly separated, to prevent the weight of his forehand falling in a direct line on his feet, and his head and neck considerably lowered for the same purpose. It was at once evident to me, that his distress arose from pain in the feet; I asked my friend how he was shod, and he told me, that he had not

looked at his shoes, thinking they must be all right, as he came to him direct from a hunting stable; but I did not feel quite so sure, that they were all right, so I examined his hoofs as he stood, and found a nail placed far back in the inner quarter of each fore foot; I immediately sent for the smith, and had the clenches of the two offending nails cut off, and the nails partly punched out, while his feet were still on the ground; but before they could be entirely withdrawn from the shoes, it became necessary to raise each foot, which was a difficult matter, for he would have submitted to be pushed over, rather than attempt to rest his weight on one foot only; however, by supporting him well on the other side, it was accomplished, and the back nail of each foot removed. I visited him again in about three hours, and I confess, I was astonished to find him quietly feeding, and evincing no indisposition to move to either side, or even to turn about, when

I required him to do so; the character of his expression was changed, and he did not look like the same horse. On the following morning he was walked out for exercise, and on the second day I saw his old shoes taken off, and new ones put on, secured by five nails, without his having shown the smallest uneasiness; but when my friend mentioned the circumstances to a gentleman, who had hunted regularly from his boyhood, and really knew a great deal about it, he strongly advised him against hunting with only five nails; he said, it might do in the stable, or at exercise, but it would not do with hounds. My friend however took a different view of the matter; for having witnessed the relief, which was obtained in so short a time from the removal of those two nails, while the horse was standing still in the stable, he wisely concluded, that their presence in the shoes during a severe run must have been very inconvenient, to say the least of it; and he therefore determined

to shoe him with only five nails, for the future, and never again saw him more distressed on the morning after a hard day, than any other horse would have been under similar circumstances.

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