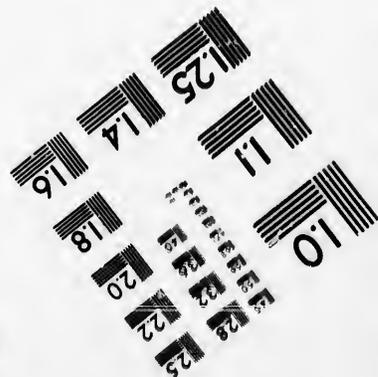
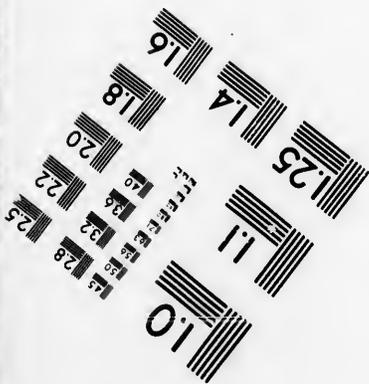
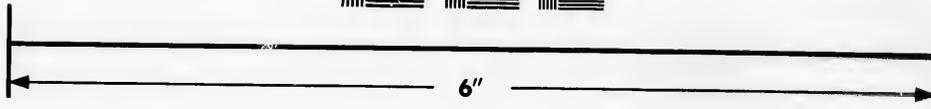
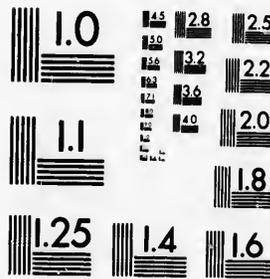


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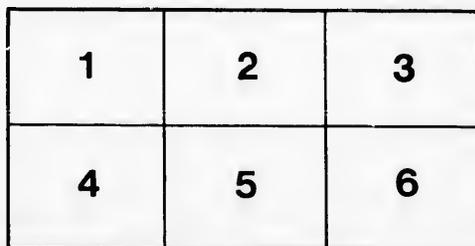
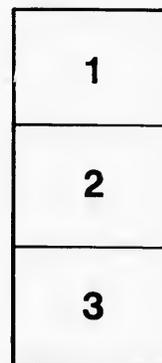
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THE
HORSE'S FOOT,

ITS CONSTRUCTION, DISEASES,
ABUSES AND WANTS,

WITH A DESCRIPTION OF



HORSE-SHOEING,
AND NEW AND VALUABLE RECIPES.

BY

D. H. WINTERS,

PICTON, ONTARIO.

PRICE,

\$1.00.

Times Printing House, Picton.

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THE
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A VALUABLE INSTRUCTOR;
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PICTON, ONT.:
THE TIMES STEAM PRINTING HOUSE,
MAIN STREET.
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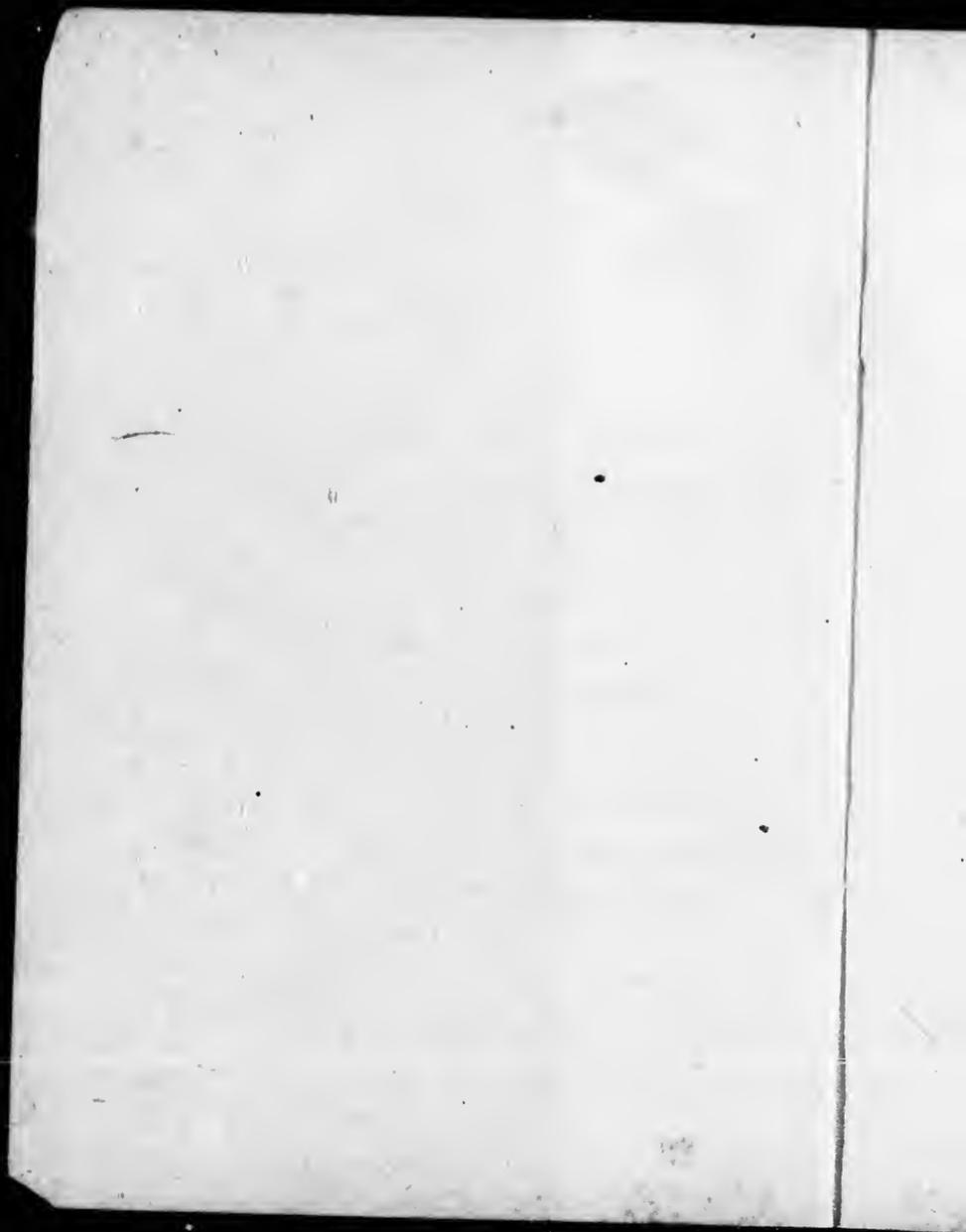
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PREFACE.

The author of this book has prepared it for the purpose of correcting many erroneous notions which now prevail in the care and management of horses' feet, as well as to place in the hands of those interested a valuable instructor. Embracing as it does, all of my theories and practices, together with a history of an experience of twenty-five years in the business of shoeing horses, it cannot fail of being a valuable assistance to those who feel an interest in the welfare of this noble animal. In the previous editions of this work there are many points which experience has taught me are incorrect, and in this issue I labour to remove all such erroneous impressions.

D. H. WINTERS.

Picton, Ont.



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SHOEING.

The object in shoeing horses is to prevent the hoofs from being broken or otherwise injured, as would naturally result from driving over our hard roads unprotected in this manner. It has often been remarked, and truly so, that "No foot, no horse," which literally means, a horse without sound feet is of but little value. The feet are the basis upon which the whole superstructure rests. A beautiful and complicated piece of mechanism, like all complicated machinery, easily deranged; hence the necessity of preserving it in a healthy state, to accomplish which, shoeing has been instituted, which, when properly done, has the desired effect. The shoe has two very important offices to perform: 1st, to preserve the hoof in its natural shape; 2nd, to protect it from injury. In order to properly understand the principles of shoeing, it is necessary that we should understand the structure of the horse's foot, and with this view we will briefly consider its anatomical relations. The hoof, or horny case, is the first object claiming our attention, which, for convenience of description, has been divided thus: the crust or wall, the sole, and the

bars. The crust or wall is that part which covers the anterior or front part of the foot, attached above to the skin at the termination of the hairs. This upper margin is termed the coronet. The crust or wall, internally, is made up of numerous horny *laminae*, which are very soft and elastic in their character. The sole is the ground surface of the hoof, anterior to the bars and frog. The bars are reflected processes of the wall passing obliquely across the bottom of the foot on either side of the frog, giving support to the heels. The internal surfaces are covered in part by horny *laminae* or plates, but are less numerous in proportion to the surface covered than are those of the crust or wall. The wall is divided into the toe, the quarter, and the heel. The toe is the front part of the hoof, the quarters are the central parts of the wall on either side, and the heels are the posterior portions of the crust or wall, being the thinner and weaker parts. This horny case in its natural condition is quite elastic, thus preserving the whole animal frame from concussion. The frog is a triangular, elastic cushion situated between the bars, and filling up the entire triangular space between the quarters and heels, completing the ground surface of the foot. The internal surface of the frog is very irregular, presenting three elevations and two depressions. The central ridge or division extends from before backward and upward. The two depressions between these ridges receive the soft cushion or ligamentous frog. The foot internally comprises the coffin, navicular, and lower part of the coronary or small *pastern* bones, also *ligaments, cartilages,* the *sensitive laminae, sole and frog.* The *coronet* or

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small *pastern* bone is nearly square, presenting four surfaces, the upper, for articulating with the large *pastern*, having an elevation in its centre, forming with the large pastern a kind of hinge-joint. By this arrangement strength is added to the parts. The lower surface is concave in the centre, which uniting with the *coffin* and *navicular* bones, forms another hinge-joint of still greater strength. The coffin-bone is semi-lunar in form the front surface is convex, the ground and posterior surfaces are concave. The projections behind on either side are called the alæ or wings, to which are attached the lateral cartilages, which extend upward and backward, and are readily discovered by placing the fingers above the hoof at the quarters. The navicular bone completes the bones of the foot, situated posteriorly between the coffin and coronary bones, forming what is commonly known as the coffin or navicular joint. It is semi-oval in form, presenting four surfaces, the upper articulating with the coronary, the anterior with the coffin-bone; the lower, over which the *perforans* tendon or back sinew plays, has a much broader surface than either of the others. Posterior and under these bones, we have the *ligamentous frog*; between this frog and the sole we have the sensitive frog; covering the anterior surface of the coffin-bone we find a very delicate structure, known as the sensitive lamina, which is very vascular and largely supplied with minute nerves. This laminated structure corresponds to that of the hoof, and when adjusted, fills up the entire circle of the hoof. I deem it unnecessary to go into a more minute description of the parts, as it would be uninteresting to the

general reader. To those who feel interested in the subject of shoeing, great benefit will be derived by a careful perusal of these remarks.

It has been proven by long experience, that the sensitive parts within the hoof do not suffer so long as the bearing of the animal is confined to the crust or wall, but when removed from that bearing they soon become diseased; hence if the sole of the foot bear against the shoe in any considerable degree, the fleshy or inner sole becomes bruised between the shoe and the horny sole below and the coffin-bone above—the horse soon becomes lame in consequence. It is obvious, therefore, that the crust or wall being the natural bearing of the horse's foot, it should be carefully protected, and confine the bearing of the shoe to that part of the foot. A shoe of the breadth of the crust would defend the foot sufficiently as long as it would last; but in consequence of its rapid wear, such a shoe would only be applicable for racing, or temporary purposes. To give all the support the crust can receive, and at the same time to make the shoe sufficiently strong to wear a reasonable time, the upper surface of the shoe should be divided into two parts. The first or outer margin should be perfectly level, and of the width of the crust; the second, the inner margin, beveled inward so as to avoid pressure upon the sole, leaving the heels of the shoe perfectly level from the last nail-hole backward. It must be borne in mind that no one form of the shoe is applicable to all forms and conditions of the feet. The above shoe is intended only for the healthy foot—as it deviates from that standard, so must the form and bearing of the shoe

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be altered to meet the altered conditions as they occur in the horse's foot. To more clearly illustrate this subject is only to refer to the injuries of shoeing as ordinarily practiced. Examine, if you please, the ordinary shoe used on all occasions, and upon all forms and conditions of the feet ; place a level across the heels, and you find the shoe at the quarters presents a concave surface, being beveled from without inward ; hence the foot rests in a concavity. When such a shoe is nailed to the foot, it presents a lateral resistance to the natural expansion of the foot, it being impossible for the heels to expand up these inclined planes ; hence the tendency to force them inward, so that they gradually become contracted. This is a natural result, and follows, sooner or later every case where shoes have been thus contracted. On the other hand, shoes properly made and fitted have never been known to cause contraction. If we observe the foot in the early stages of contraction, we find this horny case gradually becoming less ; it no longer accommodates itself to the soft structure within its limits ; the result is, concussion is greater, and the elasticity very much less ; in consequence of which the parts become bruised, fever ensues, which still further facilitates contraction of the hoof by absorbing its moisture, and we soon discover lameness in consequence of corns making their appearance. The first effect of contraction is to bruise the sensitive portion of the hoof. Particularly is this the case at that part of the foot formed by the crust and bars, causing a contused bruise which is called a corn. This occurs on the inside quarter. The crust and bar forming a triangular space causes a two-fold

pressure upon the sensitive parts within, acting like a vice ; and as the space becomes diminished the contusion becomes greater, the hoof becomes more hard and brittle, with a strong tendency to crack on very slight concussion. On removing a portion of the horn at the part of the foot indicated, we find a red spot, sometimes slightly, at other times of a brownish or bluish-red appearance. The feet in the latter stage are in such a condition as to require prompt attention, or we may have a sinus forming through the quarter, producing a disease known as quitter, often terminating in permanent lameness, and frequently in deformity. Few men believe corns to be of so serious a nature ; hence their readiness to attribute these effects to other causes. When they investigate, as I have done, they will find their error. Ossification, navicular-joint disease, founder, and a variety of other diseases, are frequently due to contraction of the feet. Another evil in shoeing, which is calculated to do much mischief, is the fitting of the shoe to the foot while red hot. This has been a source of complaint throughout all Europe. In this country there is little thought of it, to such an extent does the practice prevail. The application of the shoe in this condition, if performed by a careless workman, frequently is the cause of much mischief, and under the most favorable circumstances, performed with all possible care, causes an unhealthy secretion of horn for a long time after, rendering the animal less sure-footed, and often causes lameness to follow its application. The shoe should in all cases be fitted to the foot, and not the foot to the shoe. This of course would be attended with more labor ;

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hence the unwillingness of smiths to do it. Better
would it be for the owner to pay double the price
for shoeing his horse than to have injury done by
the application of the red-hot shoe. In almost all
European countries, within the last few years, the
smith has been much benefitted by the rapid
advances made toward perfecting this important
branch of labor, mainly through the efforts of our
professors in the various veterinary colleges pointing
out, as they have done, the evils of this shoe and
the benefits of that one.

The varieties worthy of mention are as follows :
Prof. Coleman's frog-bar shoe, James Turner's
unilateral shoe, Mr. Friend's frog-pressure shoe, and
Mr. Percival's sandal. Many other varieties have
been introduced from time to time, requiring no
special remark in a work like this. Prof. Coleman's
frog-bar shoe consists of a circular piece of iron,
flat on the upper side, about half an inch thick,
broader back than front, so as to afford protection
and limited pressure upon the frog, the under sur-
face being nearly flat; the shoe is secured by four
nails on either side. This shoe, in some cases,
answers a very good purpose in protecting tender
feet from concussion.

James Turner's unilateral shoe differs only in its
application from the shoe described for healthy
feet. It is nailed to the foot, free on the inside,
having six nails on the outside and two on the in-
side toe, with a level bearing for the crust and
heels. Mr. Friend's shoe is designed for the com-
munication of frog pressure. It differs from Mr.
Coleman's by having the frog-bar separated from
the shoe and suspended by a leathern sole—the

object of which is also for tender and sore-footed horses.

Mr. Percival's sandal, as originally made, consisted of a shoe and several web bandages, with buckles attached, by which means it was secured to the foot. For many years it was applied in this manner, and supposed to be as perfect in itself as man was capable of making it. More recently, however, Mr. Percival conceiving an idea of its application by means of India-rubber bands, commenced a series of experiments which resulted in the adoption of an endless India-rubber band. This was an improvement at once simple and much to be desired, rendering its application more firm, and less liable to become deranged. This sandal is not intended for general purposes, but only to supply the place of a lost shoe on the road, it being readily applied and affording equal protection to the foot.

Mr. Goodwin, of London, invented a shoe which has been much extolled. This shoe is concave on the ground surface—supposed to have a greater effect in getting a firm foothold—the upper surface being flat, except at the heels, which are slightly beveled outward, to facilitate the expansive tendency of the feet. This principle, as far as the bearing surface is concerned, I believe to be the best plan yet discovered for expanding contracted feet, having witnessed the beneficial effects of its application in a large number of cases always with advantage. Great care must be taken that the bevel is little more than a level bearing, as it would do much mischief if beveled sufficiently to force the heels.

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PREPARING THE FOOT.

The subject of paring has not escaped the fatality which seems to have attended every matter connect- ed with the foot. The most opposite and contra- dictory opinions have been expressed regarding it. Where such extremes exist, a line drawn between the two is usually the most correct. We will there- fore assume that position. In a state of nature (and we must take her as our guide) the growth of the hoof is about equal to its wear. When the shoe is upon it this wear is prevented. Our object, then, in paring the foot is to make the removal of the hoof equal to the growth of the foot. Where this principle is not observed, we see the effects of not paring in some horses whose shoes are allowed to remain on the feet for some months without being removed—the crust becomes unusually long, the sole thick, the animal tripping at every step. These cases prove the necessity of proper paring as a substitute for the natural wear of the hoof when unshod. In preparing the foot for the shoe, care should be taken to remove all the old stubs, the crust should be lowered from the toe to the heel with the lever knife, and the sole should then be carefully pared with the drawing-knife. The bars and the frog require to be trimmed out, removing only ragged or loose portions, or such parts as may conceal dirt or other matter producing unhealthy action.

In the first place the natural foot should be made a careful study of any man owning horses, and more especially the shoer; but it is quite the reverse in many instances, too much so for the good of the

horse. If they can put on a shoe to stay, that is the man. It puts me in mind of a man fetching a horse that was very stiff to the shop and wanting a good toe calk ; never mind the heels. I had compassion on the horse and sent him away shod quite the reverse, and he made up his mind the fool knew something ; that little something is many a man's success, which he will not know if he does not make the foot a study. First, study the anatomy of the foot and leg, and then you are in a fair way to learn shoeing.

THE NATURAL FOOT.

While there are many opinions on the different kinds of a shoe, there is one thing certain, we cannot shoe in the same manner in summer and winter, as our climate will not permit of the heavy calk, while many say the sharp one is the best. We will leave that for further on, and come to

FITTING OF THE SHOE.

In the first place, take a three-year-old colt for to go by. Now, what kind of a foot would be preferable ? I should say one not too high, yet not too low ; not too flat, or not too cupped, yet not too broad, yet not too narrow, with plenty of crust. Understand me when I say plenty of crust, I mean in thickness, with leg setting on its proper place. Well, we have got the foot, let us fit the shoe. I should say level it, with what, a buttrice ? No,

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let them take the lever knife and go around it ;
 then take the rasp and smooth it and he will not
 know the difference only you have the foot up,
 now you have got it level. Are you going to con-
 cave the shoe all the way to the heels and leave
 them out a half an inch wider than the foot? No,
 leave it level and fit it to the foot. Now comes the
 nailing. Set your shoe well forward ; don't leave a
 half inch for to be cut off with an old piece of
 scythe. Be sure and start your nails right. What
 is right? In centre of crust? No ; that is what
 makes many a chipped foot. Start it to the inside,
 gaging it so that it will get a firm hold.

Now comes the drawing down. Remember the
 foot has got some feeling in it and don't draw the
 nails too tight.

Now comes the clinching. Leave your clinch
 just long enough so that the hammer can catch it
 nicely to bend it. Will you bend it over and
 hammer it fast to the foot? No ; turn the ends
 and be sure and strike plum with the nails for
 where there is nerve there is feeling.

Now comes the smoothing it up. Do not rasp
 above the nails ; leave it a little rounding for to
 leave the strength in foot. What! has this shoe
 been put on without burning? the whole substance
 left in the foot. How? by using the lever knife.

CONTRACTED FOOT OR STABLE FOUNDER.

If a high foot, cut it well down ; then fit the shoe to the foot, not letting it project over a quarter of an inch at heels. When hot bevel on bearing up to heel nail one eighth of an inch. The heft of the horse will widen the foot if properly fitted. Don't put over three nails on inside, and if roading three on each side will do. Flat shoe is preferable when weather and roads will permit.

THE FLAT FOOT.

A hard foot to deal with, and still as long as the horse can go there is as little care taken of them. The bars are apt to extend over a portion of the sole of foot and the sole is generally thin and the pressure of bar in many cases is similar to a hangnail on a man's toe, which ought to be removed. Where it lays flat the sole should not be pared. In so doing you would make it flatter than ever. A shoe for a flat foot should be made to rest on crust by beveling on inside, but be sure and leave a level surface for the crust to rest on. The shoe should not be sprung at heel. In so doing when you come to take it off the quarters are driven up and then the foot is in a worse shape than before. A flat shoe is the best, for it lets the foot down to the ground and takes off a certain amount of pressure. Often a bar shoe is of great service, making the bar a good size and letting it rest on frog and not on quarters or heels. It shoves up the centre of foot and lets the heels come down. A shoe properly made for a flat foot is not fit to put on any other foot, for it should be creased deeper or more in

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centre of the web of shoe. A shoe made in this way, beveling the nails out, will hold the foot together where the ordinary way widens it and causes it to be flatter. There should be great caution in clinching; be sure to clinch plum with the nail. This is a point owners of horses should look after.

QUARTER CRACK OR BURST.

While many people think that quarter crack and burst are the same, there is quite a difference. A burst breaks out at the hair; the other cracks open at the bottom of the foot. It is often advisable to put on a bar shoe. If the crack is far forward let the shoe rest on heels if possible, pare away the foot on each side of the crack also cut the shell away up the crack so that the edges cannot rub, cutting through the shell above the top. If it runs to the hair burn across the top an inch, and if properly done the shells will grow down sound. I said "breaks out at top"; now I contend it is found in a thin shell and is caused by the shoe not resting properly on the heel.

TREATMENT.

Pare the hoof away so it will not interfere with the flesh, then put a strap around the foot; put some batting inside saturated with black oil, buckle tight enough to keep flesh from bulging over crust which often makes a bad foot, then level the foot for shoe; then cut out underneath burst and with the grain of foot. Be sure and let the shoe rest on heels or it will be very liable to burst again. A foot liable to burst should have the shoe resting on heels, in fact I contend all shoes should rest on heels.

CONTRACTED FOOT.

A contracted foot is generally caused by fever, caused by founder or roading or navicular or strain in tendon or even standing in the stable.

TREATMENT.

It is necessary in the first place to find the cause. It is generally laid to the smith, but in most cases it is as above stated. The first thing is get rid of fever by poulticing: Say linseed meal, and get it well softened; then taken to the shop the softening gives the smith a chance to do a good job. He can clean out the bottom and take his lever knife and trim the crust down well and especially the toe. Now the foot is ready for the shoe. A heavy shoe will give more action. Put a half an inch heel calk and no toe calk. When heels of shoe are hot rasp off the outside or bearing outward to let the foot expand when a new growth is started, by a light blister around coronet or top of foot. Then keep the horse standing on ground floor to keep fever out.

OVERREACHING OR CLICKING

Is very annoying to man and must be very tiresome to the horse. As there are many different kinds of hitting, in the first place find out whether the heel, or side, or toe of the shoe is marked. If heel, put a good heft of shoe in front and a light shoe behind, back heels say three quarters of an inch, standing well forward and a low toe calk set well back. If

side or toe, make outside as heavy again as inside and run it out longer, say three quarters of an inch with inside fitting close. Be sure and have inside half of foot pared so it stands level or a little in, which in most cases will get the hind foot outside of front one. A horse is most apt to have some particular gait that he will hit the most; very often he can be driven out of it by checking and sent along at a good road gait.

MIXED GAITS.

As there are many horses with mixed gaits it has caused me quite a study to square them away, but I have come to the conclusion that shoeing with toe weights in front and light shoes behind with proper handling, that is to say not to use any heavier weights than will square them away, not to put on ten ounces at first; put on five, if that won't do, try six, and so on, and always have your horse come to the barn as good, and feeling as good as he left it, and he will soon be a good driver.

APPLICATION OF THE SHOE.

In applying the shoe to the foot it should not be set back half or three quarters of an inch from the toe—the projecting parts of the wall cut away as is usually the custom. The shoe should be carried fully to the outer margin of the wall. Thus we preserve the wall entire, giving its full bearing surface for the shoe, preserving the wall uninjured. By removing any portion of the crust it is weakened

in exact proportion as it is cut away, reducing the space for driving the nails, and increasing the danger of pricking ; or, what is as bad, driving the nails too close, to say nothing of the change from the natural form of the foot. It is these abuses which compel us to regard shoeing the great evil of his domestication. The nails should be properly pointed, and not driven too high up—care should be taken to have them as regular as possible. Three nails on the inside and four on the outside are usually all that are required for any purpose. Clips, if used at all, should be small, otherwise they are the frequent cause of an obscure lameness, which is very difficult to manage. The mischief is done by the horn in its downward growth meeting with the resistance which the clip offers, hence the horn is turned inward upon the inside toe, causing pressure upon the sensitive laminae and coffin-bone, causing inflammation, and, from pressure, the bone is absorbed at the toe, while the soft tissues undergo other permanent alterations of structure, alike destructive of the animal's usefulness.

INTERFERING.

Our first object is to ascertain, if possible, the cause of interfering, and the part which strikes, whether the shoe or the foot. Many horses strike from weakness, or long continued exertion. Particularly is this the case in young animals. Others cut from faulty conformation of the limbs—the toes turning in, or out too much is a frequent cause. By applying chalk to the foot which cuts, we readily discover the precise part of the foot which does the

injury. Having satisfied ourselves of this, we must for once deviate from our rule in shoeing, by making the shoe straight on its edge at the part indicated, cutting down the crust level with it. By this means the feet frequently work clear. Where this does not succeed, the shoe should be widened in the web at the point where the foot strikes, but not thickened, as is too often done; the natural bearing of the foot must be preserved. Should this, too, fail, there is no resort but a strip of India-rubber, placed between the shoe and the foot, projecting at least a quarter of an inch beyond the shoe. This being soft and elastic, it will not bruise the part struck by the shoe or foot, giving it time to heal, and cause the animal to work clear in traveling. Either one of these plans is successful, if properly allied, in a majority of cases; yet all are unsuccessful in a few cases of natural deformity, or faulty conformation in the limbs.

OVERREACHING.

Many persons regard overreaching as an indication of a bad horse, yet we are compelled to recognize it as a fault in some of the best. It frequently occurs with young horses, on a moderate gait, and disappears altogether on increasing the speed of the animal. It arises from too great activity of the hind-legs, the fore ones not being able to get out of the way in time. This habit is often brought on by too heavy shoeing in front, and too light shoeing behind. By reversing this principle I have found it to answer an excellent purpose. Where this habit is allowed to go unchecked, the heels often become bruised, and in some instances the shoes

are torn off from the front-feet, causing much mischief to arise in consequence. This habit, too, like interfering, occurs in young horses after severe driving, from becoming leg-weary, a circumstance which should be carefully avoided, as habits are easily formed, but often most difficult to be got rid of. The preservation of the horse's feet depends very much upon careful and skillful application of the shoe, independently of its being constructed on correct principles. Many horses with very bad feet are enabled to go sound for many years by careful shoeing, while a bungling hand would render the same animal unfit for service in a single shoeing. It requires considerable tact to fit a shoe properly on a bad or weak foot, so as to protect it from injury.

STOPPING THE FEET.

The hoofs of horses standing upon plank floors soon become excessively dry and hard, unless artificial means are resorted to to prevent it ; and if shod in this state, it is almost impossible for the smith to pare them. The opponents of stopping, and there are a few, offer as an objection that it sometimes tends to produce thrush. This I do not pretend to deny where such stopping as cow-dung is resorted to, but it does not occur when linseed-meal is used for that purpose. This certainly is the best and cleanest application, and can be used several times by softening with a little water. To keep the soles moist and healthy, the feet should be stopped every night in the summer, and every third night in

winter. If the crust is brittle, as is frequently the case, it is a good plan to apply a mixture of tar, lard, and turpentine, equal parts, to the hoof.

SHOEING HORSES FOR CORNS.

Care must be taken that the corn be well cut out, and a little butter of antimony or muriatic acid applied to the part affected. The hoof from the corn backward must be cut away so that no part of the heel strikes the shoe, avoiding pressure, and relieving the part from unnecessary concussion. A horse thus shod, no matter how bad his corns may be, will travel sound, and with perfect ease, that otherwise shod would be decidedly lame.

SHOEING FOR QUARTER-CRACK.

To remedy this evil requires care and judgment. A horse should be shod upon the same principle precisely as for corns—a bar-shoe, often recommended, is unnecessary. Properly shod, there will be but little trouble in growing out a sound hoof. The least pressure upon the heel of the shoe will be sufficient to prevent the hoof from growing down, and thus defeat any efforts which may be made toward remedying the injury. So soon as three eighths or half an inch of new horn has grown down, the hoof should be burned with a red-hot iron just above the crack, at right angles with it, which will prevent its breaking up anew. A little tar or hoof ointment should be kept upon the part,

which will protect it from dirt, and assist in hastening the growth of the new horn, usually requiring from six to nine months for the crack to grow out.

A HORSE BAD TO SHOE.

The habit of resistance to being shod, or allowing the feet to be handled, like all others to which horses are subject, is the result of careless and imprudent management. It would seem, from the reckless disregard of consequences so generally evinced in handling young horses, as though man doubted his own reason, and would not take counsel of the teachings of prudence. If the feet had been handled gently at first (as I have directed), and blacksmiths had not vented so much of their impatience in the way of pounding with the hammer for every little movement or resistance in shoeing, this habit would never have been contracted. The natural tractability of the horse causes him to yield a ready obedience to all reasonable demands, that he comprehends. If the feet are jerked up roughly, and without an effort to reconcile him to being handled, the colt will strive to get away, or free himself from what he supposes will hurt him. Never hold to the foot with all your might, when the colt is trying to jerk away, for, in such a case, strength is not your forte, and your struggles only convince the horse of your weakness. Handle the horse in conformity with the laws of his nature, so as not to excite resistance through fear of injury. If the horse does not very much resist the handling of his feet, put the Camanche bridle on him, and

put a short strap on his hind foot. Pulling upon the strap will bring the foot forward, and he will probably resist by kicking. The instant he kicks, reprove him with the bridle, which is held in the other hand, and so continue until the foot can be held without resistance. But, if your subject is very bad, take a strap or rope, about twelve feet long, and tie one end of it in a loop around his neck, where the collar rests; pass the other end back between the fore legs, and around the near hind leg, below the fetlock, thence back between the legs, and through the loop around the neck. Now step in front of the horse, and take a firm hold of the rope or strap, and give a quick pull on it, which will bring the foot forward; pull the foot as far forward as you can, which will give you the more advantage. The horse will try to free the foot by kicking. Hold the head firmly with the left hand, and with the other hold the strap firmly. Stand right up to the horse's shoulder and whirl him about you, which you can easily do while he struggles to free himself. As soon as he yields, handle the foot gently, and then let up on it a little, and so continue till he will let you handle the foot without resistance. It may be necessary to repeat the lesson once or twice, and be careful to handle the foot with the greatest gentleness. If the rope is rough, put a collar on the neck instead of the loop, and fasten your strap to it. Use a smooth, soft strap, so as not to chafe the foot where it passes around it.

THE HORSE'S FOOT.

ITS ANATOMY AND DISEASES, &c.

The old adage, "No foot, no horse," is one which we particularly wish to discuss in this book. The foot being one of the most important members of this noble animal, its construction, its anatomy, its diseases and remedies should be understood by all men, especially every owner, and we shall proceed, in as condensed a form as possible, to lay these facts before our readers.

The foot is composed of the horny box that covers the extremities of the horse and the contents of that box. The hoof or box is composed of the crust or wall, the coronary ring and band, the bars, the horny laminae, the sole, and the horny frog.

The *crust* or *wall* is that portion which is seen when the foot is placed on the ground, and reaches from the termination of the hair to the ground. It is *deepest* in *front* where it is called the *toe*, measuring about $3\frac{1}{2}$ inches in depth, shallow at the sides, which are denominated the quarters, and of the least extremity behind, where it is seldom more than $1\frac{1}{2}$ inches in height, and is termed the heel. The crust in the healthy foot presents a flat surface to the ground, ascending obliquely, backwards, and possessing different degrees of obliquity in different horses. In a sound hoof the proper degree of

obliquity is 45° , or the fourth part of a semi-circle, at the front of the foot.

When the obliquity is greater than this it indicates flatness of the sole, and the crust is said to have "fallen in." If the obliquity is much increased the sole projects, and is said to be pumiced or convex.

If the foot is more upright or forms a greater angle than 45° , it indicates much contraction and a sole too concave; and this difference is often so great that the convexity or concavity of the sole may be affirmed without the trouble of raising the foot for the purpose of examination. It is of importance to observe whether the depth of the crust appears rapidly or slowly to decrease from the front to the heel. If the decrease is little, and even at the heel, the crust is high and deep, this indicates a foot liable to contraction, sand cracks, thrush, and inflammation. The pasterns are upright. The paces of that horse are not pleasant.

On the other hand, if the crust rapidly diminishes in depth and the heels are low, this is accompanied by too great slanting of the pasterns and disposition to sprain in the back sinew.

The crust is composed of numerous horny fibres, connected together by an elastic membranous substance, and extending from the coronet to the base of the hoof. *It differs materially in its texture, its elasticity, its growth, and occasional fragility, according to the state in which it is kept, and the cir*

circumstances that are acting upon it. The exterior wall of the hoof should be smooth and level. Protuberances or rings round the crust indicate that the horse has had inflammation in the feet, and that to such a degree as to produce an unequal growth of horn, and to leave some injurious consequences in the internal part of the foot. If there is a depression or hollow in front of the foot it betrays a sinking of the coffin bone, and a flat or pumiced sole. If there is a hollow at the quarters, it is the worst symptom of bad contraction. The thickness of the crust, in the front of the foot, is about $\frac{5}{8}$ of an inch; it becomes gradually thinner towards the quarters and heel, but this often varies to a considerable extent.

If, however, there is not, in a majority of horses, more than a $\frac{1}{2}$ inch for nail-hold at the *toe*, and not so much at the quarters, it is not surprising that the horses are often wounded in shoeing, especially as some of them are very unmanageable while undergoing this process.

While the crust becomes thinner towards both quarters, it is more so at the inner quarter than the outer, because more weight is thrown upon it than upon the *outer*. It is more under the horse.

It is under the inner splint-bone on which so much more of the weight rests than on the outer; and, being thinner, it is able to expand more. Its elasticity is called more into play, and concussion and injury are avoided. *When the expansion of the*

*quarters is prevented by their being nailed to an un-
bending shoe, the inner quarter suffers most.*

Corns are found there, contraction begins there, and *sand cracks* are centered there. Nature meant that this should be the most yielding part, in order to obviate concussion, because on it the weight is principally thrown, and, therefore, when its power of yielding is taken away, it must be the first to suffer.

A careful observer will perceive that the inner quarter is higher than the outer. While it is thin to yield to the shock, its increased surface gives it sufficient strength.

On account of its thinness and the additional weight which it bears, the inner heels wear away quicker than the outer, a circumstance that should never be forgotten by the smith. The object is to give a plain and level bearing to the whole of the crust. To accomplish this, it will be often scarcely necessary to remove anything from the inner heel, for this has already been done by the wear of the foot. If he forgets this, which he often seems to do, and cuts away with the knife or his buttrice an equal proportion all around, he leaves the inner and weaker quarter lower than the outer. He throws an uneven bearing upon it and produces corns, sand cracks, and splints, which, with a little care and common sense, might have been avoided.

The crust does not vary much in thickness until near the top, at the coronet, or union of the horn of the foot with the skin of the pasterns, where it

rapidly gets thin. It is in a manner scooped or hollowed out. It likewise changes its color and consistency, and seems almost like a continuation of the skin, but easily separable from it by maceration or disease. This thin part is called the *coronary ring*. It extends around the upper portion of the hoofs, and receives within it, or covers, a thickened and bulbous prolongation of the skin, called the coronary ligament. This prolongation of the skin—it is nothing more—is thickly supplied with blood-vessels. It is almost a mesh of blood-vessels connected together by fibrous texture, and many of them are employed in secreting or forming the crust or wall of the foot. Nature has enabled the sensible laminae of the coffin-bone to secrete a certain quantity of horn, in order to afford an immediate defence for itself when the crust is wounded or taken away. Of this there is proof when, in sand-crack or quittor, it is necessary to remove a portion of the crust. A pellicle of horn, or of firm, hard substance resembling it, soon covers the wound, but the crust is principally formed from this coronary ligament. Hence it is that in sand-crack, quittor, and other diseases, in which strips of the crust are destroyed, it is so long in being renewed, or *growing down*. It must proceed from the coronary ligament, and so gradually creep down the foot with the natural growth or lengthening of the horn, of which, as in the human nail, a supply is slowly given to answer to the wear and tear of the part. Below the coronary ligament is a thin strip of horny matter, which has been traced to the frog, and has been supposed by some to be connected with the support or action of that body, but which is evi-

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dently intended to add to the security of the part on which it is found, and to bind together these various substances which are collected at the coronet. It resembles, more than anything else, the strip of skin that surrounds the root of the human nails, and which is placed there to strengthen the union of the nail with the substance from which it proceeds.

The Bars.

At the back part of the foot, the wall of the hoof, instead of continuing round and forming a circle, is suddenly bent in. The bars are, in fact, a continuation of the crust, forming an acute angle, and meeting at a point at the toe of the frog; and the inside of the bars, like the inside of the crust, presents a continuance of the horny leaves, showing that it is a part of the same substance, and helping to discharge the same office.

It needs only a slight consideration of the natural hoof to show the importance of the bars.

The arch which these form on either side, between the frog and the quarters, is admirably contrived both to admit of, and to limit to its proper extent, the expansion of the foot. When the foot is placed on the ground, and the weight of the animal is thrown on the leaves, of which mention has just been made, these arches will shorten and widen, in order to admit of expansion of the quarters—the bow returning to its natural curve and powerfully assisting the foot in regaining its usual form. It will also be seen that these bars must form a

powerful protection against the contraction or *wiring in* of the quarters. If the bars are taken away, there will be nothing to resist the contraction or falling in of the quarters, when the foot is exposed to any disease, or bad management, that would induce it to contract.

One moment's observation of them will also render evident the security which they afford to the frog, and the protection which they give to the lateral portions of the foot.

The Horny Laminae.

The inside of the crust is covered by thin horny leaves, extending all around it, and reaching from the coronary ring to the toe. They are about 500 in number, broadest at their base, and terminating in the most delicate expansion of horn. In front, they run in a direction from the coronet to the toe, and towards the quarters they are more slanting from behind. They correspond, as will be presently shown, with similar cartilaginous and fleshy leaves on the surface of the coffin-bone, and form a beautiful elastic body by which the whole weight of the horse is supported.

The Sole.

Is under and occupies a greater portion of the concave and elastic surface of the foot, extending from the crust to the bars and frog. It is not as thick as the crust, because, notwithstanding its situa-

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tion, it does not support so much weight as the crust; and because it is intended to expand, in order to prevent concussion, when, by the descent of the bone of the foot, the weight is thrown upon it. It is not so brittle as the crust, and more elastic. It is thickest at the toe, because the *first* and *principal stress is thrown on that part*.

The coffin-bone is driven forward and downward in that direction. It is thicker where it unites with the crust than the centre, because there the weight is first and principally thrown. In a state of nature it is, to a certain degree, hollow. The reason for this is plain. It is intended to descend or yield with the weight of the horse, and lessen the shock; and this descent can only be given by a hollow sole.

A flat sole, already pressing upon the ground, could not be brought lower; nor could the functions of the frog be then discharged. Then, if the sole is naturally hollow, and hollow because it must descend, the smith should not interfere with this important action.

He must put on a shoe which will not prevent the descent of the sole, and which does not press upon it. If the sole is pressed upon by the coffin-bone during the lengthening of the elastic laminae, and the shoe will not permit its descent, the sensible part between the coffin-bone and the horn will necessarily be bruised, and inflammation and lameness will ensue.

The Frog.

In the space between the bars, accurately filling it, is the *frog*. It is a triangular portion of horn, projecting from the sole, almost on a level with the crust, and covering and defending a soft and elastic substance called the *sensible frog*. It is wide at the heel, and there extends beyond a portion of the crust; narrowing rapidly when it begins to be confined between the bars, and terminating in a point at somewhat more than half the distance from heel to toe.

The frog is firmly united to the sole, but is distinct from it. It is of a different nature, being softer and more elastic; it is secreted from a different surface, for it is thrown out from the substance which it covers. It very much resembles a wedge, with its sharp point forward; it is placed towards the back part of the foot.

The foot is seldom put flush and flat upon the ground, but in a direction *downward*, yet *somewhat forward*.

The frog being placed at and filling the hind part of the foot, discharges a portion of duty sustained by the crust; for it supports the weight of the animal, and it assists in the expansion of the foot. It being composed of a substance flexible and elastic, what can be so well adapted for the expansion of the foot, when a portion of the weight of the body is thrown upon it? How easily all these irregular surfaces yield and spread out, and how readily return again to their natural state!

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The Coffin-Bone.

The interior part of the foot must now be considered.

The lower pastern, a small portion of which is contained in the horny box, has been already described. Beneath it, and altogether inclosed in the hoof, is the coffin bone, or proper bone of the foot. It is fitted to and fills the forepart of the hoof, occupying about half of it. It is of a light and spongy texture, and filled with numerous *foramina*. Through these pass the blood-vessels and nerves of the foot, which are necessarily numerous, considering the important and various secretions there carrying on, and the circulation through the foot, which could not possibly be kept up if these vessels did not run through the substance of the bone. Considering the manner in which this bone is inclosed in the horny box, and yet the important surfaces around and below it that are to be nourished with blood, the circulation which is thus carried on within the very body of the bone is one of the most beautiful provisions of nature that is to be found in the whole frame.

No inconvenience can arise from occasional or constant pressure, for the bone allows free passage to the blood and protects it from every possible obstruction.

The forepart of the coffin-bone is not only thus perforated, but it is curiously roughened for the

attachment of the numerous minute laminae about to be described.

On its upper surface it presents a concavity for the head of the lower pastern.

In front, immediately above, is a striking prominence, into which is inserted the extensor tendon of the foot.

At the back it is sloped for articulation with the navicular-bone, and more underneath is a depression for the reception of the perforating flexor tendon, continuing down the leg, passing over the navicular-bone, and at length inserted into this bone.

On either side are projections, called the wings or heels of the coffin-bone, and at the bottom it is hollowed to answer to the convexity of the internal part of the sole.

That which deserves most attention in the coffin-bone is the production of the numerous laminae round its front and sides. They are the prolongations of the thick and elastic membrane covering it, and consist of cartilaginous fleshy plates proceeding from it, running down the coffin-bone, and corresponding with and received between the horny leaves that line the inside of the hoof-bone, each horny plate being received between two sensitive plates, and *vice versa*. These laminae are exceedingly sensitive and vascular and elastic, and, as first simply and beautifully explained by the late Mr. Percivall, their elasticity is not inherent in the

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laminae, but in the substance which connects these laminae with the coffin-bone, and which, while it contains highly elastic properties, affords a convenient bed for the numerous vessels that secrete the laminae.

While the animal is at rest the whole weight of the horse is supported by them and not by the sole. This extraordinary fact has been put to the test of experiment. The sole, bars, and frog were removed from the foot of a horse, and yet, as he stood, the coffin-bone did not protrude or in the slightest degree descend; but when the rapidity with which the foot descends is added to the weight of the horse, these little leaves, horny and fleshy, gradually lengthen, and suffer the bones to press upon the sole.

The Sensible Sole.

Between the coffin-bone and the horny sole is situated the sensible sole, formed above of a substance of a ligamentous or tendinous nature, and below of a cuticular or skin-like substance, plentifully supplied with blood-vessels. It was placed between the coffin-bone and the sole, by its yielding structure to assist in preventing concussion, and also to form a supply of horn for the sole. It extends beyond the coffin-bone but not at all under the frog; leaving a space for the frog, it proceeds over the bars, and there is covered by some laminae, to unite with those that have been described,

as found in the bars. It is here likewise thicker and more elastic, and is highly sensible, as the slightest experience in horses will evince.

The lameness which ensues from the pressure of a stone or of the shoe on the sole is caused by inflammation of the sensible sole.

Corns result from bruise and inflammation of the sensible sole, between the crust and the bar.

The Sensible Frog.

The coffin-bone does not occupy more than one-half of the hoof. The posterior part is filled by a soft mass, partly ligamentous and partly tendinous. Its shape below corresponds with the cavities of the horny frog; in front it is attached to the inferior part of the coffin-bone; and farther back, it adheres to the lower part of the cartilages of the heels, where they begin to form the rounded protuberances that constitute the heel of the foot. It occupies the whole of the back part of the foot above the horny frog and between the cartilages. Running immediately above the frog and along the greater part of it, we find the perforans flexor tendon, which passes over the navicular-bone, and is inserted into the heel of the coffin-bone.

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The Navicular-Bone

Is placed behind and beneath the lower pastern-bone, and behind and above the heel of the coffin-bone, so that it forms a joint with both bones, and answers a very important office in strengthening the union between these parts, in receiving a portion of the weight which is thrown on the lower pastern, and in enabling the flexor tendon to act with more advantage.

The Cartilages of the Foot.

There is a groove extending along the upper part of the coffin-bone, and on either side, except at the protuberance which receives the extensor tendon, occupied by cartilage, which, like the crust, is convex outward, and concave inward. It extends to the very posterior part of the foot, rising above the quarters half an inch or more above the hoof, and diminishing in height forward and backward. These cartilages occupy a greater portion of the foot than does the coffin-bone. They are held in their situation not merely by this groove, but by other connections with the coffin-bone, the navicular-bone, and the flexor tendon, and are thus perfectly secured.

Below are other cartilages connected with the under edges of the former, and on either side of the frog.

Between these cartilages is the sensible frog, filling up the whole of the space, and answering several important purposes, being an elastic bed on

which the navicular-bone and the tendon can play with security, and without concussion or shock, by which all concussion communicated to the cartilages of the foot are destroyed, by which these cartilages are kept asunder, and the expansion of the upper part of the foot preserved.

As the descent of the sole increases the width of the lower part of the foot, so the elevation of the frog, a portion of it being pressed upward and outward by the action of the navicular-bone and tendon, causes the expansion of its upper part. It is this expansion upward which contributes principally to the preservation of the usefulness of the horse, when our destructive methods of shoeing are so calculated to destroy the expansion beneath. In draught horses, from long-continued as well as violent pressure on the frog, and from the frog on the cartilage, inflammation is occasionally produced which terminates in the cartilage being changed into bony matter.

Having thus described the foot and its anatomy, we will enumerate the diseases which they are subject to: Inflammation of the Foot, or Acute Founder; Chronic Laminitis; Pumiced Feet; Contraction; Navicular-Joint Disease; Sand-Cracks; Tread and Over-Reach; False Quarters; Quittor; Prick, or Wound in the Sole or Crust; Corns; Thrush; Conker; Ossification of the Cartilages; Weakness of the Foot, &c.

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INTERFERING.

Interfering behind is often caused by getting tired or not being properly shod, but still what will stop one horse will not stop another. I have found if a horse's foot was rocked out, level it up a little; if in, set it up level; set shoe close on inside with toe calk higher on inside and shoe light; then again making shoe heavy or wide in web on outside the same as for over-reaching, was followed by good results, but it depends a good deal on toe calk. I don't believe in rocking out too much as there is danger of straining the tendon and many a good horse has been ruined for life and carries a big leg, and when the foot rocks out they are more liable to get on front quarters and more apt to click.

INTERFERING IN FRONT.

As a rule, can be stopped by shoeing heavy on outside; say take No. 2 shoe and cut out inside half of web from heel to toe, putting light side on inside of foot. If they hit with heel set close; if with toe, take off what crust will allow.

KNEE HITTING.

Knee hitting to be shod in same way as interfering with one exception, shoe lighter, and for trotting a light toe weight is very beneficial in most of cases.

CORNS.

There are many kinds of corns in different kinds of feet, but the general belief is that they all come from bad shoeing. If a horse hits his quarter he is most sure to have a corn; if the shoes stay on too long and heel of shoe gets down in heel it is most sure to start a corn; if the crust or bar runs over flat and the shoe rests on it the horse gets lame, and when you take the shoe off there is a corn—another corn for the smith to father. The flat foot is the hardest to deal with, as the sole of foot is thin. Do the best you can by putting in spirits of salts, cover it up with a little batting, put on a bar shoe; put all pressure on frog you think it will stand, and as a rule it will cause relief.

NAVICULAR DISEASE.

Navicular disease is caused by stepping toe on some hard substance and throwing the strain on back part of foot, which causes navicular bone to get loosened or displaced, which is very much dreaded by horsemen, for it is often incurable or so much so that it is not many years since it was thought incurable. It causes the horse much pain and contraction is sure to set in and it shows where the lameness is. I said it was caused by pressure upwards on toe. Now the way to give relief is to pare the toe well down, then fit the shoe close to the foot beveling on outside to prevent contraction; no toe calk and three quarters of an inch heel calk,

and I have also found a bar shoe very beneficial, bar made to cover up the most of the frog putting the pressure heavy to help shove navicular back to its place; then blister in hollow of heel and give plenty of rest.

SPRAINED TENDON.

Sprained tendon is very hard to tell from navicular lameness as it don't generally swell, but by careful examination a heat can be found. It is caused the same as navicular disease, by a strain, and causes the horse to be very lame all of a sudden not wanting to set his foot to the ground. Shoe the same as for navicular disease and put a sweat blister on each side of tendon and give rest according to severity of case.

SHOEING THE TROTTER.

Shoeing the trotter differs from other shoeing in many respects. In first place the driver is supposed to know how he wants the horse shod instead of leaving it all to the smith, although there are many drivers as well as owners of good horses that don't know how they ought to be shod to increase their speed. They do not judge the horse, but they judge some horse they have seen shod, which trotted fast. The hind shoes, as a rule, should be light, say six to eight ounce shoe, on an ordinary sized foot, outside projecting behind, and the

inside, not as long within half an inch, fitted close close to heel on inside. The front shoe must be governed by knee action, as a rule ; if a low stepper take for instance No. 2 shoe, lighten the heels by cutting out one half of web up to first nail hole and then fitting close to heels and putting toe tips on for weight. It is not advisable to put on over four or five ounces weight to commence with, for the least weight they have to carry the longer the tendons will stand, and the longer a horse will stay in a hard race. Many horses carry and have to carry much more to square them away, but they are not so apt to trot as fast as those carrying light weights, especially on a heavy track.

HORSE RAISING OR BREEDING.

There is no doubt in my mind that there should be as much study in raising or breeding horses as any other branch of business to make a success. I will endeavor to give a few ideas on the subject. In the first place a thoroughbred of any class will bring the highest price in market. It has come to the time of day that many buy solely on the breed whether it be the roadster, the draft, or the trotter. Then why not do away with the old fashioned way of selecting a stallion because he goes by the door and is handy, or because he is cheap, and say I am going to improve my stock. For instance a man has a good roadster, and young, not one of those "has beens," say descended from Tippto and Mes-

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senger, let him say I am going to take this mare to a Hambletonian, and if I should chance to get a filly I will do the same with it when old enough, and I hope I may live long enough to see the time when the United States won't be able to boast that they have got the best bred Hambletonian, and just so with the Percheron and the Clyde. I contend the great success in raising lies in this and in the taking care of colts, that is to say give them a good comfortable place with plenty of hay and oats to give them bone and muscle and grow them up with action and strength ; then when a buyer comes along you have got something to show him. When he asks the question, is it pure bred ? you can say, yes, sir, looking him straight in the eyes, showing him you have got something you are proud of and no doubt he will buy and give you your price if his purse is long enough.

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CROOKED FOOT.

A crooked foot is generally behind, caused by being hurt when when young and neglected till it becomes crooked, generally rocking outward which is a great detriment to a road horse or speed horse. In paring the foot it should be pared off all it will stand on inside, leave what little their is on outside then fit the shoe close on inside, and leave it as full on outside as possible carrying heel out a little longer and turning it out which will be a support. If the foot is thus shod in proper time it can be straightened greatly.

YOUATT ON SHOEING.

He says: "Diseases are sometimes produced in the feet from which a horse is never again free during his life. It is therefore important that a valuable horse should not be placed in the hands of every blockhead who pleases to call himself a horse shoer, but entrusted only to persons of known skill. For a horse to be well shod the hoof should be pared with a buttrice instead of giving in to the cruel and injurious practise of burning the foot with a red hot shoe until it fits smooth and level to a reasonable size; the frog should be nicely trimmed in shape a little convex rather lower than the foot.

"The shoes should be made precisely the shape of the hoof after being trimmed, not so wide between the heels as to show on the outside, or so narrow as to cramp the foot and produce narrow heels.

"Horse shoeing is what every worker of iron who has acquired the name of a blacksmith pretends to be well skilled in, but there are few indeed in possession of sufficient knowledge on that subject to make it safe to place under their care a horse of value for the purpose of being shod. To perform this operation correctly and without present or future injury requires not only good skill and judgment but a thorough acquaintance with the anatomy of a horse's foot, which is a knowledge but few of our blacksmiths are in possession of, and is the cause of so many horses being useless. Almost

all diseases in the feet are more or less the result of bad shoeing by wounding muscles, veins, nerves, or arteries in this way."

Mr. Youatt tells us the foot should be leveled with the buttrice and the frog should be nicely pared. I contend that it should be leveled with my lever knife and the rasp; that does away with all burning. You can cut off one inch as easily as one quarter. I quite agree with Youatt on burning. It should not be done, and if the owners of horses would set their foot down against it they could soon stop it. As to paring the frog, I don't agree with Youatt; leave it alone and it will shed itself when it gets too big, or once a year as nature made it.

He goes on to show or insinuate narrow shoeing will make contracted heels.

I contend if shoe is fitted to foot with level bearing and not more than seven nails, not nailing too far back that the foot will grow over the shoe and in doing so it must expand the foot.

SHOEING.

If we examine the horse's feet in their natural state, they will be found to be almost round and very elastic at the heel, the frog broad, plump, and of a soft, yielding nature; the commissures open and well defined, the sole concave, the outside crust from the heel to the toe increased from a slight bevel to an angle of forty-five degrees; consequently, as the foot grows, it becomes wider and longer in proportion to the amount of horn secreted, and narrower and shorter in proportion to the ground-surface. If a shoe were fitted nicely and accurately to the foot after being dressed down well, it would be found too narrow and short for the same foot, after the lapse of a few weeks. If any unyielding shoe of iron is nailed firmly to this naturally enlarging and elastic hoof, it prevents its natural freedom of expansion almost wholly, and does not allow the foot to grow wider at the quarters as it grows down, in proportion to the amount of horn grown as before shod; consequently the foot is changed by the continued restraint of the shoe, from a nearly round, healthy foot, to a contracted and unhealthy condition, as generally seen in horses shod for a few years.

The principles which govern in shoeing are few and simple, and it is surprising, considering the serious results involved, that it should be done with

so little consideration. The object of the shoer, in trimming and preparing the hoof for the shoe, should be to keep the foot natural, and this involves, first, the cutting away of any undue accumulation of horn, affecting in the least its health and freedom; second, to carry out in the shape of the shoe that of the foot, as nearly as possible; third, to fit and fasten the shoe to the foot, so as least to interfere with its health, growth, and elasticity.

The preparation of the foot requires the cutting away of about the proportion of horn, which, coming in contact with the ground, would have worn off, or which has accumulated since being last shod; if the shoes have been on a month, the proportion of horn secreted in that time is to be removed; if two months, then the proportion of two months' growth. No definite rule can be given, the judgment must be governed by the circumstances of the case; the stronger and more rapid the growth of the foot, the more must be cut away; and the weaker and the less horn produced, the less, to the extent of simply leveling the crust a little, the better to conform to the shoe; there is generally a far more rapid growth of horn at the toe than at the heels or quarters; more will be required to be taken off there than off the other parts; therefore shorten the toe, and lower the heels, until you succeed in bringing down the bearing-surface of the hoof upon the shoe to almost a level with the live-horn of the sole. Be careful to make the heels level; having lowered the crust to the necessary extent, smooth it down level with the rasp, the sole and frog detach by exfoliation, as it becomes super-

abundant. The sole would not need paring, were it not for the restraining effect of the shoe upon the general function of the foot, which is liable to prevent such detachment of the horn. The cutting away of the bars to give the heels an open appearance is inexcusable, and should never be done. In a natural healthy condition, the frog has a line of bearing with the hoof, and by its elastic nature acts as a safeguard to the delicate machinery of the foot immediately over it, and helps to preserve the foot in its natural state, by keeping the heel spread. It seems to be wisely intended to give life and health to the foot. Permitting the heels to grow down, with the addition of high-heeled shoes, raises the frog from its natural position, and causes it to shrink and harden; and bears, in consequence, an important influence in setting up a diseased action, that usually results in contraction of the foot. If the heels are square and high, and the hoof presents rather a long, narrow appearance, and is hollow on the bottom, there is a state of contraction going on, and you must not hesitate to dress down thoroughly. Do not hesitate because the hoof appears small. Cut away until you are well down to a level with the live-horn of the sole, and if the foot is weak, use the same prudence in not cutting it away too much. The shoer must always bear in mind that the sole must not rest on the shoe. Let the foot be so dressed down, and the shoe so approximate, that the bearing will come evenly upon the crust all the way around, without the sole touching the shoe. This requires the crust to be dressed down level, and, although well down to the live-horn of the sole, it should always be left a little higher. The

corners between the bars and crust should be well pared out, so there is no danger of the sole resting on the shoe, which is our next consideration.

THE SHOE.

The main object should be to have the shoe so formed as to size, weight, fitting, and fastening, as to combine the most advantages of protection, and preserve the natural tread of the foot the best. In weight, it should be proportioned to the work or employment of the horse. The foot should not be loaded with more iron than is necessary to preserve it. If the work of the horse is principally on the road, at heavy draught, the shoe should be rather heavy, in order that it may not be bent by contact with hard, uneven earth; it should be wide in the web, and of equal thickness and width from the toe to the heel, that it may as much as possible protect the sole, without altering the natural position of the foot; it should be well drawn in at the heels, that it may rest on the bars, thereby protecting the corn place, or angles between the bar and crust, and should in no part extend beyond the outer edge of the crust.

It is too often the case that the shoe is made according to the smith's notions of what the form of the horse's foot should be, and the foot is pared, burned, and rasped until it fits the shoe. Now, it should always be borne in mind that the shoe is intended for the foot, and not the foot for the shoe,

and that it is therefore peculiarly proper to make the shoe fit the natural form of the foot. It is impossible to have the foot of a horse sound and safe, for work and use, after bringing it to an unnatural figure, by the use of the knife and rasp. The foot of the horse being elastic, it expands to the weight of the horse, in precisely the same degree, whether resting upon the most open or the most contracted shoe. Therefore, the shape of the shoe cannot possibly affect the shape of the foot. The form of the foot is determined by the situation of the nails. If the nails are placed so that the inside quarters and heels are left free to expand in a natural manner, no shape which we can give to the shoe can of itself change the form of the foot. It must not be inferred, however, from this that the shape of the shoe is of no importance; quite the contrary being the case, as I have already shown. In forming the shoe, we should always adopt that which produces the greatest number of advantages with the fewest disadvantages.

We find that the sole-surface of the foot is by nature concave in form, which seems to offer the greatest fulcrum of resistance to the horse when travelling. It is important to preserve the natural mechanical action of the horn and sole; therefore the ground surface of the foot, that is to say, the ground surface of the shoe, should be leveled cup fashion; its outer edge being prominent, corresponds to the lower and outer rim of the hoof; while the shoe being hollow, resembles the natural cavity of

the sole of the foot. The ground surface of the shoe should always be concave.

The pattern that nature has presented us in making the sole concave, cannot be improved upon by the smith, with all his skill. The expansion of the heels, and growth of the foot, require that the shoe should be long enough, and wide enough at the heels, to allow for the natural growth of the foot in the time it is calculated the shoe should be on before being reset; for as the foot enlarges, the shoe is brought forward until it loses its original proportion, and becomes too short and narrow. The shoe may be about a quarter of an inch wider and longer than the extreme bearing of the heels; and the nail holes should be punched coarse and in the centre of the web. The manner of fastening the shoe is what really affects the foot, and what requires the most special attention in shoeing; for the foot, being elastic, expands in the same proportion on the rough as on the nicely-fitted shoe. It is the number and position of the nails that really affect the foot. If they are placed well back in the quarters, four on a side, as is common, the crust is held as firmly to this unyielding shoe as if in a vice, which utterly prevents the free action necessary to its health. Inflammation is produced, which causes contraction and the consequent derangement of the whole foot. If the free, natural expansion of the foot, and the spreading of the quarters in proportion to the growth of the hoof is prevented by the nailing of the shoe, irritation of the fleshy substance between the crust and coffin-bone will result, and ultimately create so much diseased action of the

parts as to cause contraction and nericular disease. Shoes may be fastened without causing such mischief, if the following method of nailing is observed.

In experimenting, for the purpose of ascertaining how few nails are absolutely necessary, under ordinary circumstances, for retaining the shoe securely in its place as long as it should remain upon the foot, it has been satisfactorily established that five nails are amply sufficient for the fore shoes, and seven for the hind ones, three should be placed on the outside of the foot, and two on the inner side, near the toe, thereby leaving the foot free to expand in a natural manner. The nails should be driven high up in the crust, but brought out uniform as possible. Another mistake with most smiths is in turning over too much clinch. It is also a custom with some to rasp and sandpaper the whole surface of the hoof, for the purpose of making it look nice and smooth. Such a practice should never be tolerated, the covering thus removed is provided by nature to protect the too rapid evaporation of the moisture of the hoof, and when taken away, causes the horn to become dry and brittle. It has so long been customary to use as many nails as could be conveniently driven, in fact, of fastening the shoe as if it were to a lifeless block of wood, that the fear is very commonly entertained that the shoe will not be held in its place with so few nails. Such fears are utterly groundless, as both theor and practice demonstrate. If the presence of a nail in the crust

were a matter of no moment, and two or three more than are really necessary were merely useless, no great reason would exist for condemning the common practice of using too many nails, but it is far otherwise; the nails, aside from confining the natural expansion of the hoof, separate the fibres of the horn, which never, by any chance, become united again, but continue apart and unclosed, until, by degrees, they grow down with the rest of the hoof, and are finally, after repeated shoeing, removed by the knife.

As these holes cannot possibly grow down and be removed under three shoeings, it will be found, even with a small number of nails, that three times that number of holes must exist in the hoof all the while; and as they are often, from various causes, extended into each other, they necessarily keep it in a brittle, unhealthy state, and materially interfere with the future nail-hold. As the position of the hind foot, and the nature of its office, render it less liable to injury than the fore foot, consequently it less frequently lames; however, disease of the navicular bone of this foot is by no means impossible. The same care should be taken as with the fore foot. Calks, although they may be turned down of perfectly even length on each side (which is seldom done), are objectionable appendages, and should be dispensed with, except, perhaps, for very heavy draughts, or when the roads are frozen or covered with ice.

TO PREVENT INTERFERING.

Remove the portion of crust that hits the ankle, and have the shoe set well under the foot.

The hoof should be lowest on the outside, to turn the ankle, that the other hoof may pass clear. The shoe should be light, and of narrow web, with only two nail holes on the inside, and those near the toe.

OVERREACHING.

Young horses are more subject to overreaching than old ones. It very frequently disappears as the speed of the animal is increased. At a moderate gait, the front feet do not always get out of the way in time for the hind ones, as they are brought forward. Sometimes the heels are cut or bruised badly, and occasionally the shoes are torn from the front feet. To prevent this, have the front shoes a little heavier, the animal lifts them up more quickly. The hind shoes made a little lighter, causes him to lift them more slowly, and the difficulty is at once removed.

TO CURE CORNS.

Cut the horn well down, but not to the quick, fit the shoe so that it will not press upon the part, then saturate well with pine sap or gum, which is found exuding from pine trees when cut. Fill the part in nicely with tow, and put on the shoe, which must be so fitted as not to oblige the part to support, but very slightly, if any, the weight of the horse. Horses with corns must be oftener and more carefully shod than those free from them.

TO TELL A HORSE'S AGE.

There is only one sure way of telling the age of a horse, and that is by an examination of his teeth, and that only extends to a certain age, although an experienced horseman can guess very nearly for some time after that period. There are six teeth in the front part of a horse's mouth, above and below, called the gatherers, from which we may judge of his age. When a colt is foaled, he generally has no teeth in the front part of his mouth. In a few days, two come in the upper jaw, and two below; and again, after a few days, four more appear, but the corner teeth do not make their appearance until he is four or five months old; these twelve teeth remain unchanged in the front of the colt's mouth until he is about two years old, when he sheds the two centre nippers.

At three years old, a colt sheds the adjoining teeth. At four years old, the under or corner teeth. At five years old, the bridle tooth makes its appearance. At six years old, the cups leave the two centre teeth below. At seven years old, the cups leave the adjoining teeth. At eight years old, the cups leave the outer or corner teeth. At nine years old, the cups leave the two centre nippers, above. At ten years old, the cups leave the adjoining teeth. At eleven years old, the cups leave the corner upper teeth. At twelve years, or past, the groove in inside of the bridle tooth disappears in a horse. Mares very seldom have them,

RECIPES.

The following recipes have been gathered from sources entitled to the fullest confidence, as remedies of value to all owners of horses, and are presented with the hope of doing good.

TO CURE WORMS IN HORSES.

One drachm white hellebore in powder, 1 drachm sulphate of iron in powder, 1 oz. flaxseed meal.

The above for one dose, mixed with bran mash, given at night. Repeat in forty-eight hours, if the horse is old. Two doses are enough for the worst case.

TO CURE THE SCRATCHES

IN THE SHORTEST TIME EVER KNOWN.

Use two tablespoonfuls of lard, and one tablespoonful of slacked lime; brush out the dirt and dust from the foot; *use no water*. Apply the

salve, well mixed, twice each day. It will cure the worst cases in 4 to 6 days.

ANOTHER REMEDY.

Hydrate of potassa, 10 grains; pulverized nut-galls, $\frac{1}{2}$ oz.; white lead, pulverized opium, each $\frac{1}{4}$ oz.; lard, $\frac{1}{4}$ lb. Wash with soap-suds, rub dry, and apply the mixture night and morning. Give purg-
ing ball.

SPAVIN.

This being a valuable recipe, it is worth money to any man dealing in horses.

Euphorbium, 5 oz.; cantharides, fine, 2 oz.; iodine, 1 oz., dissolved in alcohol; red precipitate, $\frac{1}{2}$ oz.; corrosive sublimate, 1 oz.; quicksilver, $\frac{1}{2}$ oz.; hog's lard, 6 oz.; white turpentine, 6 oz.; verdigris, $\frac{1}{4}$ lb. Melt the lard and turpentine together, then, while hot, add the others, except the quicksilver, which must be stirred in as it becomes cold. Mix well. When cold, it is fit for use. Rub it in well on the spavin every day for three days, then wash clean with soap-suds, and omit for three days; then repeat for three days, and so continue until a perfect cure is effected. Should it blister, use more cautiously.

BONE SPAVIN.

One-half pound of blood root ; 1 quart of alcohol ; 2 oz. tannin ; $\frac{1}{4}$ lb. alum. Mix and let stand. Shaking several times a day till the strength is all in the alcohol, and bathe the spavin twice a day, rubbing with the hand.

FOR WINDGALLS.

Olive oil, 2 oz.; nitric acid, $\frac{1}{4}$ oz. Rub as much in every day, or every second or third day, as will bear without starting the hair.

FOR INFLAMED SWELLINGS OR LAMED SHOULDERS.

Equal parts oil amber, oil spike, gum camphor, and ether. Should be shaken well before using, and well rubbed in with the hand.

HIDE BOUND.

This condition of the skin is usually produced by any derangement of system. Medicine of an alterative character is here indicated. The most successful remedy is sulphur, pulverized, 8 oz.; nitrate of potassa, pulverized, 3 oz.; black antimony, pulverized, 2 oz.; sulphate of iron, 4 oz. Mix well together, and give one tablespoonful twice a day.

ANOTHER GOOD REMEDY.

Take saltpetre, 4 oz.; crude antimony, 1 oz.; sulphur, 2 oz. The saltpetre and antimony should

be finely pulverized, then add the sulphur, and mix well together. Dose : tablespoonful of the mixture in bran mash daily.

HOW TO DISTINGUISH BETWEEN DISTEMPER AND GLANDERS.

The discharge from the nose in Glanders will sink in water. In Distemper it will not.

TREATMENT FOR RHEUMATISM.

Poultice the feet with mustard and flaxseed meal. Give internally of nux vomica, 1 oz.; pulv. gentian root, 1½ oz.; pulverized ginger, 1 oz. Mix, and divide into 12 powders; give one every night in the feed, keep the body warm, and give no corn.

FOUNDER REMEDY.

Give from 1 to 4 ounces of saltpetre, according to the severity of the case. For a severe case, draw about one gallon of blood from the neck; then drench with linseed oil, 1 quart; rub the fore legs with water as hot as can be borne, without scalding, continuing the washing till the horse is perfectly limber.

HORSE OINTMENT.

Resin, 4 oz.; beeswax, 4 oz.; honey, 2 oz.; lard, 8 oz.; melt these articles slowly, bringing gradually to a boil; remove from the fire, and slowly add a

little less than a pint of spirits of turpentine, stirring all the time this is being added, and stir till cool. This is an extraordinary ointment for bruises of the flesh, or hoof, or broken knees, galls or bites, or when a horse is gelded to heal and keep off flies.

CONDITION POWDER.

Fœnugrec, cream of tartar, gentian, sulphur, salt-petre, resin, black antimony, and ginger, of each 1 oz.; cayenne, $\frac{1}{2}$ oz.; all finely pulverized. Mix thoroughly. It is used for yellow water, hide bound, colds, coughs, distemper, and all other diseases where a condition powder is needed. They carry off gross humors, and purify the blood.

Dose:—In ordinary cases one tablespoonful once a day. In extreme cases give twice daily. This powder has never failed to give entire satisfaction.

MAGIC LINIMENT.

Take 2 oz. oil of spike; 2 oz. origanum; 2 oz. hemlock; 2 oz. wormwood; 4 ounces sweet oil; 2 oz. spirits ammonia; 2 ounces gum camphor; 2 oz. spirits turpentine; 1 quart proof spirits. Mix well and bottle for use. Cork tight. For sprains, bruises, or lameness of any kind, this liniment is unsurpassed. This is the same liniment, leaving

out the turpentine, which has achieved such wonderful cures for human ailment.

A more simple liniment can be made by putting into spirits of turpentine all the gum camphor it will cut. For ordinary purposes it is fit for use; but if you wish to reduce pain, add as much laudanum as there is turpentine.

**FRENCH PASTE FOR BONE SPAVIN AND
RINGBONE.**

Corrosive sublimate, quicksilver, and iodine, of each 1 oz., with sufficient lard to form a paste. Rub the quicksilver and iodine together, and add the sublimate, and finally add the lard, rubbing thoroughly. Shave off the hair the size of the bone enlargement, then grease all around it, but not where the bone is shaved off. This prevents the action of the medicine only upon the spavin; rub in as much of the paste as will lie on a five cent piece, each morning for four mornings only, and in from six to eight days the spavin will come out; then wash out the wound with suds, soaking well for an hour or two, which removes the poisonous effects of the medicine, and facilitates the healing, which can be done by any healing salve. I prefer the horse ointment to any other.

TREATMENT OF WOUNDS.

Wounds are caused by accidents of various kinds, when the skin is much torn from the flesh. If you are at hand while the wound is quite fresh, take a square-pointed needle, and a waxed thread, and sew it up. Be sure to put the needle in straight, one side over against the other, draw the skin tight, tie a knot, and cut off the thread; then take another stitch about an inch off, till it is all nicely drawn together. It is quite wrong to sew up a wound as you would a piece of cloth; the thread should be cut after each stitch. When you do not see the wound till the place is growing dead, and the skin is drawing up, then take off the loose skin; for if you permit it to remain, it will leave a blemish.

HOW TO CLEAN AND OIL HARNESS.

First take the harness apart, having each strap and piece by itself; then wash it with warm water and Castile soap. When cleansed, black each part with the following dye: 1 oz. extract of logwood; 12 grains bichromate of potash—both pounded fine; put into two quarts of boiling rain-water, and stir till all is dissolved. When cool, it may be used. It may be bottled and kept for future use, if desired. It may be applied with a shoe brush. When the dye has struck in, you may oil each part with neatsfoot oil, applied with a paint brush. For second oiling, use one-third castor oil and two-thirds neatsfoot oil, mixed. A few hours after, wipe

clean with a woolen cloth, which gives the harness a glossy appearance. This preparation does not injure the leather or stitching, but makes it soft and pliable, and obviates the necessity of oiling as often as is necessary by the ordinary method. When the harness is removed from the horse, take a woolen cloth or chamois skin, kept for the purpose, and wipe off the dust and all moisture from rain or perspiration, and when the harness is nearly dry, rub the damper parts very thoroughly with a second cloth or skin, until they are quite soft and pliable.

The bits, and plated mountings, should be cleaned and rubbed with a slightly oiled rag, before the harness is finally hung in its place; the harness should be protected from dust either by a covering of cloth, or by hanging in a closet. Whenever the leather becomes dry and hard, it should be cleaned and oiled according to the foregoing directions.

GREEN SALVE OR FOOT OINTMENT.

FOR WOUNDS, NEW OR OLD.

2 oz. beeswax; 2 oz. honey; 2 oz. resin; 1 pound lard; 2 oz. Burgundy pitch; $\frac{1}{4}$ oz. verdigris. Simmer slow and stir in verdigris. It is one of the best hoof ointments as well.

RECIPES.

BLACK OIL.

ONE OF THE BEST...

Sweet oil, $\frac{1}{2}$ pint; tanner's oil, $\frac{1}{2}$ pint; spirits
turpentine, $\frac{1}{2}$ pint; oil of organum, 2 oz.; oil
vitriol, $1\frac{1}{2}$ oz. last.

LINIMENT FOR SPRAINS, ALL PAINS
AND ACHES.

Alcohol, $\frac{1}{2}$ pint; laudanum, 1 oz.; wormwood,
1 oz. Let stand three minutes, then add whiskey.
 $\frac{1}{2}$ pint...

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D. H. Winters' Patent Lever Knife.

SOMETHING FOR HORSE-SHOERS.



DESCRIPTION OF KNIFE.

It is composed of malleable iron with steel knives so attached that they can be removed at any time if necessary, and can be ground without removing.

The price is within the reach of everybody who is doing any shoeing. It will pay for itself in one week.

DIRECTIONS FOR USING.

The object is to prepare the foot for the shoe. In the first place, clean out the sole or loose portion, if any; then place one knife on sole of foot, and the other on the outside shell; start the handles together by pressing them towards one another, clinching both handles when they come within reach. One inch can be taken off each time it necessary with more ease and in less time than it can be done in any other way.

The time saved and the ease with which the work of paring the hoof is done is all the reputation required, although many testimonials can be given.

PICTON, Nov. 30, 1887.
MR. D. H. WINTERS,—Sir,—With pleasure I send you your pay for the Lever Knife. After giving it a fair trial I would not do without it for three times the price, for time is money and ease is ahead on a hot day.
W. H. ACKERMAN.

PICTON, Nov. 28, 1887.
MR. D. H. WINTERS,—Sir,—I feel that the blacksmiths of the town of Picton should give you a nice present, for I am sure after using your Lever Knife that the price is no comparison with its worth. I would not take five dollars for mine.
E. F. SMAN.

D. H. WINTERS,

PICTON, ONT.

MANUFACTURER AND PATENTEE.

