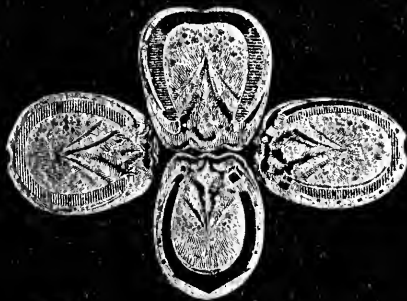


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HORSES:

How they ought to be shod.





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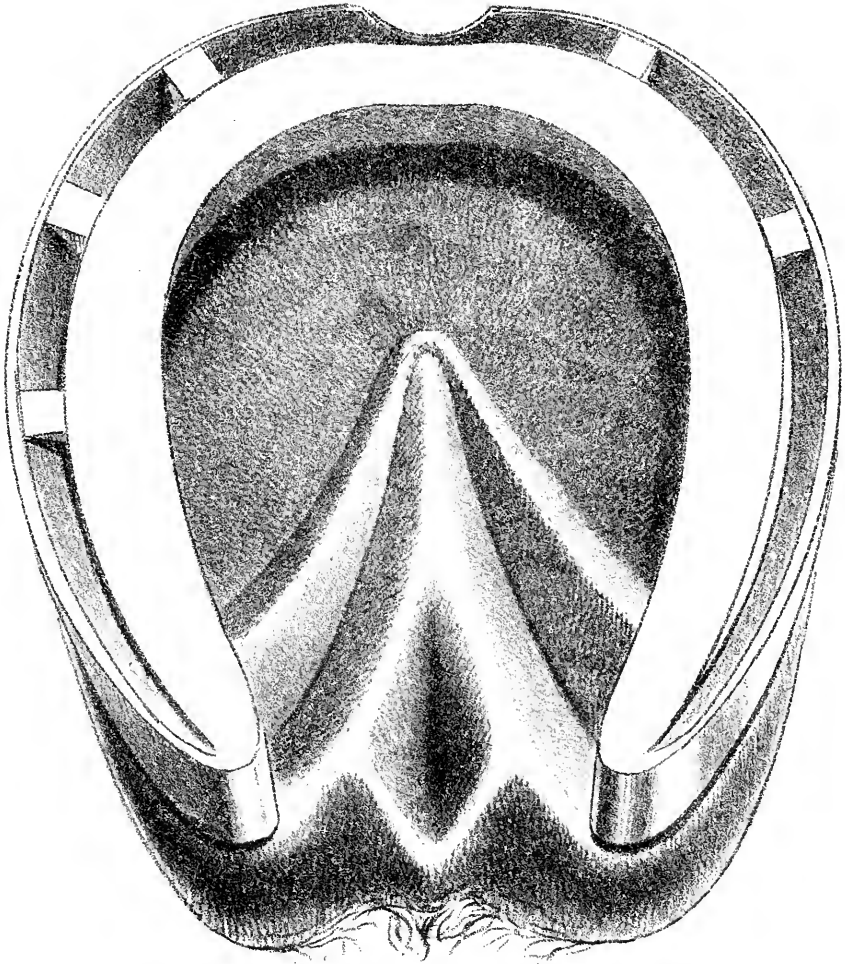
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Plate I.
(*Frontispiece*)



Shod as it ought to be

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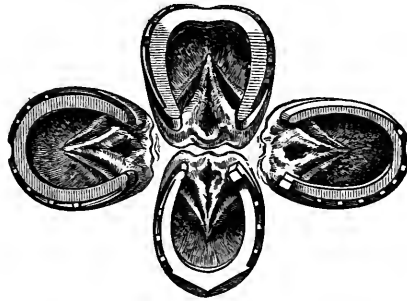
H O R S E S,

HOW THEY OUGHT TO BE SHOD:

BEING A

Plain and Practical Treatise on the Principles
and Practice of the Farrier's Art.

Copiously Illustrated.



BY

WILLIAM HAYCOCK, VETERINARY SURGEON, M.R.C.V.S.,

AUTHOR OF

"The Gentleman's Stable Manual on the Principles and Practice of Veterinary Medicine and Surgery;"

Contributions to the Pathology and Practice of Veterinary Medicine and Surgery;

"On Equine Disease;" "Villitis;" "Hysteria in the Mare;" etc.

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To the Memory

OF THE LATE

JOSEPH CROSSLEY, ESQUIRE,

OF

BROOMFIELD, HALIFAX,

WHO WAS

MY KIND AND VALUED FRIEND; MY FAITHFUL AND JUDICIOUS ADVISER;

AND MY ZEALOUS AND EFFICIENT PATRON.

TO HIM

This Volume

WOULD, HAD HE LIVED, HAVE BEEN INSCRIBED,

BUT IS NOW

AFFECTIONATELY DEDICATED.

HIS RARE MODESTY, MANLY BEARING, LARGE-HEARTED GENEROSITY,

CATHOLIC PHILANTHROPY, AND HIS CHRISTIAN VIRTUES,

ENDEARED HIM

TO ALL WHO KNEW HIM; ESPECIALLY TO THE WRITER, WHO,

IN MANY A RAMBLE AND MANY A RIDE,

DURING SIXTEEN YEARS OF UNINTERRUPTED FRIENDSHIP AND INTERCOURSE,

DISCOVERED, IN HIS LIFE AND CHARACTER, QUALITIES

WHICH RENDERED

HIS FRIENDSHIP A SOURCE OF THE HIGHEST AND PUREST PLEASURE,

AND HIS DEATH

THE OCCASION OF THE DEEPEST SORROW.

Manchester, May, 1869.

M370185

P R E F A C E .

THE present work, we trust, the reader will find simply what it professes to be, namely, a plain, practical treatise on the art of Horse Shoeing—an art which, long as it has been pursued in England, and much as it is talked of and discussed, the public are yet strangely in ignorance of the true principles respecting it.

In the present treatise we have all but entirely avoided entering into any question relating to the Physiology of the Foot; we have avoided all inquiries as to whether the foot of the living horse expands or contracts during locomotion—a question not yet settled either amongst professionals or amateurs; and, we may add, not likely to be for some time to come; and we may also further add, if settled in favour either of the “expansionists” or “contractionists,” would not in all probability be productive of any valuable result to the animal in the practice of Horse Shoeing.

The Shoeing of the Horse is said to present a wide field for improvement and invention, which perhaps is true in one sense, but certainly not in a financial one. A number of patents during the last eighty or ninety years have been secured for Horse Shoes—so many, in fact, that a bare statement of the names and dates, together with a brief enumeration of the wonderful virtues which they all claim to possess would fill a volume of no mean size. We have carefully examined the whole of the specifications relating to these patents, and their claims may be classified under three heads :

- (1) Some exhibit much ingenuity, but the cost attending their production and use, places them far beyond what the general public who own horses would expend in such matters.
- (2) Others present much novelty, but will be found upon thorough examination, to possess no improvement upon the modes at present daily in use.
- (3) Others, again, are so absurd and worthless, as scarcely to merit a second examination from any one.

The Farrier's Art may be said to possess four Cardinal Principles; two of which relate to the construction of the shoe ;

and two in the application of the shoe to the foot—principles which in our opinion ought to be enforced by Act of Parliament. These Cardinal Essentials we may state as follows :

- (1) The Shoe should be seated as shown at Plate V., and in the manner explained at Page 17.
- (2) The Toe of the foot and the Toe of the shoe should be curved in a manner to fit each other exactly in the way shown and explained at Plate I., and as explained at Pages 20, 21, 22, and 23.
- (3) The Frog of the foot should not, when healthy, be pared ; and only the exfoliating parts of the Sole, as explained at Section IV., Pages 15, 16, and 17.
- (4) The Wall of the foot should not be rasped.

Such are what we designate the Cardinal Essentials of the farrier's art ; and all who own horses, or are in any way interested in their comfort and welfare, will do well to study the nature of these essentials as explained in the present treatise, and thus obtain a full knowledge of their importance in their application to the well-being of the foot.

In conclusion, I have to thank Mr. F. Fountain, of 2, Skinner Lane, Leeds, for the artistic care and skill displayed in the preparation of the numerous plates which illustrate the present work. Thanks are also due to Mr. F. Mudd, Photographer, St. Ann's Square, of this city, for the valuable aid derived from services rendered by him in his department.

STRANGWAYS,

MANCHESTER,

May, 1869.

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THE SHOERING OF HORSES.

SECTION I.

ON THE SHOERING OF THE HORSE, AND ON THE GENERAL TREATMENT OF THE FOOT.

THE art of shoeing the horse properly, and the subject of the general treatment of his feet, are matters of great practical value and interest to the public. "No foot no horse" is an old adage; and the more we see of horses, and experience the value of their services, the more obvious becomes the truth of the above proverb. Although the practice of horse-shoeing is of great antiquity, much ignorance still prevails as to the best mode of doing it, so as to secure the greatest amount of comfort to the foot and safety to the animal. No other department connected with the management of horses is of more supreme importance to the owner, in a pecuniary point of view, than the one in question. Bad feeding, imperfect ventilation, and other matters of a like character, may for a time be partially neglected with some degree of impunity; but if the animal be not properly shod, the feet are speedily crippled, and the horse, as a natural consequence, is rendered useless.

The right application of the shoe to the foot of the horse is confessedly a matter of incalculable importance. The importance of the question is fully understood by the author, and it is to make the best known principles connected with the practice of the art plain and simple to all interested in the subject, that the present treatise is written. The success of the farrier, as a workman, may be said to depend upon the strict observance of a few common-sense principles or rules, the value of which may be made clear to one possessing an ordinary knowledge of the subject, but to carry out these rules the practical workman only has the ability. A clear understanding of such rules, however, will furnish the amateur with grounds whereby he may judge of the skill of the workman, and of the principles upon which the *science of his art* may be said to depend.

The practice of the art of horse-shoeing naturally divides itself into three stages :

- 1st. The preparation of the foot for the shoe.
- 2nd. The preparation of the shoe. And,
- 3rd. The securing of the shoe to the foot.

We shall first describe the matters necessary to observe in the preparation of the foot. In stating what is the necessary duty of the farrier when preparing the foot for the shoe, perhaps the best plan to pursue would be to state in emphatic terms *what should not be done*. So much injury accrues to the horse from undue cutting, paring, and rasping the feet, that one is strongly

tempted to write, *Do nothing*, but simply secure the shoe well to the foot in that state in which the organ in question may chance at the time to present itself. As this, however, would be deemed by the majority of readers as equivalent to saying nothing, we shall endeavour to deal with the matter in the most satisfactory manner we are able. The first object to be accomplished in preparing a foot for re-shoeing is to remove the old shoes. The manner of doing this is a matter respecting which much has been said to the apparent disadvantage of the farrier. Youatt, and other veterinary writers even of a more recent date, speak of the removal of the old shoes from the feet as though our shoeing smiths delighted in brutality, and in the infliction of pain to the horse.

The first act is, by the aid of the hammer and a small instrument called the buffer, to knock away the clenches; after which the operator, by means of his pincers properly applied to the shoe—the sole of the foot forming the fulcrum, and the bow of the pincers the lever—by a dexterous and easy twist of the hand, removes the shoe and the nails at once. This, if done by a skilled workman, is but the effort of a few moments, and can be easily effected without either breaking the hoof or inflicting the least pain on the animal—results so much dreaded by the above author, and by others not practically acquainted with the art. When the shoe is removed, the smith applies his rasp briskly but lightly to the foot, for the purpose of removing all chips of horn or decayed portions of the wall; having done which, the foot is ready for paring. Here we enter at once into the heart of the

matter; and the question prominently presents itself, *What is proper for the farrier to cut and rasp from the organ, in properly preparing it for the shoe?* This question we shall best answer by clearly stating to the reader a few essential particulars respecting the following matters :—

- (a) The names and uses of the various parts which enter into the formation of the foot.
- (b) The kind of feet peculiar to horses.
- (c) The manner and the rate at which the foot grows, or is reproduced.

After which, the reader will be prepared to fully understand the significance of the answers given.

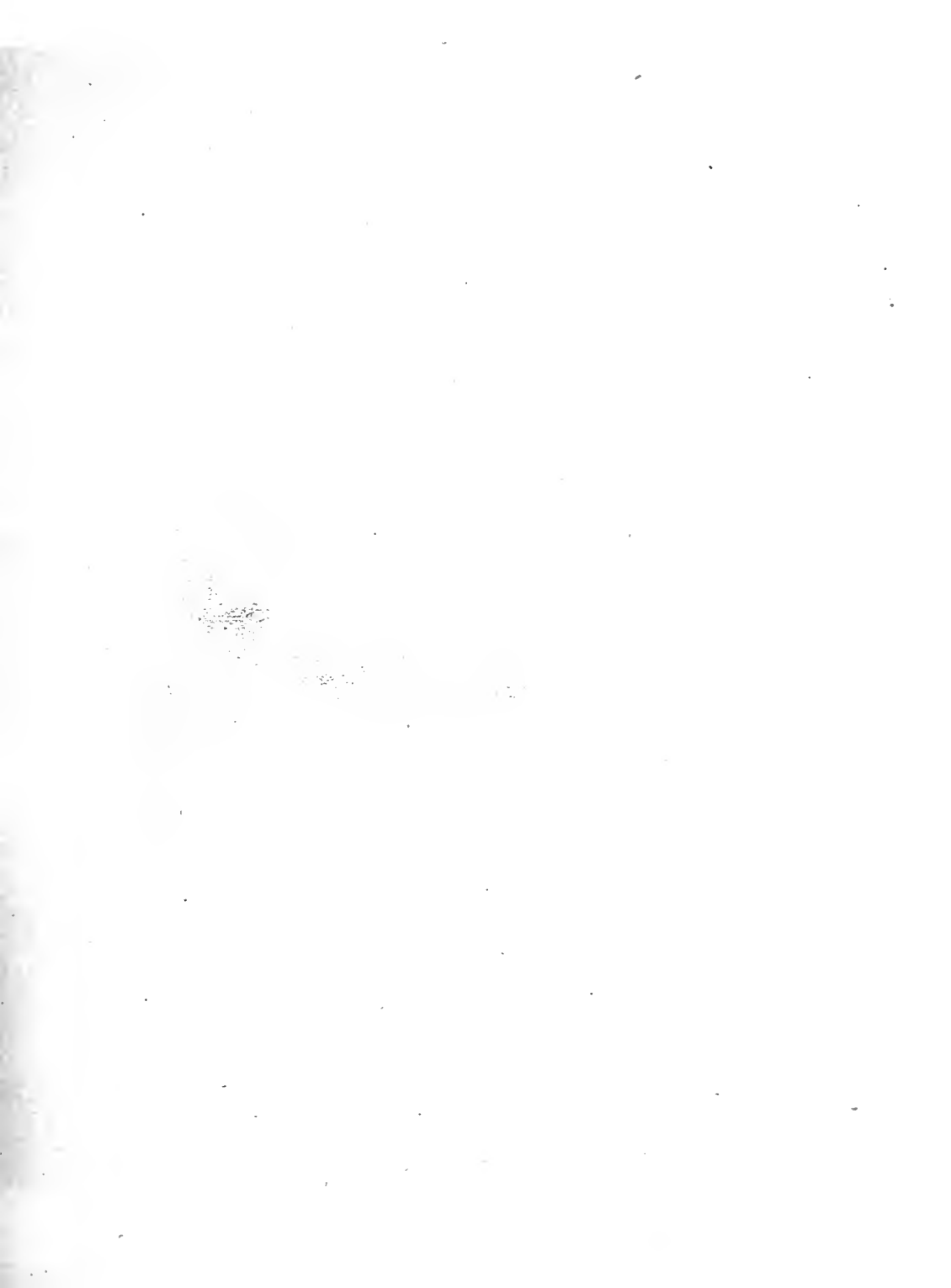
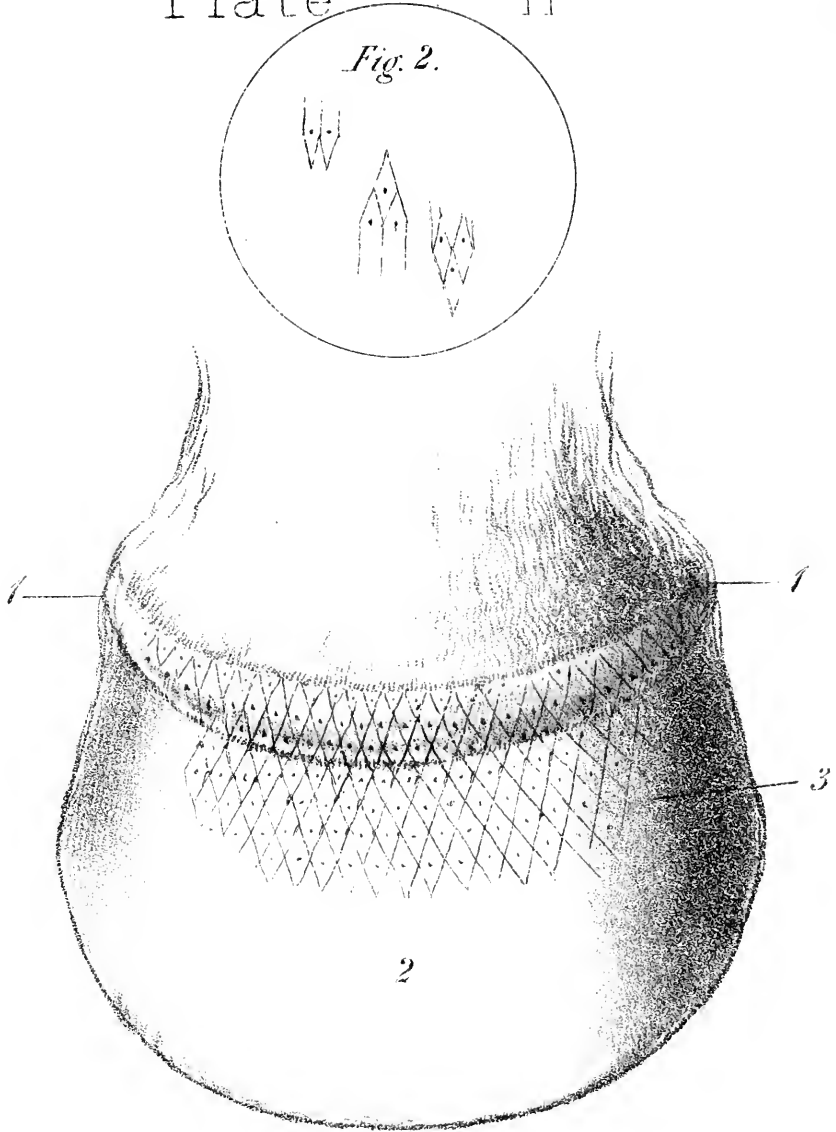


Fig. 2.



SECTION II.

ON THE NAMES AND USES OF THE VARIOUS PARTS WHICH ENTER INTO
THE FORMATION OF THE FOOT.

BEFORE the reader can understand the uses of a thing, it is first necessary he should know what the thing is. The figure in Plate II. will illustrate the two essentials in question; and a careful attention on the part of the reader to the details will enable him to thoroughly comprehend the nature of the matter in hand.

PLATE II.

Plate II., Fig. 1, represents a front view of the hoof, including the coronary frog band and its epithelial or siliceous covering. The frog band is coloured green. The diamond figures represent the epithelial cells or scales which exist upon the surface of the wall.

1. *The Coronary Frog Band.*—This is a substance peculiar in its nature; it is about one inch in width, and extends from the frog (Fig. 77, Plate II.) around the coronary border, forming the junction between the hoof below and the skin above (Fig. 12,

Plate II). It closely resembles a thin band of vulcanised india-rubber, both in colour and its elastic properties. It may be readily observed, especially after the foot has been subjected for a day or two to the action of a warm bran or linseed poultice.

The uses of the frog band are numerous :—

By its elasticity it aids materially in the prevention of concussion during the locomotion of the animal.

It is the bond of union, as stated above, between the skin and the hoof.

It secretes a peculiar substance which principally consists of silex or flint. This substance descends from the coronary frog band, and covers the whole of the external surface of the horny box, similar to a thin coating of glue. (See Fig. 2, Plate II.)

It prevents undue evaporation from the surface of the wall, and aids materially the hoof to retain that natural moisture and elasticity so essential to its well-being.

It is perhaps needless to state, that its removal favours undue dryness and brittleness of the hoof, and in the development of sandcrack. The epithelial cells may be readily obtained by macerating a dead hoof in water ; a small film may then be placed under a microscope having a one-inch object glass, and the cells are at once brought into view. They form very beautiful objects for examination when carefully prepared. Figure 2, Plate II. is a further representation of the cells in question.

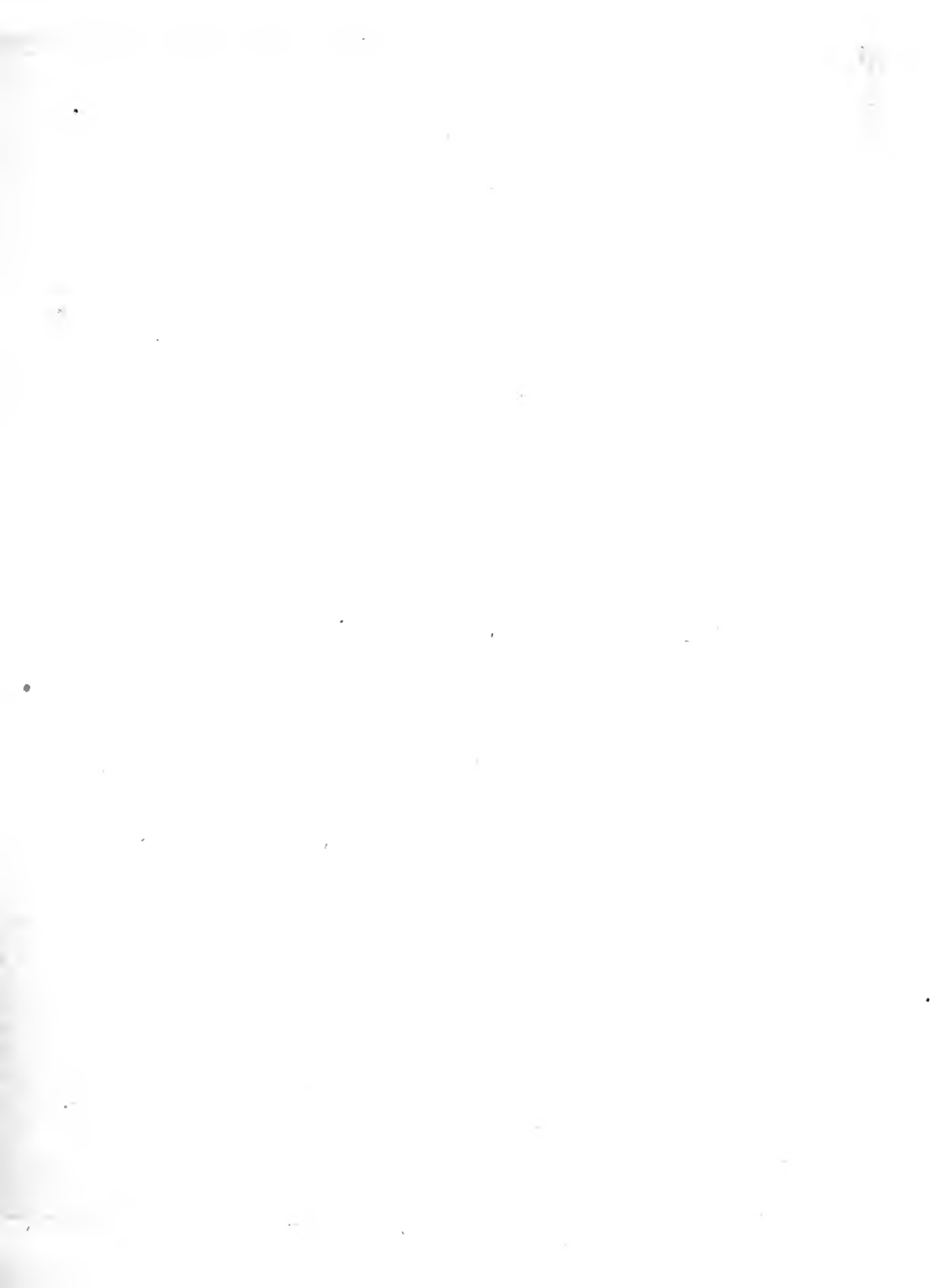


Plate III.

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PLATE III.

Represents the ground surface of the foot.

1 1 1. *The Sole of the Foot.*—The sole of the foot varies in thickness to a considerable extent. Large feet, having a concave or vaulted form of sole, are not unfrequently one inch or more in thickness; while in other varieties of feet, especially where the sole is flat, it may not be half an inch in thickness. In feet where the sole is convex, it is sometimes not more than one-eighth of an inch in thickness. These are facts which bear essentially upon the question, How much should the farrier pare from the foot at the time of shoeing?

2 2 2. *The Ground Surface of the Wall of the Foot.*—The ground surface of the wall is the part which rests upon the shoe when the latter is nailed to the foot. The wall of the foot, like the sole, varies in thickness. As a rule, the wall is the thickest at the toe and the outside quarter. Numbers of feet present great thickness of horn at the outside heel of the organ; as a rule, however, the wall becomes thinner at the heels, so that great care is necessary in driving nails near to the heel.

3 3 3 3. *The Bars.*—The bars are a mere continuation or inflexion of the walls internally. As the wall approaches the heels, it suddenly curves inward, and takes the form of the letter V inverted, coming to a point near the point of the frog. The bars aid materially in keeping the foot open and broad at its ground surface.

4 4. The base of the horny frog.

5. The apex or point of the frog.

8 and 9. The wings, or lateral processes of the frog, being the commencement of the coronary frog band. (See Plate II. Fig. 11.)

10. The point of the toe.

12. The junction of the sole with the wall and the bars.

The line of junction is coloured blue, the purpose of which will be explained hereafter.

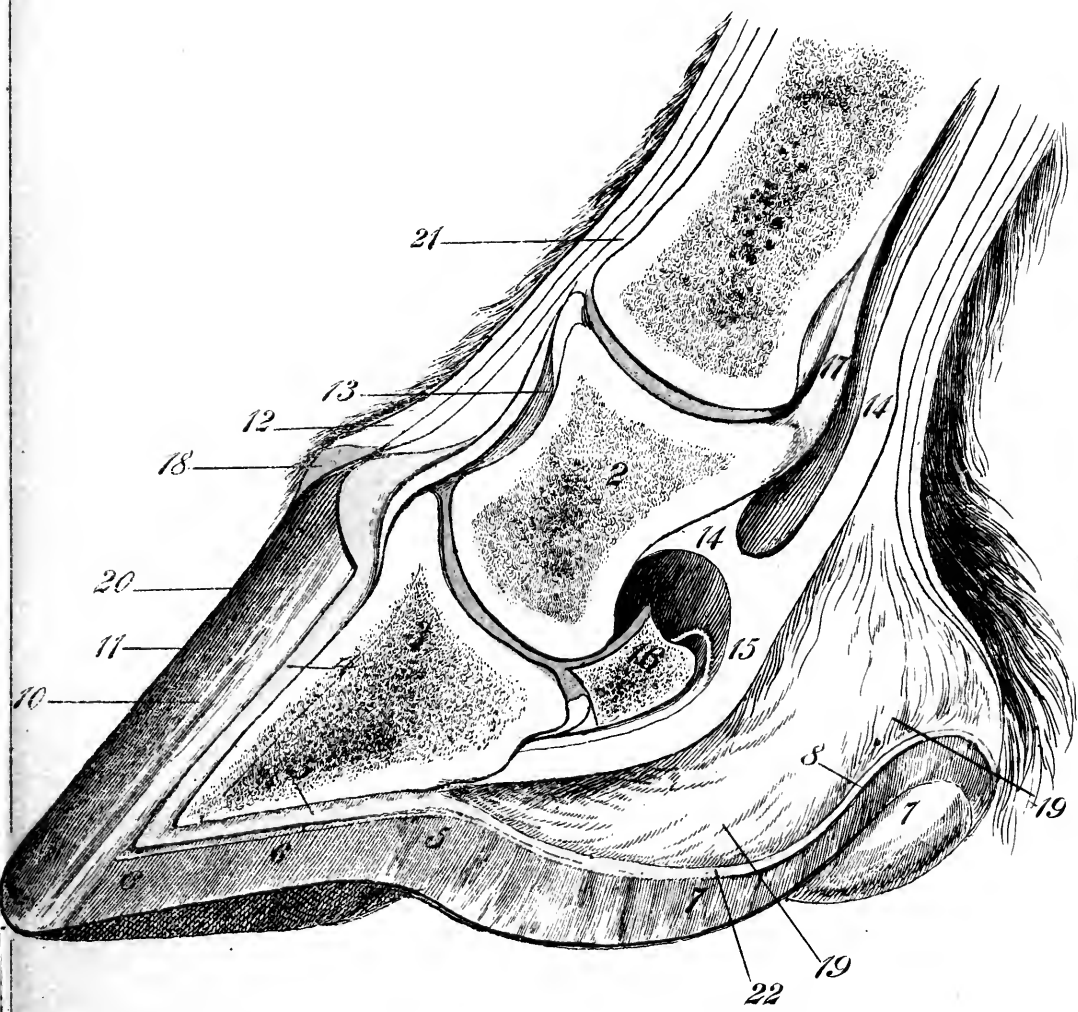
PLATE IV.

Plate IV. represents a section of the right half of the fore foot of the horse. It is divided exactly down the middle; the division was effected by means of a very fine saw, revolving at great speed. It was made with every possible accuracy, and the right half of the organ was photographed; from which, and from the divided foot, the present engraving was prepared. It is essential that the reader should clearly understand the use and relative position of the parts delineated; without this, he cannot fully comprehend the value and importance of carrying out certain principles, to be hereafter stated, respecting the proper form of the shoe when applied to the foot.

1. The large pastern bone.

2. The small pastern bone.

Plate IV.





3. The coffin bone.

4. The vascular or sensitive laminæ of the foot.

5. The vascular villi, or sensitive sole of the foot. The vascular sole consists almost entirely of blood vessels, the function of which is to secrete or form—

6 6 6. The horny sole.

7 7. The horny frog.

8. The vascular frog. This, like the vascular sole, is to secrete or form the horny frog.

18. The vascular villi of the coronet. The vascular villi of the coronet consists entirely of blood vessels, the purpose of which is to secrete—

10. The horny wall. The wall is secreted at the top of the hoof, at the junction of the skin and hair surrounding the coronet.

12. The coronary frog band. The coronary frog band is coloured green. The uses of this band we have explained when treating upon the structure, at Plate II.

19 19. The cushion of the navicular joint, which principally consists of a strong, elastic, yellow-coloured tissue, of a fibrous nature. It is an abundance of this tissue which gives to the heels and frogs of young horses the round, plump-like appearance, so characteristic of these parts when perfect. This elastic substance is in immediate contact with the termination of the tendon (15), between which and the navicular bone (16) is formed the navicular joint; this substance, forming (as it does) a cushion, will be seen to act as a buffer to the joint in question; while 7 7 will be

seen to perform a similar service to the elastic cushion—thus affording to the joint a *double* protection. It may also be observed that the paring of the horny frog (7) tends to the injury of the navicular joint. The frog should not be pared. It may also be further seen upon reflection, that the horny sole (6) should be pared no more than is absolutely necessary. It is generally necessary to remove some portion of the sole. In strong, vigorous feet the sole, is produced with great rapidity; and if left alone, as in unshod feet, it will naturally exfoliate in flakes; but if these flakes are loose upon the sole, as they frequently are upon feet that are shod, they should be removed. It is impossible to nail a shoe securely to the foot if the flakes are left upon the sole.

20. A strip, coloured green, descending from the coronary frog band to the termination of the hoof: this green strip is to represent the epithelial scales covering the outer surface of the wall. (See Plate II., Figs. 1 and 3.)

14, 15, 17. Parts coloured yellow, to represent the tendons which pass from above to the bones of the foot, where they become inserted. The reader is especially requested to note the curve of the tendon 15 as it passes under the navicular bone 16.

SECTION III.

ON THE KIND OF FEET PECULIAR TO HORSES, AND ON THEIR MODE AND RATE OF GROWTH.

THE varieties of the foot peculiar to the horse may be said to be innumerable ; but a careful examination of the organ, as presented to us in the living animal, will reduce the foot to what may be termed four classes or orders.

1. The concave or vaulted foot.
2. The flat foot.
3. The semi-flat or semi-concave foot.
4. The narrow or elongated foot, common to Arabian horses, the mule, &c.

The classes of feet here enumerated are so common and well known that, in a brief treatise like the present, it is perhaps unnecessary to enlarge upon them to any considerable extent. A recital of them, however, is necessary, simply because each class of foot will require a difference in shoeing. A want of knowledge of this fact has brought many a theory of shoeing, having some germs of good sense within it, to oblivion. The

concave form of foot is more prone to navicular disease than the other forms; also to disease of the frog, sandcrack, and to contraction. On the other hand, flat feet are more predisposed to corns, descent of the sole or pumiced foot, and seediness of the toe and quarters. The flatter the feet, the more carefully the shoe requires to be fitted, the greater the care necessary in seating the shoe, and the broader the web for the defence of the sole. Horsemen, as a rule, prefer the concave to any other form of foot: other forms are regarded by them as somewhat abnormal, and the concave is regarded as the model form. In life this is not so: the best feet, generally speaking, are to be found in the semi-concave class. They possess, as a rule, an abundance of horn at the sole and the wall; are not so liable as the former to seedy toe, navicular disease, and sandcrack, as the concave; nor, on the other hand, are they so liable to seedy toe, seediness of the quarters, corns, and descent of the sole as the flat-formed foot.

Growth of Feet.—Ere we conclude the present section a few remarks are necessary respecting the growth of the foot. The rate at which the feet of horses grow or are reproduced will give clear and precise indication to the farrier of the quantity of hoof and sole he may with safety remove from the foot at each shoeing. The wall is formed or reproduced at the coronet, by a mass of blood vessels named the vascular villi. These vessels are situate behind, and to some extent are protected by the frog band. (See Plate I., Fig. 1; and also Plate III., Fig. 18.) The wall grows from above downwards, and in the best feet its reproduction will rarely exceed five-sixteenths of an inch per month, or about one

inch and a quarter in three months. Numbers of feet appear stationary in growth; and others are not reproduced at a more speedy rate than one-eighth of an inch per month. Thin, flat-soled, or what are usually termed shelly feet, as a rule, are the worst in this respect. Every gentleman taking a right interest in the welfare of his horse, should ascertain the rate at which hoof is reproduced in his own horse. The means of attaining this knowledge are simple. Procure a small three-edged file, and file a portion of the horn *across* its substance, a certain distance, say one inch, from the coronet. Do this at the front of the hoof, and also at the quarters; then, with a pair of compasses, measure the distance of the part filed, from the junction of the hoof with the hair at the coronet. Make a memorandum of the date of the experiment, and every time the animal is shod compare with the first measurement; by this means the rate of growth of the wall of every foot measured will be accurately known.

The sole and frog of the foot are produced from a class of vessels similar in many respects to the vessels of the vascular villi. The sole, as a rule, grows more abundantly than the wall, except in feet that are puniced from disease. The secreting vessels of the sole are shorter and thicker in character. In consequence of the nearness of the vessels secreting the sole to the pressure received by the sole from the ground at all times, the sole is produced in flat or shallow layers, which layers, if not interfered with, dry, and are thrown off in flakes or flat masses; the rate at which these layers are reproduced is not exactly known. (For the vascular villi of the sole and the frog, see Plate III., Figs. 6, 7 7 7, and 2 2.)

In concluding the present section, we may state, as a rule to be observed by the farrier, *that every form of foot requires a somewhat different form and adaptation of shoe.*

With regard to the reproduction of the hoof, it may also be stated that the quantity of horn to be removed by paring should be *less* than the quantity grown during the time between one shoeing and another. By this means, a store of horn, so to speak, is gradually produced—a state of the foot highly desirable. Such feet, if rightly shod, will, in the nature of things, remain sound and durable. The rate at which feet are reproduced is a question of the highest value to the practical farrier; he ought to know the fact, with reference to every horse he may regularly shoe. At the same time, if gentlemen know this fact, respecting the feet of their own horses, they will then be in a position to demonstrate to their own satisfaction whether or not the farrier exceeds his duties with the knife.

SECTION IV.

ON THE PREPARATION OF THE FOOT AND THE SHOE.

HAVING stated and clearly illustrated in Section II. the use of the most important parts entering into the formation of the foot, and also in Section III. the various forms of the foot and its mode and rate of growth, the question,—What shall the farrier remove from the organ, to prepare it properly for the shoe?—becomes simple ; and the reader may readily anticipate the answer. It will be evident to the common sense of every one, if more horn is removed from the sole at the end of a month than the blood vessels of the sole has secreted in the same period, or if more wall be removed from the base of the foot at the end of a month than has been secreted during a like period, and if such operation be frequently repeated under similar conditions, the result sooner or later must inevitably be, lameness to the foot, and destruction to the usefulness of the animal.

We have stated that the sole is cast from the foot in layers or flakes. Let the farrier remove *only* those layers or flakes which are loose, and which would, if left alone, be exfoliated

naturally ; to go beyond this, is to encroach upon what is necessarily the proper protection to the sensitive tissues of the organ within. The farrier should be careful to remove any undue elevation of the sole within the angle of the heels. Such elevations, if left, may grow, and press upon the inner surface of the shoe ; and corns, as a consequence, will result. The farrier should also carefully remove all loose or broken portions of the wall, if any exist. He should not violently twist or tear them away with his pincers, as is too frequently the case, thus inflicting injury on the sound horn, as well as removing that which is useless ; on the contrary, he should remove such broken portions with the knife. The ground surface of the wall, when practicable, should be left as follows :—The lower border of the hoof, when the animal is standing with his foot upon the ground (supposing the sole to be flat or semi-concave), should be a quarter of an inch below the sole ; the ground surface of this projection of the wall should also be made perfectly level from toe to heel, or the entire circumference of the wall.*

The frog, if healthy, should be left alone. The knife, in its application to this organ, should be strictly prohibited. It is shown in Section II. (page 6), and at Plate III., Fig. 7 7, that the frog is the great protector of the navicular joint, a joint if not of greater, is at least of equal importance to any point within or contiguous to

* Unless the toe has been previously curved to adapt it to a similar curve given to the toe of the shoe ; a matter to be fully treated upon ere the present section is concluded. When once the toe of the foot has received its due curve, the farrier can work as readily to it as to a foot perfectly level.

the foot. The frog, as previously stated, is really a buffer to the joint in question; and to cut its horny substance wantonly away, is to inflict what may ultimately prove a fatal injury to the soundness of the foot and the usefulness of the animal. Numbers of gentlemen and owners of horses will insist upon the removal of large portions of horn from the frog; they like, as they express it, to have the foot left neat. To sacrifice this organ from mere caprice, and thus render their horses liable to injury of an irreparable nature, is a matter of regret.

The bars are the only parts left unnoticed in our remarks. The bars, like the frog, should be left untouched with the knife. It is a common matter with dealers and many horsemen to insist upon the farrier paring the bars to a level with the sole, which is done to give the foot a wider appearance than it really possesses; this, to say the least of it, is a foolish and reprehensible practice.

We have thus described—we trust clearly—to the reader the operations necessary in preparing the foot for the shoe. We shall next proceed to treat upon the preparation of the shoe.

SEATING THE SHOE.—By seating the shoe is meant *the formation of a level space upon the foot surface of the shoe, varying from three-eighths of an inch to half an inch in width, or according to the size of the foot to be shod; and upon which should rest the inferior border of the wall, when the wall and the shoe are nailed together, and through which the nail holes of the shoe, in all cases, should be punched.* A clearer explanation may perhaps be afforded to the reader, if reference be made to Plate V.

PLATE V.

This plate gives a diagrammatic representation of the shoe, with its foot surface properly seated. The seated space is the part coloured blue. The whole extent between the inner border of the blue and the inner border of the shoe (the white expanse) represents that part which requires to be *bevelled*. The seated or level portion is to receive the wall of the foot, upon which it should exclusively rest; that is, when the foot and the shoe are nailed together.

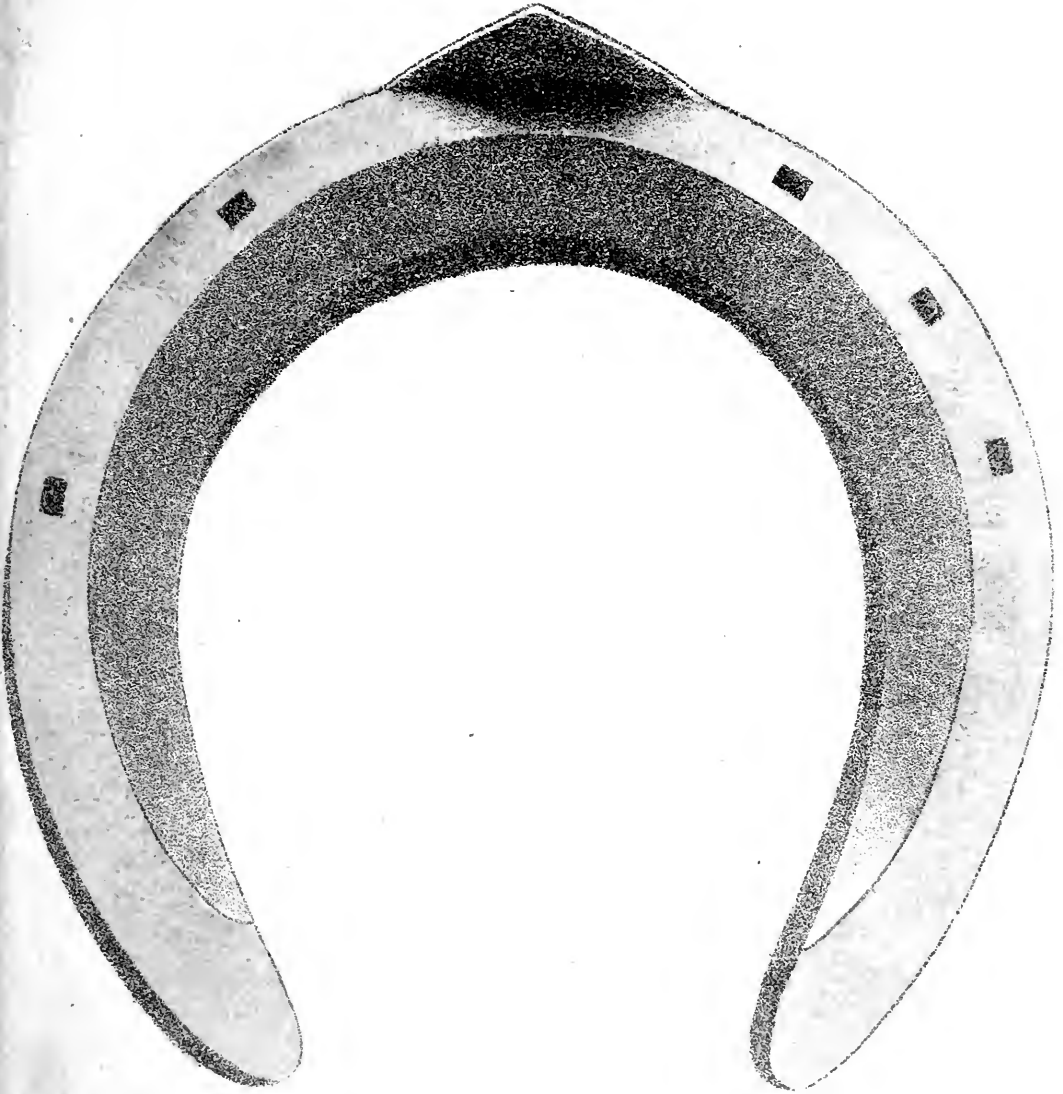
The toe of the shoe is provided, as every shoe should be, with a clip.

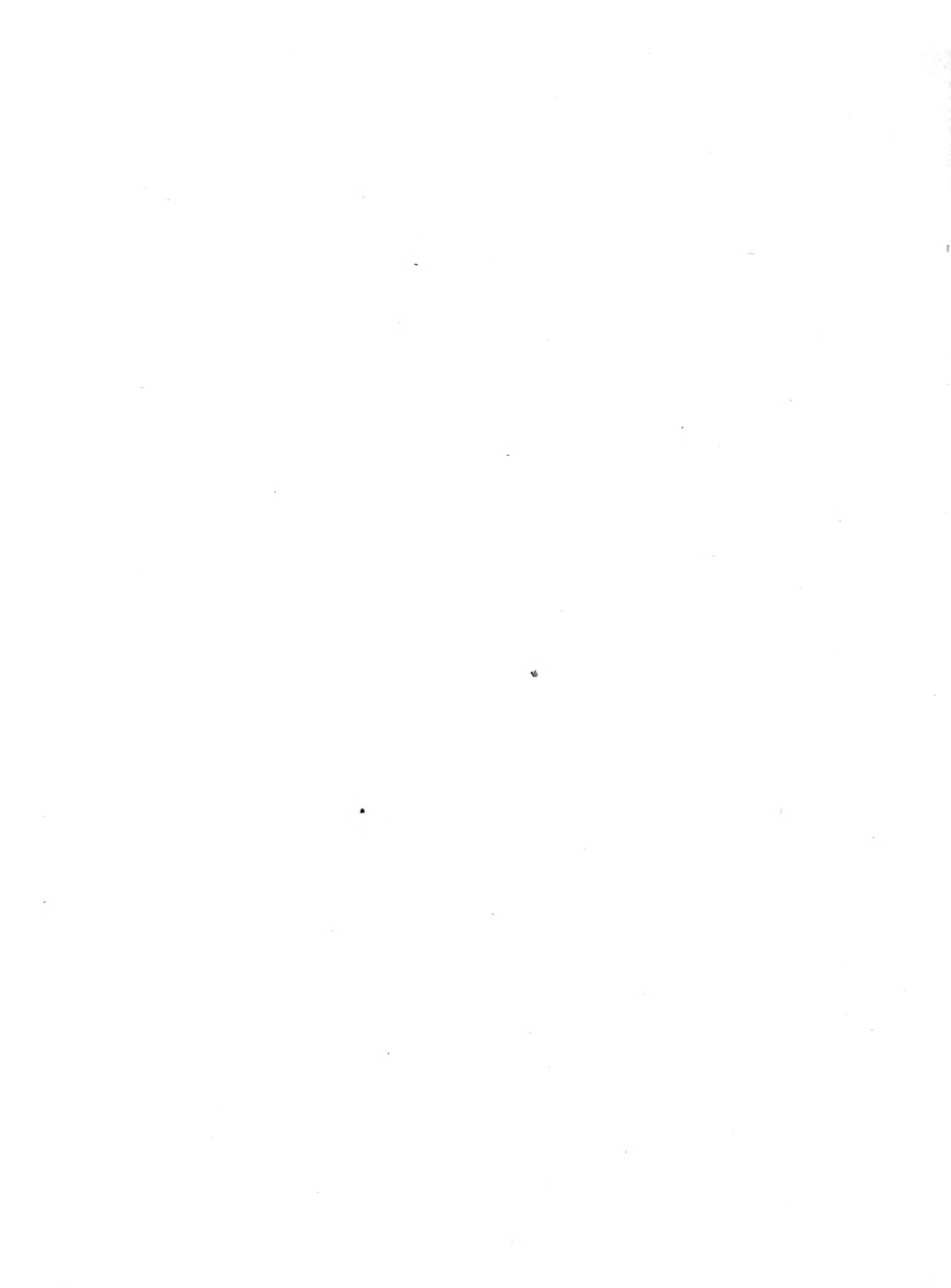
For concave or semi-concave forms of feet, the bevelled part does not require to be over carefully worked; but for a flat or full-soled foot, the bevelling should be executed with great care. In every instance, when practicable, sufficient space should be left between the bevelling and the sole to allow a thin picker to be freely passed around.

Seating the shoe ought to be made by Act of Parliament one of the primary and indispensable rules of the farrier's art. To give clearness to the importance of this rule, we shall state a few particulars relating to the union of the wall and the sole of the foot;—particulars which, we trust, will give such plainness and force to our statements, as to render any further arguments upon this matter unnecessary.

The wall and the sole of the foot are only united mediately; that is, no direct union of the two exists. It may appear otherwise to those not conversant with the foot; but the union of the

Plate V.





two is simply no more than what would exist between the two forefingers of the reader, if pressed together. The wall and the sole are alike in one respect : they yield upon pressure. If pressure be applied steadily to the wall, in a lateral or outward direction, it will in time, if such pressure be continued, slowly separate from the sole ; and the sole will as gradually descend, and become altered materially in form.

The separating process spoken of is widely in operation, and the majority of those who own horses are perhaps utterly ignorant of the fact. The shoe, unless properly seated, will sooner or later produce the effect described. The evil in question is not so common amongst horses having feet of the concave class, as with heavy draught horses and those having flat feet.

The shoe, if properly made, should be both seated and bevelled in the mode shown in Plate V. ; but if the seating be omitted, and it be bevelled only (and especially if the bevelling extends from the outer to the inner rim of the shoe), the effect which, in time, must ensue to a foot regularly nailed to such a shoe will be evident, if reflected upon. Thousands of feet are daily shod with shoes of the kind described ; and the consequence is, the wall of the foot is forced laterally from the sole in an outward direction ; and the sole descending, becomes what is called *pumiced*—a condition of the foot which, if not arrested, may so increase as in time to render the animal useless.

More fully to understand this; the reader should select an old horse shoe, and place it, foot-surface upwards, upon the end of the fingers of the left hand, holding the shoe evenly balanced towards the light, upon a level with the eye ; then place across the shoe a

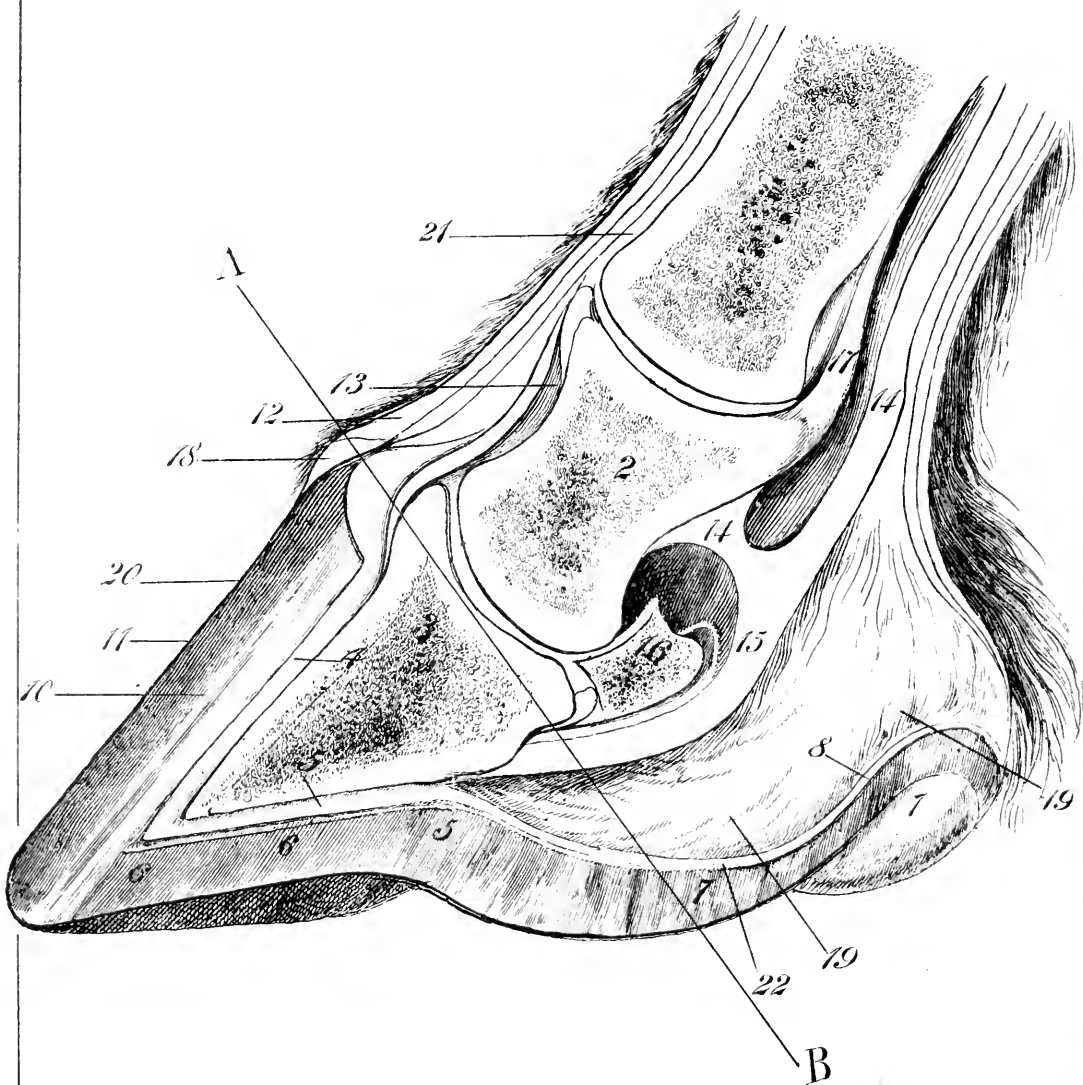
rule of sufficient length to reach from one side to the other. Now look under the rule, and observe what width of iron it rests upon. If the shoe be large and properly made, half an inch of level seating ought to exist around its foot surface; but if the shoe be not seated, the bevelling will be seen to occupy the entire web, or to extend from the outer to the inner rim of the shoe. If the latter, it will be readily seen that in the case of a foot regularly nailed to such a shoe (especially if the sole be flat), its integrity must in time succumb; the wall will be forced outwards, and the sole must become pumiced; and unless the system of shoeing pursued be changed, it is equally certain that the animal must become useless.

Curving the Toe.—One more essential—an essential the consideration of which we have purposely left to the last—is the curving of the toe of the foot, *to adapt it to a similar curve to be given by the farrier to the shoe.*

The question may be asked, Why this curve, and for what purpose given? The reason is important; and we shall endeavour to state our views fully upon the matter. If the reader can procure the forefoot of an unshod colt, that is, a foot which never has been shod, and place it upon a level surface (a board, for example), and hold the same to the light and at a level with the eye, he will observe the light passing between the foot and the board in a manner to show a curve of the foot at the toe. This fact is observable not only upon the foot of the unshod colt, but also upon the feet of horses at grass, that is, if such horses have had their feet for some time untrammelled with shoes. It may



Plate VI



be also stated that with many horses, if shod with shoes made perfectly level (in the first instance) from heel to toe, if such shoes be removed when worn out, and placed upon a level surface as above described, the shoe will also be found to be curved at the toe, with a space of sufficient extent to allow the light to pass between the board and the shoe. These facts we regard as *natural indications of what the farrier should do.*

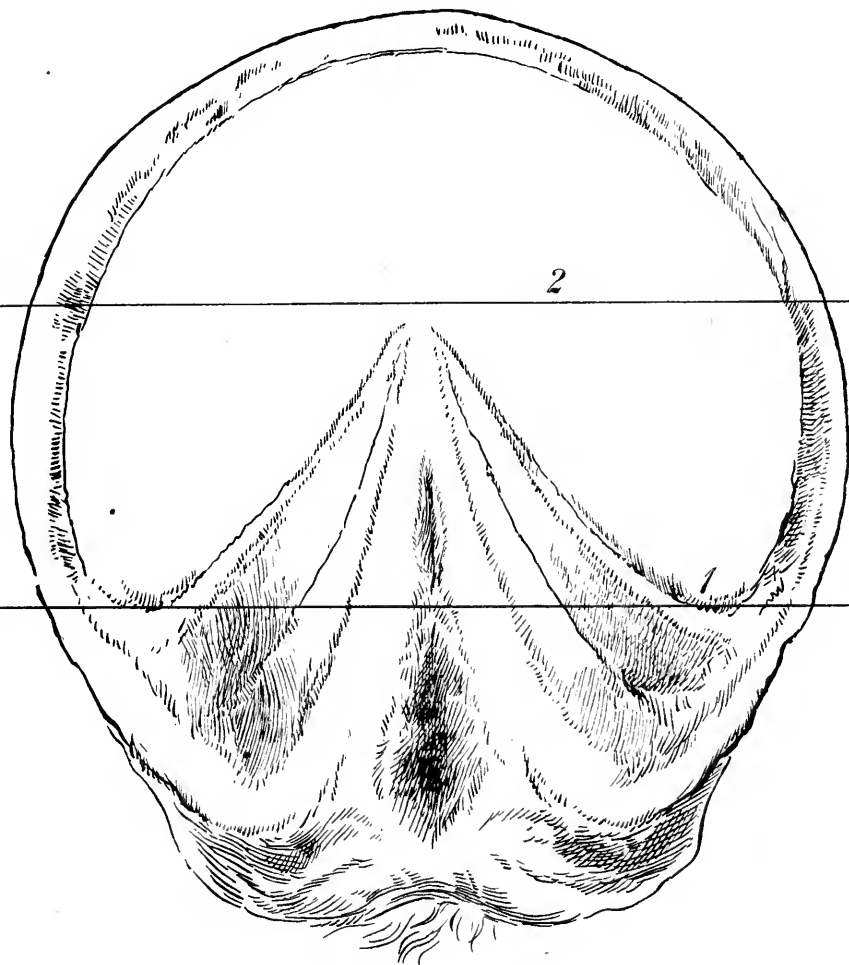
A more powerful reason, however, still exists why this curve should be given to the foot. The line A B (Plate VI.), upon which rests the diagram of the foot, will clearly illustrate the fact stated. Figure 6 is the toe of the foot, Figure 7 is the heel, 16 the navicular joint, 15 the curve of the tendon in its course over and behind the navicular bone 16, in passing to its insertion under the coffin bone 3. Now, in the act of progression, the heel, of necessity, requires to be frequently elevated from the ground. This elevation is mainly effected by the pulley-like action of the tendon in question; consequently, anything which tends to impede the free and easy action of the tendon is very likely to be a serious cause of injury to that structure. By retaining the foot at a level from 6 to 7 upon the line A B (see Plate VI.), it is clear that a greater exertion of the tendon is of necessity required to elevate the foot than would be the case if the foot was curved at the toe; and this we regard as a fact of the highest importance if we desire to maintain the foot in efficient health and usefulness. *The constant practice of placing upon the foot a shoe level upon its ground surface, from heel to toe, we regard as the most prolific cause of navicular disease—a disease, in its very nature, from the onset incurable.**

* See Plate IV., and explanation, to Figures 15 and 16.

From the curve given to the foot, we proceed to the consideration of

Curving the Shoe.—The peculiarity to be borne in mind of curving the foot and the shoe is this: the two curves require to be adapted exactly to each other. It is easy to adapt the foot and the shoe to each other, when both are level from heel to toe; in this case the weight of the limb, when placed upon the ground, is equally distributed over the shoe. Now, in curving the foot and the shoe, it is necessary that this equal distribution of weight should remain the same, or as nearly the same as practicable; or, as though the foot and the shoe were, so to speak, both level. If the curves are made too suddenly, the action of the limb will be materially altered; the foot will lose its grasp or pressure upon the ground, and the safety of the animal may be endangered. Perhaps the best rule to adopt in this case will be the following: let the farrier mentally divide the ground surface of the foot and the corresponding foot surface of the shoe into three equal spaces, similar to what is represented at Plate VII. The farrier should begin to curve the foot and the shoe a little in advance of line 2; the commencement should be extremely slight, gradually becoming more and more as he approaches the point of the toe (see Plate VIII., Figs. 1 and 2). The curve at the toe of the foot is obtained by a removal of horn from the space indicated in Plate VI. Having first procured the desired curve of the shoe, apply it hot to the level foot, mark where the curved portion of the shoe scorches the horn, then slightly scorch the hoof again, and in this manner proceed until the two curves are exactly fitted to each other. The

Plate VII.



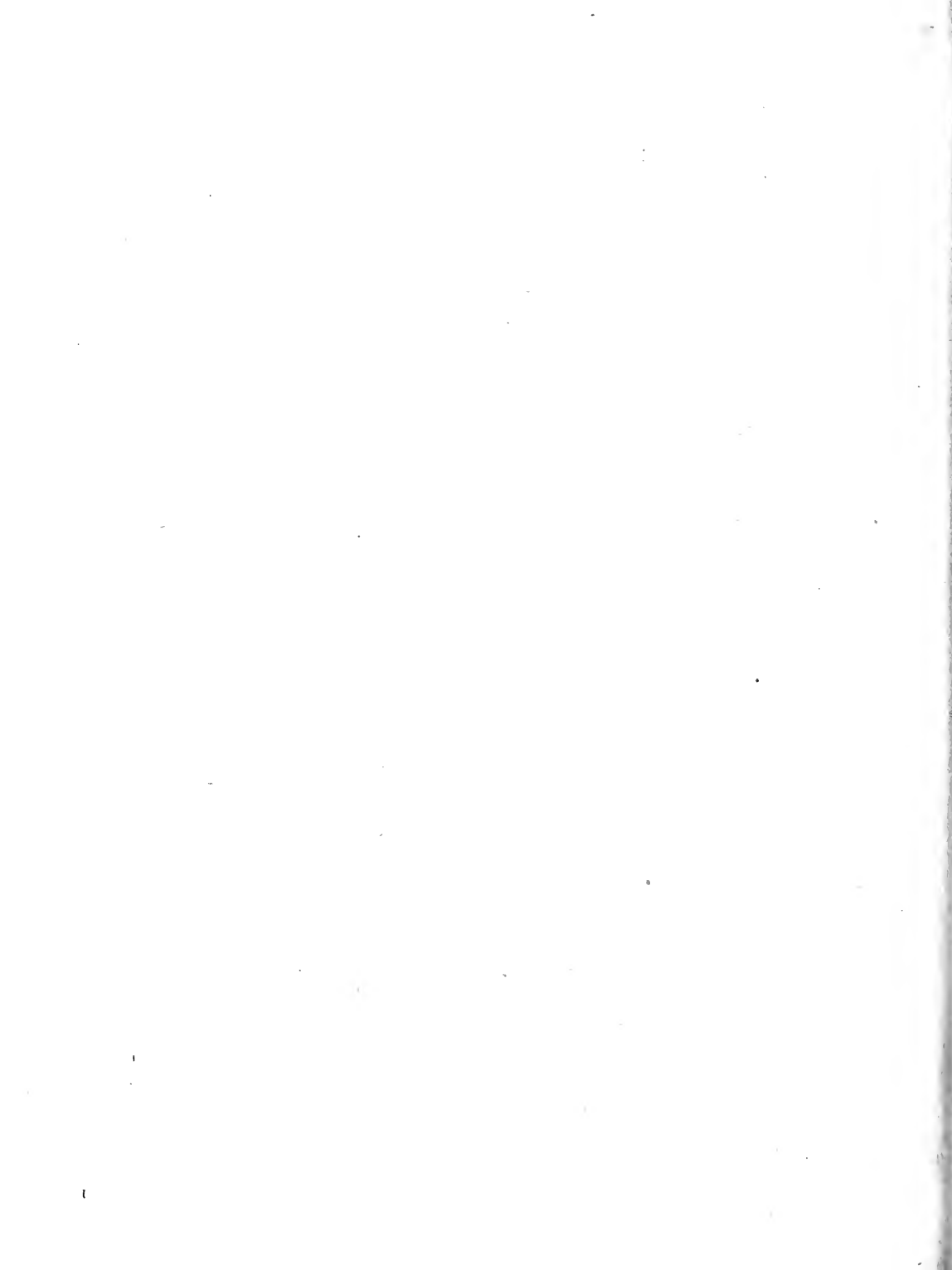




Plate VIII.

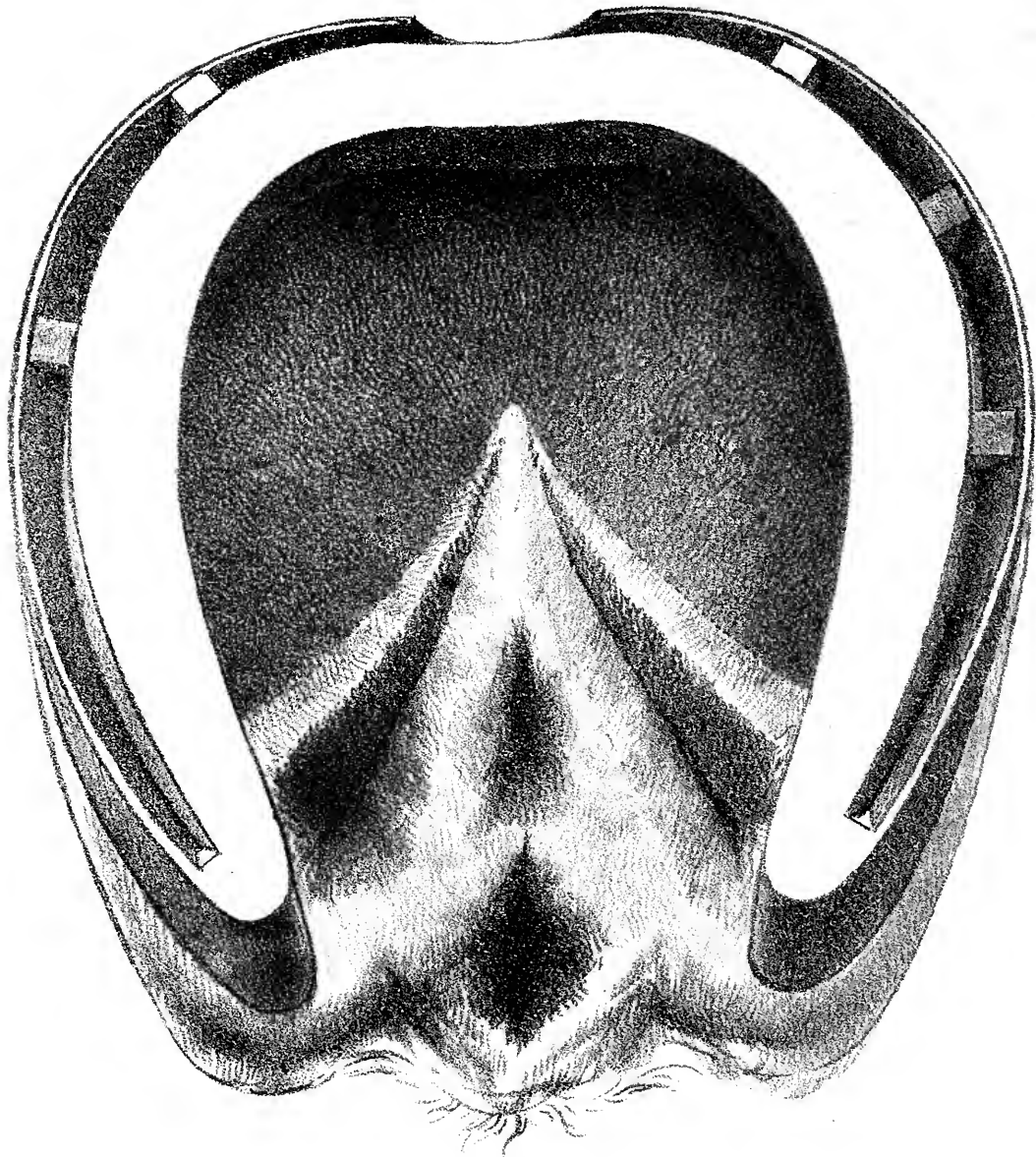


Fig. 1.

completeness of the matter may be at once known by the perfect fit and the perfectly easy appearance of the adaptation of the foot and the shoe to each other.

To curve the foot and the shoe properly requires practice ; but care and a right appreciation of the subject on the part of the smith will speedily give confidence, and that degree of skill necessary to its right performance. Plate VIII., Figure 1 represents the ground surface of the shoe, upon which is shown the necessary degree of curve at the toe. Figure 2 represents a front view of the foot, with the appearance of the shoe curved as directed, when the foot is upon the ground. It is not always practicable for the farrier thus to curve every fore foot. Feet that are flat, weak, and thin at the wall and the sole, cannot, as a rule, be so prepared. All other conditions of the foot, however, will admit of the practice. The curving of the foot and the shoe, and the proper adaptation of the two to each other, are perhaps, of all other operations connected with the art of shoeing, of the greatest importance with reference to the well-being of the foot and the usefulness of the animal.

Shoeing the Hind Feet.—The processes necessary to be undergone in properly shoeing the hind feet do not differ essentially from those already stated with reference to the fore feet. Still, there are peculiarities connected with the hind feet which require a certain degree of special consideration.

The great care and skill required rightly to shoe the fore feet are not so absolutely called for in shoeing the hind ones. In the first place, the hind feet, in the act of locomotion, are placed somewhat differently upon the ground ; they have not the weight to

sustain which is sustained by the fore feet. The hind limbs are the propelling powers; the fore limbs and fore quarters are the weight-receivers, in addition to the aid they render in the act of propulsion. The majority of horses place the hind feet flat upon the ground, and appear to progress with a sort of sliding motion; in proof of which it is very common to find the hind shoes worn level throughout, while those of the fore feet will be found worn most at the toe, and the anterior part of the shoe. The friction and consequent wear of the hind shoe is also greater than what is sustained by the fore shoe. As a rule, numbers of horses, especially cab and draught horses, require three pairs of hind shoes to every two pairs of fore shoes.

The navicular joint of the hind foot, although constructed precisely similar to that of the fore foot, cannot have the severe strain upon it which is exerted upon the fore foot; in proof of which it may be stated that while that destructive malady—navicular disease—is so common and baneful in its effects upon the latter, it is entirely unknown as a disease affecting the navicular joint of the former.

It is a rule to use shoes for the hind foot having greater thickness of iron at the toe, and also caulks at the heel, both of which will be found of great service if used under certain conditions. They are necessary to the draught horse, also to harness horses; also, when the limbs of horses are affected with spavin, curb, and many forms of weakness and debility affecting the joints, tendons, and ligaments of the limb, caulks aid in supporting the structures. Of the various kinds of shoe necessary to use of an especial kind, such as for the prevention of cutting, forging, and other common peculiarities of a like nature, we shall treat upon hereafter.

Plate VIII.

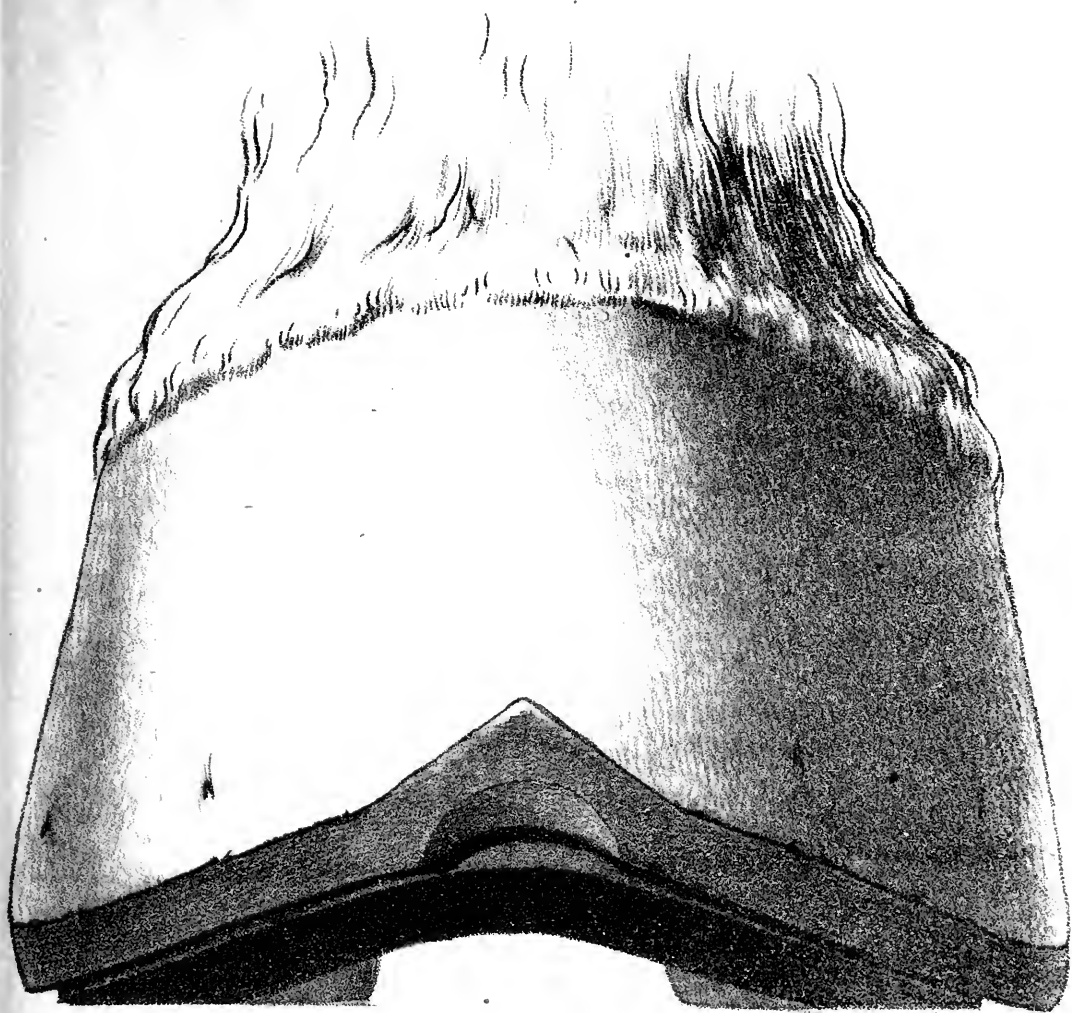
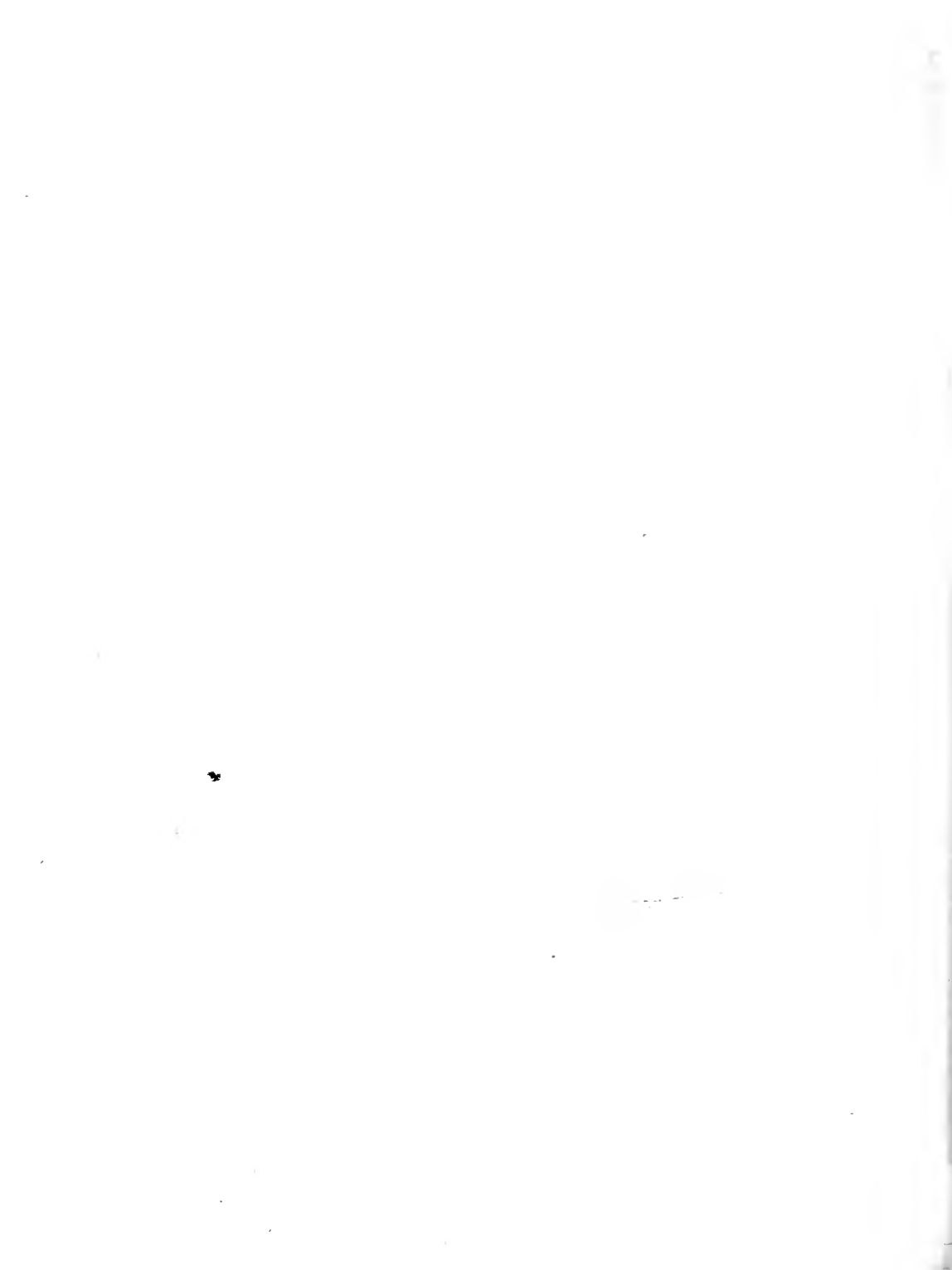


Fig. 2.

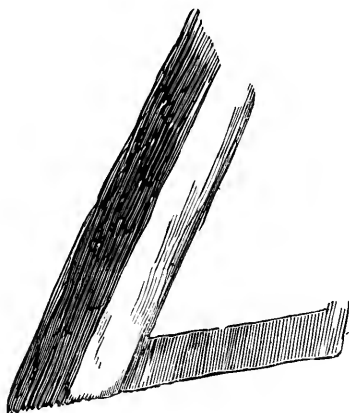


SECTION V.

NAILING THE SHOE TO THE FOOT.

THE art of properly nailing the shoe to the foot is one requiring great practical skill; it is an art which necessitates the use of two of our senses—viz., hearing and touch—to be highly and peculiarly educated. The skilled workman knows by the particular sound elicited, and the degree of resistive force offered by the nail, whether its direction be proper or not. A deaf man, or one of low sensibility in point of touch, is entirely disqualified to nail shoes upon the feet of horses. We have stated at page 17, Section IV., that the nail holes in all cases should pass directly through the seating of the shoe. When the nail holes are properly struck, and the shoe fits the foot accurately, the task of the doorman is comparatively easy. On the other hand, when the nail holes are what the smith denominates coarse—that is, some struck in the seating, and others in the bevelling of the shoe, and at irregular distances from each other; or, if the workman be drunk at the time, it is from causes such as these that driving the nail into the sensitive tissues of the foot is most to be dreaded. A nail, when properly driven, should be forced straight from the fingers of the smith to

its proper destination in the hoof. The question may be asked, what is its proper destination? The annexed figure fully illustrates what part of the hoof the nail should occupy. The figure



represents a section of the wall of the hoof; every hoof of a dark colour, when divided perpendicularly, will exhibit a dark and a light portion immediately connected. The dark portion in all dark hoofs is of a dark grey colour; the lighter portion is a light yellow coloured substance, and is generally designated by the farrier, "The Lemon" of the foot. In the generality of feet (excepting those of a white colour), the dark and light portions are well marked, and distinctly visible. In white hoofs this line of separation from the oneness of colour is not so visible; the thickness of the horn, both in its light and dark portions, is greatest at the toe, a provision which appears as though purposely intended for the toe of the foot to be curved. The wall gradually diminishes in thickness from the toe to the quarters and heels; it is the narrowest

at the inside quarter and heel, so that the more close or high towards the heel the doorman drives his nail, the more danger he incurs of inflicting injury. A nail in its course should not pass through the lemon of the foot; the more strictly such course is confined to the dark portion of the wall, the less likely is the nail to prove injurious. A prick arises from the nail puncturing the blood vessels, which are situated immediately behind the yellow coloured substance of the hoof; the nail entering the lemon merely, generally causes pressure upon the laminæ, which, in heavy bred horses, three or four or more days may elapse before the injurious effects are visible, and when manifested, if promptly removed and the foot properly treated, no serious consequences may ensue; but if the foot be pricked, the evil effects, as a general rule, are visible at once. The most sober, careful, and skilled workman may prick a horse; it is almost impossible at all times to avoid it, especially where the hoof is very thin, and the animal extremely restless at the time of being shod. If the generality of those who own horses knew of the narrow space in which the workman is compelled to confine his nail in its course through the foot, they would marvel that such accidents are not more common.

Number of Nails Requisite to Each Shoe.—This is a somewhat vexed question, and many opinions prevail as to the proper number of nails necessary to secure the shoe to the foot. Some writers strongly advocate five as being the proper number; others six and seven. The patentee of the “Goodenough* Horse Shoe”

* *The Goodenough Horse Shoe*: A patent shoe which during the past eighteen months has received an amount of advocacy and praise marvellous to hear; a shoe which a friend of mine facetiously

would appear to advocate the use of eight nails, as each shoe of this kind contains eight nail holes. The shoe in question, in spite of all the advocacy of late bestowed upon it, must sooner or later disappear from every establishment which may have used it: it cannot, therefore, be taken as a criterion of the number of nails best to use. The rule is to use as few nails to each shoe as possible; and it is surprising, if the foot be a good one and the shoe accurately fitted, how few nails will suffice. Much, therefore, depends upon the goodness of the wall, the tenacity of the nail, and the accuracy of the fit.

In determining this question, a great difference also exists in horses as to the amount of wear and tear which the limbs and shoes undergo. Where the feet are put down unevenly or violently, or when the wearing of the shoe is greatest at one particular part, such as the outside quarter of the foot or at the toe, or upon the inside quarter, the nails in these cases have unequal force to sustain, and possibly more nails as a rule are required, and the shoes more frequent attention. Heavy draught horses require more nails to each shoe than are required for the shoes of lighter bred horses.

One great essential, we may again repeat, towards a shoe being well retained to the foot, is accuracy of fit. It matters

observed ought to be called the "Badenough Horse Shoe." The "Goodenough" shoe does not differ in any respect from an ordinary one, save in this: it presents upon its ground surface five cogs, or small iron prominences or lumps, which, for a short time (so long as these cogs or lumps remain free from wear), aid in the prevention of slipping; but when these cogs are worn, the shoe is simply an ordinary one. The shoe is perfectly level from toe to heel, and it is highly objectionable on this account. If curved at the toe, and the cog at this part removed, the shoe in question would be greatly improved.

little, however, how accurate the fit, if the nails are bad ; while, on the other hand, it matters little how good the nails, if the fit of the shoe is bad. It is a simple matter (assuming that the fit of the shoe is good and the nails are good) to work a horse with each shoe secured by five nails, and should this number be found insufficient, others can be added according to the necessities of the case. Five nails to each shoe will be found totally inadequate for draught horses. Eight nails may be found necessary to each shoe for this class of horse.

The best plan for a gentleman to pursue is this : first, he should know whether the farrier he employs be a skilled workman or not ; if the former, he should, by a few experiments carefully conducted, determine this question for his own satisfaction, and when determined should follow his own rule in the matter.

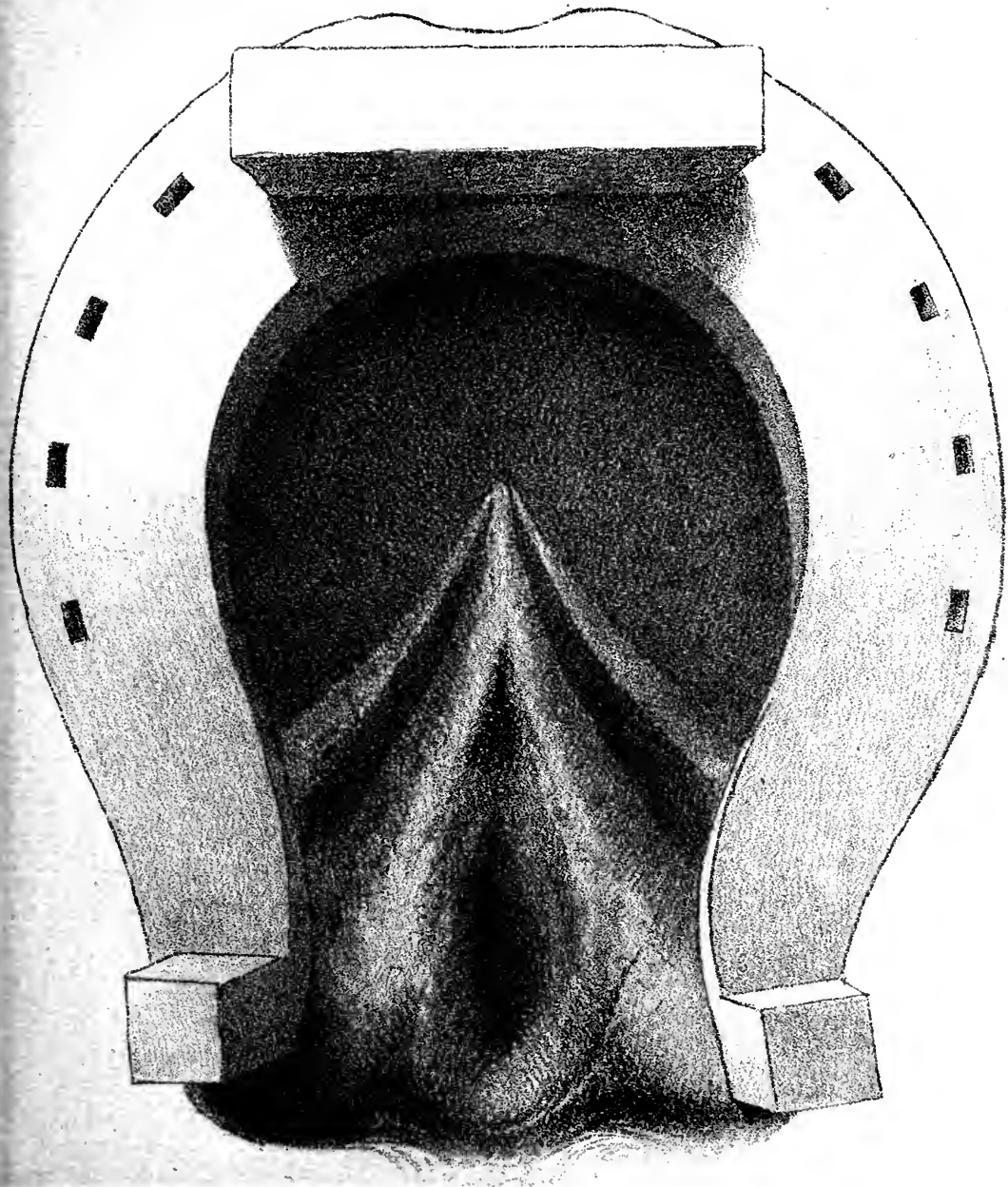
SECTION VI.

ON SHOEING THE DRAUGHT HORSE, AND ON CERTAIN SPECIAL FORMS OF SHOE.

PLATE IX.

SHOEING the Draught Horse.—In the numerous treatises, essays, and monographs, which, from time to time, have appeared in our language in relation to the farrier's art, it is somewhat singular that not a single line (so far as we are aware) is to be found having reference to shoeing the draught horse. The feet of the heaviest horses of this class are exceedingly large, and are generally flat in form. Concave-formed feet are occasionally met with, but the flat form is the one most common. The consequence is, that draught horses require a larger shoe than horses of superior breed; also, a shoe with a broader web, to afford more cover and protection to the sole. In the South of England draught horses are commonly shod with what is called a broad-webbed, wedge-heeled shoe—that is, a shoe plain from heel to toe upon the ground surface, but becoming gradually thicker towards the heels; while, in most other parts of the kingdom, the foot of the draught

Plate IX



horse, when shod, may be said to stand upon a tripod, viz., a caulk to each heel of the shoe, and a strong toe-piece attached to the front part of the shoe, similar, in fact, in every respect, to what is represented in Plate IX. Throughout Lancashire and Yorkshire this is the only form of shoe in use for draught horses. Many attempts have been made from time to time to introduce the South of England shoe into Manchester, but without avail; experience has proved, over and over again, that the best form of shoe for heavy draught horses is the one figured at Plate IX.

The strong piece of iron (the toe-piece) welded across the toe of the shoe, enables the animal, when moving a heavy load, to press the earth with immense force. The necessity for the toe-piece creates the necessity for the caulks; a lighter form of shoe might break or bend to the force applied, or the nails might be wrenched from the foot, and the wall torn away. The great exertion required also necessitates great width across the shoe; this is usually done by making the outside heel of the shoe of greater length than the inner heel and also by bending the outside heel in an outward direction, or what is commonly called "donkeying the heel." More than ordinary care should be exercised by the farrier in giving a broad level seat to this form of shoe. It is a common practice to bevel the foot surface of these large shoes from the outer to the inner rim of the web; the consequence is, that the feet of draught horses speedily become pumiced,—not one aged draught horse in fifty having naturally flat soles, but will be found with more or less descent of the sole, from the gradual operation of the cause in question.

A set of shoes for the largest sized draught horse, a horse

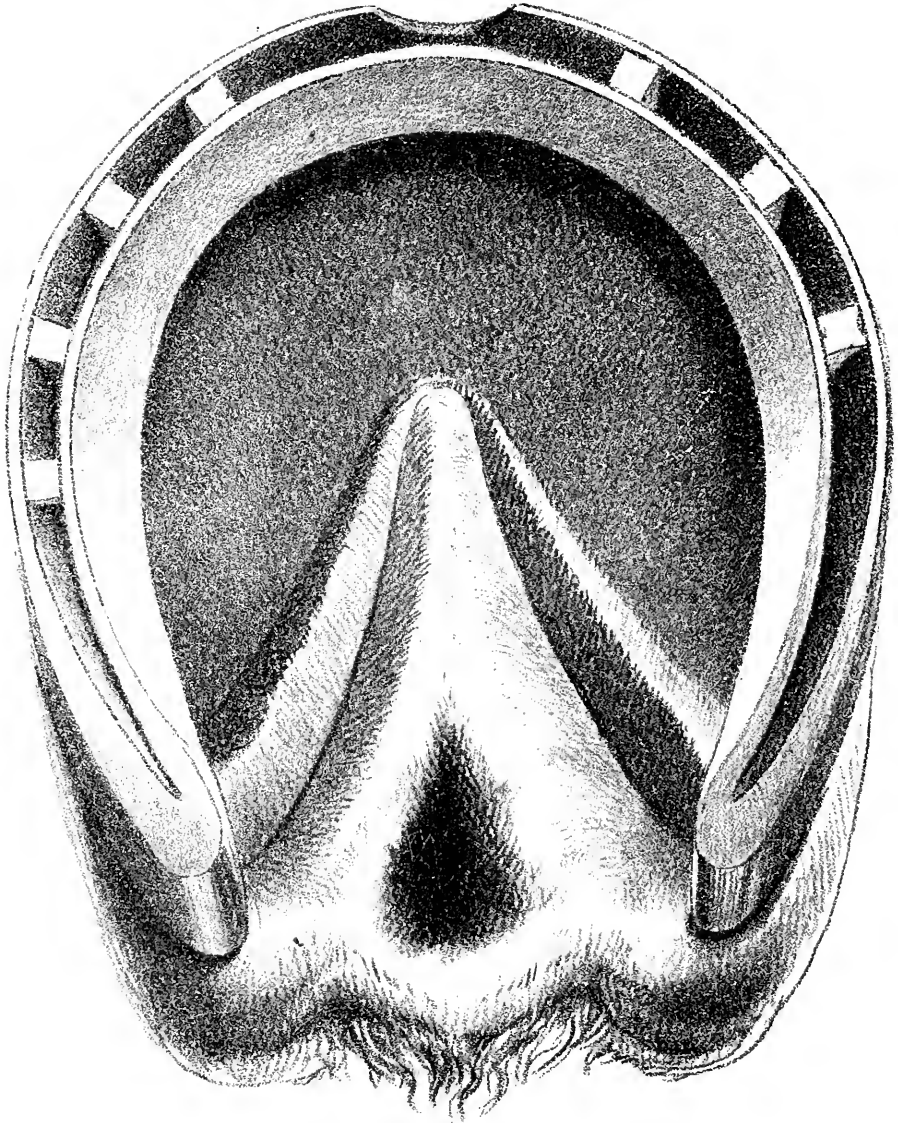
weighing from fifteen to twenty hundredweights, are rarely less (we speak of the Manchester shoe) than sixteen or eighteen pounds weight; they are made out of bars of iron $1\frac{1}{2}$ inches wide by $\frac{9}{16}$ ths of an inch in thickness. The shoe, when formed and hammered out, will average a little over $\frac{3}{8}$ ths of an inch in thickness; width across the web, at its widest part, $1\frac{3}{4}$ inches.

The toe piece is made of iron one inch in thickness; the heels are made by turning the metal upon its own substance, and they are generally about one inch and a quarter in depth. This shoe is usually secured to the foot by eight or ten nails. A curve cannot well be given to the toe of the shoe to be efficient, but the same practical result is obtained by having the caulks a trifle higher or deeper than the toe piece; by this means the lift from toe to heel is far less severe than if the shoe was level from toe to heel. The nail holes are always punched. It is more common amongst draught horses to wear the shoes in an irregular manner than amongst horses of a higher breed. Sometimes the wear is almost exclusively confined to the outside quarter; sometimes to the inside quarter; while, in other cases, the wear is more peculiar still, viz., to the outside quarter of the fore feet, and the inside quarter of the hind feet; or the reverse of this. Where these peculiarities exist it is easy to provide against them to some extent, by affording greater thickness to the shoe at those parts, and also by the provision of additional clips. Where the wear of the shoe is most heavy a clip may be necessary, the use of which is to prevent the foot from leaving the shoe.

To horses that are coarse bred and bulky in stature, where the roads are long and heavy, the country hilly, and the streets



Plate X.



are paved with hard slippery granite, the best form of shoe for draught horses is, without doubt, the Manchester shoe.

PLATE X.

Hunting Shoe.—This form of shoe possesses two properties highly valuable to horses engaged in the chase : first, lightness ; and, second, it will not suck, or become attached to the ground in wet, heavy, or clayey soils. The shoe, as shown in Plate X., is bevelled upon its ground surface, from where the inner edge of the nails terminate to the inner edge of the shoe. The foot surface is level. This shoe is best adapted to feet of a concave form ; it will also answer equally well for feet of a semi-concave form. In feet that are very flat this shoe will not be found suitable ; first, because it will not afford sufficient cover to such feet ; and, second, because it could not be adapted to flat soled feet. A clip is required at the toe, and also one at the side of the foot, with horses whose tread is unequal. The fore foot should also be slightly curved at the toe. This form of shoe will also be found very serviceable for light hack and harness horses, having good sound concave or semi-concave feet.

Great care is required in nailing the shoe to the feet of hunters. Each nail should be driven well home ; the clencher should be left a little longer than usual, they should be well turned over, and hammered flat to the wall, and not touched with the rasp. Horses in the field have to encounter tough, boggy, and clayey soils, and, unless the shoes are well secured in the manner described, they are certain to be drawn from the

feet, and the horse may be disabled in consequence. When the clenches are left long, the feet require more frequent examination.

PLATE XI.

Shoes for Cutting, Striking, Speedy-Cut.—Striking one limb against its opposite is a common defect in horses. In some instances it arises from debility; in others, from malformation of the feet and limbs. It is common alike to fore and hind limbs. When the defect is confined to the hind limbs, it is called “cutting” or “striking;” if confined to the fore limbs, “speedy cut.” Speedy cut is far more dangerous than cutting or striking; it is more dangerous inasmuch, as when it occurs, both horse and rider may be brought in a moment with violence to the ground. The defect, whether existing in the fore or hind limbs, requires a similar course of management; so that what is stated respecting the remedy is to be regarded, in a general way, as applicable to both.

Before proceeding to remedy the defect, by any alteration of shoe, it will be well to know the precise part of the foot which may inflict the blow upon its opposite. To ascertain this, adopt the following simple method: first, wash the legs and feet carefully, and when the hair is dry, rub upon that part of the limb injured a portion of chalk, after which briskly exercise the animal over clean level ground; and, in a short time, observe if the striking foot be marked at any particular part with the chalk.* A

* White chalk for dark-coloured legs; red for light ones.

Plate XI.

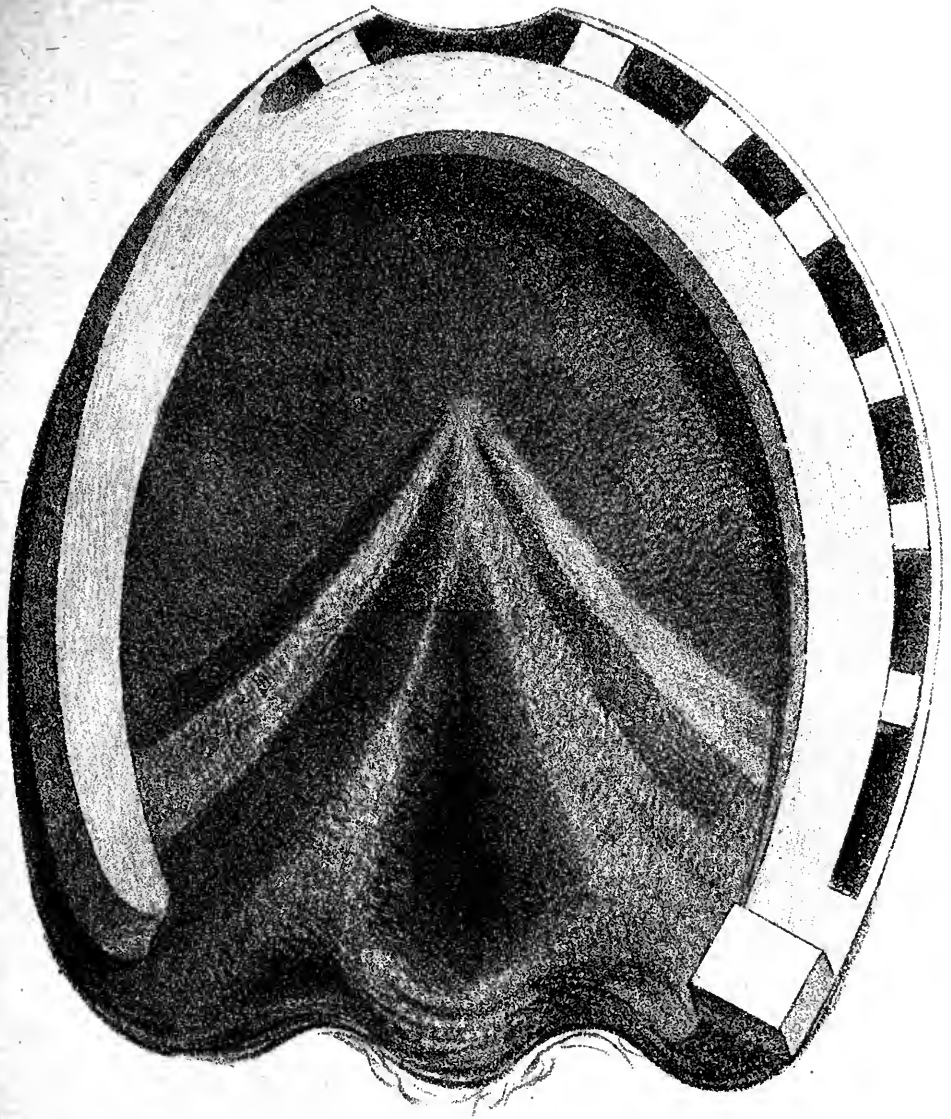


Fig. 1.





Plate XI.

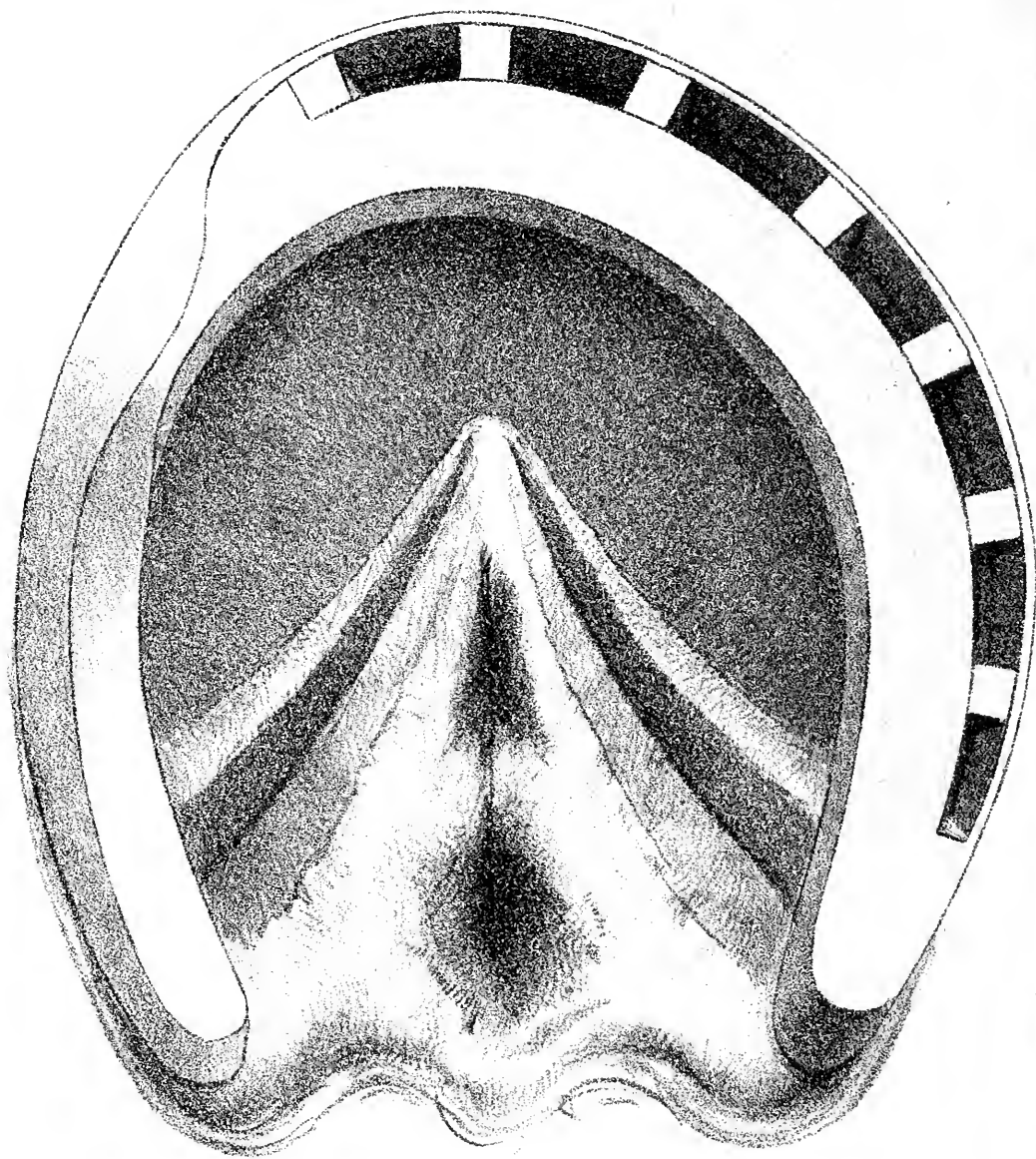


Fig. 2.

knowledge of the precise part inflicting the blow may enable the farrier to remedy the defect at once. To prevent confusion, it is best to describe the shoes figured 1 and 2, Plate XI., separately.

Figure 1 is the common form of shoe in use to prevent cutting of the hind limbs. The foot surface of the shoe is flat; it is caulked on the outside quarter; and it possesses a clip at the toe. It is usually secured to the foot by six or eight nails, which are attached to the outside half of the foot, with one or two at the toe. (See Plate XI., Fig. 1.) The whole of the inside quarter is free from nails, as represented. The inside half of the shoe is narrow, and its upper border is made to fit with the greatest accuracy to the inside of the wall. From its line of junction with the wall to its ground surface (the part destitute of nails) the shoe is bevelled more or less, according to circumstances.

Fore Foot Shoe.—The fore foot shoe is similar to the one described, with this difference only: it is seated at the foot surface; the upper and inner edge of the shoe is made to fit the edge of the wall with the greatest possible accuracy. From the inner and superior border of the shoe to the ground surface is more or less bevelled, according to the necessities of the case. Sometimes the inside half of this shoe is made thicker than the outer half, so thick, in fact, as to very slightly tilt the foot to one side; in other cases it is made thinner, so as to very slightly tilt the foot inwards. Either of these plans may succeed in the object desired; experiment alone, however, can determine which of the two.

Figure 2 is a peculiar shoe; and is generally used for a fore

foot. One half of the foot surface (the outer half) is seated; the inside half of the shoe is bevelled, from its inner border to where it rests upon the ground, to the utmost extent possible. The inner surface of the shoe is so much bevelled as to give the shoe the appearance of passing right under the foot. The ground border of the shoe is made deeper at one part, as shown in Figure 2. Sometimes this form of shoe will succeed when all other methods may have failed.

It is, perhaps, difficult to explain how the shoe in question prevents speedy cut; the reason may be as follows: From the fact of one part of the inside half of the shoe being deeper than the other portions, the shoe, when nailed to the foot, will cause the fore limb to rest, as it were, upon a mere point. This may give the animal the impression of insecure foothold, the direct effect of which will be to cause the horse to place the fore limbs wider apart; and thus the dangerous act of striking may be prevented.

PLATE XII.

Hind Shoe to Prevent Forging.—There are two forms of shoe, embodying the same principle, in frequent use to prevent forging, either of which, if resorted to with care, may do much to remove the disagreeable habit in question. First, the diamond-toed shoe, as represented at Plate XII., Fig. 1; this shoe, from the peculiar form in which the metal is worked, affords two things, viz., the largest space for the toe of the foot to rest upon, and also the least amount of surface to strike against the shoe of the fore foot.

Plate XII.

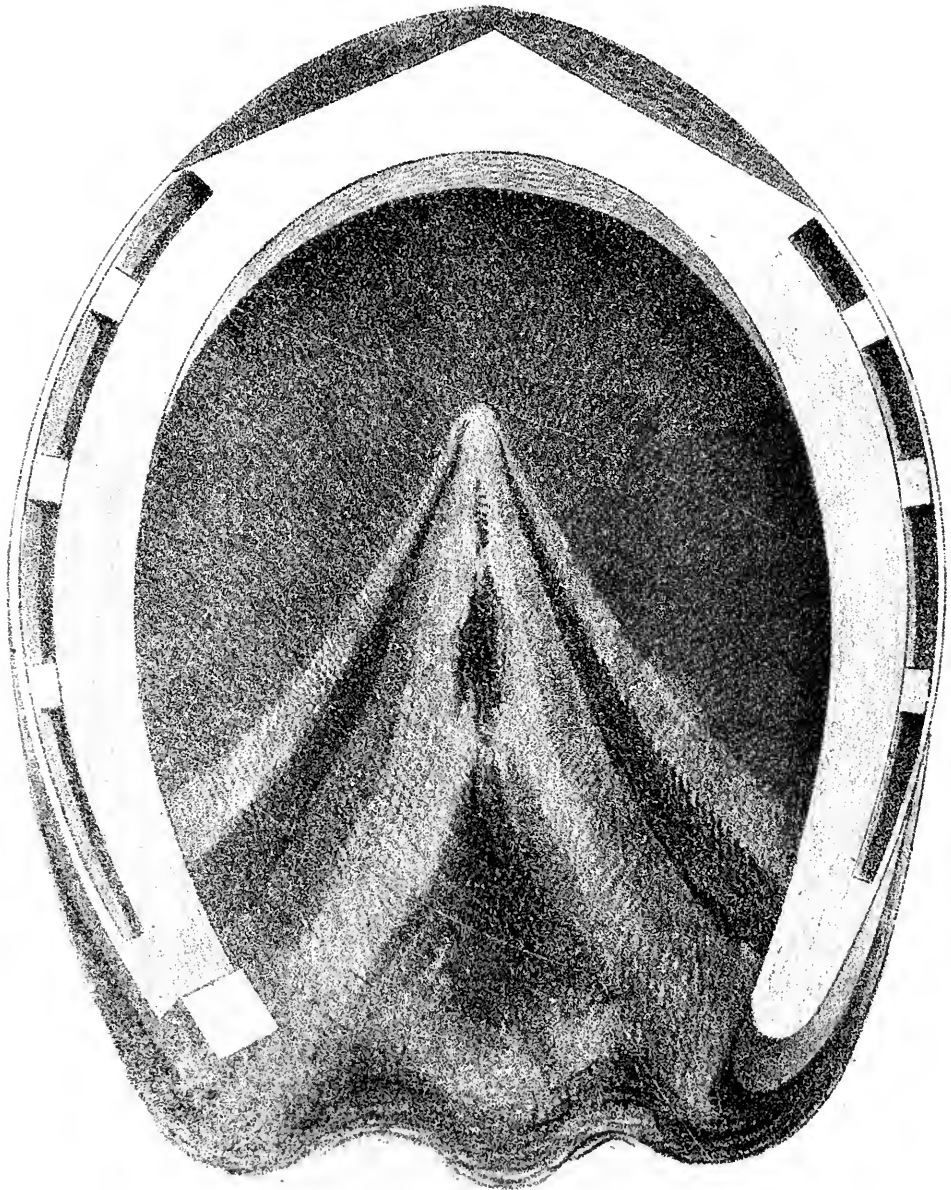


Fig. 1.

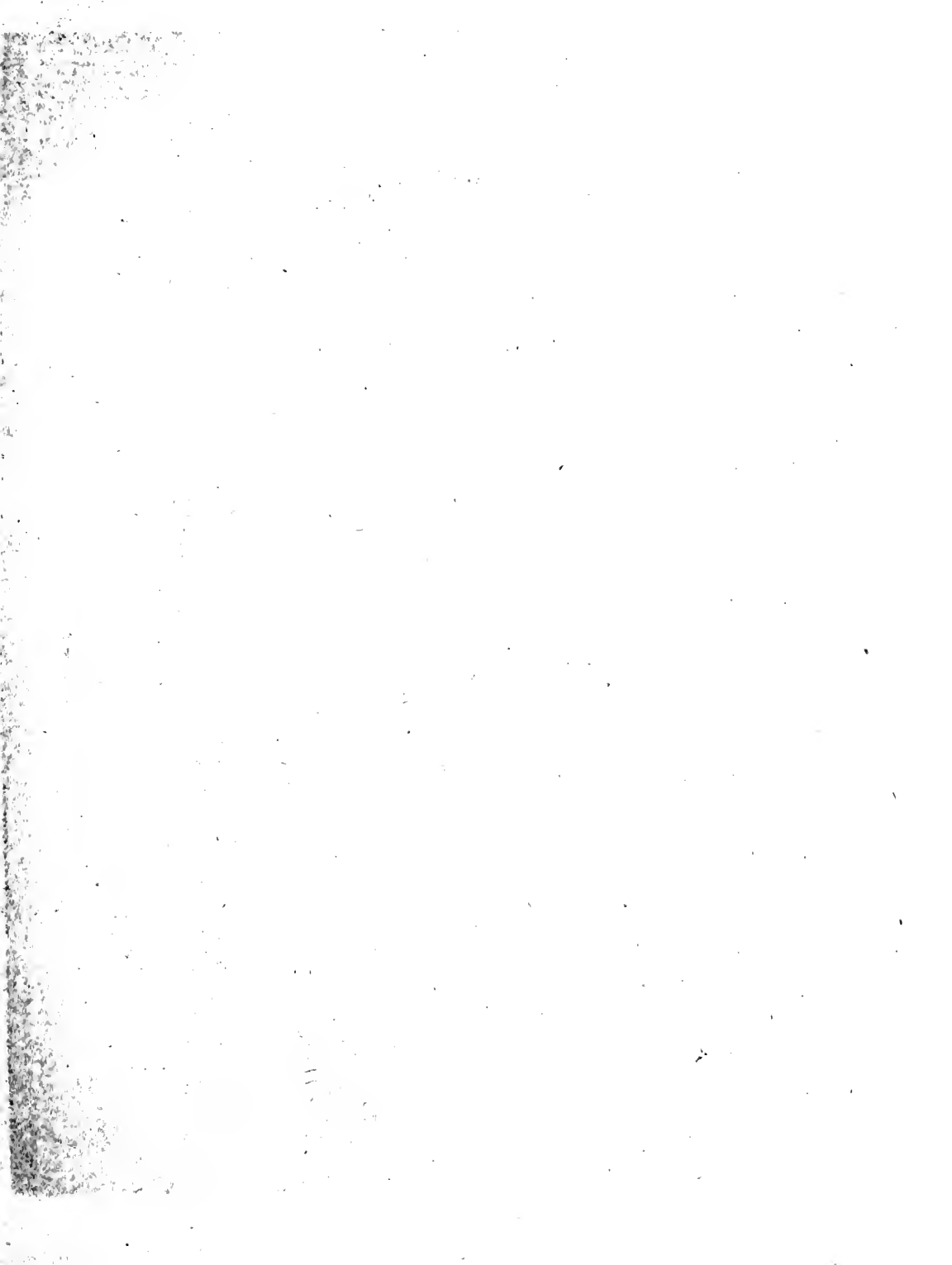


Plate XII.

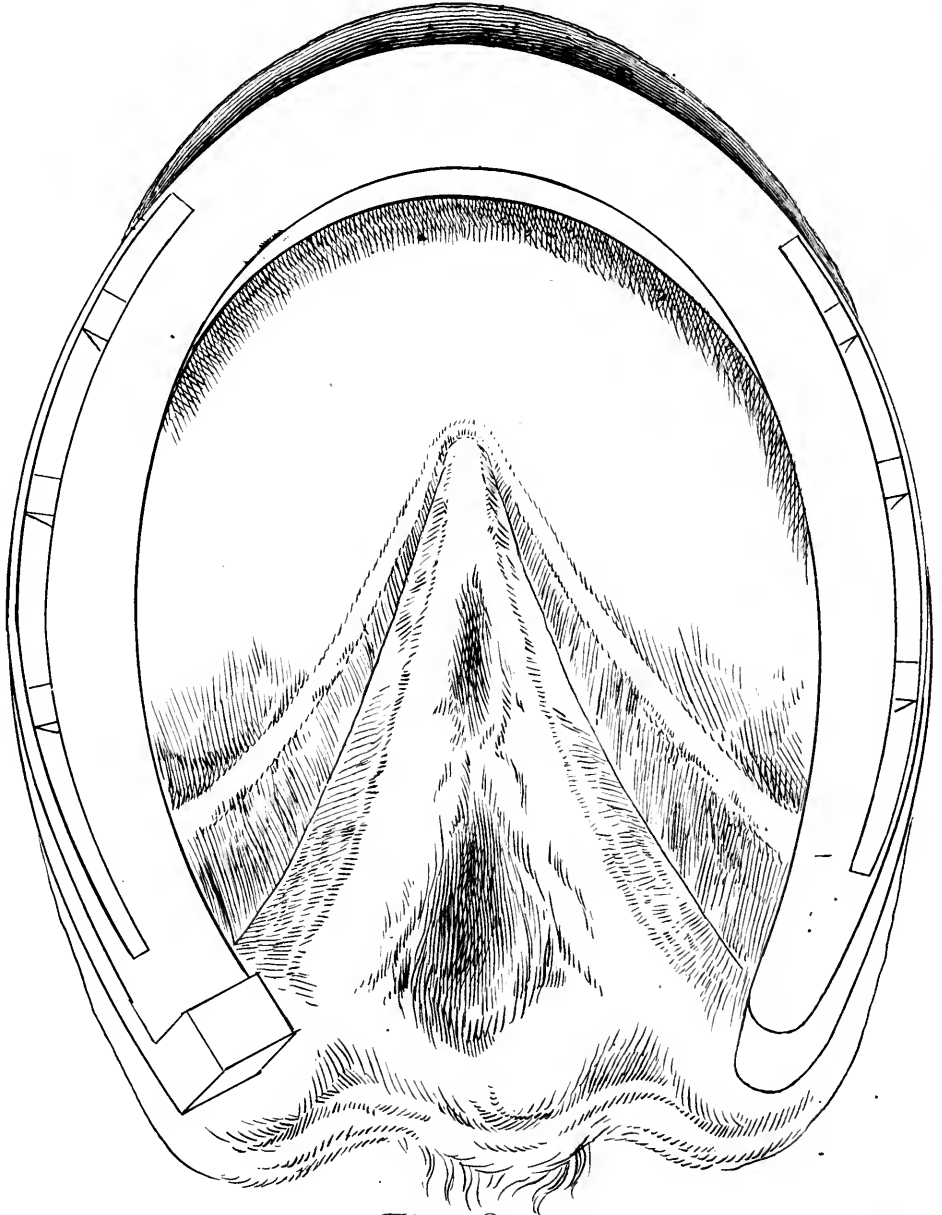


Fig. 2.

The diamond-toed shoe is made of the form given, with a clip on each side, situate in a line parallel to the nails nearest the toe. The use of the clips is to prevent the foot being forced over the shoe. One or two caulks may be added according to the circumstances of the case: if the animal cuts as well as forges during locomotion, one caulk only should be given, and that at the outer heel; if the action, however, is such as to place the hind feet sufficiently apart to prevent cutting, a caulk may also be placed upon the inside heel. The shoe is secured to the foot in such a way as to leave the toe projecting over or beyond the diamond part of the shoe; by this means the horn is made to strike the fore shoe instead of the hind shoe, and thus the clicking sound is entirely prevented.

The other form of shoe, Fig. 2, Plate XII., is precisely the same in principle as the shoe described above. In this shoe the toe is left round. It has two clips—is secured to the foot by six nails, and is so fixed to the organ as to cause the toe to hang over the shoe in the manner explained above, and as shown at Fig. 2, Plate XII.

Clicking, or forging, is a habit arising more from causes of a nature which may be regarded, generally speaking, of a temporary kind than otherwise. Short-stepping horses, having low action, rarely or ever forge; the same may be said where the hind limbs are thrown wide apart during rapid motion; in cases of this kind, the tread of the hind feet shoes will be found outside the tread, or the impression left upon the ground by the fore feet shoes. Young horses, having free bold action, generally forge when forced upon their speed, and will continue to do so if

carelessly ridden, or until properly trained and well handled. It is seldom that aged horses forge. Much may be done by a good rider or driver to prevent the habit, by riding or driving young horses well up to the bit. Shorter steps and quicker movement of limb, as well as attention to the shoeing, are the necessary essentials to cure the evil.

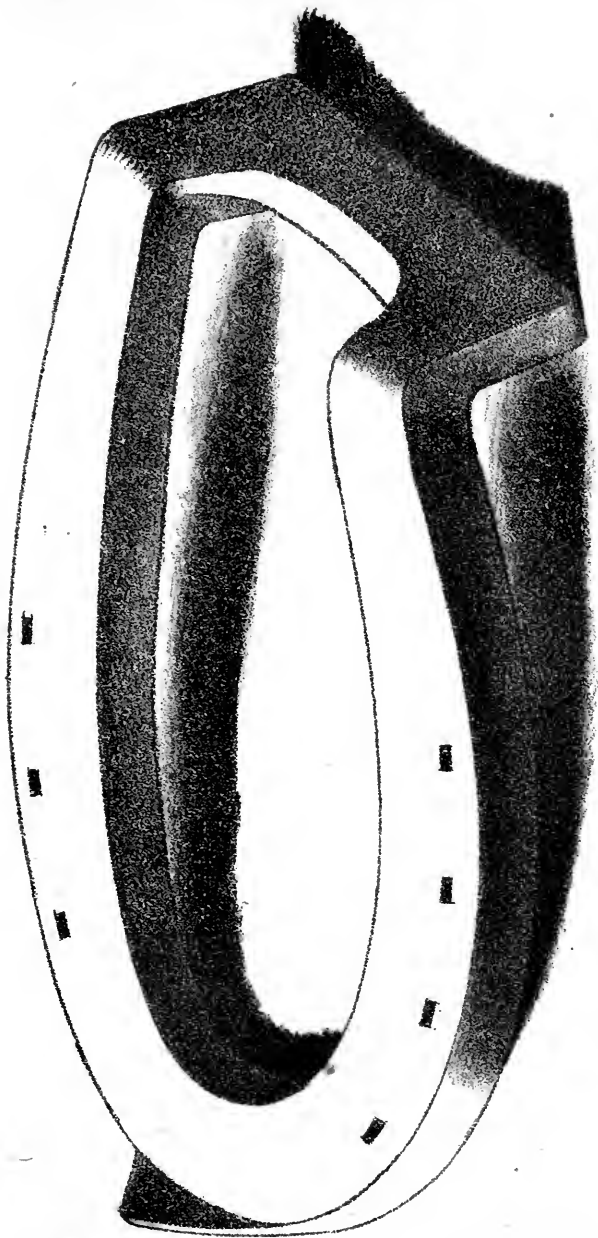
PLATE XIII.

High-Heeled Shoe.—The high-heeled shoe is the kind of shoe represented in Plate XIII. Its application to the foot as an adjunct in the treatment of certain forms of lameness and disease of the feet and limbs will be found of great value; it may be used with advantage in acute navicular disease, sprains of the fetlock joint, also of the back tendons, also in diseases and injuries to the knee, hock, elbow, and stifle joints, in shoulder lameness, and, in short, all sprains and injuries of the active tissues and organs of locomotion.

This shoe, when placed upon the foot, acts beneficially, in consequence of the support it affords to the tendinous and ligamentous tissues, especially such as are situate at the back of the limb. The heel being elevated, and so maintained without any exertion on the part of the animal, time is thus afforded for curative measures to exert their full beneficial effects.

In the construction of this shoe, the following essentials should be observed :—

Plate XIII.



1. Make the shoe as light as compatible with the weight and strength of the horse and the foot to which it may be necessary to affix it.
2. Make it strong, and all its parts secure.
3. Make the heel (the part raised) to slant a little backward, as shown in the plate; this slant of the heel prevents the foot from being suddenly as it were jumped up, and thus throwing the foot into a painful position. By slanting the heel of the shoe backward, the heel of the foot is raised easily and gradually, and so maintained without pain or inconvenience to the patient. The slanting of the heel is attended with the necessity of causing this part to be made a little longer in order to obtain the desired altitude of the heel. It is clear the more the heel of the shoe is slanted backward, the lower the heel of the foot will become; in most cases the altitude given to the heel of the shoe should be from one and a half to two inches; the higher it may be necessary to raise the heel, the longer the shoe will have to be made from toe to heel, in order to give the gradual slant to the foot.

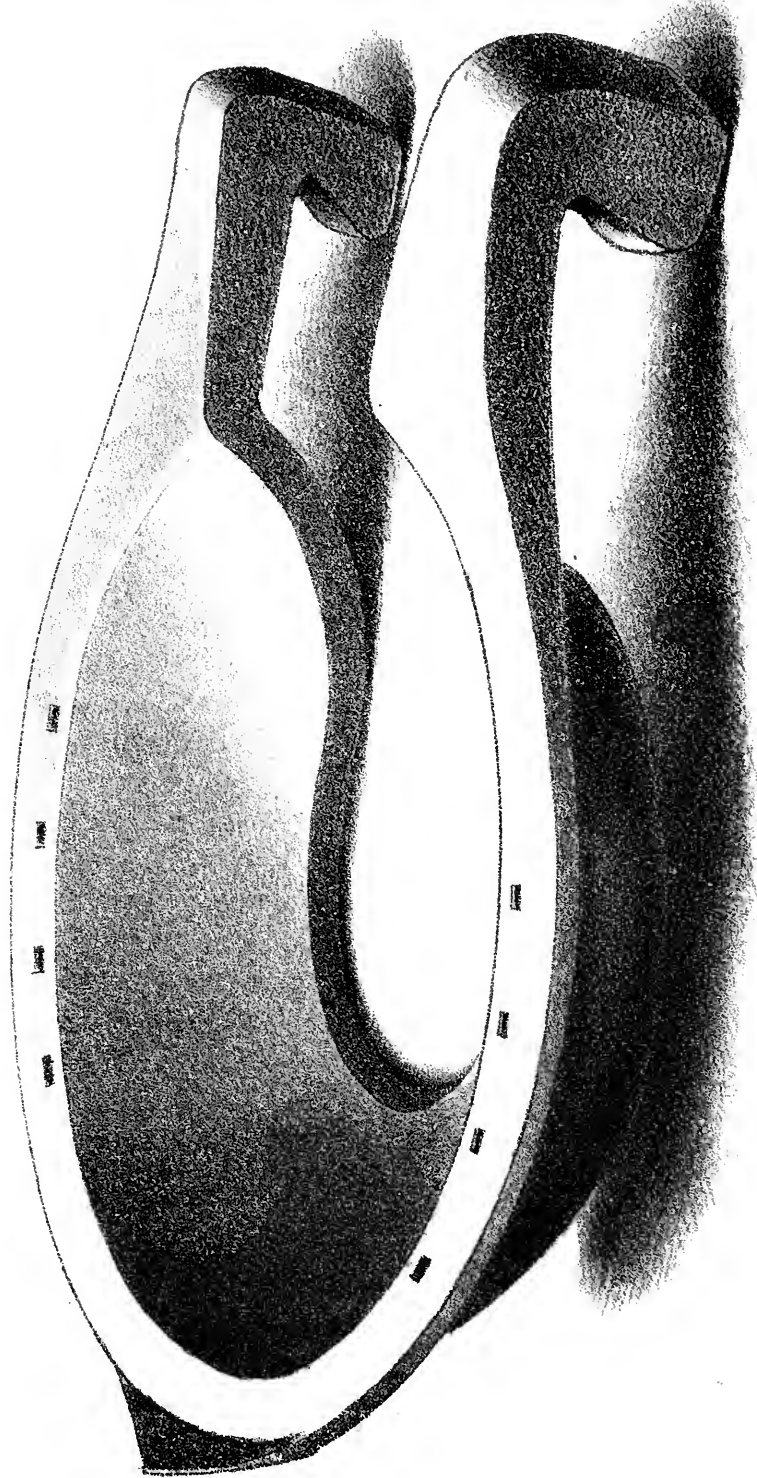
One peculiar but foolish prejudice which frequently operates against the use of the high-heeled shoe is this: ignorant people believe that by securing such a shoe to the foot of a lame limb, it will cause the muscles and tendons of the limb to grow shorter—an idea so absurd in its nature, that unless we heard it repeated so frequently and vehemently as we do, we should not deem it

worthy of notice. The first essential towards the cure of a sprain, whether severe or not, *is rest to the part injured*; and the shoe in question is the best and most simple mechanical appliance we possess for the purpose.

PLATE XIV.

Shoe for Pumiced Feet, or Box Seated Shoe.—This is a form of shoe difficult to make, and requires a workman to undertake the task. *When properly made, it should have a seating worked perfectly level from toe to heel, for the wall of the foot to rest securely and easily upon; and between the inner border or inner rim of the seating, and the inner rim of the web of the shoe is a deep hollow space or concavity, of a capacity and extent proportioned to the convexity of the foot to which it may be necessary to secure such a shoe.* In some cases this concavity of the shoe may be required to be one inch or more in depth at its deepest part, to receive the convex sole and contain it in a way it may not suffer from pressure. With this form of shoe skilfully applied many horses, otherwise incapacitated for work, may be made to travel and work with comfort; but unless the shoe be properly made, the evils sought to be remedied by its use will in all probability be aggravated. Few country farriers understand how to make it, and when necessity compels them to try, instead of the shoe described, they produce one which is simply bevelled upon the foot surface over the whole web, or from the outer to the inner rim of the shoe, and the consequence is, when such a shoe is nailed to a pumiced foot, the evils sought to be remedied are slowly but surely increased, so long as such a piece of ill-

Plate XIV.





constructed metal may be continued in use. We have elsewhere fully treated upon the destructive consequences which in time will be produced upon the foot by a shoe when merely bevelled, or without a level seating in connection.* It is to remedy the defects and disastrous results established within the foot after the prolonged use of such a shoe, that the box-seated shoe now described is required. The seating of the concave shoe will require to be from three-eighths to half an inch in width, according to the necessities of the case; the nail holes, as in all other shoes, should be punched through the centre of the seating. It is generally necessary to use leather soles in association with the shoe now described.

Bar or Round Shoe.—This is a form of shoe so well known that it is all but superfluous to describe it. It should be carefully seated, and the bearing surface made perfectly level from heel to toe, and, when not used for any special disease of the foot, of a temporary character, it should be curved at the toe in the way described at page 22. It is valuable to use as a regular wearing shoe to fore feet that are thin at the sole, and with low and weak heels. It is also of value in cases of side bone; also to use when the foot is affected with canker; and when required for this purpose, the web of the shoe should be made of extra width. It is generally necessary to use a leather sole in association with the Bar Shoe.

Clips.—A clip is essential at all times at the toe of the shoe;

* See pages 17 to 19.

without such clip the shoe, if nailed to the foot, would be in a state of continual displacement. The dig given by the animal at the toe when the limb is in rapid motion would speedily force the foot over the shoe, and destruction to the wall would as speedily follow.

Side-clips are also frequently necessary, where the animal treads more upon one side of the foot than the other. Many valuable horses do this ; but it is more common among horses of inferior breed, such horses commonly treading more on the outer than the inner half of the foot. If the tread be on the outside, a clip is necessary on that side of the shoe, simply to prevent the foot from leaving the shoe ; on the contrary, if the wear be the greatest upon the inner side of the organ, the clip should also be placed on the inner side of the shoe, for the reason stated above.

SECTION VII.

GENERAL CONSIDERATIONS RESPECTING THE FEET OF HORSES, AND THEIR MANAGEMENT.

MUCH has been said and written of late respecting various matters relative to the general management of the foot. Questions are frequently asked, such as the following :—

1. Should the feet of horses be stopped occasionally, for the purpose of keeping them tough and pliant ?
2. Are the sole and the frog so organised as to sustain weight and pressure ?
3. How frequently should a horse in regular work be shod ; or, how frequently should the shoes be removed ?
4. What are the best modes to pursue with the foot so that its integrity and usefulness may be retained ?

To these, and other questions of a kindred nature, we feel called upon to contribute a few observations.

1. *Should the feet be Stopped, to keep them tough and pliant?* This will depend upon circumstances. Much difference will be found in the feet of horses. Some retain their natural moisture longer than others, and, consequently, will retain their toughness and elasticity for a greater period; while the feet of others part with moisture rapidly, and, unless supplied occasionally by external means, they become so powdery and brittle, that it is with difficulty a shoe can be retained upon them. Horses regularly worked in soft ground, as when used for agricultural purposes, do not require such aid; but where horses labour year after year upon the hard granite (as in London, Manchester, and other large cities), and at night stand upon dry litter, such feet require to be stopped and kept moist by artificial modes. The direct application of water to the feet, if long continued, will produce a pasty condition of the horn; and when the operator ceases to apply it, the evaporation from the surface of the organ becomes so rapid that the foot is speedily left in a highly brittle state—worse, in fact, than before. Hence water alone, as an immediate applicant, is not desirable; a medium is required, which will only allow of moisture to pass into the pores of the horn slowly and steadily; or the application of a substance is desirable, which will prevent the internal moisture from escaping. Either of these modes may answer the purpose required; the latter of the two is to be preferred, the only drawbacks being, it is a little more trouble and a trifle more expensive than the former. In defiance, very likely, of all lecturing and writing to the contrary, the use of cow dung to the feet of horses will be continued. Its application to the feet is dirty and disgusting, but experience, we are told, has found it to answer the purpose

ntended. One of the best compositions we have found for the purpose of applying to the feet is the following :—

R	Tar	...	...	...	...	...	...	2lbs.
	Bees Wax	...	...	...	...	...	...	1½lbs.
	Honey	...	...	...	...	...	...	1lb.
	Suet (Beef or Mutton)	...	...	...	...	...	...	2lbs.
	Whale Oil	...	...	...	...	...	...	4lbs.

The above ingredients to be mixed and slowly melted together in a hot water bath. It should be applied freely to the sole and wall of the foot by means of a small brush, at least once or twice a week. It is best applied warm; and the feet at the time should be perfectly clean and dry upon every part.

2. *Are the Sole and the Frog capable of Bearing Weight and Pressure?*—There is but one rational answer to this question. The sole and the frog are structures intended to take their due share in sustaining the weight of the body of the horse. If we regard the foot of the wild horse in this respect, we shall find that the sole and the frog are amongst the principal weight-sustainers of the limb; these parts, from their position in the economy of the foot, are compelled to receive weight and pressure—indeed, of what use would they be to the animal if they could not? The sole and the frog are parts capable of bearing great weight and pressure, if equally and fairly distributed over their entire surface. It is only when pressure is severely and irregularly applied to these structures that we find any injurious consequences to result.

The uses of the frog are numerous : It is a weight-bearer. From its form and position upon the foot, when the animal travels at great speed, the frog will act as a wedge upon the earth, and thus aid very materially in giving firm hold to the foot ; it will also aid in checking or controlling the speed. To us these functions of the organ are what may be called its *obvious* uses. *If a shoe could be constructed of a material of such a nature as exactly to cover the entire ground surface of the foot, and press upon it in a manner precisely similar in all respects to what water would do, if confined to the area in question; and if this material could be secured to the organ without interfering with the outward spread of the wall of the foot, or limit the action of the organ in any direction whatever beyond what is perfectly natural, then the farrier's art would be perfect, and the desire of the most humane realised.*

3. *How often should the Shoes be Removed?*—The average duration at which shoes are allowed to remain upon the feet of horses in large towns engaged in active work is generally from thirty to forty days. With agricultural horses the case is different, and altogether a matter of uncertainty. Many horses exclusively engaged in agriculture have rarely shoes applied to the hind feet ; while the fore feet sometimes retain their shoes three and four months in succession—a practice not, as a rule, to be recommended. So long, however, as the shoes retain their proper place without injury to the sole, and are secure to the wall, it may not be necessary to interfere with them. Frequently to remove the shoes is a practice destructive to the feet ; and the more lengthened the interval before their removal, unless necessity requires, the better and more efficient is the foot likely to remain.

4. *What are the best modes to pursue for the Preservation of the Foot?*—This is an important question, and one worthy of the attentive consideration of every individual owning horses. To some extent we have treated upon it in our answer to the first question proposed in the present section. It will be proper to regard this question in a twofold relation—first, with reference to the feet of colts in a wild or unbroken state ; and secondly, with reference to the feet of civilised horses.

Management of Colts' Feet.—It is highly necessary regularly to examine with care the feet of wild colts ; such feet are subject to great irregularity of growth, also to splitting and fracture of the wall, bruising of the sole from hardness and irregularity of the ground, the insinuation of sand, pebbles, and other foreign bodies within the cleft of the frog, injuries to the coronet from treads and over-reaches when playing with each other, or when galloping in herds.

Irregularity of Growth is a matter which should receive every attention. Sometimes it manifests itself by an overgrowth of horn at the toe ; sometimes by a similar overgrowth of horn at the inside quarter ; either of which, unless checked, will produce a turning in of the toe, and in time an outward projection or bowed state of the fetlock joint. Numbers of horses have this peculiar projection of the fetlock joint, arising, in the first instance, from the want of proper care and attention to the feet when young. All such tendencies of growth in the foot, from whatever cause, should receive prompt attention. In attending to the foot of the colt, avoid paring the frog and the sole. All the horn which

nature can produce is required by these structures for the preservation of the parts within. The feet of wild colts should be carefully inspected at least once every two months; and all irregularities of growth, if once observed, should be carefully watched for the future.

Civilised Horses.—For the preservation of the feet of civilised horses, good shoeing is one—and perhaps the great—essential.

First : Avoid all undue cutting, paring, and rasping of the feet.

Secondly : Treat the feet according to rules laid down in answer to question 1 of the present section. Preserve, if possible, the natural toughness and elasticity of the horn. Horses having thin, weak feet, the application of cold water by means of swabs to the wall, or bandages loosely fixed to the limb, with occasionally the free use of the composition recommended at page 45, will be found the right course to pursue.

Finally : The owner of a large stock of horses would find it greatly to his advantage, if he occasionally had the shoes removed, and his horses turned barefoot into a roomy box, having a layer of sawdust spread over the floor. A change of this kind, if taken advantage of, would be found highly conducive to the welfare of the feet. Where a large number of horses are kept, one or two of the stock might be spared at a time for the purpose suggested.

The practice of fixing tips upon the feet of horses at grass is bad, and the sooner it is abolished the better. By turning the horse barefoot to grass, the frog and the sole are brought into full use. It is true the wall may in certain instances be broken to some extent, but this will prove in the end of little or no consequence; besides, with care and management, even that may be greatly obviated, or altogether avoided. The feet of such horses should be frequently inspected, and all broken and fractured portions of horn carefully removed. Numbers who own horses would doubtless put these suggestions into practice, but their attention is never called to such matters. Let us hope the remarks now offered may not in future be lost sight of.

It is too much the practice to regard all destructive influences in operation upon the foot, as arising from causes involved in mystery. Hence men are continually upon the hunt for a new form of horse shoe, or for new modes of a remedial kind; and hence, again, to meet these supposed wants, we have numbers of "patent" horse shoes and other inventions, the great bulk of which are so worthless and absurd in principle, that it is mere waste of time to bestow a second consideration upon them. Before we commit ourselves so hurriedly to the mere "fads" of amateurs or the worthless inventions of those who have no practical knowledge of the farrier's art, let us use a little more common sense in availing ourselves of such resources as are in abundance around us. Is every farrier educated to the knowledge we possess? and, Do our best farriers work, in all cases, to their full power? We think not. So that, until we have brought into full and efficient play all the forces we possess, it is useless to repine, as all our

search after new remedies, under circumstances of this nature, will not be attended with any better result to the comfort and welfare of our dumb servants.

Shoeing with Leathers.—Shoeing with leathers is a common practice in large towns like Manchester, especially to horses of the heavy draught breed. There are two modes in general practice by which leathers are applied to the feet of horses.

1. By leather soles cut to the size of the foot, and placed between the shoe and the foot, and made secure with nails.
2. The second mode is by what receives the name of *ring leathers*.

A ring leather is a piece of the article cut of the same form and size as the shoe, and secured to the foot along with the shoe. The ring leather forms a kind of second shoe; and if properly applied, and carefully secured in a way that its ends cannot become loose, it may prove of great service in modifying concussion. A ring leather elevates the sole and wall further from the ground than these parts otherwise would be. Ring leathers are generally used to the feet of light horses. India-rubber, cut to the form stated, has been tried in place of leather, under the name of “cushion” to the foot, and letters patent have been taken out to secure what pecuniary gain might arise from its use. The best application of india-rubber for this purpose is the one patented by the late John Fowler, engineer, of Leeds. The india-rubber cushion does not answer unless by the mode patented by Mr. Fowler; the elasticity

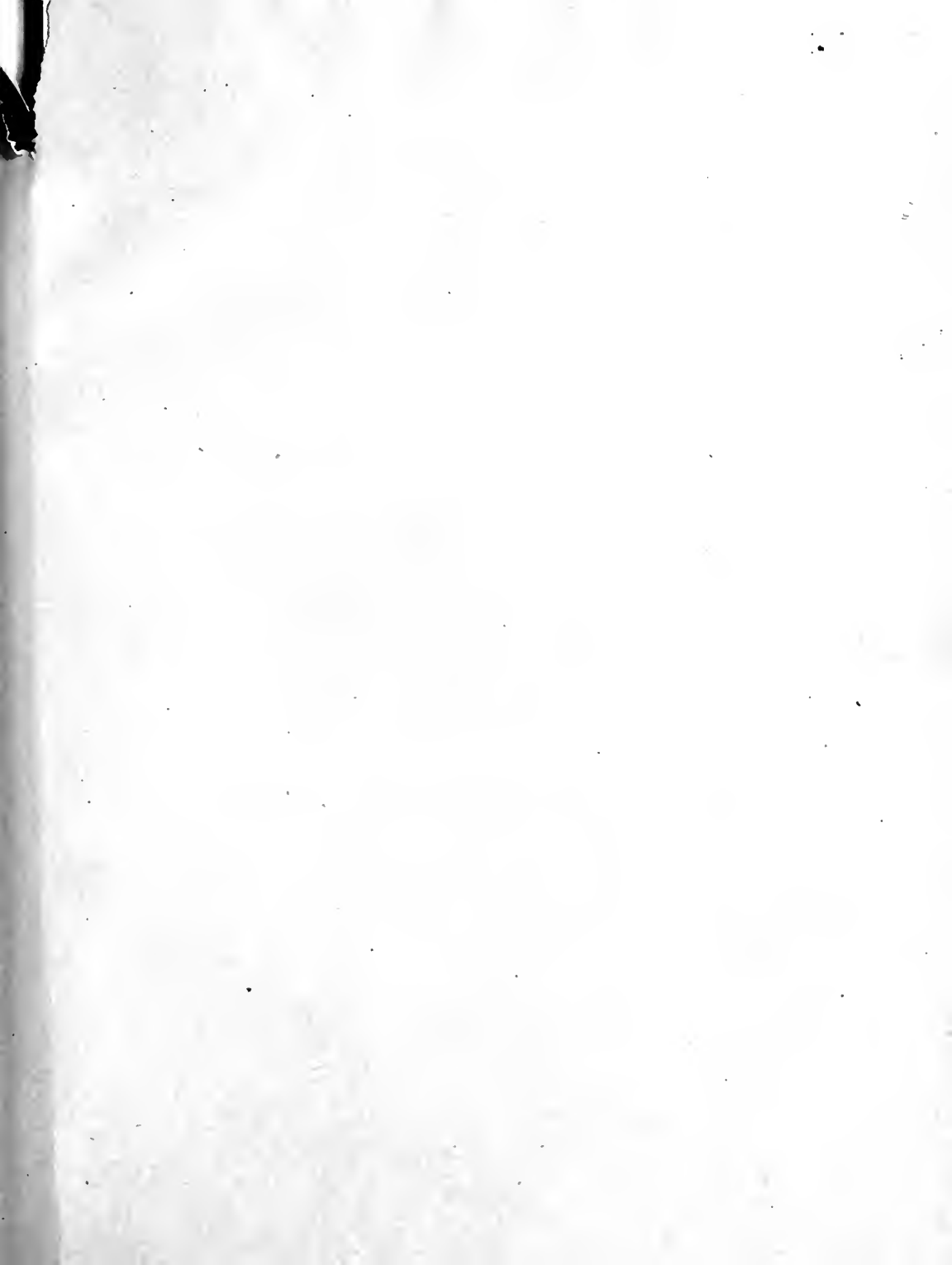
or reactive force of the agent is so great as to speedily loosen the shoes, by forcing the clenches, and thus is neutralised any good which otherwise might result. Leathers, when applied to the feet under certain conditions of the organ, are beneficial in several ways.

1. The sole and frog of the foot are better to have a moderate degree of pressure, *provided* such pressure can be equally distributed over the entire surfaces of the frog and the sole. Leather is the best medium yet in use to effect this equalization of pressure on the parts named.
2. The feet of horses in large towns, from rarely or ever coming in contact with soft moist ground, become exceedingly hard, dry, and brittle; and cows' dung, the substance generally applied to produce a more favourable state of the foot, cannot at all times be readily secured; a leather sole and a stopping of tar and tow are the best to apply for the purpose.
3. Feet having thin, flat soles, and low, weak heels, are generally tender. Leather soles are the best protectors to such feet.
4. Feet having bad thrushes, corns, bruise of the sole, stabs or injuries from the nails in shoeing, canker, an irregular broken or splintered state of the wall from any cause whatever, pumiced feet, and numerous other types and forms of an abnormal character, require either the permanent or temporary use of leathers.

The sole should consist of light but strong leather. Heavy horses require a leather sole of greater thickness than well-bred and lighter horses. Leather varying from 3-16ths of an inch to a quarter of an inch in thickness will be of sufficient substance for the feet of any horse, however large and bulky.

Along with the application of the leather, at the period of shoeing, it is necessary to use a compound, consisting of tar and ground linseed; a portion of which is spread evenly over the sole. The foot is then carefully packed with clean tow, the leather placed upon the tow, and the shoe upon the whole, and securely nailed to the foot. Tow and stopping, unless carefully spread, are very likely to collect into small hard lumps, and by undue pressure upon the sole, cause the horse to become lame.





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