Cursory account of the various methods of shoeing horses ... with incidental observations.

I have not the honour of being a medical man, but a private gentleman, retired from the army-rank of captain, having become incapable of duty, from the Rupture daily becoming worſe than ever, down twenty times in a day, and have uſed a few medical terms for the ſake of decorum.

From my earlieſt remembrance, I recollect a particular formation in my left teſtes, which was in an artificial ſac: at the age of twenty-two, riding on horſeback, both the omentum and inteſtine deſcended into this ſac, and was there incarcerated many hours with dreadful agony. I did not then know what a Rupture was. My ſurgeon in the country, who reduced it, ſent me to a truſs-maker in London, and who was one of the beſt: he made an excellent *formed* truſs.—The late eminent Mr. Potts, ſurgeon, to whom the world will ever be indebted, inſpected and approved the old mode of putting on this truſs.

I found the truſs of little uſe: the thigh ſtrap, which was of cotton, was *not* fixed

to

ny calico cuſhion. Since which time, all ›ains in the teſtes have ceaſed, and the Rupure cannot deſcend. Twenty years ago, I ttempted my ſyſtem of immoveability, but id not ſucceed, the ſpermatics being unpro-ɛcted. All the other ideas, and the mode f wearing the truſs, are the reſult of ſix ıonths experiments and thought, impelled › maturity by neceſſity, the mother of in-ɛntion. And thanks to God, thoſe ideas ıve in my own caſe, and in other reducible ıes, annihilated the dreadful conſequences one of the moſt afflictive complaints, man ſubject to. I ſhould obſerve, that ſome of e *ſame* truſſes which were uſeleſs to me, *fore* the improvements were uſed, are *now* ɛctual.—A moſt clear account of Ruptures given in the laſt edition of Chambers's ctionary. See article *Hernia*.

The act of breathing and ſpeaking puſh down a Rupture.

Cover your fingers with the ſhirt or handkerchief, by which means the Rupture is gathered up with more eaſe and diſpatch.

To render the practice eaſy to every one, I uſe the expreſſion *knead* the Rupture upwards through the aperture, as dough is *kneaded* *; but during a ſtate of inflammation, touch the inteſtines very gently, if at all.

By comparing the ruptured ſide of the body with the ſound ſide, it may be ſeen and felt when the Rupture is reduced.

Method makes every thing eaſy, therefore obſerve theſe directions in the *order* placed.

Motion

1. Lay down.—The head is to be lowered; heels raiſed.

* In the act of kneading, the fingers are to be extended, gently and ſhortly.

 2. Draw

CHAP. III.

On the Conſtruction of a Truſs.

THE pad ſhould be rather *broad* and *flat*, though not *entirely* flat. A pad of this kind creates more preſſure than thoſe which have a round elevation in the centre, from a falſe idea of producing preſſure *into* the aperture.

The hoop part of the truſs ſhould be in a *true* circular line with the pad.

No edging of leather ſhould project from the hoops of the truſs, nor any quilting or ſtuffing.

The thigh ſtrap to be made of *waſh-leather*, *lined* with thin tape, to prevent its ſtretching; the end adjoining the buckle to be of neat's leather. The thigh ſtrap to be *ſewn*, with ſtrong thread well waxed, to the

In all and every part of the truſs, in its ſewing, its ſtraps, its appendages, obſerve only one idea, and execute it:—Let there be *action*.

Many in this metropolis have talked about the mechaniſm of their truſſes, their ſpiral ſprings, and the *dangers* of a circular ſteel ſpring.—I think and know, a truſs cannot have proper effect without a ſteel ſpring.—It is not the ſpring, but the hard part of the pad of the truſs that is dangerous, and has ruined many a man, by cauſing hydroceles*, &c.

The double truſs ſhould be *united* behind by a double-tongued buckle and ſtrap, to let out or take in; not by one horrid hard ſteel ſpring, cutting the loins to pieces.

* See Mr. Potts's Works.

CHAP.

Fifthly. It elevates the *pad* part of the truſs to the line of elaſtic action with the *hoop* part, and thereby *preſerves* and enforces its elaſticity, retaining the truſs in a ſtate of effect for years.

Laſtly. On the tight application of this cuſhion, the patient is alſo relieved from all rumbling pains ariſing from the internal deſcent of the rupture. And from its combined qualities, we accompliſh the moſt difficult attainments. The being enabled to inflict preſſure on ſubſtances naturally too tender to bear preſſure, and thereby enforce a ſyſtem of *immoveability;* without the adoption of which, the uſe of all truſſes are inefficacious.

It is neceſſary to add, that either fine, old, or waſhed linen, will not anſwer the end; and a cuſhion after uſe, having acquired its form, is better than a new one. Its edges ſhould be occaſionally clipped; and this cuſhion muſt be formed in *ſeparate* ſlips, as directed, folded over each other.

Improvements of the Author, to produce entire ſafety and effect, moſt *particularly* by firſt fixing by ſtrong *ſewing* the thigh ſtrap to the hoop part of the truſs; then draw this ſtrap as *tight* and cloſe as poſſible round the thigh to the *buckle* on the pad of the truſs.—Tightneſs of girthing decreaſes, rather than cauſes the chance of galling, by deſtroying friction.

General Directions for the Ruptured.

THE patient ſhould have two truſſes in his poſſeſſion, fit for uſe.

He ſhould *never*, night or day, be without his truſs on; a cough in the night, might produce a fatal ſtricture.

He ſhould *underſtand* the nature of his caſe from his ſurgeon, whether reducible or not, and be maſter of the ſubject as much as poſſible.

He

CHAP. VI.

A Cauſe of Rupture, hitherto unnoticed.

I MUST point out one cauſe of Rupture, both inguinal and umbilical, hitherto unnoticed—I mean *the uſe of dumb bells*—in our armies and our boarding ſchools, for the purpoſes of expanding the cheſt, or obtaining exerciſe within doors. One caſe of a gentleman came to my knowledge, who became ruptured by, and in the act of uſing dumb bells, which cauſed theſe obſervations. Let any man of common ſenſe obſerve their violent action on the body, and their effect is obvious. I hope this caution will baniſh them from our armies and ſchools—they are injurious to all, eſpecially to young perſons.

CHAP. VIII.

On the Cure of Ruptures.

THE ſmall anatomical knowledge I poſſeſs, forces me to think, that whoever promiſes to cure a Rupture, impoſes on the feelings of the ruptured.

One worthy gentleman, in this metropolis, where ſpeculators live by the miſeries of mankind, promiſes a cure for one hundred guineas (money down) if his patient will lay *one* month in bed, generally in one poſture, and obſerve one diet. Some ſay, *their* truſſes will effect a cure--nothing can be promiſed. Some ſpeculate in Ruptures, and the *charitable* feelings of the world.

It is ſeldom we can aſcertain the ſtate of the peritonæum, whether lacerated, dilated, or adhered; therefore, while the bottom of a tub is loſt (to make a homely compariſon)

How

Concluſion.

GENTLE Reader, farewell! Believe, without prejudice, that my Improvements are facts, not ſpeculations. If you have a reducible Rupture in the groin, a literal, full, and accurate attention to my rules will produce happineſs. Your feelings and obſervations, when you begin to apply them, will be thus:

Firſt You will *think* your Truſs will drop off.

Secondly. You will *think* you are bound ſo tight that you cannot walk.

Thirdly. Try; and in five minutes you will exclaim—I am well—I am ſound—I feel no Rupture; and you will walk or ride with perfect eaſe.

During a ſecluſion from the world, from bad health, Ruptures and Truſſes were my hobby horſes. And I have made great improvement in the Umbilical Truſs.

THE END.

PRINTED BY SAMPSON LOW, BERWICK STREET, SOHO.

CURSORY ACCOUNT, &c.

If a horse were to go without any defence to his feet, on the pavements or roads in this country, the outer parts of the foot would unavoidably be broken, worn, or otherwise injured in a very short time.

Shoeing is obviously intended to prevent these evils.

Experience, however, daily proves, that shoes occasion many alterations in the form of the hoof, and various diseases in parts within it, which do not occur when the foot is exposed to wear in its natural state: but, as it is admitted on all hands, that some coating or defence is absolutely necessary to guard this part from injury when a horse is worked, it becomes of importance to inquire what kind of shoe is best adapted to this purpose, and is of itself attended with the fewest inconveniences.

A review of the history of Horse-shoeing shews, that within the last hundred years, shoes

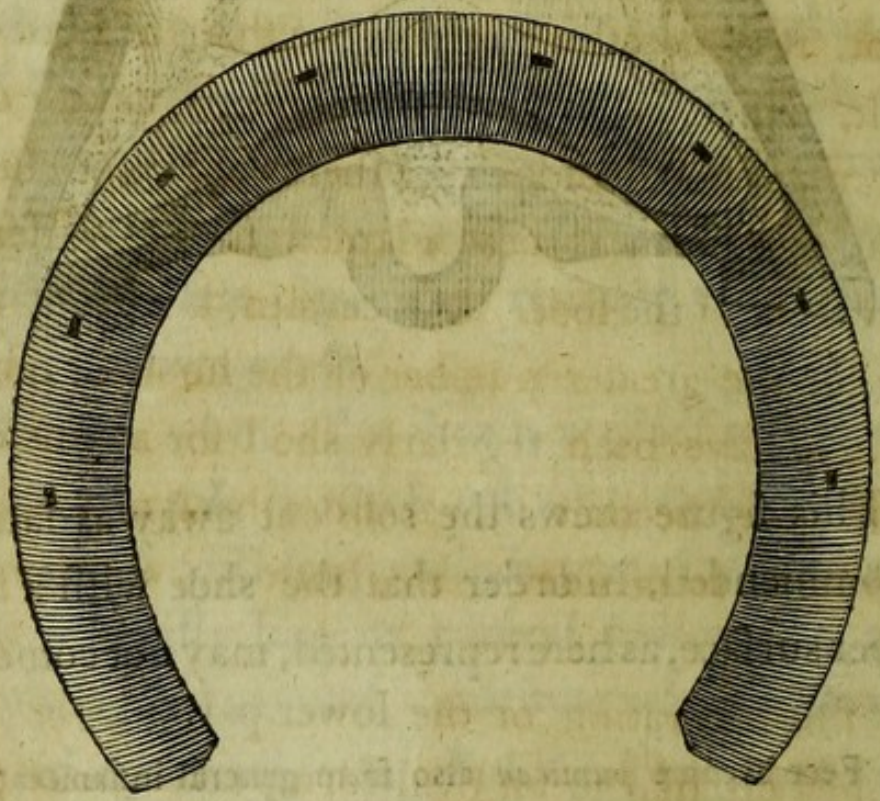
to confine the bearing to those parts which are found capable of supporting the whole of the weight without injury, and to prevent any pressure from taking place on those which would be injured by it.

Now, long experience proves, that the sensible parts within the hoof do not suffer if the crust or wall have a proper bearing on the shoe; but that if the horny or outer sole bear upon the shoe in any considerable degree, then the sensible or inner sole being pinched between the iron and horny sole *below*, and the bone of the foot *above*, the horse is lamed. It must follow, therefore, that in proportion as a greater quantity of the crust is brought to bear flat on the shoe, the firmer the horse must stand; and the less likelihood there is of any pressure taking place between the sole and the shoe, the less chance will there be of his being lamed.

These principles ought to be kept constantly in view, and a shoe should be considered more or less perfect as it corresponds with them.

contact with it. The lower surface of this shoe is hollow, and consequently on hard ground can only rest on its outer edge.

Of the common Shoe.



The shoe in common use has its upper surface hollow, or sloping, regularly from the outer

crust, which has been recommended as a specific, blistering the coronet, steeping the feet in warm water for several hours a day for months together, and turning out afterwards in moist land, it has proved that although the contraction was removed the lameness continued.

By the slope or bevel in the shoe, a cavity is formed between it and the sole, sufficient to admit a picker, and to prevent pressure on this part, without the sole itself being hollowed, and consequently weakened.

For if it be one of the functions of the horny sole to defend the sensible sole, of which, from its situation and nature, no one can doubt, it must be evident, that the more perfect it is left, the stronger it must necessarily be, and of course the more competent to perform its office.

The value of every practical object is best ascertained by experiments; and the results of the trials with various shoes, which have engaged the attention of the Author for several years past, have been decidedly in favour of the seated shoe. And, though he is not sanguine enough to sup-

since that period to the present day, the 25th of March, 1800. They have been removed regularly once every month, in order that the superfluous growth of the hoof might be taken away, but have never been altered in the slightest degree during this time except once, when it was found necessary to make each shoe a quarter of an inch wider at the heels, on account of the feet having spread so much, although they were of a very good proportion when the shoes were first put on. This case is brought forwards, not to prove the superior wear of these shoes, but to shew that this principle has produced all the advantages, which could be expected from any shoe.

and ever since that time, this method has occasionally been employed for the same purpose. But about the middle of the 18th century, the short shoe, tip or half-moon shoe, as it has been called by different writers, was strongly recommended for general use, under an idea that it would hinder feet from contracting, prevent corns, and other diseases, from taking place, and likewise give such a firmness of tread as to render caulkings, in every circumstance, totally unnecessary. And, as contracted feet in many instances had become wider from the use of this shoe, employed as a means of cure, it did not seem unreasonable to conclude, that its constant use might put an end to contraction altogether. But, however this practice might be at first approved by men eminent in their profession in different countries, the experience of a few years shewed, that though in fact it did prevent feet from contracting, yet it also brought along with it many inconveniences which did not exist when the common shoe was employed. For, if a horse so shod was much used when the roads were wet, it happened frequently that the horn at the heels was rubbed away faster than it grew, and thus the sensible parts within the hoof becoming inflamed and sore, the animal

was lamed; and from the weight of the body likewise bearing too much on the back part of the leg, strains were often caused in the hind tendons, and in the fetlock joints, and especially in such horses as were used for hunting or racing. And again, that this kind of shoe also required to be removed much oftener than the common one, in order to prevent the ends of it from being forced into the hoof, and to preserve the even tread of the bottom part of the foot by frequently cutting down the toe, without which, the heels soon become too low and the toe too long. On the whole, therefore, the disadvantages of the short shoe so much overbalanced the advantages, as to cause it to be abandoned for general purposes. And although, at various times since that period, attempts have been made to bring this shoe into general use, they have uniformly failed, from the effects just mentioned constantly resulting, so that the tip is now seldom employed, except for feet under circumstances of disease.

Of the Thin-heeled Shoe.

On the failure of the tip, as a shoe for general use, it was insisted by some of those who had

weight becomes more than usually thrown upon it. And by the heels being in effect made thus low, the skin is often brought against the ground and bruised. And here it must be remarked, that it is extremely difficult to restore to feet the proper direction and depth of their heels, when they have once become low and sloping.

One of the most specious reasons for having the toe thick, arises out of the fact of the wear being generally greater there than in any other part of the shoe; but surely it cannot be sound economy, that the true tread of the horse's foot should be destroyed, and that the hind tendons of the leg should be subject to perpetual risk of being strained, for the purpose of saving the price of one or two sets of shoes in a year, even if there existed no other less dangerous expedient which might answer the same end.

Experience, however, the surest guide in practical matters, seems to have established as a general rule, that it is more advantageous to the tread of man, that his shoe should be at least as thick at the heel as at the toe; and a shoe-maker would materially risk the displeasure of his customers, were he, with a view to increase the size of the calf of the leg, or to prevent the toe from wearing out, to make no other shoes than

upon two expedients for keeping up the name and counterfeiting the principle of this shoe, so as to save them much labour. The first consists in making the toe thick, and in sloping it off so rapidly on the quarters, that if the shoe be laid on a flat surface, it will be found to touch it only at the toe and at the heels. This kind of shoe may with greater propriety be called a *thick-toed*, than a *thin-heeled* shoe.

The second is still more simple, the shoe being made as nearly as possible of the same thickness throughout, except within about an inch of the heels, where it is bevelled off suddenly to a thin edge; and so *in point of fact* this shoe may be said to be thin-heeled, although *in point of effect* it is only a parallel shoe, robbed of a portion of its flat surface.

These are abuses of practice, and do not attach to the principle of the shoe just mentioned; but they afford a strong proof, that if the principle were ever so good, it would not be generally adopted, from the difficulty of applying it fairly to practice.

and are consequently unfit for general use, it remains to examine, what effects would result from a shoe of the same thickness at the heel, as at the toe. Here it must be obvious, that *with* such a shoe, the tread of the foot must be in the same plane, as if it were *without* a shoe. And as it is of the utmost importance to retain this even tread, it is clear that this can be effected with ease and simplicity, by the application of the parallel shoe, without the least necessity for having recourse to the difficult and complicated plan of cutting away the foot, in some parts excessively, and of leaving it untouched in others, in order to adjust it to the thin-heeled shoe. And if it be most advantageous for the foot, that the frog should come in contact with the ground frequently, that sort of shoe will surely be in this respect the best, which will allow the *whole* surface of the frog to have a *full* and *equal* bearing on the ground, instead of the *back-part* resting much more considerably upon it than the *fore-part*, as must necessarily happen with the thin-heeled shoe.

Formerly it was imagined, that the frog was liable to be bruised and hurt, if it came much on the ground, and shoes were made thick at the heels, to prevent this happening; but latterly a contrary doctrine has been held, and it

It may be urged against the parallel shoe, that it will wear out sooner at the toe than the thick-toed one, and this will certainly be the case; but may in part be remedied by leaving the toe solid, instead of making a groove or fuller mark round it, and may be entirely obviated, by steeling the fore part of the shoe of horses which wear much at the toe, or are constantly worked on a pavement.

Indeed it would be an excellent practice to steel all shoes; for by the toe being thus made harder than the rest, it would be prevented from being so readily rubbed away; and the waste would be nearly alike in every part, till the shoe was worn out.

The additional expence of steeling, is too trifling to be weighed against the advantage of the natural plane of tread being preserved to the last.

Of the Shoes for the Hind Feet.

From the circumstance of the sole of the hind feet being much more hollow than that of the fore feet, a shoe with a flat upper surface, may be generally applied.

it has been regularly recommended by almost every writer, from that time to the present. And notwithstanding this method has very frequently failed of success, yet repeated disappointment appears never to have led to the circumstance of questioning the truth of the principle. Nay, indeed, the reliance placed upon it has been so strong, probably from the simplicity of the reasoning on which it was founded, that in the cases where it most particularly disappointed expectation, its failure was generally attributed to the practice not being carried sufficiently far; and accordingly the shoe has been still more raised on the inner quarter, and the edges of the crust and shoe have been filed away. When with these expedients it likewise failed, the last resource has been, a circular piece of leather placed round the joint to receive the blow of the foot.

It is now about four years since, that a shoe, with the outer quarter thick, and the inner one thin, was for the first time, in the practice of the Author at least, employed, in a case which had baffled many attempts on the old plan.

On the first trial the horse ceased to cut, nor has he ever done it since; which can only be attributed to his having constantly worn the same

the work; and therefore, at present, the Author will confine himself to that part of the subject alone, which is absolutely necessary to be understood. For horses, therefore, which cut their hind legs, the shoe, at the outer heel, should be from half an inch to an inch in thickness, according to the kind of horse, and to the degree in which he may cut. The web of the shoe should gradually become thinner till it reaches the toe, which should be of the ordinary thickness, and from which it should slope off, and end like a tip in the middle of the inner quarter.* This shoe, in point of effect, would be equally proper for the fore feet, were it not that in such horses as are used for the saddle, the fore feet being more charged with weight than the hind feet, are more particularly subject to be injured, and a horse thus shod on the fore feet, might go unsafe; therefore, it is expedient to let the inner quarter of the shoe be thin, and reach to the heel, but the outer edge should be bevelled off, so as to slope inwards. The same kind of shoe is equally well calculated to prevent the speedy-cut; observing to bevel off, still more strongly, the part

* For horses which cut only in a slight degree, a shoe of the same thickness throughout, but reaching on the inner quarter only as far as the middle of the foot, will in most instances be found sufficient.

were then used, and it appeared, that the distance between the outer edges of the prints of the shoes, taken as before, was regularly reduced to eight inches and a half.

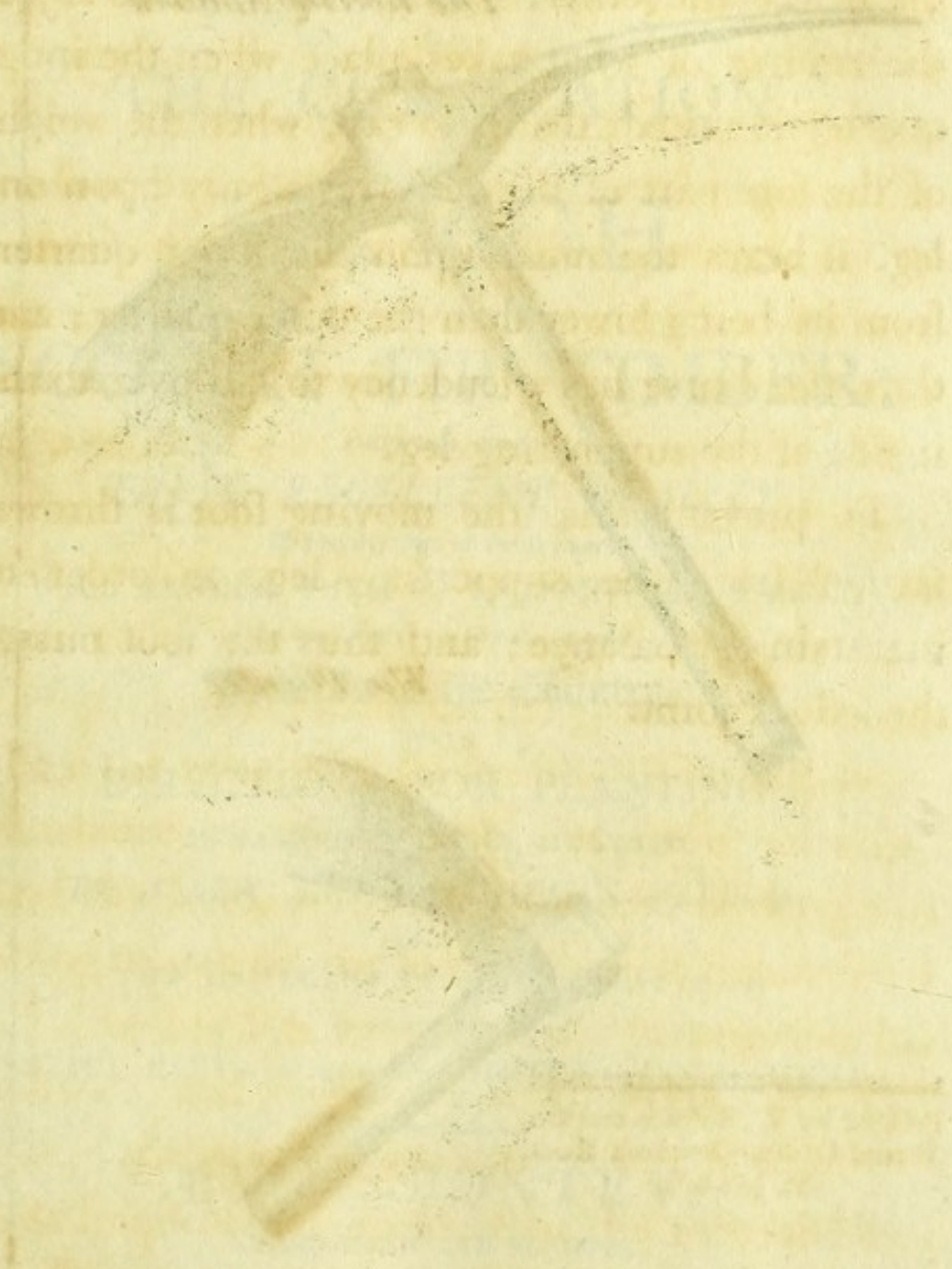
EXPERIMENT III.

The same shoes were afterwards placed on the opposite feet, so that the thick heel was on the outer quarter; and the result, under circumstances exactly the same as in the foregoing experiments, was, that the distance between the outer edges of the prints of the shoes, was regularly increased to eleven inches.

To account for these results, it is necessary to attend closely to the different effects produced by the weight of the fore part of the body acting upon the two fore feet, when raised on the inner or outer quarters, during the opposite states of rest and action. And first, with regard to shoes raised on the inner quarter: whilst a horse so shod, is standing still, the fetlock joints are certainly thrown farther apart than when any other kind of shoe is used. Hence, it was concluded, that the limb which supported the body would have its fetlock joint thrown so much outwards, as to keep it completely out of the way of the foot in motion. But it appears, that the impressions made on the ground by such shoes, are an inch

nearer together than those made by parallel shoes, and two inches nearer together than those made by shoes raised on the outer quarter. And this may be thus explained: when the horse is at rest, the weight is supported equally by the two fore feet, but the instant one foot quits the ground, the weight is suddenly transferred to the other; and by the outer quarter being lower than the opposite one, the fore part of the horse has a tendency to fall over to the outside. To prevent this, the moving foot is suddenly brought close to the fetlock of the supporting foot, in order to relieve it by catching the weight, and the foot itself is placed on the ground, too much under the middle of the breast. The same circumstance occurs to both feet in their turn. And the horse being thus in constant danger of falling to one side or to the other, is constrained to bring his feet near together to preserve his balance, and in doing this, strikes the foot against the opposite fetlock.

It frequently happens, that the more the toes are turned outwards, the nearer the fetlock joints are brought together, and the more the horse is disposed to cut. However, this is true only to a certain extent; for if this faulty position of the lower part of the leg be carried artificially beyond



ADVERTISEMENT.

THOUGH the writer of the following pages has, for ſeveral years, had conſiderable practice, as a contract planter, he means not to attach more importance to it than that of being enabled, by induſtry and obſervation, to aſcertain principles, which he was previouſly perſuaded were founded in reaſon and nature; nor does he pretend to any ſuperior ſhare of abilities; but, attached to the intereſts of planting, (much more from choice than neceſſity,) he has, from early life, when viewing the works of others, not contented himſelf with ſeeing *that they were ſucceſsful or otherwiſe, but has reaſoned and in-*

bibe ſuch a notion, when unſupported by facts?'

To this I anſwer, that the greater part formed their ideas from report, without giving themſelves the trouble of inquiry; and, of thoſe who conſidered the ſubject, only a very ſmall proportion had an opportunity of ſeeing a deal board cut from a fir of Engliſh growth, of ſufficient age and ſcantling to enable them to determine its quality.

Were we to expect ſubſtantial timber in oak ſapplings, it would be accounted abſurd;—is it not equally improper to ſeek for it in fir poles?

In regard to the Scotch fir, which is almoſt the only one that has had any thing like a trial, the young timber has generally been condemned as *brittle*, while the old has been rejected on ac-

Live knots, or ſuch as are incorporated with the wood from the core to the bark, whether large or ſmall, are the remains of branches, that were alive either at or near the period when the trees were cut down; and dead knots, of ſuch as have been left upon the trunk after they died, and, ſometimes, till they have fallen of themſelves:—the trunk continuing to grow, in the interval, cloſes upon, but cannot unite with them, and, therefore, they become dead knots from that part.

But in ſome trees, particularly the oak, the miſchief of ſuch dead branches does not end here; for, as the trunk continues to increaſe, and the dead branches to rot, it often happens that the latter, when they fall, leave hollows in the trunk, capable, from their direction, of holding water; which, acting upon the end of the branch, or knot, quickens its

the bad conſequence of large knots, he will cloſely prune his trees, to a reaſonable height, while the branches are ſmall*; not all at once, but from time to time; ſo that he will, in a great meaſure, form the trees, though he cannot make one leaf of them. And, for dead knots and hollowneſs, he will apply the ſame eaſy preventive to all branches, great or ſmall, ſo ſoon as they appear to be dead: and, by combining cauſes and effects, readily perceive, that, by this practice, moſt ſorts of timber may be grown ſound, and nearly clean, to a ſufficient length; as the knots will be very ſmall, and found only near the core†.

* Trees grown for ſhelter or ornament, ſhould be pruned to ſuit particular ſituations.

† There are knots which do not originate in the core; but, as they can happen only when the tree has produced freſh ſhoots, from accidentally loſing its

planted, would not have gone without their ſhare of improvement; as even barren ſoils, if planted with firs, will, in the courſe of forty or fifty years, become fertile; becauſe theſe trees, if the ſtratum be looſe enough to admit their roots, draw a great portion of their nutriment from a conſiderable depth; part of which, aſcending to their tops, forms their leaves or ſpines, which, falling, become the food of vegetables, and, eventually, of man.

Should a plantation, one year with another, increaſe one tenth of an inch, in depth of ſoil, for fifty years; at the end of that term, an increaſe of five inches will be found, of a quality that cannot fail of making it ever after good paſture land; ſuppoſing the trees cut down, and the roots not extirpated.—Thus we perceive a tree, by the ſimple operation of nature, performing what all

Almoſt any plantation in a ſhallow ſoil, with a looſe ſtony bottom, will prove this; for it is not poſſible that the trees in them are nouriſhed by the top ſoil only, when, as is often the caſe, they are growing freely where it is not ſix inches deep. Had they no other ſupport, we ſhould ſometimes find the larch completely at a ſtand in its principal growing ſeaſon; for, at that time, ſuch ſoils are frequently ſo very dry as to be unfit for vegetation.

That trees have been ſo ſtopped where the ſoil was thin, and either a compact rock or a clay bottom, I readily allow; but I never knew it where they had a bottom ſomething like what I have been deſcribing.

Having now, I truſt, clearly demonſtrated the point in queſtion, I proceed to ſhow that they will thrive where ſeve-

ters; every tree has only ſix ſolid feet and three quarters of ſoil, to exhauſt or ſubſiſt upon; and they are generally ſuffered to ſtand, without thinning, from ſeven to twelve years. In that time, as their leaves or ſpines could have benefited the ground but very little, it is not to be wondered at, if, even before thinning, the ſoil ſhould be nearly exhauſted, and the trees checked in their growth; the wonder would be, if it ſhould prove otherwiſe.

But admitting the trees to be thinned, within the time above mentioned, and half the number, originally planted, taken out; every tree would have only thirteen ſolid feet and a half of exhauſted ſoil for its ſhare; conſequently, would be pinched of nutriment, while the trees planted upon ſoils with a looſe bottom, conſtantly puſhing their roots into ſtratum not before exhauſted, and far below the ef-

fects of drought, would continue to thrive, till their ample trunks gave aſſurance of the deſired reward.

With perſons who plant upon a large ſcale, every thing that expedites the operation will have weight. To ſuch, I truſt, I ſhall render an acceptable ſervice, by preſenting them with the annexed copperplate, deſcriptive of two tools, which I invented, and have long uſed, as ſubſtitutes for the ſpade, in making holes and planting. The former operation, in land covered with ſtrong heath, or full of ſtones, or both, when performed in the uſual way, viz. with a ſpade and a mattock, is known to be exceedingly tedious; for, if but one man be employed, much of his time is loſt by the change of tools; and, if two, it often happens that one of them has not ſufficient employment.

years, it becomes neceſſary to thin out, at leaſt the difference betwixt the two numbers, when they are fit only for fuel; therefore, of but little value in any ſituation, particularly where fuel is plentiful: and further, which is a ſerious objection, by enhancing the expence, diſcouragement is given to the ardour of the planter.

I am aware of the defence, made by the advocates for thick planting, viz. that the trees, growing thick, ſhelter and draw up each other; but, on the whole, I believe, that ſuch drawing up is more injurious than the ſhelter is beneficial, except, as before hinted, in very open ſituations; for when trees, that have been ſo drawn up and ſheltered, and are very ſlender in proportion to their height, become ſuddenly expoſed by thinning, they are frequently broken by the winds; but if they eſcape, being top heavy, many

much quicker progreſs than ſuch as are ſmaller. As to Scotch firs, thoſe of four years old, that have been two years tranſplanted, are beſt for the ſituations in queſtion, unleſs they be very bleak; when plants of three years old, one year tranſplanted, ſhould be preferred.

In fertile lands which produce a conſiderable quantity of graſs, weeds, or bruſhwood, and where the latter has been cleared, the plants ſhould never be leſs than two feet high, to prevent their being ſmothered. Indeed, where proper care is taken partially to clear the bruſhwood, ſo that what remains gives ſufficient ſhelter, plants of the largeſt uſeful ſize may be admitted, viz. firs of three feet, and larch of four or five; for ſuch as are higher ſeldom do well, except they have been removed one or two years before.

taken off the extremities of the roots, keeps dipping them, by ſmall quantities; after which, they are bound together, in bundles of two or three hundreds each, according to ſize, and conveyed to where they are wanted; then placing them together in an upright poſition, in any ſituation that is ſheltered, ſtraw is carefully put round the outſides, to keep the air from drying their roots.

Provided the ſoil for the puddle be a binding loam, or inclining to clay, and the air carefully excluded, ſuch plants will retain a conſiderable degree of moiſture at their roots, for ſome weeks after planting; neverthelefs, where the ſituation affords the means, the bundles ſhould be dipped before they are unbound, as the outſide plants will be ſomewhat more dry than the reſt; but it may be diſpenſed with where proper care has been taken.

would be found almoſt at a ſtand for ſeveral years. In this caſe, the beſt way is to caſt up the land in trenches, in a ſerpentine direction, by which the appearance of regular rows will be avoided, and the paſſage of the winds prevented: theſe ſhould be interſected by others of the ſame ſort, ſloping at the ſides, and about four feet wide at the bottom; except ſuch as are to carry off the water, which ſhould be two feet wider, and one ſide thrown up a little, ſo as to form a ſhallow ditch for that purpoſe.

The diſtances between them ſhould be ſufficient to hold the ſoil to be caſt up; and the number of wide trenches, in proportion to the water likely to be collected; but care muſt be taken that each have only a very moderate quantity, for it will, otherwiſe, ſoon waſh them ſo as to bare the roots of the trees.

Two rows ſhould be planted in every trench, whoſe roots will eventually occupy all the land, though, in the firſt inſtance, leſs than half the uſual quantity will be uſed; and if three or four inches of black ſoil be left in them, it will do no harm, as the roots will be planted beneath it.

This mode of planting will greatly enhance the expence; and, therefore, can be recommended only for parts of plantations, where the trees would not otherwiſe ſucceed; in which caſe it is certainly worth adopting.

In large pieces of planting, we ſometimes meet with other parts, that are clayey and wet: this is a difficulty, and muſt be overcome, or the plantation will be imperfect; the firſt thing, therefore, to be done is, to render them dry by means of open ditches, (which ought never to

deep, muſt be increaſed to five or ſix, by taking out the ſtones; into this he muſt put the turf, and tread it cloſe, to promote its rotting; then drawing the ſoil over it, a hollow will be left at one end, and a little hillock raiſed, for the reception of the trees, on the other.

If this were done early in autumn, the holes would be found in good order, in ſpring, to receive the plants, which ſhould be larches of two years, that have been one tranſplanted, (ſay, the leaſt of that age, viz. from eight to ten inches high,) and Scotch firs of three years old, which have been one tranſplanted.

It may be ſuppoſed, that, by raiſing the ſoil ſomewhat above the ſurface, many of the plants will be deſtroyed by drought. But the ſurrounding graſs, the mellowneſs of the ſoil, the increaſed quantity, and, above all, the rotten turf below,

hence it is that we have now ſo few old larch trees, and the conſequent difficulty of forming a correct eſtimate of the value of its timber; which could not poſſibly have happened, had theſe writers been able to view the ſubject diſtinctly; as, by the weight of their authority, in planting, they might be ſaid to direct, if not to form, the taſte of their age.

When ſuch men leave an important ſubject undecided, it is no wonder that thoſe who immediately follow them do the ſame; for, where the former have no certainty, the latter may be permitted to doubt; and thus age after age is conſumed, and man remains in ignorance.

If this be an object of national concern, it ought to have been diſtinctly treated as ſuch; but I do not know that any writers have ſhown, that they had a clear and comprehenſive idea of its im-

ſuade,) that ſuch undiſtinguiſhing havock proves them to have leſs ſagacity than the beaſts of the field; for they, the creatures of inſtinct, know what is neceſſary to their wants; but men, the children of cuſtom, blindly overlook it.

On returning to the buſineſs of planting, the opinions of others are deſerving of attention.—Some writers recommend trenching the ground, for that purpoſe, which will greatly forward the growth of the trees, in moſt caſes; but, as the coſt more than counterbalances the advantages, and there are other effectual methods at not an eighth of the expence, it can make no part of the ſyſtem of planting for profit.

The reaſon for ſuch preparation is, that the trees may receive a greater ſupply of nutriment, in conſequence of their roots ſpreading freely, in a looſe, moiſt,

portion may, in moſt ſorts of deciduous trees, be reduced, by diminiſhing the tops, but in the fir tribe it is impracticable.

Some light ſoils, bearing a ſtrong ſward, are too ſtony to admit either the plough or ſpade;—when ſuch are to be planted, with trees of two feet or upwards, it will be a good and eaſy method of preparation, to have the holes made in autumn, ſomething larger than for trees of the ſame ſize, where there is no ſward, and put the turf, reverſed, into their bottoms.

Perhaps the following will be found the cheapeſt mode of preparation, it being preſuppoſed that the land is in ſward, capable of being ploughed, and in ſome degree fertile; as it will, thereby, without any kind of manure, bring two tolerable crops of oats; which are likely to pay for rent and labour.

the ball may be reduced in thickneſs, and the lower roots ſhortened. It may then be replanted in the ſame hole, and remain till wanted, by which time it will have produced a great number of ſmall roots, in place of the large ones cut off: theſe may be ſhortened when the tree is removed; which may eaſily be accompliſhed without breaking the ball. But, as what has hitherto been done, is only preparatory to its future ſucceſs, where the ſoil is ſhallow that defect muſt be remedied; and, therefore, inſtead of making a hole deeper than the ſoil, it will be ſufficient to ſtir the earth only to that depth, leaving three or four inches under the ball, and the deficiency muſt be made up, as directed for trees that have been deprived of a part of their roots.

When thoſe of the laſt deſcription cannot conveniently be attained, it will be beſt to procure plants of a large ſize from

and fencing an hundred acres, ſo ſituated as ultimately to ſcreen the whole, allowing compound intereſt for that, with the accumulating rent of the land, for fourteen years, the eſtate would then have coſt about twenty-one thouſand two hundred pounds; and the account for it, with fourteen years beyond that period, may be ſtated as under:

	£.
Paid for the Eſtate	18,000
900 acres, improved by ſhelter, 3s. per acre, at 30 years' purchaſe	4,050
Value of 200,000 trees, (chiefly larch,) at 6d.	5,000
Eſtate worth, at the end of 14 years	27,050
Coſt, as before mentioned, about	21,200
Improvement by planting	5,850
Do. by trees, in 14 years more, at 1s. each .	10,000
	15,850
Deduct, for rent of 100 acres, at 60l. per annum, with compound intereſt,—about	1,175
Eſtate improved by planting, in 28 years	14,675

In making the foregoing calculations, I have made full allowance for the expo-

ſure of ſituation, as it is not uncommon to ſee larch worth as much money in leſs than half the time; but, probably, if the whole were ſuffered to remain to the end of the term, the improvement might not be ſo great; yet, if the thinning were properly attended to, the value of ſtanding trees, with the produce of ſuch as were ſold, could not be leſs than the ſtated average, independent of expences, viz. 1s. 6d. per tree, or 125l. per acre*.

* It is material to the preſent, as well as the principal object of this treatiſe, that larches will grow to conſiderable ſcantlings, though very near each other, providing the ſoil be ſuitable, (and mountainous ones are almoſt uniformly ſo;) for the nutriment collected, by puſhing their roots into freſh ſtrata, is very little waſted, either in ſpreading heads or uſeleſs arms; as they need not have any of the latter, and but as few of the former as are ſufficient to attract the ſap to the ſupport of the trunks; all of which, from their very baſes to where they are three inches in diameter, may be conſidered as valuable timber:—and, of the rapidity of their growth, the following is a direct (but not uncom-

and regularly ripened, of courſe heavier; beſides being ſcreened, while ſtanding, from the *ruinous effects of ſhaking winds*, for which there is no other remedy than cutting down the grain before it is ripe, to prevent its being waſted.

Many are the remote benefits of ſhelter; but I ſhall content myſelf with one, the fruitful parent of all the reſt. It affords the facility of converting the once cheerleſs and ſolitary wilds into the ſocial haunts of men, who never fail to bring with them their wants and their reſources; and, if duly encouraged, population is as certain to increaſe: while that is the caſe, the fertility and conſequent value of the ſurrounding fields increaſe too; for it is rare indeed to find land cheap where men are plentiful, and ſtill more ſo to find their numbers, once eſtabliſhed, decreaſe, except through the wretched policy of rapacious or miſtaken landholders.

Far from being unduly biaſſed by the intereſts of my profeſſion, this ſyſtem has economy for its baſis; and having eighty acres thus planted, on my own account, I am conſcious of acting and writing upon the ſame principle, viz. UTILITY:—for I have long been convinced, that it is not only practicable but eaſy for this iſland to grow fir timber, for its own conſumption, without oppoſing the intereſts of agriculture. The end is confeſſedly important, and to promote the means, my beſt endeavours, though feeble, have not been wanting: and if in this or any future attempt, to forward the ſame GOOD CAUSE, they be found in the leaſt degree ſucceſsful, I ſhall have the conſolation to think, that I have not lived in vain.

Sikes and Smart, Printers,
Kirkgate, Huddersfield.