THE
JOURNAL OF
COMPARATIVE PATHOLOGY
AND
THERAPEUTICS.

VOL. V.—No. 2.

JUNE 30, 1892.

PRICE 2s. 6d.

ON THE MECHANICAL TREATMENT OF
CONTRACTED FEET.

By FRED SMITH, M.R.C.V.S., F.I.C., Professor in the Army
Veterinary School, Aldershot.

FOR years past our neighbours on the Continent have practised an operation on contracted feet, for the purpose of restoring them to their natural shape. It is a question in my mind how far the operation as practised by them is necessary, for we are taught to recognise that a contracted foot is an effect rather than a cause.

Doubtless in the large majority of cases this view is perfectly correct, but I can conceive, and I believe I have witnessed, cases where contracted feet were unassociated with organic disease of the part, and were the result of bad shoeing.

We are perfectly familiar with the changes occurring in the foot as the result of the absence of frog pressure and the presence of high heels; we know perfectly well that the contact of the posterior part of the foot with the ground is essential to a healthy state of the parts, and that where this pressure is removed a "wiring in" of the heels and atrophy of the frog occur. In aggravated cases the contraction of the wall is so excessive that it doubtless exercises pressure on the sensitive laminae, and I believe I am correct in saying that a contracted foot, quite apart from organic disease of the part, may be a cause of lameness.

Apart, however, from this important question, is the next one of the disadvantage to the horse of being without a frog, and the serious reduction which occurs in the size of the weight-supporting surface of

the foot, by the part not being as large as it was intended by nature to be.

There are feet which no amount of care in shoeing will convert into broad open heels; I allude particularly to those which have been neglected for months or years, where the posterior edges of the wall or bulbs of the heel are actually in apposition or overlapping, and the frog is represented by a narrow ragged diseased streak, the cleft long since disappeared, and the foot at the heels high and narrow. Judging from my own experience of these feet, I think that it is not possible to entirely change their appearance by care in shoeing; the frogs improve, and may become twice as large, but the foot is distinctly contracted, and will remain so. In these feet mechanical dilatation of the heels offers the best and most rapid prospect of cure, and in the remarks I have to make on mechanical expansion of the foot, I am anxious to make myself clear on the point of the selection of cases—I should propose to limit the operation entirely to those where we have good reason for believing that no organic trouble exists.

In all feet if the posterior part of the wall be compressed from both sides, the pressure causes the foot to become slightly narrower, and distinct movement may be seen in the cleft of the frog. In the same way it is possible by exercising pressure in the opposite direction to make the foot wider; this is the rationale of mechanical expansion. An arrangement exists in the shoe for exercising outward pressure on the wall, thereby opening the cleft of the frog, and removing the sensitive frog and plantar cushion from pressure; as the result of decrease in pressure, these parts regain their natural bulk, and the horn covering them becomes correspondingly healthy; day by day we can see the frog improving and gradually unfolding like a growing leaf, until at last it assumes its full proportions and a cure is effected.

The shoes which have been devised for the purpose of producing expansion of the foot are much too numerous to mention, but they all

FIG. 1.—The Shoe seen from its ground surface, and from the side. *a*. The screw with a fine cut thread; *b*. Nut which travels along it; *c*. A hollow thimble into which the screw passes at one end, the other being cut out V-shaped to catch into a slot, *d*, on the shoe; *e*. The grip for the bars, the length and direction of which depend upon the shape of the foot; *f*, *f'*. The counter-sunk rivets forming the hinge; *g*. The counter-sunk rivet of the expanding piece.

work much on the same principle, viz., some part of the shoe is hinged. The heels of the shoe are movable outwards and inwards, and they

catch inside the heels of the foot by means of a screw or wedge ; the movable heels of the shoe are then gradually widened, and with them goes the foot.

The shoe shown in Fig. 1 is one devised by Farrier Major Miles, A.S.C. to meet my requirements ; it is probably the most simple of its kind, and not too difficult for an ordinary skilful farrier to make.

The arrangement for expanding the heels of the shoe is a nut travelling along a thread. The movable heels are secured to the body of the shoe by strong counter-sunk rivets.

My method of proceeding is as follows. A careful outline is made of the foot or feet by placing them on paper, and the position of the hinge in the shoe should be marked ; it must not be too far forward or it leaves very little foot to nail to. Before the shoe is applied I make careful measurements of the foot, width of the wall at the heels, width of the frog, etc. These measurements are conveniently made with a pair of calipers, the wall being marked so as to ensure the measurements all being made in the same place during future observations.

In fitting the shoe, the only difficulty which may arise is that if the heels have been hinged too far forward, when the shoe is nailed on it has a tendency to spring at the heels, and the arrangement or grip which catches on to the bars may have some difficulty in biting. All this trouble is avoided by keeping the hinged part of the heels of the shoe as short as possible ; $1\frac{1}{2}$ inches to 2 inches from the heel to the hinge should be sufficient for all purposes.

After the shoe has been securely fixed to the foot, the travelling nut is driven forward on the screw so as just to cause the grip on the heels of the shoe to catch inside the bar. The amount of pressure must be learned by experience ; I screw up very gradually until I see the cleft of the frog commencing to open. I now trot the horse up, and if he goes sound it is certain that the pressure I have exercised will not give rise to trouble. The animal is sent to work, to assist in the development of his foot. On examining the shoe next day, the grip is found to be quite loose—the foot has enlarged ; the nut is turned once more until the grip on the bars is tightened, the horse being again tested by trotting up to ascertain that no injurious pressure is exercised.

Every day or two I repeat this process, making measurements in all cases before widening the heels. The increase in width of the foot which results is astounding ; one quarter to three-eighths of an inch during the first week may be safely predicted, and in a month to six weeks it is impossible to recognise in the large healthy frog and wide heels, the shrivelled up organ of a short time before.

The secret of success depends upon avoiding injurious pressure by turning the nut too far ; the safest indication in this direction is the horse trotting sound and the foot remaining cool. If the screw be too tight the foot becomes very hot, and the lameness intense, though by relaxing the screw the animal is at once relieved.

Gradually by this process the frog becomes developed, the cleft and bulbs unfold themselves, parts of the frog which have been curled in, perhaps for years, now have light thrown on them, and in a short time the transformation is completed.

Avoid undue haste ; the tendency is to turn the nut further than

necessary, and then the pressure becomes considerable; the frog is developing at such a rate that we are inclined to take advantage of this, and make its recovery still more rapid. This results in the pro-

FIG. 2.

duction of lameness and retards the progress of the case, for the nut on the screw must now be completely slackened, and all pressure taken off the foot for a day or two.

I append drawings of two feet treated on the above principle. In Fig. 2, A shows the shape of the foot before treatment; B, the same foot after nine days' treatment, when the heels had widened $\frac{3}{4}$ inch; C,

FIG. 3.

the same foot after thirty-nine days' treatment, at which date the frog was an excellent looking one, and the foot had increased exactly an inch in width.

In Fig. 3, A shows another foot before treatment, and B the same foot after twenty-four days' expansion treatment, when the foot had enlarged $\frac{5}{8}$ of an inch.

In the absence of organic disease I strongly recommend this method of treating contracted feet.