

Wisdom from The Past

Farriery is the art of shoeing horses, and can only be properly learned by a long practical experience in the shoeing-forge. If the foot of the horse were not a living object perhaps the training obtained in the forge would be all that was necessary for efficient workmanship.

As, however, the hoof is constantly growing, it is constantly changing in form. The duty of the farrier therefore is not merely to fix a shoe upon the hoof but to reduce the hoof to proper proportions before doing so.

Now, as the hoof is only the outer covering of a sensitive foot, damage to the exterior surface may injure the structures within. Injury does frequently result, and not always from carelessness. Perhaps as much injury follows careful work based upon wrong principles, as slovenly work carried out in perfect ignorance of any principle. The injury to feet resulting from shoeing may not be apparent at once. It may be, and often is, of a slow and gradual nature, and not credited to its true cause until the horse is rendered an incurable cripple.

It seems evident then that to do justice to a horse a farrier should not only possess manipulative skill, but should have a correct idea of the structures and functions of the foot, as well as a thorough knowledge of the variations of the hoof.

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By: William Hunting

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Have You Ever Asked Yourself?

- 1. During forward movement, how many different directions can a horse travel?**
- 2. What is regarded as the normal conformational stance of a horse?**
- 3. Why is the front foot almost round?**
- 4. Why does the rear foot have a corner or a point to the toe?**
- 5. What is the main function of the front limbs?**
- 6. What is the main function of the rear limbs?**
- 7. Does the length of pastern have any association with the length of toe?**
- 8. Does the size and weight of the horse have any bearing on the size of the foot?**
- 9. Can we compare the horse as an athlete to the human athlete?**
- 10. What analogies can we link to each?**

One Man's Opinion

During my 30 years of effort to serve the horse, I have learned to question myself from time to time. I will try to be brief in my answers to the questions

When I view a horse moving forward, I have come to realize that the horse moves in only two different directions. First, there is the straight line. Second there is an arc, to either side and in variable degrees but still, in an arc.



Figure 1. Horse's movement is either in a straight line or in an arc.

Looking at the skeletal structure, I find the horses [80% of the horses I see] are slightly toed out in front and the same behind. The foot, knee, and forearm of the leg line up and under the mass of the front end. The rear foot is pointed outward from the line of spine some 10 to 12 degrees. However, this conformation tends to line the hocks up under the gluteus masses of the hip.

The front foot's appearance resembles a horizontal bearing, if you will. By this I mean it is larger and rounder than the rear, and this shape allows it to bear the weight and break-over with equal ease at any point on the toe.



Figure 2. Front feet break over with ease on at any point of the toe

The rear foot has a corner or point to it. Could this be a design flaw? I think not! The "point" has a dual purpose. First, it gives guidance and directionally influences the leg. Second, it gives the limb something to dig into the ground with, provide resistance, therefore changing this energy into forward motion.



Figure 3. Rear foot gives guidance and direction

As the horse moves in a straight line, both hind feet push and the breakover only occurs after the whole leg including the hock are in front of the foot. The breakover occurs at the medial toe quarter. When the horse is moving in an arc, the inside leg's foot breaks over at the lateral toe quarter while the outside leg's foot is still breaking over medial toe. These actions allow for the maximum amount of ground to be covered with the least effort.

The front limbs have a large responsibility; they have to keep the horse's nose from hitting the ground. Therefore, 90% of their function is VERTICAL LIFT, and 10% is for guidance during arcs.

The rear limbs are very different. Because the center of mass is always in front of the rear legs, they are responsible for PROPULSION.

The length of pastern varies from horse to horse; therefore, to keep the levers and pulleys functioning properly, the length of toe must coincide, as close as possible, to pastern length of each individual.

The size and weight of the horse are the main factors that should determine the size of the foot. Is there adequate surface area of foot for the weight of the horse?

I believe the horse and the human, as athletes, are very similar. Both can accomplish extraordinary feats with the proper nutrition, conditioning, and training. They both can fail if any part of one of these elements is missing.

When viewing the human in a "starting block" sprinter's stance, the body strongly resembles the horse. The arms become the fore legs, the chest becomes the "barrel", and the hips are the hips, while the human knee becomes the stifle, the heel (which is raised off the ground) becomes the hock, and the toes become the pasterns.

One analogy I like to use is the person pushing a full wheelbarrow. This is a good example of what a horse feels. The wheel is responsible for keeping the cargo aloft. The wheel is the fore legs and the cargo is the mass. The center of mass is above and behind the wheel. The handles function as the loins. The handles intersect the person at the hips forming the "universal joint" used when the horse moves from the straight line to an arc. Now let's complicate things and add an incline. What part of our anatomy do we really depend upon now?

CONCLUSION

Most of the horses we shoe are asked to do the same thing, **MOVE**. Moving forward is a basic response. If I utilize the roundness of the front foot for ease of direction, straight or in an arc, then cover the foot with an adequate shoe, the flexors are then responsible for achieving the lift that is necessary. The rear feet can now perform their task of forward push. I find that all parts of the foot are necessary to facilitate their purpose, especially the **TOE!**

By shortening the surface area of the foot by excessive trimming or applying a blunted or squared toe shoe, I find I lose too much energy and function of the foot. The horse has to work harder to cover the same amount of ground. It would be the same as putting lawn mower tires on the front of your truck! I try to set my horses up with length and mass of foot that closely associates to the length of pastern.



Figure 4. Do these toes help or hurt the horse?

EXAMPLE: I shoe a T/B/Warm Blood cross. He is 17 years old, 16.3hds. and weighs 1300lbs. The pastern length in front is 4 7/8" and rear is 5 1/8". The length of the front foot after trimming is 4 1/2" and the length of the rear foot, after trimming, is 4 3/4". Both front and rear feet are fit full or "perimeter fit" with plenty of expansion, and the heel length is at least directly under the bulbs. This horse participates in 4 or 5, 3-Day Events per year. He is sound, takes training well and best of all, he is like shoeing a statue. He is not sore in hock, stifle, back, or shoulder. This was not the case in '94. His feet were nearly destroyed. He was wearing #2's, severely squared toes with no expansion, and no length to the shoe. He was sore all over with a most unpleasant attitude. Three hours was a minimum to take old off and put new shoes on.



Pared Hind Foot



Trimmed Front Foot



Proper Length and Angle of Toe



Length of Toe Compared to Length of Pastern

Figure 5. These pictures are of the horse described in the example.

To make a horse's foot smaller than normal, whether by trimming and/or squaring or backing-up the shoe, only serves to dysfunction the foot as well as the complete horse.

It's very unfortunate that the horse has been subjected to the "short style" of shoeing. Many remodeled feet, shortened hooves, blocked and squared toes, with very inadequate expansion, has led to a short life expectancy of a truly tough animal. The "authority figures" involved, from vets, shoers, and nationally known trainers seem to accept these conditions as normal. Many of the same people feel these conditions are even necessary! The misinformation used, mistakes made, common sense ignored, and ego enhancing "power positions" have made this situation very critical!

Question yourself and others from time to time. Get into the habit of researching your answers from as many sources as you can and make up your own mind. Do not be guilty of shoeing a certain way because everybody says it's right.

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