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How Horses Work

Installment #1: The Anatomy of the “Soft Feel”

by Deb Bennett, Ph.D.

Introduction

There is a direct relationship between the inner life of the horse and what he is willing and able to do with his physical body. By “inner life” I of course mean the bones, muscles, joints, ligaments, tendons, and organs that make up his anatomy under the skin. But I also intend to mean his thoughts, emotions, and spirit. To me anymore, it is impossible to “just” teach anatomy or physical functioning; the other more subtle things come right along with it. They are inseparable.

Because they are inseparable, it is impossible for a horse, even when he is by himself, to think a thought and not, at the same time, do something (or not-do something) with his body. It is impossible for him, for example, to move from an emotional state of fear to one of curiosity without that also showing up in the expression of his face and body. This is what we mean when we say that horses are “honest.”

When a rider or handler enters the picture, he or she becomes part of a larger system—or organism; a new composite creature. No rider, whether skillful or clumsy, can be around a horse without affecting the horse at all levels. The rider brings in a physique, but also a whole bundle of concepts, hopes, aspirations, and positive or destructive emotions. The total mix of what is coming from the rider, where it meets what is coming from the horse, will dictate what we see happening on the “outside.” This is where, I feel, the teaching of Tom Dorrance and Ray Hunt is so effective: for in all my experience with them, I never saw either man address any problem merely on the physical level. They were scanning for what was going on within, and when the system wasn’t working, they went in—and they asked me to go in—as deep as necessary to put things right again.

Today, when I step into a riding arena to teach a clinic, this is what is primarily on my mind. Riders often come to clinics hoping for “a few pointers,” and if they insist on that, I guess that’s what they’ll go home with. But my intentions for them are far greater—nothing less than helping them get the connection between what they are asking the horse to do on a physical level and what that asking means to the horse. I believe that anyone who does not understand, and respect, what a given situation or maneuver means to a horse will wind up hurting the horse. Anyone who pretends to teach and who

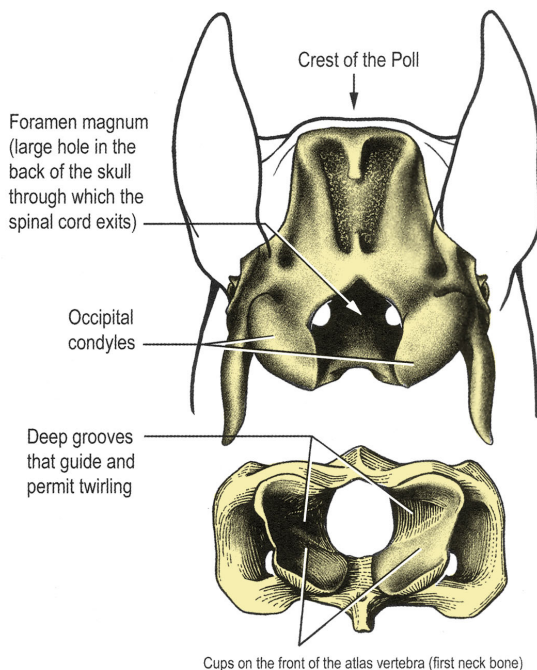


Fig. 1.

does not understand this is not qualified to teach.

This is the first installment of a series. I have used the title “How Horses Work” before—long ago, in the 1970s—so this is a reincarnation and hopefully, an improvement. You can look forward to learning some anatomy here. It will be presented in a way that should have a lot of meaning and relevance to *Eclectic Horseman* readers. Each installment will focus on a maneuver that is a key to good horsemanship: the same repertory that Ray Hunt encouraged us, through his horsemanship class, to learn. The list of maneuvers is fairly long – you’ll already know this if you rode with Ray regularly; there was quite a lot packed into any one of those afternoon classes. You also probably know that if you want to make progress with your horse, you have to practice these appar-

ently “simple” maneuvers to repletion. All the other stuff you want to do—whether it be reining, dressage, cutting, jumping, trail riding, ranch work or what-have-you—is founded upon these essential building blocks. My hope, then, is to show you “what’s going on inside the horse” so that your concept of what you are asking in each case is crystal-clear. It will then also have some chance of becoming clear to your horse.

Twirling the Head

This is one of the first things an aspiring horseman needs to learn. “Twirling the head” is my name for it; back in the 1820s François Baucher called it “jaw flexions”; Ray Hunt called it “picking up a soft feel.” There’s a good story to tell as we begin.

It was a Ray Hunt clinic in 29 Palms, California, and it was time for lunch. Since this clinic was not too far from my house, I had driven down there to participate. Kim and Bill Ortamond had kindly loaned me a good Thoroughbred mare to ride. It was not too big a clinic, and there were shady picnic tables, so a bunch of us—including Ray—sat down to munch on sandwiches and shoot the breeze.

Somebody smiled and asked whether “Dr. Deb” had any bones in her saddlebags. As it happened, I had a horse skeleton boxed up in the trunk of my car (dreadful, somebody suggested, to think what would happen if my car ever got rear-ended). So amidst the laughter, I walked over and got the skull, jaws, and the first two neck bones. I sat down with them directly across from Ray as everyone gathered around.

“Ray,” I said, “you’ve been teaching me for years and when you’re teaching I don’t have a lot to say. But if it’s OK with you, I’d like to give you something back now.” Ray nodded for me to go on.

I fitted the first neck bone onto the back of the skull to form the poll joint, and began manipulating it so that Ray and the class could see what mobility at the poll joint looks like. Some of that mobility is the back-and-forth kind of movement that riders associate with “tucking the nose.” But there is also another class of movement that is possible for the horse to make at the poll joint—a certain kind of sideways swivelling that brings the horse’s inside eye into the rider’s line of view without tilting the horse’s head.

As I swivelled the bones, I glanced up at Ray’s face and saw that his eyebrows were going up and up—they went up so far they tilted his hat back. Evidently, seeing this had some meaning for him.

“You see, Ray,” I said, “when I was in school, they taught me these bones and the movements they could make at the joints. But I had no useful idea of what it meant until you showed me what the soft feel is. What clarified it for me was when you said, ‘tuck the jowl under the throat.’ I see a lot of people mix that up with pulling back in order to get the nose to tuck. They’re pulling back softly, and they may even be tim-

ing their release pretty good, but they are still not getting a lasting soft feel—because they aren’t asking the horse for the right motion at the poll joint.”

“Yes,” said Ray.

“Now, another thing you have taught all of us,” I said, “is that if we want to get a soft feel, then we mustn’t pull square on the reins. You’ve showed us again and again that the hands have different jobs and the feel on one rein is always different than the feel on the other—even if you ride one-handed in a curb bit. And I understand that’s because you’re asking us to learn to control the feet. The feet hardly ever move square, so our hands can’t be square either.”

“Right,” said Ray.

“OK, so these things go together,” I said. “A ‘soft feel’ is a soft feeling that the horse is sending back to you, but it’s provoked or brought on by causing the head to swivel sideways at the poll joint. And you get that motion by holding the inside rein so that his jowl will want to move under his throat. And you hold that rein until he releases any brace, and then you release, and that’s when it becomes ‘soft.’”

Ray nodded.

“So what I want to ask you now is this,” I said. “Ray—if you had the most perfect horse you could possibly imagine—perfectly finished, the ideal ride—would you, on that horse, ever pick up a square feel?”

And Ray sat there so long without saying anything that I thought I had offended him by asking. The entire class held its breath. Finally he said,

“No, Debbie, I don’t believe I’d do that even then.”

So there’s your answer from the master. Now let’s take a close look at the actual anatomy where the upper part of the horse’s neck meets the back of his skull—and the meaning of that anatomy—so that you can see just what the folks at the 29 Palms clinic saw.

Illustrated Essay on Head Twirling

Fig. 1. The poll joint is formed where the knob-shaped occipital condyles fit into cups in the front of the first neck bone (the atlas vertebra). If you were to grab the atlas vertebra shown here and turn it around to face the page, you could fit the cups onto the knobs.

The poll joint is not the same as the crest of the poll. If you were to pierce the flesh of the horse’s neck with a long needle just behind the crest of the poll, you would have to push the needle straight down parallel to the rear surface of the skull about five inches on an average-sized horse before its tip would be low enough to lie between the occipital condyles.

The occipital condyles, as well as the cups in the atlas which receive them, are bean-shaped—not spherical. Such “eccentric” articulations force synovial fluid to squish away from the area of greatest flexure each time the joint moves, thus ensuring automatic and continuous lubrication to all



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parts of the joint.

No joint in the body can move any which-way. All joints are engineered to make certain specific movements. Only two types of movement are possible at the poll joint. The first is familiar to most riders: when the horse makes a nodding, “yes,” or “tucking” gesture with his head.

The second type of movement, known to very few riders but far more important than the first, is “twirling” or side-to-side swivelling. This is not the same as the rotatory or “no” gesture the horse makes when he’s shaking off flies. The bean-shaped occipital condyles have a narrow edge, which fits into the slots which form the deepest parts of the cups on the front aspect of the atlas vertebra. When you twirl the horse’s head, you are not rotating the head but sliding the occipital condyles across the slots in the atlas.

Fig. 2. Here I am on my old friend Painty Horse, whose response to my request to twirl his head is of the finest. The technique of twirling the finished horse is what you see my right hand doing here—a slightly up-and-to-the-midline gesture that communicates by the mere weight of the rein. My little finger is open because the camera snapped at the moment of release—yes, there is always release, even when you have a horse like Painty who will “follow a feel.”

The action of twirling is when Painty swivels his head at the poll joint so that he tucks his inside jowl under his throat.

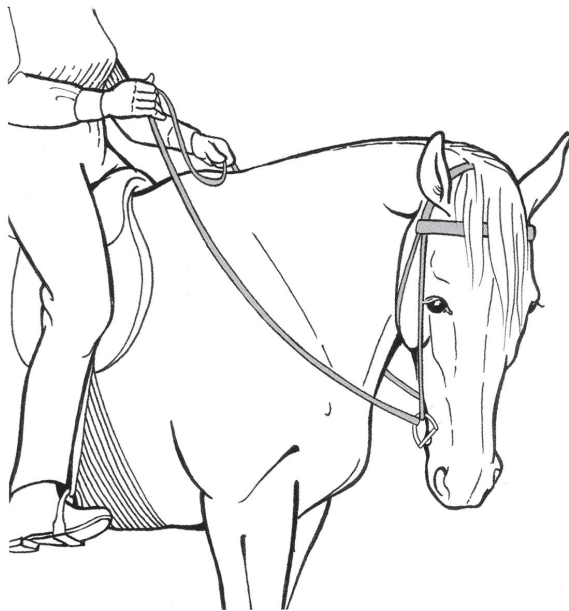


Fig. 2.



Fig. 3.

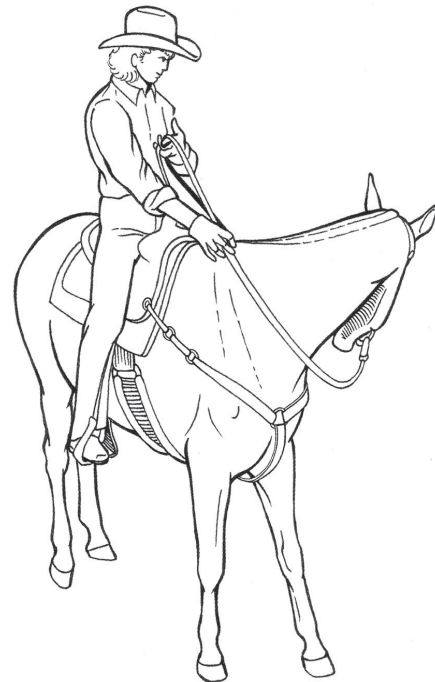
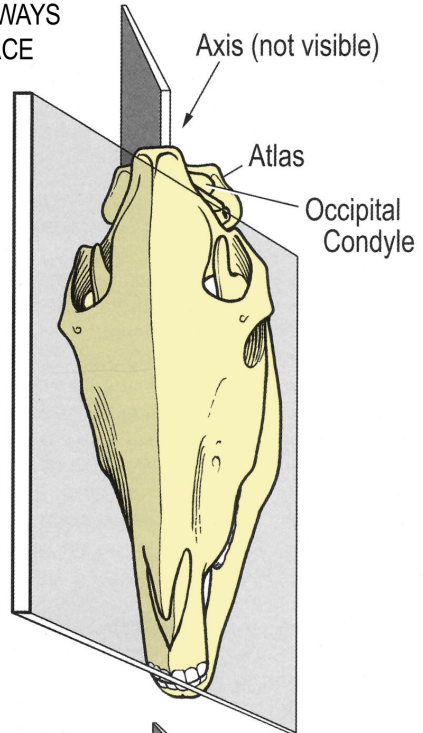


Fig. 4.

RIGHT: SKULL AND
JAWS SLIDE SIDEWAYS
ON FRONT SURFACE
OF ATLAS



He neither tucks his nose (I am not asking him to tuck his nose), nor does he tilt his head.

The meaning of twirling is that it helps the horse release any brace that he may be holding in the muscles of his neck. Twirling feels good to the horse, so he sure doesn't mind complying. When the horse feels good physically it helps him feel good mentally, emotionally, and spiritually. Often, you get to the inside of the horse by working with the outside.

Fig. 3. Master Paso Fino trainer Jorge DeMoya riding a colt in Puerto Rican equipment—all of braided rawhide. The reins are thick and rather stiff. This is great traditional gear that can work just as well as the English outfit on Painty. The difference is that Jorge's colt is dead green, and Jorge is patiently showing him what "to twirl the head" means. Jorge's upturned right hand demonstrates a sophisticated and effective technique—much better than raising the hand excessively. Jorge's left hand, meanwhile, is completely open; he has entirely dropped the outside rein. The colt needs complete freedom on the outside—no confusion from conflicting signals—while he figures out what the tug on the inside is supposed to mean. Note the colt's "arrested" stance but interested expression. He knows something is wanted and his brain is going a mile a minute to hunt it up.

Until he finds it, the brace that you can see in the colt's neck will remain there. It will continue to be difficult to turn the horse's head, and likewise it will continue to be difficult for the horse to turn his head. Jorge knows that if he waits at the same pressure, pretty soon the colt will make the right gesture. At that moment, the brace will evaporate and Jorge will then release the inside rein. When the brace goes out of there, the colt will be able to drop his head, maybe even all the way to the ground. Because it feels good, the colt will want to do it again. This is a great image because it captures this colt's introduction to what the reins and the rider's hands are supposed to mean. As it is impossible for a horse to turn correctly without the head first twirling, this will be a lesson he'll use for the rest of his working life.

Fig. 4. Observe this colt's tilted head. The rider is thoughtful, tactful, and experienced. She believes that neck flexions are important for making a finished horse. She's right; they are. The problem is that this lady—like most riders that I see—does not have enough knowledge to be specific. She does not know which joint or joints she is addressing. In her quest to get the neck more flexible, she has gone past what the colt is physically capable of executing correctly today.

The moment you pull a horse's head around far enough that it starts to tilt, you have ceased to address the poll joint but instead have engaged the next joint farther back, which is the joint between the atlas and axis vertebrae. The more you tilt the horse's head, the stiffer and more braced his neck will get, for the effects of addressing the 2nd neck joint are just the opposite of those obtainable by addressing the 1st joint. Much of your power

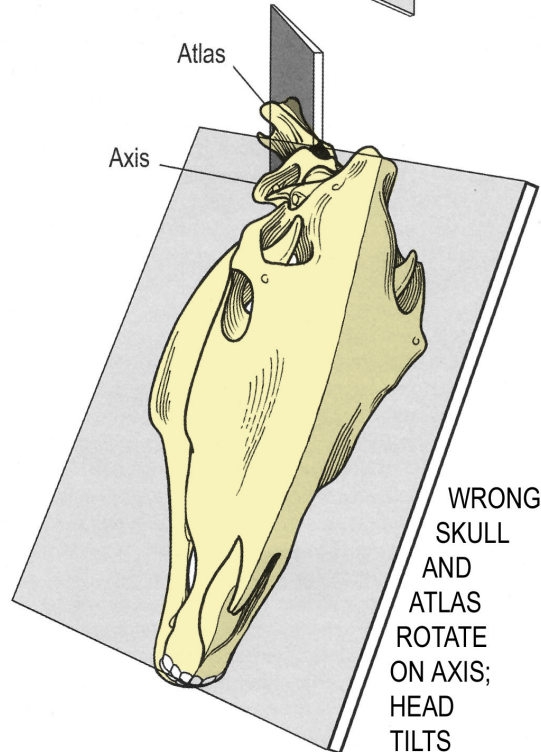


Fig. 5.



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as a horse trainer comes from your ability to address the horse's body exactly where you meant to create an effect.

Fig. 5. Twirling (above) vs... tilting (below). Both might be produced by a pull on the right rein, so you need to be careful to have the right mental picture before you begin. When a horse twirls the head correctly, the tips of the ears, a line drawn between the eyes, and the poll crest all remain level. The midline of the face remains plumb to the ground. The inside jowl tucks under the horse's throat. Old books tell the rider to "look for the horse's inside eye." However, don't get so caught up in looking for the eye to come around or the jowl to tuck that you start leaning over toward the inside. If you want a good idea of how to sit while you observe the horse's responses, look again at the picture of Jorge DeMoya.

Fig. 6. What happens at the level of the actual bones and joints when the rider causes the horse to tilt its head. 1: The axis or 2nd neck vertebra is vertical in this view, as is the rest of the neck (not drawn). 2: The rider pulls on the inside rein too much, so that the nose is drawn upward and the midline of the face is tilted off plumb. 3: The occipital condyles, seated in their twin cups in the atlas vertebra, cannot move in this direction, so the joint jams. As the pull from the rider continues, the skull-plus-atlas rolls over as a locked unit (grey arrow). The jammed joint is frozen rather than loosened: just the effect you did not want! 4: Rotatory, "no", or tilting movement is not permitted at the poll joint, but it is legal between the atlas and axis vertebrae—in fact this is the only place it is freely permitted in the horse's entire vertebral chain. The arrow points to the surface of mobility at the 2nd neck joint.

Fig. 7. Twirling; bones seen from the top. When the head twirls, the skull swivels sideways in the cups of the atlas. This is about the greatest degree of twirling that most horses can achieve; any more and you would run the occipital condyles right out of the atlas. Keep in mind that the object of twirling is never to see "how much" the horse can twirl. Neither is any force needed; you are not to "crank" the head, but instead merely apply enough pressure with the inside rein to show him what you want, and then wait at the same pressure until the horse releases to the steady feel you're offering.

Twirling has one object only: to provoke release of the neck muscles, to help the horse get rid of a brace. For this purpose, only a small degree of twirling may suffice. You will find it helpful if, once you think that the horse is complying, you continue to hold at the same pressure for a slow count of "one, two" before releasing. Waiting this small extra amount of time does not discourage the horse, but ensures that he responds "thoroughly."

WRONG:
TWISTING
THE HEAD

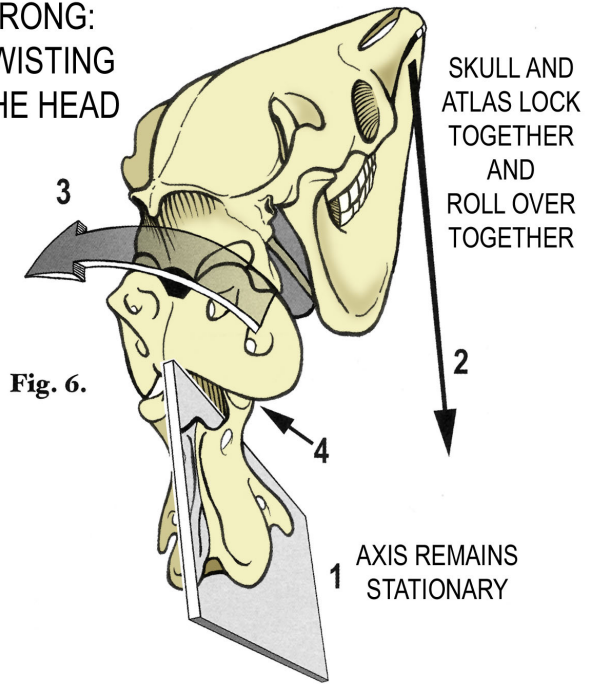


Fig. 6.

RIDER'S LINE OF TRAVEL — MIDLINE OF SKULL
OUTSIDE — RIGHT: TWIRLING THE HEAD

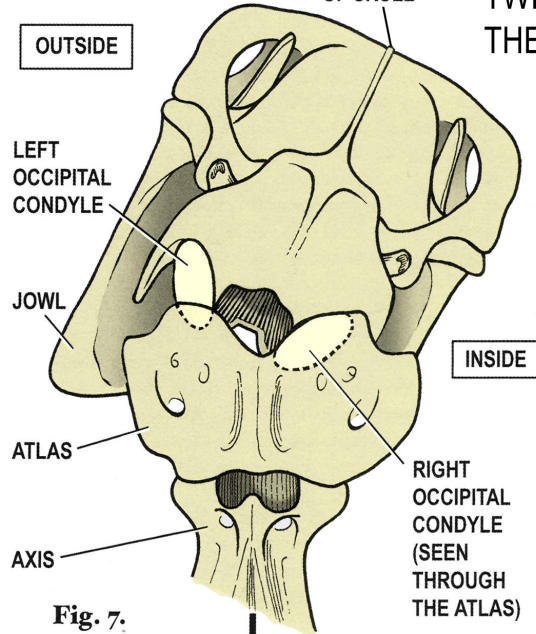


Fig. 7.

AXIS AND ATLAS STATIONARY;
SKULL SLIDES SIDWAYS
ON THE FRONT OF THE ATLAS



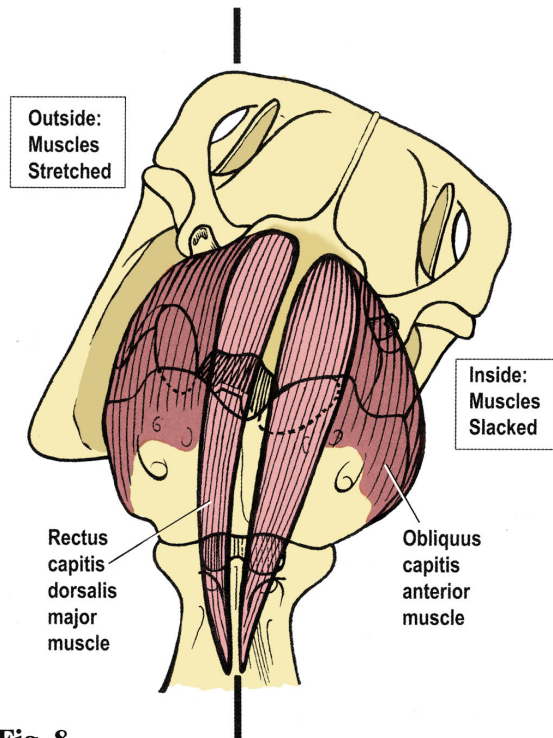


Fig. 8.



Fig. 9.

Fig. 8. Twirling works via special nerve cells called “stretch receptors” that are embedded in muscles and tendons. The stretch receptors communicate with a deep, unconscious part of the horse’s brain that is pre-programmed to guard him against strains by either bracing or relaxing muscles as appropriate. When the head twirls, it stretches the muscles of only one side while it simultaneously slacks the muscles of the other side.

A square feel thus sends a straightforward signal: it is exactly as if the rider is telling the horse’s brain, “turn your neck muscles on—brace them—so that they defend against my pull.” But an un-square feel poses a dilemma to the brain: “you’re getting two different signals at one time; probably best to relax and go with the flow.” Twirling fools the brain into telling the neck muscles to release. Muscles shown here are those most directly affected by twirling; there are several much larger muscles that overlie these which also benefit (for example, splenius capitis, brachiocephalicus, cervical rhomboideus, and complexus).

Fig. 9. Don’t drive your horse nuts with this. After they have learned how to twirl a horse’s head, students often ask “how often should I do it.” The truthful answer is that there is just about never a time when the head is not twirled. This is because it is impossible to turn or circle correctly unless the head is first twirled, and also because release of all brace in the poll, jaws, hyoid joints and neck is a prerequisite to the horse being able to coil his hindquarters for good halts or collection.

But “to twirl the head” does not necessarily mean that you, the rider, need to do anything. The rider in this picture is approaching the corner of her arena. She is setting the horse up for the corner: you see her inside rein actively “asking.” In one more step—when he complies with her request—she and the horse are mutually going to cause that rein to go slack. Will his head maintain the soft curve that will carry him all the way through the corner, without the rider having to “steer” every single second? Ray Hunt used to say that steering all the time would discourage a horse, and one reason is that it robs the horse of any initiative he might have had to learn to “carry a soft feel.”

If you have a horse that’s been badly ridden for a long time, so that whenever you address the reins he braces, you will often have to step in there and physically twirl the head in order to help him. But as your horse becomes more and more finished, less and less will be needed and you should always be looking for whether he will maintain the soft feel on his own. As the release response penetrates deeper and deeper into the horse, he discovers that he can move without first bracing up—and then you may get long stretches where you don’t need to twirl the head, because there is simply no brace anywhere in the horse. When you approach a corner or ride on a curve, the horse will look where you are looking, intend what you are intending, “follow a feel,” and twirl himself!

Next Issue: Untracking