RESPONSE TO THE REQUEST, "PLEASE DISCUSS YOUR OPINION REGARDING THE USE OF HARSH BITS, DRAW REINS AND MARTINGALES/TIE-DOWNS."

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Love and marriage
Love and marriage
Go together like a
Horse and carriage

So runs the song. Some old-established connections are acceptable but others are accepted without question, simply because they are old. 'Bridle and Bit' is a connection that man has grown accustomed to for 6000 years. Before I can respond adequately to the request in the title, I need to take a detached look at this connection for a moment and provide some information by way of background. To do this I will ask myself some fundamental questions.

- 'What is a bit?
- What does it do?'
- And in the words of the song, is it true that
  "You can't have one (the bridle) *without the other* (the bit)"?

Those readers who do not have the time to study the reasons for my opinions should skip straight to the brief 'Opinions' themselves on page seven.

DEFINITION AND ASSUMPTIONS

A bit is most often made of steel and is a rod-like device. One or more of these devices are inserted across the interdental space of the horse's mouth, bridging the two knife-edged branches of the lower jaw (the 'bars'). The natural reaction for such foreign bodies to be spat out by the horse is anticipated and prevented by retaining the device(s) in this sensitive space by a system of straps around the horse's head (the bridle). For riding, one or more pairs of long (4-5 ft) straps are attached to each end of the device(s). The rider holds the other end of the strap(s) and uses it to apply pressure to the horse's lips, tongue, gums, lower jaw and sometimes the roof of its mouth. The amount of pressure that is applied varies with the design of the device, the experience of the rider, the amount and

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quality of the training that the horse has had, and the monsters (real or imagined) that the horse encounters on the ride.

The assumption is that, together with aids exerted through seat and leg, the pressure of a steel mouth-rod will regularly signal a horse to start and stop, speed-up or slow-down, go forward or backward, turn to left or right, move sideways, and obey a number of other instructions. Furthermore, it is assumed that by harnessing a horse to a wheeled vehicle or other heavy object – in the absence of guidance from seat and legs - a horse can be trained to respond to mouth pressure only, conveyed through 10 foot straps or longer, and to draw or drag such objects for long distances at various speeds.

Unfortunately, although these assumptions are correct for some of the time, they cannot be relied upon all of the time. The problem is that the method of signaling is potentially painful. When pain is inflicted rather than a polite and painless request, it is likely to be responded to by the horse in ways that the rider did not intend. To make an analogy with verbal communication between two people, whereas a whisper will get the message across correctly a shout may not. Think of the different responses that you are likely to get between whispering, "I love you" to the person in your arms and shouting the same message with all the force of your lungs. This means that the mouth-rod method of communication is at best unreliable and at worst positively dangerous. Some of the main reasons for this unhappy situation are explained in the next section. Essentially, riders need to whisper to their horse, not shout. Faulty communication spawns disasters in equitation as it does in all other fields of endeavor.

Before moving on, let me quote Dr. Jessica Jahiel's comment on a basic fallacy in many people's assumption about the bit. Jahiel is an ARICP instructor in dressage and combined training, the author of many books and the author too of a priceless electronic Q&A newsletter.[2] *"One of the great myths of horseback riding is that the bit stops the horse. The bit does NOT stop the horse. A bit can hurt a horse, frighten a horse, cut though the horse's tongue, or otherwise damage the horse. A bit can be used to signal a horse, crudely and harshly or gently and lightly, depending on the skill of the rider. But no bit ever stopped a horse. All the bit can do is to* ***help you tell the horse that you would like it to stop*** *(*emphasis added*) – and you can say that just as clearly WITHOUT a bit."*

THE HORSE'S VIEWPOINT

The horse's mouth is one of the most sensitive parts of its anatomy. The muzzle with its whiskers, and the lips, tongue, gums, hard palate (roof of mouth), and lining of the mouth are tactile organs of exquisite sensibility. They are 'organs of apprehension' in both senses of the word. They allow a horse to feel its way fastidiously around the world, and to select food and water with the utmost

[2] www. prairienet.org/horse-sense

discrimination. But just as they are highly sensitive to touch, pressure, temperature and taste, so also are they extremely sensitive to pain.

Yet man applies his greatest force in this delicate oral cavity. The mouth-rod 'invades' a body cavity. Classifying this method as one classifies diagnostic methods in medicine, such a procedure is spoken of as an invasive technique (like exploratory surgery of the abdomen, for example), as opposed to a non-invasive method that does not break the skin or enter a body cavity (like radiography, for example). As the functioning part of the mouth-rod is largely out of sight, it is – to many riders – also out of mind. Yet a moment's thought about our own mouth reminds us that we cannot abide the slightest oral discomfort. A sore on our lip gives us no peace; an ulcer inside our mouth spoils our day; an ill-fitting denture cannot be abided. And don't even talk about toothache.

Steel rods in the form of snaffles apply the rider's hand pressure directly to the mouth, though with the mechanical advantage of a five-foot rein. As the horse often retracts its tongue to avoid the rod, or places its tongue over the rod in order to redirect its pressure, the steel rod or rods often come into direct contact with the bare bone of the bars of the mouth.

These bars are like a pair of knife-edged, bone railway tracks, covered only with a thin layer of gum. Gum is a specially modified periosteum; a skin of fibrous connective tissue around the bone. Don't let anyone ever tell you that the bars of the mouth are 'fleshy.' If you want to know how a steel rod pressing on the bars might feel like to a horse, try pulling a snaffle bit across your shin. But remember too that your shin is several times less sensitive than your mouth. Whatever pressure is generated at the level of the rider's hands is applied over these knife-edges. Because the contact area of a circular rod on a knife-edge is infinitesimal, the pound per square inch pressure (psi) that develops is proportionally immense. It has never been measured but it is possible to make an estimate.

A hand pull of 3 pounds, for example, will generate c.200 psi, whereas 10 pounds will generate c.700 psi. If, even for a moment, the rider accidentally threw the whole of her body weight against the horse's mouth, the psi would be registered in the thousands. Think of the effect that high-heeled shoes have on a hardwood floor. Top-notch riders apply ounces of pressure to the reins, not pounds. They 'whisper' with their fingers rather than 'shout' with their biceps. But Dr. Hilary Clayton reports *"peaks in the range of three to 10 pounds are seen most frequently. In a horse that is allowed to lean on the bit, peaks of 16 to 20 pounds are not uncommon, and when a horse snatches at the reins, it will often generate a spike that exceeds 30 pounds!"* Not surprisingly, such pressures cause intense pain, damage the bone and trigger the formation of bone spurs on the bars of the mouth. A survey of 74 jawbones in four museum collections showed that 55 (74%) had bone spurs on the bars. Consider the pain of 'splints' or sore shins but applied to both sides of the jaw. Now imagine the effect of

further episodes of pressure on these inflamed areas, applied daily over an extended period. Sometimes, the bar pressure so damages the gum that the blood supply to the bone is compromised and a sliver of bone the size of ones little finger actually dies and sloughs away or has to be surgically removed.

Curb bits are leverage rods that multiply, at the level of the bars, whatever hand pressure is applied. The multiplication factor may be times two or three, depending on the ratios of the rod's shanks. In addition the curb chain applies a vice-like grip to the lower jaw. When the chain and rod devices are applied in unison, they work on the principle of the thumbscrew, the instrument of torture so beloved by the Spanish Inquisition. At the point of application of this instrument, the lower jaw - even in a draft horse - is no bigger in cross section than a hen's egg cut in two. It is a very vulnerable small bone sited at the front extremity of an animal that weighs 1000 lbs or more. Man, it seems, has always had a talent for finding an animal's weak spots.

THE HORSE'S DEFENCE

Understandably, the horse responds with a number of strategies to shift or evade the pain of a mouth-rod. As already mentioned, retraction of the tongue is one, and trapping the rod under its tongue is another. Alternatively, it may raise its head so that the rod's pressure is directed against the rock-like face of the first cheek tooth, rather than the more sensitive bars ('ahead of the bit'). Or it may flex extravagantly at the poll, which will have the same effect ('behind the bit'). Leaning on the bit and 'pulling' will have the same effect.[3] Yet again, it might keep the rod constantly on the move to distribute the pressure on different regions (constant 'mouthing,' 'busy tongue,' or 'chewing on the bit'). Finally, and judging by museum specimen evidence that I have studied this is a common strategy, the horse will open its mouth slightly and disarm the rod by placing it firmly between its first two cheek teeth ('grabbing the bit'). Over time, this strategy results in severe wear and erosion of the first lower cheek teeth in particular and, to a lesser extent, the first upper cheek teeth also. The lower jaw teeth can be rubbed down to their roots or even lost altogether, in which case the horse now resorts, in desperation, to using the second cheek teeth and so on. Osteomyelitis of the jawbone may be a sequel to such damage.

FACTORS AGAINST WHICH THE HORSE HAS NO DEFENCE

Apart from inflicting pain, mouth-rods also impede breathing and interfere with running. By inserting a foreign body in a horse's mouth, a series of eating reflexes are triggered that are incompatible with exercise. At liberty, when moving at the walk, trot, or gallop, a horse's lips are sealed, its mouth closed, its tongue at rest, its soft palate in the 'down' position, and its salivation subdued. This enables the soft palate switch-plate in the throat to be configured for deep breathing rather than for swallowing; for exercise rather than for eating. But the

[3] Actually, the horse 'pushes.' It is the rider's shoulders that are pulled.

mouth-rod in the ridden or driven horse is telling the horse to 'eat' rather than exercise, so it confuses the horse, physiologically. With a rod in the mouth, the lip seal is broken, the mouth is often open and the tongue is on the move. The soft palate is in the 'up' position, where it blocks the airway at the throat (in stable language the horse is said to have 'swallowed its tongue'), and salivation is profuse. The result is that the horse cannot breathe properly, will tire prematurely, and may 'make a noise.'

And one thing leads to another. When running at liberty, a horse strides in time with its breathing. It takes one stride for each breath. If it is prevented from breathing properly, it is also prevented from striding properly. The normal rhythm of breathing and striding is interrupted and becomes inefficient. So gaits become irregular, a stumble becomes more likely, stride length shortens, and speed slows. A whole cascade of complications follow but space does not permit these to be described here. Sage advice to teachers is that if you cannot say what you want to say in 20 minutes, you should go away and write a book about it. This is what I have done[4].

BIT-INDUCED BEHAVIORAL RESPONSES TO PAIN

My research tells me that the bit causes over one hundred different manifestations of pain. The pain makes life miserable for the exercising horse, and the manifestations make riding unnecessarily difficult, disappointing and dangerous for the rider. The only rider who can use the mouth-rod method of communication with finesse is one who has developed an independent seat and who relies predominantly on seat and legs, balance and breathing to convey her signals. Such a person does not actually use the rod, or makes only minimal use of it. This is someone whose hands are so 'quiet' and 'soft' that the horse is never (or hardly ever) hurt. Such people avoid hurting their horse, or they apply so little pressure that the horse can successfully prevent whatever pain is threatened. Such people avoid creating a legion of complications and conundrums. But they probably had to practice for many years, preferably with the same horse, before they reached this pinnacle of perfection.

However, even these experienced riders cannot avoid the remaining problems associated with the fact that it is still physiologically incorrect to exercise a horse with a foreign body in its mouth. These same people would not allow their children to run around the garden eating an apple or chewing sweets. So it is that even Olympic caliber riders using the (currently) required mouth-rods still encounter horses that loll their tongues, put their tongues over the bit, gape their mouths, cross their jaws, breathe badly, move awkwardly, evade contact etc, etc.

The primary problem is that actual pain or the anticipation of pain frightens a horse. "To a frightened man,' said Aristotle, "everything rustles." And so it is with

[4] Cook W.R. and Strasser H. "Metal in the Mouth: The Abusive Effects of Bitted Bridles." Available online at www.bitlessbridle.com

a horse. Horses with steel rods in their mouths are often nervous, 'hot,' spooky, and unpredictable. Less frequently, when resigned to pain, they become dull, unresponsive, lethargic or sullen. But more often, horses run from pain (bolt). If for some reason they cannot run away, they will tend to rear, buck, freeze, throw up their heads, or exhibit any one of 95 other behavioral responses. These responses lead to accidents and injuries to man and horse, some of which are fatal. Nevertheless, they should not be considered vices. From the horse's point of view they are simply hard-wired survival responses developed by 60 million years of evolution. It behooves riders not to hurt their horses. The four main survival responses triggered by pain are fear, flight fight and freeze. Most of the hundred manifestations of pain are subsets of one or more of these four. Fortunately, all these problems can be solved. The solution for inconvenient and dangerous behavioral responses follows the same time-honored principle as for the treatment of disease … remove the cause.

From the evidence now accumulated, I am unable to escape the conclusion that the mouth-rod method of communication is deeply flawed. Likewise, because they are all pain-based methods, all the traditional bitless bridles have serious limitations. The bosals, hackamores, and sidepulls (in which category jumping hackamores and rope halters also fall) are still dependent on pain or the threat of pain. The pain is inflicted on the bridge of the nose and the chin rather than the mouth. Quite apart from this, none of the traditional bitless bridles are without limitations as methods of signaling for stopping or steering (vertical or lateral 'control'), and none of them are universally applicable to all disciplines or usable by all riders.

IDEAL SIGNALING CRITERIA

The criteria I would list for the ideal method of communication with the head of the horse at exercise are that the method should be

- Painless
- Compatible with all other aspects of exercise physiology
- Effective as a signal for all purposes
- Free of all undesirable side-effects
- The safest available method for both horse and rider
- Applicable to all ages of horse and to all types, temperaments and stages of training
- Capable of being recommended for all ages and experience of rider
- Applicable to all disciplines

Sadly, the mouth-rod method fulfils none of these criteria. Riders need years of experience before they are able to use a bit humanely and even then the method fails on other grounds. Expecting a child or an adult novice rider to learn how to use her hands by insisting that, right from the start, they should

use a bitted bridle is like insisting that the same students should start with spurs.

The good news is that in the last few years a bridle has been developed that meets all the criteria. This is the crossover design of bitless bridle first devised, to the best of my knowledge, in the early 1950s by 'Ink' Grimsley of Spink, Colorado. It was used on a small scale by bulldoggers such as Leon Manchester in New Jersey for rodeo contests. Allan Buck, a horseman from California, attempted to market the design in the late 1980s, but it was not until 2000 that a development of the design, by myself, was finally recognized by the public.[5] The trigger for the bridle's adoption was probably the publication of my research findings, which drew rider's attention to the many problems caused by the bit. As a scientist-cum-salesman, I declare this conflict of interest without a blush, as I know that I am doing more to help horses and their owners now than at any previous period in my 52 years as an equine clinician, teacher and research worker.[6]

There are no physiological or management contraindications to the use of the crossover bitless bridle. Unlike the steel mouth-rod, there are no undesirable side-effects. The only barrier to its widespread adoption is man-made in that the FEI, USEF and other national organizations have not yet recognized that this advance in communication renders their current regulations in need of an update. By continuing to require the use of (painful) steel mouth-rods for competitions, and by not permitting the use of the (painless) crossover design of bitless bridle, these organizations are no longer in accord with their own avowed mission of protecting and enhancing the welfare of the horse.

OPINIONS

'HARSH BITS'

Whether a particular mouth-rod is recognized as being harsh or mild is avoiding the real issue. All mouth-rods can be relatively kind or relatively cruel depending on the state of training of the horse and the rider at the other end of the reins. But for the reasons given above, no mouth-rod is, in my opinion, acceptable. Spare the rod and save the horse is my suggestion. In so doing, one can also make riding simpler, safer and more satisfying for the rider. As the average skills of riders fall far short of those required to avoid "the infliction of unnecessary and avoidable suffering" (an accepted definition of 'cruelty') I have to conclude that use of a mouth-rod, whether steel or some other material, cannot be recommended as a universally appropriate method. The mouth-rod is a device that, in my opinion, too frequently harms the welfare of the horse and jeopardizes the safety of both horse and rider. On

[5] *The* Bitless Bridle. *The* Bitless Bridle Inc. 2020, South Queen Street, York PA 17403-4829. Toll free 866 235 0938. Email: info@bitlessbridle.com Online at www.bitlessbridle.com:

[6] See the testimonials online at bitlessbridle.com

the basis of a risk/benefit analysis, I would say that the risks of using a bit far outweigh the benefits. Science has always progressed by a process of constantly correcting mistakes. If we are fortunate, the mistakes are corrected quickly. The invention of the bit was a mistake that man made 6000 years ago. It is time for it to be corrected.

The crossover bitless bridle is to the bit what the electric razor is to the straight or 'cut-throat razor. An electric razor may not give a barber's customer quite such a close shave but it is quite close enough for practical purposes and it requires little or no experience to use correctly. Not only, in the hands of a novice, will it not leave the customer raw, bleeding, and apprehensive of ever being shaved again but also neither will it expose the customer(or the novice) to the hazard of sudden death. With the crossover bitless bridle, as opposed to the bit, a rider does not have to be the equivalent of a master barber (a master horseman) to use it safely. It complies with the Hippocratic oath … 'at least do no harm.'

DRAW REINS

As steel and other mouth-rods are themselves unacceptable, readers will not be surprised that I especially deplore the use of draw reins. By a series of different rein configurations, these devices depend on employing the mouth-rod in even more painful ways than its standard usage.

MARTINGALES/TIE-DOWNS

Standing martingales (tie-downs in Western riding terminology) and running martingales are employed in an attempt to subdue a sign of suffering. Horses throw up their heads as a reaction to the pain caused by the mouth-rod. The correct approach to the head tossing problem is to remove the cause … banish the bit. Symptomatic treatment is both illogical and ineffective. In medicine, trying to mask or prevent a symptom from occurring does nothing to cure the disease. So martingales, in my opinion, are items of equipment that have been rendered obsolete by the advent of the non-invasive and painless, crossover bitless bridle. The same can be said of the bit.