

CASIE BAZAY INTERVIEWS DR. ROBERT COOK

April 2013



Robert Cook, FRCVS, PhD graduated as a veterinarian in 1952, from the Royal Veterinary College, London UK. Subsequently he earned a Fellowship of the Royal College of Veterinary Surgeons and gained a PhD from Cambridge. Apart from six years in practice and eight years as a senior scientist at the Equine Research Station of the Animal Health Trust, Newmarket, UK, he has been a clinician, teacher and researcher at university schools of veterinary medicine in the UK and USA. He was appointed Professor of Surgery Emeritus of Tufts University, Cummings School of Veterinary Medicine in 1994. His focus of research is diseases of the mouth, ear, nose and throat of the horse. He became Chairman of BitlessBridle Inc. in 2000.

CB: What led you to develop your bitless bridle?

The crossunder feature of bridle design is one that has been known to a few horsemen for many generations but has never become mainstream. It appears, for example, in the bitted McCleod bridle, patented in 1894. As part of a bitless bridle I have traced its existence back to the 1950s but it is probably much older. George 'Ink' Grimsley of Spink Colorado was making a few of these bitless bridles in the 1950s for 'bulldogging' friends on the Philadelphia rodeo circuit (Fig. 1). They needed a bridle that prevented their horses' mouths being damaged by eager riders and they turned to him for help. Leon Manchester of Fairhill, Maryland, who showed me the Grimsley bridle in 2005, was one of 'Inks' friends (Fig. 2). These were hand-made bridles - never mass-produced or marketed. Perhaps George Grimsley was a descendant of the family that gave its name to the Grimsley saddle, which would explain his reputation for making bridles. In 1874, the Grimsley saddle was the enlisted man's saddle in the Mexican War.



Fig. 1: George 'Ink' Grimsley



Fig. 2. Leon Manchester at 81 with the Grimsley bridle

In the 1990's, Allan Buck of Ramona, California attempted to market a bridle that was essentially the same as the Grimsley bridle. In 1997, I was introduced to Buck and his Spirit Bridle by Lady Sigourney Richmond-Darbey, a dressage pupil of his who had read my book "Speed in the Racehorse: the Airflow Factors." She recognized that my research might provide the evidence Buck needed to persuade the horse-owning public of the benefits of the crossunder design. I liked the bridle and for a couple of years was glad to help Buck promote it. Sadly, for reasons that had nothing to do with the bridle, his venture fell apart. In 1999, to prevent the concept from dying, I modified the design and marketed it myself through a company I already owned.

Some people may find it strange that a retired academic, at 82, should be selling an item of tack but this is simply a continuation of a veterinarian's work. My research tells me that the bit causes much pain and distress, over 40 diseases, and countless accidents. As a surgeon, I treated one disease at a time but by providing an alternative to the bit I can treat and prevent dis-eases by the score.

Click here for more information on this question
<http://www.bitlessbridle.com/BonnerInterview.pdf>

CB: How does the bitless bridle differ from a hackamore or bosal?

Traditional bitless bridles depend on their ability to cause pain or the threat of pain, whereas the crossunder bitless bridle is virtually incapable of causing pain. It also provides a fully comprehensive method of signaling and is applicable to all disciplines, both Western and English. Being painless and more effective, it is also humane and safer (Figs. 3 & 4).

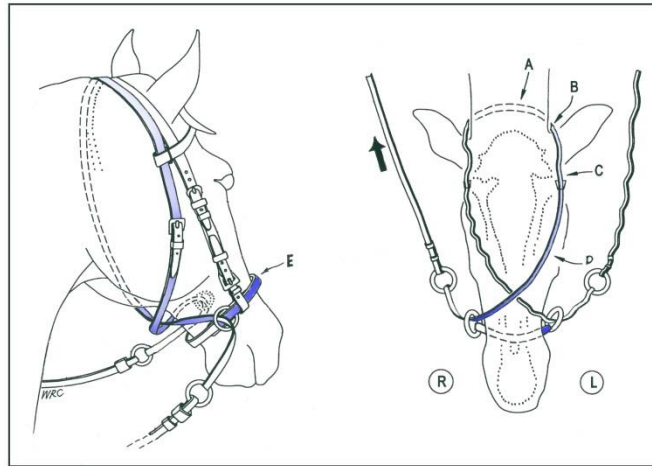


Fig. 3. The Dr. Cook® bridle. The diagram on the right is a worm's eye view. The gradation in color shows how the pressure of strap on skin, though never painful, is greatest over the nose, less under the chin and along the cheek, and least of all at the poll. Pressure and release on one rein (thick arrow) nudges across the bridge of the nose and up the opposite side of the head from E to A providing a cue for steering. Intermittent pressure on both reins provides a cue for slow and stop.



Fig. 4. The bridle correctly fitted

'Hackamore' is a description used for any bridle the action of which depends on nose rather than mouth pressure. Collectively, they have been referred to as 'nose bridles.' But there are actually three categories of such bridles: bosal hackamores, mechanical hackamores, and sidepulls (including rope halters and jumping hackamores).

A summary comment on how the crossunder bitless bridle differs from traditional hackamores is to say that bosal and mechanical hackamores depend on neck-reining for steering. Sidepulls with rigid or thin nosebands, though less painful than a bit, have

similar disadvantages to a bit, especially in their limitations as a cue for stopping. For a more detailed response to the question, click on http://www.bitlessbridle.com/Traditional%20_pain-based_%20BBs.pdf

Though the question asks for a differentiation of the crossunder bitless bridle from the traditional hackamores, the greatest indication for use of the crossunder is as an alternative to the bit (Fig. 5). Click here for an article on its differentiation from the bit.

<http://www.bitlessbridle.com/BenefitsOfBB.pdf>

and here for why members of the Pony Club and 4H organizations should not be compelled to use a bit

www.bitlessbridle.com/Bitless%20BenefitsPonyClubs.pdf

And here for why the crossunder bitless bridle would be good for racing

http://www.bitlessbridle.com/JC_RACING_presentation.pdf

http://www.bitlessbridle.com/BB_SAFETY_FOR_RACING.pdf



Fig. 5. From Edward Mayhew's "The Illustrated Horse Doctor" (1860). The caption read,

"Various modes of forming that which all men speak of as a 'good mouth'"

CB: As a vet and researcher, what type of damage have you observed that resulted from the use of a bit?

Some short questions require book-length answers and this is one of them. To answer briefly, the types of damage to the horse can be described as physical, mental, behavioral, and physiological, though there is considerable overlap between all categories. Likewise, 'damage' to the rider can be described as psychological, economical and medical.

Effect on the Horse

a) *Physical damage:* The direct mechanical damage that one or more metal rods can inflict on the sensitive tissues of a horse's mouth includes:

- lip sores, cuts and sarcoids from longitudinal stretching of the lips
- laceration and amputation of the tongue
- gingivitis from pressure on unerupted wolf teeth in the lower jaw
- a sore mouth from bruising of the gum over the bars of the mouth
- bruising of the roof of the mouth
- bone spurs on the bars of the mouth
- star fractures of the bars and the shedding of dead bone (sequestra)
- erosion and shedding of the first cheek tooth in the lower jaw
- chip fractures of the first lower cheek teeth
- periodontal disease; and
- damage to the jaw, from fractures and osteomyelitis.

To read my article on bone and dental damage, click on the link <http://www.bitlessbridle.com/DamageByTheBit.pdf>



Fig. 6. The first cheek tooth in the lower jaw shows an example of the dental damage that occurs when a horse repeatedly grabs the bit and erodes its grinding surface. The bit has also been pressing hard against the front edge of this tooth and flattening its normal 'prow.' Such a horse may well have been labeled as a 'puller' and been said to have 'leaned on the bit' or to have had a 'hard mouth.' (Specimen photographed courtesy of the American Museum of Natural History)

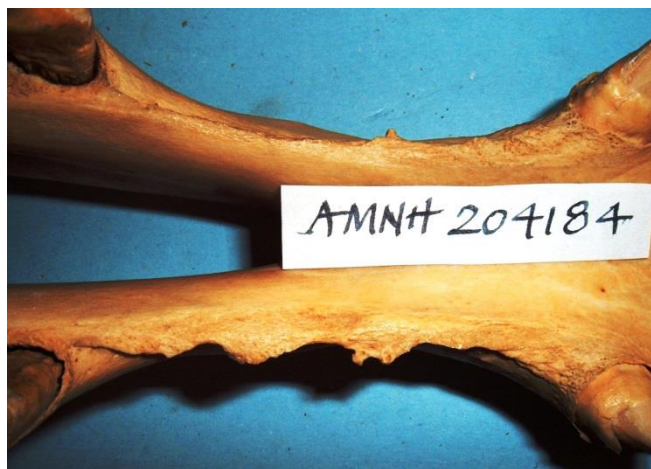


Fig. 7. Close-up of the bars of the mouth. The canine teeth are on the right of the picture and the first cheek teeth on the left. The lower bar shows several large bit-induced bone spurs and the other bar shows one smaller spur. Lesions like these can be likened to 'splints' on a horse's shin but are far more painful. (Specimen photographed courtesy of the American Museum of Natural History)

- b) *Mental damage:* This includes acute pain, chronic pain and fear. Acute pain is inflicted by the bit during the generation and maintenance of all the lesions listed above. Chronic pain is the neuralgia that daily use of the bit sets up in the trigeminal nerve (tic douloureux), so often responsible for head tossing, muzzle rubbing and other signs of the headshaking syndrome. Fear is the mental stress, nervousness, apprehension, shying and spookiness triggered by the anticipation of pain.

- c) *Behavioral damage:* The pain and fear of mental damage manifests itself in a hundred and one different ways in the ridden horse's behaviour but also in (unwanted) behavior prior to and after riding. Examples of some of the more dangerous under-saddle signs include bolting, bucking, balking and rearing. A more comprehensive listing is available at <http://www.bitlessbridle.com/AccidentPreventionChecklist.pdf> and the full text of this article on the prevention of accidents is available at <http://www.bitlessbridle.com/AccidentPrevention.pdf>

58 controlled experiments were carried out between 2002 and 2008, in which riders compared the ridden behavior of a horse in a bitted bridle with that in a crossunder bitless bridle. Using a checklist of 82 possible signs of pain and distress, the sign most frequently eliminated by removing the bit was of a horse that "hates the bit" i.e., chews on the bit. All horses showed markedly fewer signs of pain and distress when bitless. The summated numbers were bitted 1643 and bitless 202, an overall improvement of 88%. The median number of pain and distress signs that each horse exhibited when bitted was 24 - when bitless 1 (unpublished material).

Most of the behavioral signs of pain result in reduced performance. A different 2008 experiment compared bitted and bitless performance. Four riders that had never previously used a crossunder bitless bridle, rode four horses that had never before been ridden in one. In the first four minutes of removing the bit (in the second ride of a simple dressage test) they increased their scores by an average of 75%. Their score changed from a bitted average of 'quite bad' (3.7) to a bitless average of 'satisfactory' (6.4). To read the peer-reviewed article click <http://www.bitlessbridle.com/CHAtest-EquineVetJournal.pdf> and for a video of the experiment click http://www.bitlessbridle.com/index.php?main_page=page&id=12

- d) *Physiological damage*: The bit triggers digestive responses when what are needed in the exercising horse are respiratory, cardiovascular and musculo-skeletal responses. Essentially, it triggers a conflict between eating and exercising. The physiological requirements for eating include a head down position, quiet breathing, an open mouth, tongue and jaw movement, salivation and swallowing. For exercising, the requirements include a raised head, rapid breathing, sealed lips, a closed mouth, an immobile tongue and jaw, a relatively dry mouth and no swallowing. A young horse at liberty in a field, interchanging between grazing and playing, can switch between these two requirements effortlessly and smoothly. Too often, the same horse when bitted and ridden presents a very different picture. Its lips are parted by the bit and its mouth may, at intervals, be frankly open. Tongue and jaw movements may be prominent and salivation may be so effusive that saliva drools from the mouth and foams. As a result, breathing is made difficult and the intake of oxygen reduced, triggering a cascade of problems affecting the lungs, legs and heart.

The anatomical 'damage' in the throat that sets all this in motion can be best understood with the help of the diagram in Fig. 8. The bit breaks what should be an airtight-seal at the lips and a very necessary oral vacuum is eliminated (Figs 9-11). The head and neck may be flexed, so the soft walls of the throat are flaccid. Under these conditions, aggravated by tongue and jaw movement and even by actual swallowing reflexes, the soft palate gets sucked upwards during rapid inhalation and obstructs the throat (Fig. 11b). This, in my opinion, is the cause of dorsal displacement of the soft palate (DDSP), a physiological scourge of the bitted horse. Again, in my opinion, DDSP is the cause of bleeding from the lungs, the so-called exercise-induced pulmonary hemorrhage (EIPH) better named as negative pressure pulmonary edema (NPPE). Together, DDSP and NPPE, these two side effects of the bit, represent a multimillion dollar problem for the racing industry, currently unsolved by Salix. To read my article, "What causes soft palate problems and bleeding in racehorses?: The answer is on the tip of the horse's tongue" click here <http://www.bitlessbridle.com/SoftPalateAndBleeding.pdf> and click also on the two links at the end of this blog.

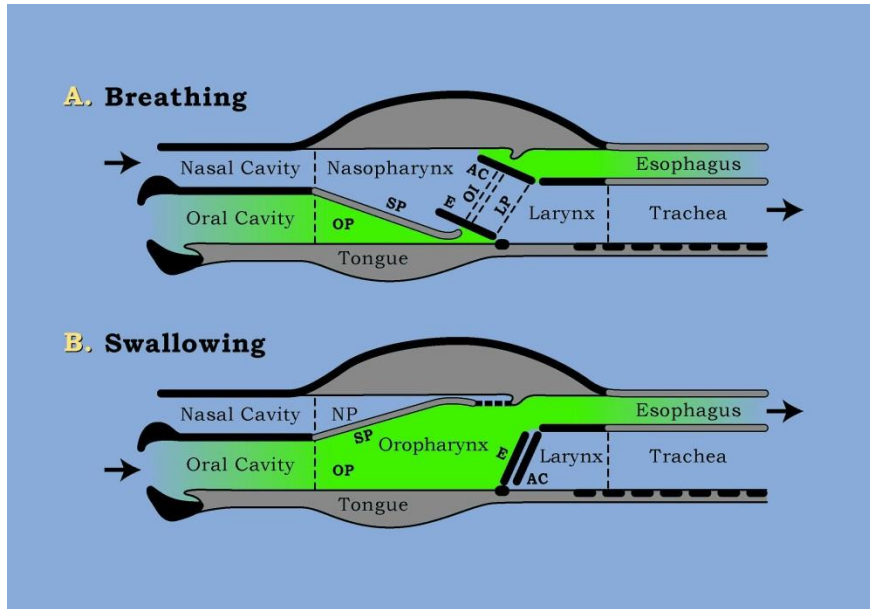


Fig. 8: Showing how the soft palate and cartilages of the voice box act as switch plates allowing the throat to be configured for either exercising or eating (rapid breathing or swallowing). To simplify the diagram for the purpose of emphasising the changes in the throat, air space is shown in the mouth, the oral part of the throat and the esophagus (gullet). This space is severely limited when grazing and eliminated when exercising (see Figs 9 – 11)

Key:

AC = arytenoid cartilages ('flappers') of the voice box (larynx)

E = epiglottis

LP = laryngopharynx (the food channels on each side of the voice box that enable a horse to graze yet still breathe quietly)

NP = nasopharynx (the respiratory part of the throat)

OI = ostium intrapharyngium (a 'button-hole' in the soft palate, into which the voice box fits like a grommet except when swallowing)

OP = oropharynx (the oral part of the throat)

SP = soft palate

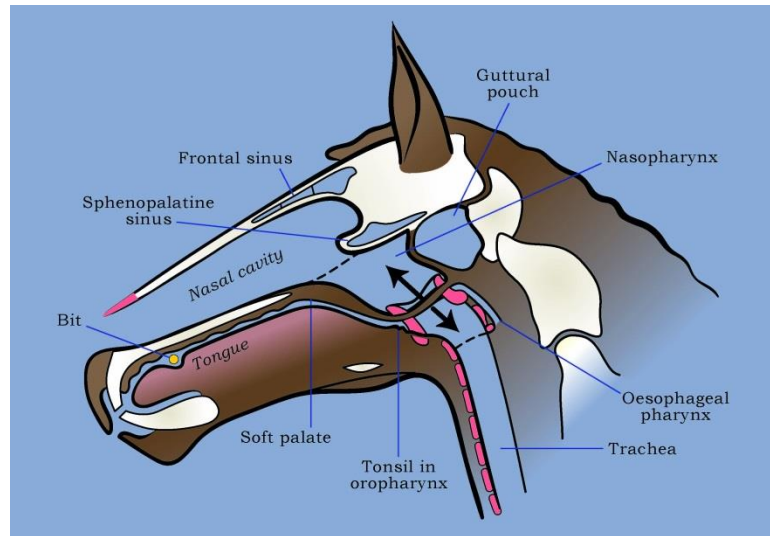


Fig.9. Anatomy of the head, showing the configuration of the throat for quiet breathing. The throat serves two masters, breathing and swallowing. For breathing, the size of the respiratory part of the throat (nasopharynx) is maximised at the expense of the oral part of the throat (oropharynx). The double-ended arrow, depicting the airway, has its front end in the throat and its back end in the voice box (larynx).

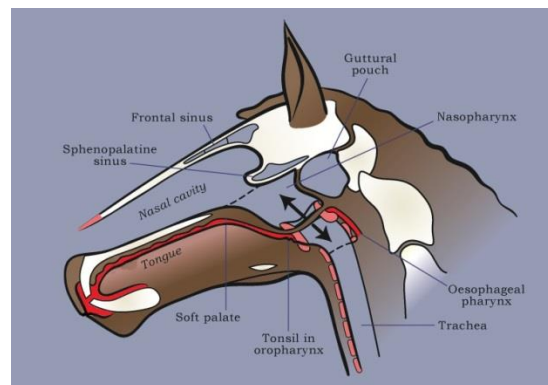


Fig. 10. The same diagram as Fig. 9 but showing the sealed lips that, after a swallow, enable the running horse when bitless to create a vacuum in those compartments shown in red.



Fig. 11a. Normal configuration of the throat for running in a horse at liberty. The poll is extended, the throat is stretched, and the soft palate is 'vacuum-packed' on the root of the tongue and around the voice box. There is an airtight seal at the lips and between the two parts of the throat.

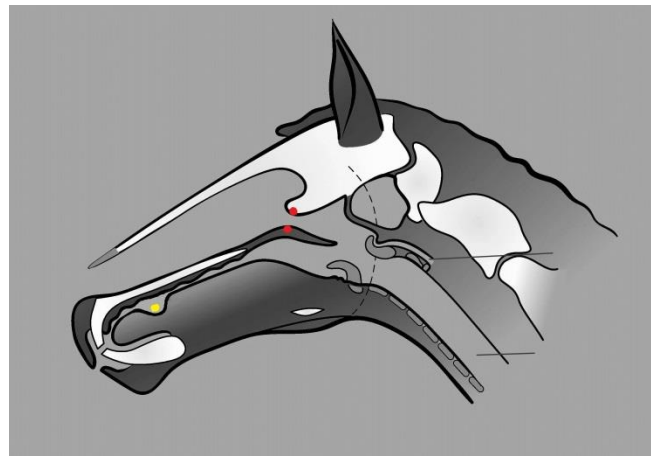


Fig. 11b. Abnormal configuration of the throat when running in a bitted bridle. The bit (yellow dot) has broken the lip seal, allowing air to enter the oral part of the throat. The soft palate is unstable and, in this diagram, is shown in an elevated position that is only appropriate to a phase of swallowing. The airway is severely obstructed at the junction of nasal cavity and throat (red dots).

Apart from the above conflict between eating and exercising there is another major conflict in the bitted horse between breathing and striding. At liberty, the cantering horse takes one stride for every breath. There is a synchrony between the two, called respiratory-locomotory coupling. . But when a bit interferes with breathing this synchrony can be lost. From 82 signs of pain and distress eliminated by removing the bit in the controlled experiment cited above, 34 (41%) were signs that in one way or another impacted a horse's stride and way of going. The signs ranged from the regrettable, e.g., lack of finesse and reluctance to change leads) to downright dangerous, e.g., stumbling, freezing, bucking, rearing and bolting.

The 82 questions on which the above experiment was based did not include the catastrophic accidents that occur on the racetrack as the result of bit-induced shortage of breath and premature fatigue. Bleeding from the lungs and the appearance of blood at the nostrils or in the windpipe is only the outward and visible sign of a much more serious inward disaster. Bit-induced asphyxia causes massive waterlogging of the lung (pulmonary edema). That red blood cells and edema fluid gets sucked into the small airways of the lung is only one effect of this problem. Not only is a racehorse unable to obtain all the oxygen it needs for running due to the obstruction in its throat but also, because the lungs become waterlogged, it is unable to fully absorb the oxygen it does get. So a racehorse builds up an oxygen debt and is unable to prevent a build-up of carbon dioxide. The heart muscle can no longer circulate fully oxygenated blood to the muscles of the legs, nor to the muscles or respiration, and may even be short of oxygen itself. Adding insult to injury, the heart has to work harder to pump blood around the body to its lungs and legs because of the resistance to circulation imposed by congestion in its lungs. Likewise the work of breathing is increased for the same reason, as the lungs are no longer compliant. Little wonder that a 'bleeder' (99% of racehorses are affected to varying degrees) has difficulty in breathing and striding. Premature fatigue, exhaustion, breakdowns, falls, and fractures may follow. The end result of bit damage can be sudden death or euthanasia.

To sum up, the bit damages the digestive, respiratory, nervous, cardiovascular and musculo-skeletal systems.

Effect on the Rider

- a) *Psychological 'Damage'*: What many riders describe as 'bad' or 'unwanted' behaviour on the part of their horse, and for which they may blame their horse, is generally normal behaviour, albeit inconvenient and even dangerous for the rider. Mostly, it is a normal response to pain and fear, largely bit-induced. From the above controlled experiment, not more than 12% of the signs of pain and distress were caused by some factor other than the bit. The 88% bit-induced behavioural responses are frequently the cause of much rider unhappiness. This is expressed in a slew of emotions from self-doubt about their riding skills, disappointment, frustration, reluctance to ride, fear, and even anger with the horse, to a state of mind in which the rider is ready to sell the horse or simply give up riding altogether.
- b) *Economic 'Damage'*: The staggering 'cost' of the bit to the racing industry has already been mentioned but trail riders and pleasure riders also incur bit-related expense for rehabilitation and replacement. For riders who train, compete and sell horses, the cost of poor performance can be considerable. To see a cost/benefit comparison for a bit and bitless rein-aid, click here <http://www.bitlessbridle.com/CostBenefit.pdf>

- c) *Medical 'Damage'*: Horse riding is recognized by insurance companies as being more dangerous than motor cycling. Bit-induced accidents, which are frequent, cause injuries ranging from broken collar bones to broken necks and sudden death.

For a summary of the benefits of the crossunder bitless bridle for both horse and rider, click here <http://www.bitlessbridle.com/BenefitsOfBB.pdf>

CB: Do most horses need an adjustment period when switching from traditional bridle with a bit to the bitless bridle?

No. Horses make the adjustment easily, quickly and with obvious relief. A few riders may take five minutes longer but most riders are entirely happy on day one about their bitless maiden voyage. After a week they will often vow to never use a bit again.

CB: Will the bitless bridle work for any riding discipline? Is it better-suited for certain disciplines?

On the evidence of welfare, safety and effectiveness, the bitless bridle 'works' for every discipline, including driving. It cannot currently be used for some disciplines in competition but this is because administrator's rules have not yet been updated in the light of published research. I presume that, after 15 years, they have heard of the bridle, seen it work and consulted their advisors. Being responsible for the safety of both horse and rider I imagine that they will also have read the primary source literature. Yet only the Dutch national federation has taken steps to give the new bridle a trial.

In 2009, the United States Equestrian Federation rejected a rule change proposal filed by a member to allow the crossunder bitless bridle for dressage. Subsequently, at the USDF Convention 2009, Hilda Gurney talked about an experiment she did using a regular bridle and the crossunder bitless bridle on several of her horses. She found that they went 'no differently' in the bitless bridle and encouraged everyone to be open minded in the discussion about whether they should be legal to use when showing. Sadly, four years later there has been no word from the USDF or the USEF of any movement on this topic.

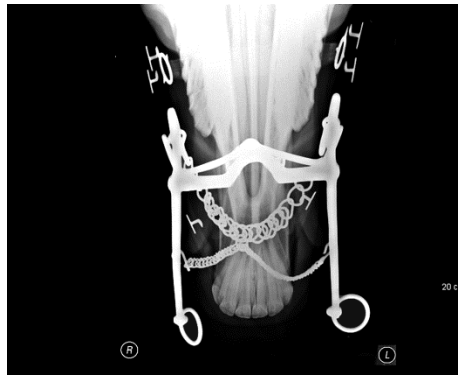


Fig 12. The double bridle, mandated by the FEI for upper level dressage

Sport horse organizations and racing jurisdiction worldwide are 'big ships' and need time to change direction. Yet these organizations do change their rules on an annual basis, so I have to wonder why there is this delay in introducing a simple rule that could so advance welfare and safety. Science too has its rules. They are not written down but this is how science works. Hypotheses and research results based on observation or experiment are submitted to peer-reviewed journals and, if accepted are published. Other researchers can repeat the experiments or bring forward their own observations and hypotheses. If they have the evidence, they will subsequently publish a refutation. The original authors may publish a response or other researchers will enter the field with additional evidence to support or refute. In this way, a dialogue takes place and the topic is on the table for discussion. After a period of time, if the original hypothesis and results cannot be refuted, the hypothesis is accepted at the present state of knowledge and provides a foundation for action.

Since my first peer-reviewed article in 1999, indicting the bit, I have published many more both in peer-reviewed and other journals. None of these articles have been refuted yet ample time has passed. It is my contention that members of committees who have the responsibility to oversee rule changes should themselves either file rule changes to approve the crossunder bitless bridle for dressage and other disciplines or publish their reasons for not doing so. At the very least, a dialogue should be taking place.

The FEI mandate use of the bit for dressage and some other disciplines and have done for nearly a century (Fig. 12). This would be regrettable enough if the inhumanity was confined to FEI competitions. Unfortunately, FEI rules are widely adopted by national federations and followed by Pony Clubs and 4H organizations. The result is that unskilled adults and youngsters who wish to compete are obliged to use a Bronze Age signal that is harmful, dangerous and, in many countries, illegal.

Click here for more on the legal and ethical aspects of inflicting avoidable pain
<http://www.bitlessbridle.com/BenefitsOfBB.pdf>

To read my article,
"New tool benefit denied by an old rule: Rider/horse safety trumped by tradition"

click here <http://www.bitlessbridle.com/NewToolOldRule.pdf>

The current crisis in USA racing over the debate as to whether or not the continued use of Salix on race day should be permitted can be settled by acknowledging the correct answer to the question, 'What causes 'bleeding'?' As the evidence points overwhelmingly to bit-induced asphyxia, a simple rule change to permit the crossunder bitless bridle is all that is required. The same approach is recommended to racing jurisdictions worldwide. Removal of the bit would do much to prevent catastrophic accidents on the racetrack, reduce wastage and improve the image of the sport. To read my article, "*Bitted mouths cause waterlogged & 'bleeding' lungs: Racehorses need management, not medication*" click here

<http://www.bitlessbridle.com/WaterlogBleeding.pdf>

For another article about "The Pain-free harness horse: Promoting performance by demoting the bit" click here <http://www.bitlessbridle.com/PainFreeHarnessHorse.pdf>

