Two Pelham type bits

I frequently tell my friends, that out of every twenty bits I make, nineteen are for men's heads and not more than one really for the horse's head. (Benjamin Latchford, 1871: The Loriner.)

Let me say before I start, I KNOW that there are large gaps in what might be said in this article – but please, bear with me.

I am not a riding teacher or a horse breaker, but I have been a harnessmaker, so the areas I'm equipped to look at are the leatherwork and hardware we use on our horses. Training of the horse and the rider are important, but all training is going to be easier with suitable equipment than with equipment that hinders the message getting through to the horse.

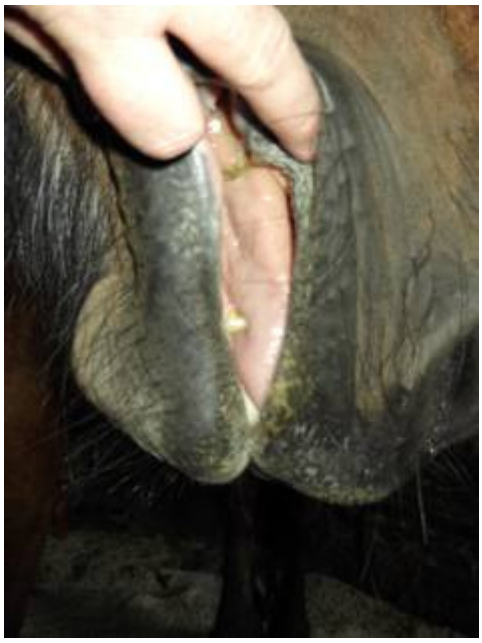
I'm not going to advocate one bit over another, just point out some facts. What I write will almost certainly conflict with other things you've read or with common assumptions, but if you go out to your horse and actually test you may find the common assumptions are inaccurate.

Always remember that bit makers are in the business of selling bits, so they describe all kinds of actions that may make you buy their variations on the basic designs. Don't put too much trust in their descriptions of how their bits act. Make your own judgements.

Make those judgements by observing your own animals and *thinking and feeling*. I hope the information here will slot into whatever else you happen to be doing with your equine/s.

I'm only going to look at a couple of bits that I find suitable for what I do, which is occasional driving in the show ring and regular driving exercise/schooling/leisure, with Fell ponies.

Tongue, lips and bars



The tongue completely covers and protects the bars of my Fell pony mare. X-rays of horse heads (Sprenger, 2010) show that even in "well bred" horses, the tongue fills the mouth space.

An unjointed straight bar snaffle bit, for instance, is the simplest and most logical bit to understand and use. It beats me why we don't see more people using it. It sits across the tongue and lips.

Unjointed bits with a low arch or port, particularly a wide one such as Sprenger's Comfort Mouth (below) or Hilary Vernon's mullen mouth, enable the bit to echo the shape of the jaw at the bars – but they still sit on top of the tongue and touch the lips either side.

The mullen mouthpiece

The mild curve of the mullen mouthpiece sits over the tongue and when curb action is used, unlike a single-jointed snaffle it moves slightly away from the palate.

The shape is easiest to see on this snaffle bit.

Showing the shallow curve right across the mouth space.

This mouthpiece rests on the tongue and the lips. I've used mullen mouths for years on my own ponies and never had one object to them, so I've not had reason to try any of the other options.

Glory and Arch mouthed bits, and flexible "happy mouth" bits, fit much the same, with varying degrees of precision. Some horses prefer a close fit, while others prefer the slacker fitting of the mullen mouth. The bit still has to fit over the tongue.

High port bits sit on the tongue, but when they are in use the mouthpiece rotates so the port rises to press against the palate. No horse deserves such treatment. High ports are also said to "accommodate the tongue" so the bit "acts directly on the bars." No bit should ever act that way. The only time a bit can act on the bone and gums of the lower jaw is when you pull so hard on a single jointed snaffle that it does the nutcracker "squeeze". If you ever fit the bit so low that the horse puts his tongue over it and the bit sits directly on the gum and the jaw, the immediate wooden feel and loss of control should convince you that "direct action on the bars" is not a good method of communication.

No bit can ever act solely on the corners of the mouth, either, no matter what any bit catalogue asserts. The tongue is always there and is one of your main means of communicating with the horse.

Liverpool driving bit with Mullen mouth

Top/rear view of a mullen-mouth Liverpool bit.

From top to bottom: The outcurved cheek eyes are important for native types with wide mouths, to give room for the widening of the native type face at the molar teeth above the bit. In addition, I buy my bits ¼" wider than the pony requires, and I add cheek guards if necessary to take up the slack at mouth level. The curb hooks are easy to use, the points are rounded and they turn away from the pony's cheeks.

Cheek guards

There are several reasons why I prefer to use cheek guards with a Liverpool. The sliding mouthpiece of this bit often has "stops" at top and bottom which can be sharp-edged and can cause rubs or pinching. Guards prevent them causing sores. They take up the slack at the mouthpiece if you need to buy a wider bit to accommodate a pony face that broadens quickly at the cheek teeth. They keep slobber off the rein billets if you are using rough cheek or either of the "slot" rein settings. Also, guards discourage you from fitting the curb-chain too tight.

Putting the heavy rubber guards onto this long bit involved a basin of hot water, followed by two shoe laces tied through the centre hole of the guard – one fastened to a weighty kitchen stove, and the other to a belt around my waist! I have found that cheap guards made of thin rubber will tear rather than stretch, so you might as well split those tidily and lace them on.

Four options of rein settings

The Liverpool bit has a ring that runs right round the mouthpiece – behind and forward – and this example has two deep slots down the cheeks, which would allow me to use my 7/8 inch wide driving reins through them IF I really needed to. The rear half of the ring is for securing the rein on "plain cheek" (snaffle) setting. The forward half of the ring completes the circle and secures the rein if you use the rough cheek setting below the mouthpiece and above the first slot. However the ring itself can actually be a disadvantage (these are points I'll talk about later).

A typical Liverpool bit has a loose mouthpiece, permitting up/down movement and a swing in/out. Because the mouthpiece is loose, you need to fit the bit slightly lower than you would fit a snaffle, permitting some play. This point is often overlooked.

Some horses like a loose mouthpiece, others don't. There are Liverpools with non-sliding cheeks that still swing, and there are fixed-mouth Liverpools, that are intended for

use in pairs driving but may also suit horses who don't like the "play" that sliding or swinging cheeks permit.

There is leverage available in this cheek-style because of its length, both above and below the mouthpiece. With the rein set anywhere below the mouthpiece, the cheeks go back, the eye goes forward and that tightens the curb-chain. The bit rises in the mouth and slides up the cheek pieces, which adds somewhat to the leverage below the mouthpiece.

The rein settings from the ring (snaffle) setting going down to the bottom slot become progressively more powerful. The maximum leverage available here, with the rein on the bottom slot, is 2:1 – 2 units acting below and 1 unit above the bit. This proportion is fairly standard for any curb bit.

Plain cheek or smooth cheek rein setting

Although this is technically a "hybrid curb" bit, in driving we only use one rein at each side, so putting the rein at this setting will act directly on the mouthpiece, making it a loose cheek hanging snaffle. A line drawn from the direction of the rein meets the mouthpiece precisely, so it can NOT apply leverage, therefore it can NOT apply curb or poll pressure. Hanging snaffles don't apply poll pressure either. They can't. It's a law of physics.

Rein pressure at this setting doesn't rotate the mouthpiece in the mouth, and the cheek pieces of the bridle are not put under tension. In fact, you can see in this photo that the bit has risen slightly and is not supported by the cheek pieces at all (a reduction of any bridle pressure at the top of the head).

The curb-chain has no effect with this setting, except to stop the hooks flipping about (though it should still be turned, on fitting the bridle, till it's flat.) The "fly" link hangs from its lower edge. Strictly speaking, for driving the fly link should be taken off, as there is no provision for a lip strap on a driving bit and so the fly link has no purpose. This double-link chain is smoother than a single-link one, though single is traditional for driving

Note that this driving bridle has the standard English design, with keepers at the sides of the noseband for the cheek pieces of the bridle. The noseband should be fitted below the cheek teeth – the keeper inside the noseband can cause pressure if you don't. The noseband is just touching the front of the nose when the bit is at rest, and should have two fingers' sideways space behind the jaw. This example, at this height, should be one hole looser.

Cheap and badly-measured nosebands that are too short behind and too long in front will make the bit cheeks poke forward in an ugly manner, like tusks. They also tempt you into fitting the curb-chain too tightly. More about curb-chains later.

Rough Cheek rein setting.

Top Slot rein setting

There is very little leverage on the bit with the rough cheek setting but the rein itself often prevents up and down movement of a sliding mouthpiece, which – again – some horses may like and others dislike.

The rein on the top slot gives more leverage, but the slot-to-mouthpiece distance is still less than the mouthpiece-to-bit-eye distance, so the ratio of leverage is still less than 1:1. Tension on the rein makes the mouthpiece slide up the cheek of the bit and the eye of the bit go forward (notice how the cheek piece of the bridle is now at the rear of the bit eye). This forward movement tightens the curb-chain. The bit mouthpiece lifts and rotates slightly.

The curb-chain here could be one link longer and the noseband one hole slacker.

Reins on bottom slot.

The mouthpiece has now slid to its highest position on the cheeks, and the movement has rotated it in the mouth. Although the curb-chain and noseband are not obviously tight, the mare really doesn't like tension on the reins at this "duffer's hole" setting – she has backed off to the end of her rope.

The bottom slot setting is very open to abuse if it's used with a tight curb-chain and tight noseband.

Curb-chain completely slack.

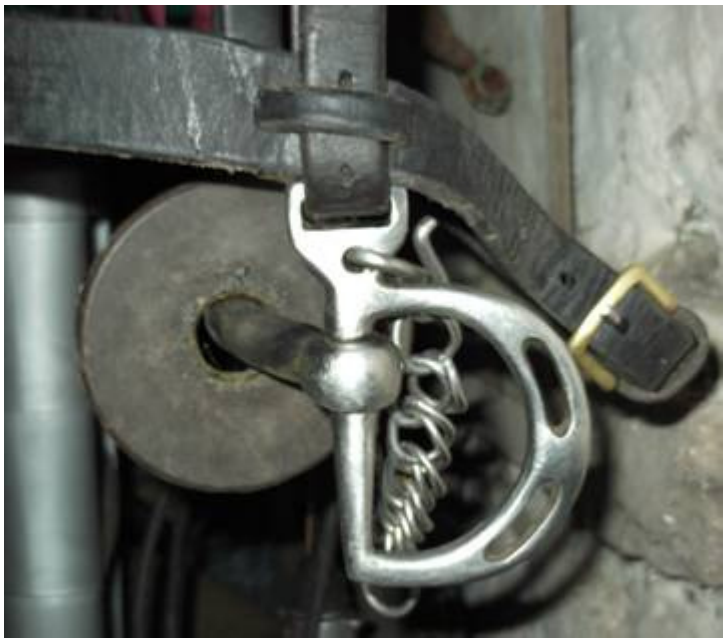
Curb-chain applied by rein tension.

With the curb-chain slackened off completely, the noseband is now acting on the underside of the jaw like a curb. If the noseband were looser, the bit would pull round to

an even greater angle. Although the chain itself is barely able to touch the jaw at this slackness, it rises more than an inch in the centre when tension is put on the reins.

Mullen mouth Kimblewick or Uxeter

The Kimblewick or Spanish snaffle has a plain unslotted mouthpiece. This version of the bit, with slots for two rein positions as well as the plain ring setting, is known as an Uxeter. It has a swivel cheek that swings in or out, but the mouthpiece has no up and down movement. This curb-chain has a fly-link.



Uxeter side view

Top slot setting on this bit is exactly in line with the mouthpiece, so it offers NO curb or poll pressure. (More on "poll pressure" shortly.) With this setting the bit acts directly on tongue and lips, without turning the bit in the mouth, ie it lies still in use, like a Baucher or any other hanging snaffle.

Putting the rein on the lower slot of this bit gives a 1:1 ratio of lever action – the same amount of bit cheek above the mouthpiece as below. This is as "severe" as this short cheeked bit can get – and since 1:1 gives no mechanical advantage it is ridiculous to call it severe at all. The slight lever action merely turns the bit in the mouth, and puts some tension on the curb-chain.

Putting the rein on the ring is halfway between the two slots, giving a very slight amount of leverage (less lever below the mouthpiece than above) and a small rotation of the mouthpiece when rein pressure is applied. The curb-chain tightens a little and the cheek piece of the bridle is under slight tension. These are all small, almost "blurred" movements.

I've found the Kimblewick / Uxeter is not a severe bit as is often claimed. In fact it seems to be very forgiving. Its main action, like an unjointed snaffle, is from the pressure of the rein drawing the bit backwards in the mouth. A dressage expert might deride its imprecision, but it is kind. With driving reins, 12 feet or more between bit and hand, with all signals carried via 2 rein terrets, precision can't be achieved anyway. I have voice aids available to me in driving, so I go for a kind bit.

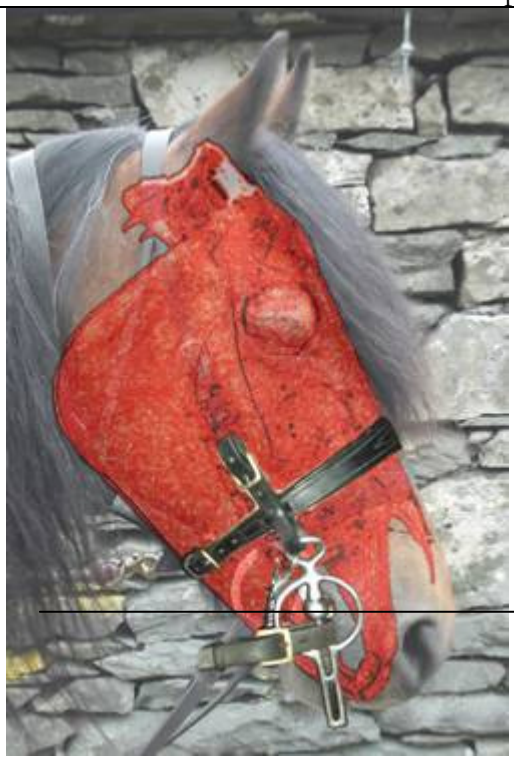
The example in the photo has a square cheek eye so the lift-and-tension effect is slightly more immediate than if the cheek eye were large and rounded (see the photos of the Liverpool bit, below) where the bit can turn and the eye slip across without disturbing the bridle. The Kimblewick / Uxeter is a convenient bit for leisure driving because the cheeks are so short they never catch in anything. They don't "put off" people you meet on the road who may want to pet the pony. There's nothing forward of the mouthpiece except the front of the cheek eye, so even if there is outward pull from the rein, there's nothing to press into the pony's face. She can also graze (when allowed) even if I don't take the bridle off.

I drive with the rein on the ring of the Uxeter. That's very similar to the setting I use if I drive in a show class, "rough cheek" on the Liverpool bit. My ponies like this bit.

Disadvantages of the Liverpool, and other hybrid Pelham-type bits

If the Liverpool cheek has 3 slots, it gives you 5 rein settings, but the cheeks will project too far beyond a pony's muzzle. That long cheek is really only suitable for horses, who have a mouth that is actually as well as proportionately longer than that of a pony, or of many cobs. 2-slot cheeks giving 4 rein settings are plenty long enough for a pony.

The orange/yellow skull is that of a horse, scaled to the same size as that of a pony skull. The horse has a longer mouth space, a higher palate and a finer lower jaw compared to the pony (in red).



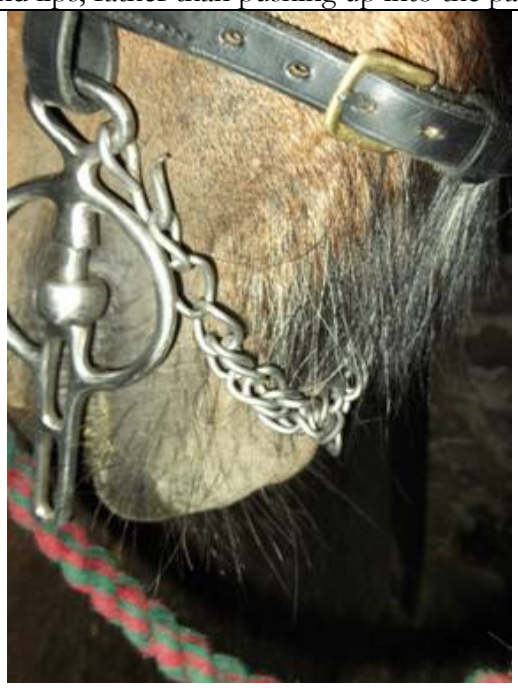
Liverpool bit correctly positioned, on left: Fell pony skull;

Horse skull. (To same scale.) The black line shows the difference in bit height.

When a "hybrid" curb bit, such as the Liverpool or Pelham, is fitted correctly for height on a cob or native pony the curb-chain will sit neatly in the chin groove, but on the longer mouth of a horse if the mouthpiece is right then the chain can be too high up the back of the jaw. So, horses can be more difficult to fit with such bits. This is another reason why the true curb bit like a Weymouth has a fly link on the curb-chain and a position for a lip-strap. The lip-strap keeps the centre of the curb-chain in the right place, as well as preventing the chain from being flipped off when the horse shakes its head at flies (which is the usual reason given!)

A difficulty with the swivelling Liverpool cheek is that any outward pull of the rein at the rear of the cheek ring will press the forward part of the ring towards the horse's face. For that reason it's not suitable for driving pairs, who should have a fixed-mouth version of this bit, or a bit without the forward part of the ring, which is really only decorative. It can be done without, as it is in the design of the Buxton, the Military/Elbow, and the Kimblewick.

Pelhams and Liverpools and other hybrid bits fit ponies and cobs well because these animals have a short mouth space, but horses are better suited by the classical two-bitted double bridle (Weymouth curb and single-jointed bridoon) and they have the jaw length to cope with both. Their mouths also have space for the single-joint to work on the tongue and lips, rather than pushing up into the palate.



Left – the curb-chain has not been turned to make it straighten out; it's been left "rough".

Right – the chain is fixed far too tight, permitting no movement of the bit whatsoever and forcing the horse to have the chain in contact all the time.

Because the Liverpool has a curb-chain, which must be fixed on any curb bit each time you ride or drive, there is the possibility of fitting it wrongly. In the case of a tight chain the horse gets no "cue" from the driver using the rein. He can't respond quickly and so escape curb pressure by obeying. The pressure is there already, the bit cannot turn, and the cue happens at the same moment as the increased pressure. With the "roughed" chain there are aggressive points of pressure on the bones of the jaw. A combination of these two common errors would be torture for the horse. Small blame to him if he objects.

Poll pressure – a myth?

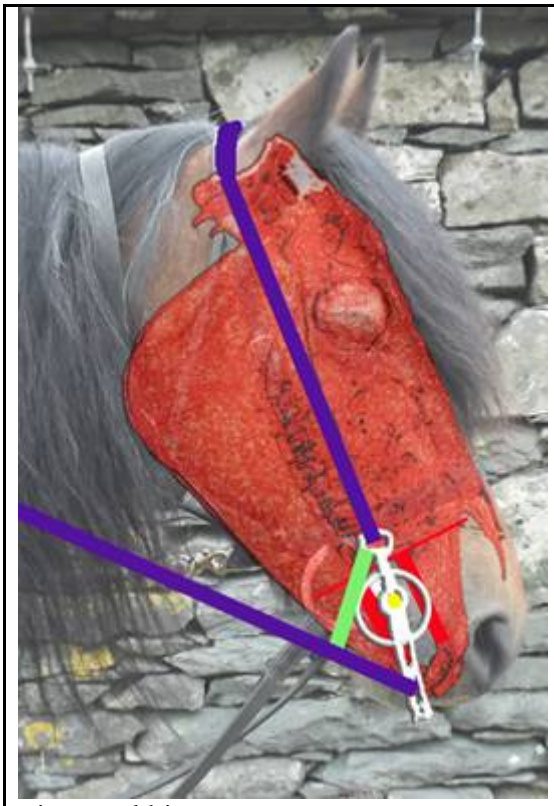
I conducted a straw poll (please excuse the pun) on a carriage driving forum about curb bits and poll pressure. Almost all my responses came from people who don't use curb bits and so were only guessing.

I asked people to assess the pressure they actually felt, oon a scale of 0 to 3, where:

0 is "Zilch."
1 is "I could barely feel the crownpiece move."
2 is "Mm, I can feel why they give to that."
3 is "Ow, that really hurt!"

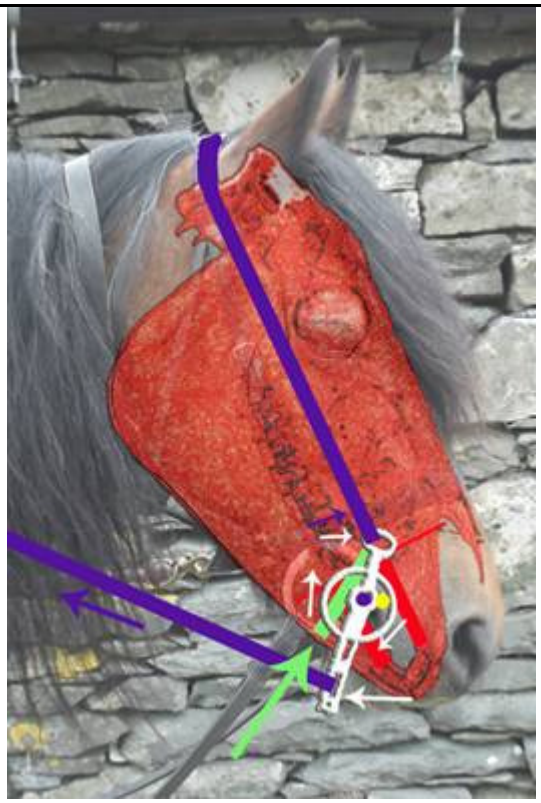
All those who guessed chose 2 or 3 – until the testers began to send in their reports. Then the puzzlement began.

My results, and the testers' results, were 0 and 1. Let us "Go figure" why that was!



Liverpool bit at rest.

Red lines: palate, jawbone, molar teeth.
Purple: rein and crownpiece/cheek of bridle.
White: bit.
Yellow spot: end of mouthpiece.
Green: curb-chain.



Liverpool bit activated by rein pressure.

Lower end of bit cheek swings backwards.
Mouthpiece rotates, presses back on the tongue and lips, and rises fractionally in the mouth.
Bit eye swings forward.
Crownpiece shifts fractionally towards the ears as the cheek piece goes forward with the bit eye.
The curb-chain lifts a long way up the jaw as it tightens.

On the previous scale of assessments, when I applied "rein pressure" these were the results:

2-slot Liverpool (drawing back the bottom slot)

The <u>cheek piece</u> swings forward with the bit eye; pressure at poll = 0, or at most, 1. I could barely feel the crownpiece move.

<u>Mouthpiece</u> rotates, presses back and rises fractionally in the mouth = 2. I can feel why they give to that.

The <u>curb-chain</u> lifts up the jaw and tightens = 3+ ! That really hurt!

Kimblewick (drawing back the ring – the equivalent of "rough cheek" on the Liverpool)

The <u>cheek piece</u> swings forward a small amount with the bit eye; pressure at poll = 0. Zilch.

<u>Mouthpiece</u> rotates a tiny bit, presses back and rises fractionally in the mouth = 1. The pressure applied is similar to the weight I put on the rein, like a snaffle.

The <u>curb-chain</u> lifts up the jaw and tightens = 2. I can feel why they give to that – but it doesn't tighten nearly as much as the Liverpool did, because the cheek piece above the bit is smaller and can't move so far to pull on the chain.

Discussion

The backwards pull of the rein on these bits does *not* apply pressure at the poll. There is just a barely perceptible change of angle in the crownpiece due to the eye of the bit going forward – a slight sensation of the leather moving a fraction of an inch towards the ears. I wondered initially whether it was significant that my bridles have shaped headpieces, which shift the leather away from the ears and allow the cheek pieces to fall further back down the face; but other people's tests with unshaped bridles also gave the same results.

Unless you have forced the bit so high in the horse's mouth that it jams on the molar teeth, there is no fulcrum effect at the mouthpiece and no perceptible increase of pressure at the poll.

It's the rotation of the bit over the tongue and lips that gives the horse his cue to yield. If he doesn't yield, the bit rises a little. It is the eye of the bit that is the fulcrum. However, even the most severe lever action can only shorten the distance between the poll and the mouth by a fraction of an inch, and the pressure at the top is spread over not just the junction of the poll and the atlas, but right down the width of the face until it begins to narrow to the muzzle. There is far more ability to resist pressure in the bone and flesh of the head than there is in the soft tissue of the mouth.

The main effect of a lever bit is the slight rise and rotation of the mouthpiece over the tongue and against the soft corners of the lips. The curb-chain should not come into play until both rise and rotation have been ignored. When the chain does make contact, it is very firm indeed on the underside of the jaw, and from that point there is no *further* lift of the bit in the mouth, nor tension in the bridle cheek-pieces. The only pressures that increase from then on are the mouthpiece on the tongue and the curb-chain under the jaw.

There is a subtle difference of rein pressure between turning the bit in the mouth and applying the curb-chain. The longer the bit cheeks and the tighter the curb-chain, the stronger the power you can exert, but it's also true that the further the cheek has to be moved to apply the chain, the more warning the horse gets before its power hits his jaw. The horse therefore has to be well enough trained to know that pressure means "yield" – and when he does so, the rider/driver has to be quick to release, and certainly not *increase* the pressure that applies the curb-chain.

Conclusion

This, then, is why long-cheeked curb bits are not advised for novices, either human or horse: they have to be precisely adjusted and sensitively used, and they are very open to abuse. However, *short*-cheeked bits with kind mouthpieces, like the mullen mouthed Kimblewick, may well offer "control" for strong ponies who resist single jointed snaffles. Perhaps this control is not because of their stronger action but because they are kinder and milder for short mouthed animals – and perhaps because the rider is being more careful, believing that the bit is severe!

Having done these tests, I shall continue to use my mullen mouthed Kimblewick for everyday work because I KNOW it is mild. It's certainly enough bit for my experienced ponies, and it's convenient for all the activities they take part in. I am, however, going to replace its curb-chain with the nice leather curb I have tucked away in the spare room. I'm also taking the curb-chain off my Liverpool. I will never consider putting the rein in at either of the slots in the cheeks. And exhibitors in any driving class that I am judging will have their bit fitting and use inspected with an even more critical eye.

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