

## POTTOKA ´S BEHAVIOUR AND TRAINING



The horse's long evolution as a prey animal has selected a series of behaviours, including social behaviour, that are surprisingly uniform despite great differences in race, climate and geographical conditions.

Ethology is the study of animal behaviour under natural conditions, that is, wild, not

domestic, animals. Until very recently it was thought that the only true wild horse was Przewalski's, the Asiatic wild horse (*Equus przewalskii*). Unfortunately most examples live in zoos, although a herd has been re-introduced to natural conditions in Mongolia where its behaviour is being studied.

Wild *Equus caballus*, the modern horse, was thought to be extinct. Almost all "wild" horses are in fact feral, that is, descendents of escaped domestic horses. During domestication, certain characteristics useful to man are selected: docility, ease of training, strength or speed, the capacity to accept often rather rough handling without protest, the acceptance of unnatural living conditions, or any other whim that takes our fancy, like shape of head or coat colour. It should be noted that ease of training does not necessarily mean intelligence, for our training methods are often confused and anthropomorphic. North American mustangs and island ponies, South American criollos living wild, Australian and New Zealand brumbies, Namibian desert horses, Japanese misaki horses and others, including the famous Tour du Valat herd of Camargue ponies, are all feral horses whose behaviour has been studied.

Recently, however, it has been found that the Portuguese Sorraia, which now lives in domestic conditions, is in fact a true wild horse dating from the Palaeolithic. A group of true, ancient wild horses, the Retuerta herd, was found in Doñana too. Most recently of all, the Basque pottoka has been found to show the genetic variation of a wild population which has escaped domestication and human selection. The small size and fierce character of the mountain pottoka has made it

virtually useless to man except as a cleaner of mountain land. Although colts are often culled, the remaining stallions are selected on the base of survival characteristics, not for tameness as in most domestic breeds. Thus it remains the largest population of true wild horses in Europe. In training, the pottoka is exceptionally sharp-witted, quickly discerning whether our presence is beneficial to it or not. In Siberia there may be true wild horses too.

All these feral and wild horses show similar behaviour and social structure, which centre around their easily obtained food source. As herbivores, horses provide rich meat for predators, so good predator defence behaviour is vital. This innate behaviour is found even in domestic horses. The more unnatural their living conditions, the more unnatural their behaviour becomes. Taking an animal from its natural environment creates stress and abnormal behaviour. The study of these animals does not provide good clues about natural behaviour, and can be misleading. We must study wild or feral horses under the natural conditions to which their behaviour is adapted.

**Special equine problems.** Compared to other tasty herbivores in the grazer-browser niche, equids suffer from two physical disadvantages. One is their small stomach, which needs frequent refilling. The bacteria that help all herbivores digest plant cell walls live in the large intestine, and most digestion takes place there. Horses trickle-feed, eating between 13 and 20 hours in every 24. This makes them vulnerable to attack. In contrast ruminants house their bacteria in one of their multiple stomachs, stuffing another and regurgitating food to digest it when feeding might be dangerous. They can stand much longer periods without eating.

Secondly, equids lack horns. Although horns may be used for sexual display, they are also handy in defence, and some antelopes deliberately attack predators with them.

Equids have to rely on behavioural defence. Perhaps that is why there are few species of them compared to artiodactyls (two-toed ungulates like deer, antelope, cows, goats etc.) Nevertheless, horses survive wherever they escape, which is normally on poor land: deserts, mountains, uninhabited islands (from shipwrecks), poor prairie, marsh – anything but tropical rainforest.

**Group living.** For horses, safety lies in company, for some can watch out for predators while others eat or sleep. Wild or feral horses do not live alone but in groups. Isolated domestic horses suffer behavioural stress resulting in stereotypic behaviour, digestive upsets, lowered fertility and resistance to disease, altered emotions and other stress-related pathologies. Company is essential to equine health.



There are two types of group.

The **natal band** comprises one or more stallions, an average of three to six mares per stallion, and their offspring up to sexual maturity at around two years. About half are one-stallion bands called harems.

Harems are as stable as the stallions can keep them. Stable, peaceful bands produce more and better foals than ones with changing members. New members are generally not welcome until they have shown persistence in wanting to stay (or the stallion has refused to let them leave). Domestic groups, too, reject newcomers for a while.



Multimale bands are less stable, and take various forms. Sometimes a stallion allows another to join his band but not cover his mares. Later, the subordinate stallion will elope with the original one's daughters, which is one way of acquiring mares, but meanwhile he has to be the band's main defender. Sometimes two harems live together, each stallion respecting the other's mares. Sometimes a group of young males acquire mares together, but are such good friends that they share them until finally pairing off.



Multimale bands are never as peaceful as harems, but they can be advantageous in heavily predated country. They are bigger than harems, and big bands take

precedence at scarce waterholes where bands have to queue.

Among feral Venezuelan criollos, which are heavily predated by puma and jaguar, large herds composed of many bands are found living peacefully together. Stallions respect each other's mares. Camargue horses also group in big herds in the summer, to reduce horsefly bites.

The natal band is thus a breeding unit providing a peaceful, protected environment for foals, the band's most vulnerable members. Although the stallions' ideal is perhaps the harem, they are prepared to make pacts with other stallions if local conditions demand.

**The bachelor band.** The second type of band is male-only, comprising young males



that have not yet acquired mares. On leaving their natal band at sexual maturity, colts join or form a bachelor band, where they stay until seven or eight years old. Their lives are dedicated to gaining the skills necessary to get mares and keep them: play-fighting, tracking mares,

watching stallions, trying to steal mares or sneak matings when the stallion's back is turned. They cause a good deal of problems for harem stallions during covering time.

In the sierras of northern Spain, native ponies (pottoka, Asturcon, gallego) and meat horses are left to roam and breed in natural conditions. British native ponies, too, generally live as if wild. These populations are interesting and easy to observe, for they are not hunted or chased as most feral horses are. Sadly, however, it is not possible to see bachelor bands, for surplus colts are culled and sold.

### **Roles and relations in the natal band.**

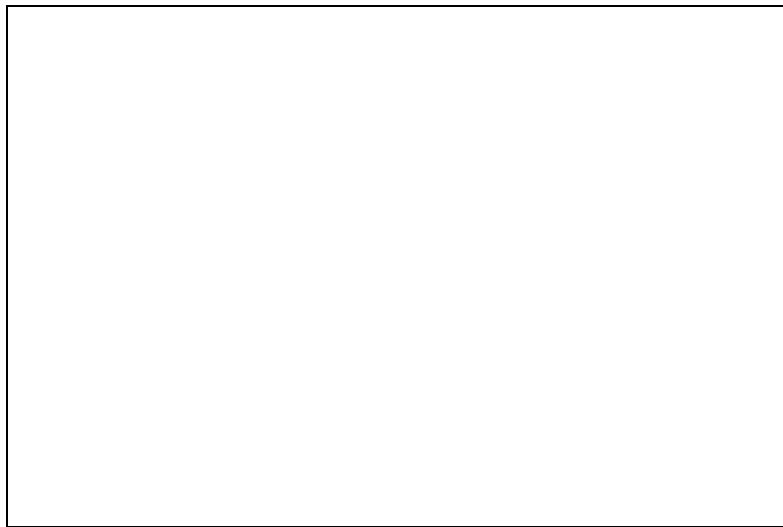


**The stallion** is the band's protector and defender, its Minister of Foreign Affairs as well as its foals' father. He is also the band's most vigilant member and the one to whom others refer when danger seems to threaten. He is usually found on

the outskirts of the group, keeping all under his eye. In dangerous situations he heads the band: at waterholes, a favourite place for predators to lurk, he generally drinks first.

At the first sign of trouble, he rushes out to investigate, and will stamp and snort in an attempt to scare off predators or strangers, including observers.

He may retrieve straying band members by herding them, using a characteristic, easily recognised posture, head low and wobbling from side to side, stepping high with his front feet.



The stallion relates to all the members of the band, and especially his colt foals, whom he initiates into the arts of play-fighting with charming gentleness. Foals seem fascinated by their father. In a pottoka harem in the Pyrenees, the three-month-old foals were constantly with the stallion, returning to their mothers only to suckle.

Natal bands roam a home range, which is not a territory since the stallions do not defend it. Several band ranges may overlap, especially around water or favoured pasture. Most natal bands live separately, avoiding each other, but they do meet at times. When they do, the stallions generally rush out, leaving the others

behind. They cannot tell whether the other is a stallion or a mare, and are usually optimistic.

On meeting, they sniff each other carefully, nose, withers and genitals. Reaching the last, they shriek furiously, and a brief, inconclusive fight often breaks out, ending in a display session. Arching their necks, they prance in *passage*, swelling their muscles impressively. Finally they settle into the great dungpile ritual.

One stallion defecates, turns to smell it, steps back. The second comes to smell it, dungs on top with great deliberation, turns to smell it, and steps back. The first returns, smells it, dungs on top, turns to smell it, steps back....This goes on and on until neither has any dung left. Then they go back to their bands.

This solemn ritual, comical to watch, seems to help them associate a particular stallion with the smell of his dung. On the sides of paths, stallions make dungpiles to which each passing stallion adds his contribution, a sign that he has gone that way. On smelling the dungpile, another may recognise who passed, and may decide to head his band in another direction.

Stallions always dung on other males' dung. On their own mares' dung they usually urinate. This tells passing bachelors that the mare is already accompanied, not a stray.

Natal band stallions do not actively search out more mares, nor battle for them, although offers are always welcome. They are far too concerned with raising their foals and protecting the mares they have against theft by marauding bachelors. Stallions that avoid conflicts have more and better foals than aggressive ones: natural selection favours the peaceful stallion that avoids trouble.

This is not the impression given by many domestic stallions, who tend to become aggressive when kept in highly artificial conditions and used only for covering visiting mares. A stallion naturally wants to stay with and protect a mare he has just covered, and tearing him away from her, often by the use of painful devices, infuriates him. Confined in a stable, isolated from his normally rich social life, unable to complete his role in life, he is extremely frustrated, and in all animals frustration triggers aggression. Fertility is lowered due to stress.

These stallions have often been isolated since sexual maturity and have no social education with other horses, merely a desperate longing to get at them.

The horse, a herbivore, lacks aggression either to other horses, with which it does not compete for food, or to other animals, which it does not eat. While feral males do very occasionally compete aggressively for mares, these occasions are rare. However males are the band's defenders, and will defend themselves more readily than mares if attacked or brutally treated by aggressive people. In extreme cases they learn to attack first at the sight of an aggressive or tense person. This behaviour is not natural, but aberrant behaviour due to poor welfare. When domestic stallions are kept in conditions approaching the natural, that is, in fields with mares and their foals, they are as gentle as so-called wild ones, though seldom as sociable together.

Pottokas, which have never been selected for docility, defend themselves furiously once they have had bad experiences from people, just as they would against any other predator that attacked them. The stallions are likely to be the first in defence. Remembering that this is a reaction to abusive treatment, we must be careful not to abuse them.

**The mare.** A mare's role is to keep herself and her foal in good health. She seldom has the wide social contacts of the stallion, being more likely to confine them to her family and a special friend. Bonded pairs may have been born in the same band, have left it together, joined another together, and passed almost the whole of their lives together without losing sight of each other.



A major factor contributing to band stability is the bonds that the mares share. They express these bonds by staying together, shadowing each others' movements, and in mutual grooming. One horse approaches another in a curious, tentative way; if the other is willing, both start scratching each other's withers with their teeth. Sometimes one scratches too hard and gets rebuked by the other. Shoulders and rump are also groomed sometimes. All these are areas where lice can be troublesome.

Mutual grooming is only performed between friends and mother-foal pairs. Most mares and the foals also groom with the stallion.

In contrast to the long-term friendship bonds, a mare's bond to her foal is extremely strong and exclusive at first, but gradually wanes until she weans him, although she does not reject his company altogether.



The breeding mares usually keep together, maintaining a peaceful nursery area free of playing adolescents. They do not lose sight of small foals nor cache them as ruminants do, but stand over them when they sleep. This behaviour is probably the reason why the domestication of the horse came 4,000

years after the domestication of cattle, goats and sheep, which leave their sleeping offspring hidden while they go off to graze. You cannot steal a sleeping foal.

**Birth.** As she feels birth approaching, the mare separates herself from the band, or stays behind as it advances. She gives birth alone. At first consideration this seems unnecessarily risky. However, the filial bond is of such importance that it is essential that the foal bonds to his own mother and no-one else. The birth of a foal arouses great interest in other herd members, who crowd around. It would be too easy for the foal to orientate, the first step of bonding, to another instead of his mother.

Birth usually takes place at night: 3am. is a favourite time. Predators are most active at nightfall and dawn.

Birth is fast: only 12-20 minutes elapse between the breaking of the waters and the appearance of the foal. The mare gets up and lies down until she finds a comfortable position. She is likely to choose a stony slope where the birth sac breaks easily.

When the foal is born, the mother immediately turns to see what has appeared, smells the birth waters (amniotic fluid), and performs Flehmen (p. 000), raising her upper lip to block her nostrils so that the smell enters the vomeronasal organ. This in turn signals to the hypothalamus, an area of the brain that activates hormone release and so changes behaviour. In response, the mare starts to lick the



foal, an action which is virtually unseen in other contexts. As she stimulates it, the foal starts to wriggle. In response she nickers, low and soft. The foal turns towards the noise (orientation), learning to recognise its mother's voice. Mother-foal bonding thus begins as an interchange of action and reaction, links in a chain that gradually strengthens.

As he dries, the foal starts to try to struggle to his feet, but may not be successful until about an hour has passed. He then starts to search, rather haphazardly, in the dark area between two upright pillars. If he is lucky he gets it right first time and arrives at the udder which, as he touches it, releases milk. This soon starts him suckling. If he goes for the wrong legs, the mare may nudge him into place.

Suckling releases oxytocin, a hormone that causes uterine contractions. As a result, the mare passes the placenta, generally about two hours after birth. Oxytocin also produces a sensation of pleasure that helps cement the maternal bond.

After passing the placenta the mare immediately leaves the birth site and rejoins her band. The foal is well able to walk and gallop, though he may not discover the trot for a few days. He shadows her closely.

For the first week of the foal's life, the filial-maternal bond is maintained more by the anxious, watchful behaviour of the mare rather than the behaviour of the foal, but as time goes on these roles gradually reverse. Tiny foals do not recognise their mothers and are liable to run to any mare the same colour. It is the mare's soft nicker that identifies her and calls her to him.



Wild or feral horses have never been seen to reject their foals, although domestic ones may. Often they have never seen a small foal and are literally frightened by its wobbly, uncoordinated movement. Others have been removed to a strange stable and feel stressed. One hormone associated with stress and pain is vasopressin, which acts against oxytocin and so inhibits milk let-down and the formation of the maternal bond. Having people around upsets the mare. A soft bed in a stable may not offer the best conditions for the sac to break, and the foal may drown inside.

Pottokas usually breed in natural conditions and have no perinatal problems. However, their increasing use as children's ponies may mean that some are asked to breed and give birth in unnatural domestic circumstances. We must remember that the pottoka's survival-based instincts are likely to be stronger than those of any domestic or even feral horse, since artificial selection has not bred them out. It is far safer, even if it does not seem so to our controlling minds, to leave a pottok mare to give birth as and when she chooses, in conditions as natural as possible.

**Mating** About nine days after giving birth the mare returns in season strongly, and is usually covered by the stallion. The mare plays an active part in seeking out the stallion. Where stallion numbers are greatly reduced due to colt culling, some mares live permanently with the stallion while others roam in pairs or little groups with their foals. These can be relied upon to search out and find the stallion when the time is ripe. It is also a popular time for domestic mares without a stallion to escape and go hunting for one. Pregnancy lasts 11 months.

**Foal development.** New-born foals do not have a complete set of fixed action patterns, those coordinated little sequences of actions that are elemental in an animal's behaviour. Although they can get up well, discovering exactly how to lie down in a coordinated fashion takes them a few days. Trotting is often not mastered for a few days either. Scratching and tail-whisking at flies takes time too. They soon nibble at grass or leaves, but it is not real eating. Drinking is unnecessary at first, for suckling provides enough liquid, but after a while it, too, must be mastered efficiently. How much of this is due to learning, and how much to maturation – the connection of nerve circuits which are unconnected at birth – is not clear. One neurological process that is immature at birth is seeing. Tiny foals do not see well, which must be remembered when we are trying to manoeuvre mother and foal through a gate, for instance. It is interesting to keep a notebook recording what new piece of behaviour the foal exhibits day by day.

New foals have a great deal to learn, and learn very fast. At first they are fairly fearless, and it is the mother's watchful behaviour that calls them away from danger. The first few weeks of life are a period when the foal learns to accept the things that will be part of his normal life: after that, he increasingly mistrusts anything he has not seen before. It is, then, the best time for us to introduce ourselves, tickling their necks and scratching their rumps (see training, p. 000).

Tiny foals sleep flat a great deal, and suckle some 4 times an hour day and night. They soon learn to block their mothers' movement when they want to suckle, running to stand perpendicular to her chest then, when she has stopped, diving underneath. At first they play around and even on top of her. She is remarkably tolerant.

Foals are born without teeth, which erupt after about three weeks. At this time it is not unusual to see a mare suddenly turn and bite her suckling foal savagely, or give him a soft kick that sends him flying. He has used his new teeth on her udder. This is his first maternal punishment, and he quickly learns what provoked it. It is a sobering thought that all mares teach their foals not to bite within a couple of days at only three weeks old, while there are many domestic colts and stallions that people have been unable to teach the same prohibition despite years of trying. We are not as good at teaching as we suppose.

Other mares reject advances from small foals, laying their ears back with a head-thrust, or pushing them away angrily. This is the first example of social norms that a foal must learn: do not invade other's space unless you are invited. They soon learn to recognise invitations from other foals to play, and to make inviting faces and gestures themselves. As the weeks go by, they play more and more together.

As well as learning social norms, growing foals must learn to distinguish between different types of plant, learn not to lie on thistles, avoid gorse prickles, follow paths and memorise them; learn communication signals and how to use them; learn to recognise the different members of the group, and where to go in different weather conditions. All animals learn to learn. That is, the more they have learned, the faster they learn new things. Youngsters that have been brought up in natural groups are far quicker to learn than ones brought up in deprived conditions like stables or corrals – if we know how to teach them. Pottokas are particularly quick learners once they do not fear us.

**Play.** Play has various functions: muscular development, coordination, and the



practice of behaviour patterns that will be essential in adult life. Among these are predator evasion tactics, communication and, for colts only, fighting. Colts, then, play more than fillies, and their play-fighting gets rougher as they grow. This often means that fillies prefer not to play with them.

Predator evasion practice takes the form of group running, learning to synchronise direction, speed and turns until they move as one. Bonded playmates may reach such perfection in this that they appear as synchronised swimmers, mutual shadows. Vigorous bucking is also a defence move.

Colts' play-fights include neck-wrestling; trying to bite each other's necks with rapid, darting movements; biting behind the elbows so the other kneels, exposing his lower-leg tendons; rearing and trying to push the other over, and waltzing nose to tail. All these moves are seen in real fights. They also practise mounting each other.

**Reactions to adults.** Foals have a special signal that they give to adults apart from their mothers. They approach with front legs bent, cringing, and "snap" their jaws rhythmically, showing their teeth. This was thought to signal submission. However, it does not prevent aggression from an irritated adult, whereas the function of a submissive gesture is to stop an aggressor attacking. An alternative explanation may lie in the fact that frightened foals always run to their mothers and suckle, not to eat but rather for comfort (non-nutritive suckling). In "snapping", the tongue, body posture and jaw movements are identical to those in suckling, so it may be a redirected action due to fear. It generally disappears about weaning time.

**Weaning.** As the months go by, the foal gradually becomes more independent of his mother, grazes, and forms friendships with other foals. He continues to suckle, though less often. About two months before the birth of the next foal, the mare refuses to feed him, though she does not reject his company altogether. In good conditions she will breed every year, so he is about 9 months old at weaning. In poor conditions, she breeds every other year, so he may still suckle at a year and a half old.

Traditional domestic weaning is at 6 months old or even less, when the foal is abruptly removed from his mother. This is done in order to relieve the mare's burden and allow her developing foetus to grow larger. Both suffer acutely. Stress

hormones increase milk production, so the mare's udder swells painfully. Foals are often shut in a stable, for they may damage themselves crashing into fences in their desperate search for their mothers. Their need to suckle, both to eat and for comfort, drives them to suck the manger or jutting stones, and this in turn starts oral stereotypes, ritual, functionless movements like tics: crib-biting, wind-sucking, and tongue-sucking. 50% of them get stomach ulcers, and may develop excessive salivation to neutralise stomach acid. Rich concentrated food, given to overcome weight loss provoked by stress, increases the likelihood of ulcers.

Weaning stress may be lowered by never weaning a foal at less than 6 months, a time when he becomes much more independent of his mother. He should never be alone, but with known companions. Mare and foal should be separated by a barrier, like a high mesh fence or a corral with close bars, that allows visual contact but not suckling. They can still rest and sleep with each other. The mares dry faster and usually can be removed after a couple of weeks without the foals becoming stressed or losing weight. The best food for a foal at weaning time is rich grass.

**Learning social norms.** All societies have social norms. Horses' social norms include not disturbing the rearing of small foals, not biting and kicking unrelated adults, not hurting others in play, and avoiding inbreeding. Mares do not allow in-band adolescent colts to mount them even when the stallion's back is turned.

All these norms are imposed in the same way, by angrily driving the offender away: *go away, you cannot be in my company if you behave like that*. It is mostly the adult mares that impose these sanctions on the youngsters. This is called negative punishment, the removal of something desired. At the same time as punishing, it also teaches, repeatedly, the concept of respect for individual space, something that the foal's mother cannot teach him since he must invade hers to suckle. This concept is literally vital, for it helps avoid collisions when fleeing together in a close-knit bunch. Adult horses have an acute appreciation of individual space and the distance between them. Although their lives depend on being together, close physical contact is generally avoided except in mare-foal pairs, in playing, and in mutual grooming. These close interactions are short compared to those of dogs or cats, which sleep in piles together and not have such respect for personal distance.

The result of these prohibitions means that the youngsters are gradually pushed to the outskirts of the group, which helps them form bonds together. They

make investigative forays and may interact with members of other bands, especially bachelor bands. Sometimes a group of such immature adolescents detaches itself altogether (called a mixed-sex peer group).

Domestic youngsters brought up alone, or only with their mothers, lack the concept of personal space and invade ours. Although this seems charming when they are young, lack of respect is alarming when they get bigger. However if nobody teaches them they do not learn.

**Inbreeding avoidance and natal dispersion.** Horses do not breed with others they have seen growing up since birth. Mares in the same band are often related, so that breeding with each other's sons may be as bad as breeding with their own. Youngsters leave the natal band on reaching sexual maturity at around two years old.

The stallion will not cover his own daughters, but drives them away when, on coming in season for the first time, they are attracted by his smell and try to seduce him. They may be picked up by passing bachelors, something the stallion does not attempt to prevent, or wander off to approach another natal band stallion.

Not mating with in-band fillies is not a total guarantee against inbreeding, for a stallion will mate happily with his daughter out of a mare he lost after covering her, and will equally refuse an unrelated filly out of a mare acquired when she was already pregnant by another stallion or made a sneak mating. Nevertheless, it is a good working rule.

Some fillies get covered but return to their mothers, for their filial bond is too strong. They do not make good mothers, being more attentive to their own mothers than to their foals. Some fail to bond into a new band, but wander promiscuously from one to another; these do not make good mothers either. Bonding is important to band stability, and thus to breeding success, but filial bonds must be broken and replaced by more permanent friendship bonds. Some do not get this balance right, and their foals may fail to survive.

Domestic fillies that have continued to live with their mothers until adulthood tend to be too dependent on them. They do not learn well, since they are used simply to copying their mothers. It is best to separate them at two years old for a few months, mimicking natal dispersal, even if the intention is to keep them together permanently.

Colts, too, must leave the natal band. They generally do so voluntarily, to join a bachelor group, though colts that stay too long may finally be driven out by the stallion. It is, however, a misconception to think that stallions battle with their sons and turn them out bleeding and discouraged to the wolves. Only a human could think that. Stallions do play-fight with their sons, and from a distance these games seem dramatic when the son is well grown; but there is no blood, no damage. Feral stallions have been seen to run out to a bachelor group and play with their sons even years after these have left the natal band. If a feral stallion is seen chasing a youngster away, it is more likely to be a daughter than a son. However, where space is limited and other company not available, as in many managed herds, it is not a good idea to leave colts in their natal band after they are sexually mature.

**Bachelors and the acquisition of mares.** Bachelors lead a jolly life, playing rowdily, roaming far and wide, and trying to become breeding stallions. Sneak matings are the bachelors' delight, one reason for a stallion not having so many mares he cannot keep an eye on them all. In broken or forested country sneak mating is more feasible than in open prairie.

It is not usual for a bachelor to achieve even a sneak mating before he is five or six years old, and maintaining his own mares is unlikely before he is eight. If he acquires any earlier he generally loses them again, for he lacks the necessary seriousness and dedication.

There are various possibilities for mare acquisition. Chancing on an in-season filly rejected by her father means hanging around natal bands and, with luck, getting to know her first. Stealing a mare is easier in the winter, for bands spread out more in poor grazing, and in rough country. Offering to defend a band and inherit the daughters is another. Finding a mare that has just given birth is possible but unlikely. Those promiscuous fillies offer a chance of learning to keep an eye on them, but usually sneak away. All these possibilities require ceaseless observation, checking for clues in dung and urine, tracking skills, and being alert and agile at escaping a stallion's fury.

When a whole band comes across a stray mare, there is seldom any friction. Their play-fights have already shown who is the strongest, and he may be practising the defence of the band already, as if he were a harem stallion. On the contrary, he may not even reject his friends' company, and all may travel together for a while.

If, however, a bachelor's luck fails and he has not acquired mares by the time he is eight or so, he may fight for them. This is not a popular choice, for it is risky. While horses are not specially equipped for fighting, injuries like broken teeth or a broken jaw from a kick in the face, damaged tendons bitten in the kneeling down ploy, or severe bruising to the jugular and windpipe, can mean death, especially where there are predators. Horses do not fight unless they see no other option.

The whole bachelor band may take part, selecting a stallion that is evidently not in his prime. Harrassing him mercilessly, they can take turns in resting, though he can not. This may go on for days until finally there is a real battle, which the younger stallion usually wins. He then drives the mares furiously, chivvying them and biting them, and may force-mate them. In early pregnancy this causes abortion and an early return to season.

The unhappy older stallion may attempt to regain his harem; he may be so severely injured he sickens and dies; the wolves may get him. If he survives, he may finally settle to looking after younger bachelors, but after his defeat he is highly aggressive for some time.

## **Defence**

Large predators have mostly been eliminated, or have never existed, in many places that feral horses now inhabit. Nevertheless predation has shaped the whole of the horse's behaviour and psychology.

Horses have evolved to exploit the poorer end of the grazer-browser niche, and food is rarely a problem except in deserts and overpopulated islands. They do not have to trap it, make plans to outwit it or compete for it. In fact they are remarkably careless about it, using it equally as a toilet, a bed, a rolling site; they do not guard or store it. Forward planning is not necessary.

Their competition for survival is not against each other but against predators, where rapid perception and reaction are fundamental. Such survival behaviour cannot be left altogether to the chancy business of learning: it must be automatic, the result of inborn or innate connections. In general, the horse is alarmed by, and avoids, anything that has not been proved safe, especially if it moves.



Group living and communication form the first bases of the defence strategy. When a band eats, or dozes, almost all the members do the same thing. However there are always one or two on watch. The stallion is the most vigilant of all, but he too must eat (though not so much as a mare) and sleep (more than a mare) at times too. Look-outs communicate to the remainder.

On spotting a possible predator at a distance, a horse turns to face it, using the binocular part of the visual field (p.000) to examine it better; if it is closer, he will run to a safer distance before turning. Tension pervades his whole body: his head is high, his tail raised. On seeing these signs, others turn to look too. If they do not, he will move with stiff, jerky steps that catch their eye. If they decide it is harmless, they relax, and so does he. Band members take more notice of the stallion's attitudes than of others'. Horses have an incredibly sensitive eye for movement and quality of movement. Prowling, stalking movements alarm them, as do signs of tension or tense movements. This ability to interpret emotion through the body language that expresses it is one of their special gifts, for their lives depend on it. Hence their insecurity when alone.

If there seems genuine danger, all run together and run away in a close-packed bunch; other bands may run to join them. Massed flight confuses a predator's eye. He does not know where to attack, and with luck all escape. It is the lone animal that is vulnerable.

Massed flight implies all participants synchronising direction and speed together, as pigeons, trout, and many social prey animals do. We are singularly bad at it, for it depends on lateral eyes. The sight of such synchronised flight, when a whole herd (or flock, or school) wheels and turns in unison, separating round an obstacle to flow together again, holds us in breathless fascination, for its beauty is mysterious to us.

Synchrony is fundamental to a horse, Tiny foals synchronise perfectly with their mothers in flight or on the move. Later, they practise with each other in play. They even synchronise emotions: calm, panic, uneasiness, tension or relaxation infect a whole band. The members of a band synchronise activities, eating, resting, rolling and moving together (social facilitation). To a horse synchrony, the loss of identity in the formation of a unitary band, is survival. It is so deep-rooted that if we

show them that we are neither predators nor insignificant animals like rabbits, they willingly synchronise with us in activities they would not do alone.

**Collision avoidance.** In a stampede, collision may mean death, especially for the foals. The horse's respect for personal space, and his acute awareness of distance from others, is repeatedly taught by adults to weaned youngsters. The use of "go away" as negative punishment for infringement of social norms drives the point



home. Domestic youngsters raised without this education may knock us over when afraid, for they crowd too close. Again, we are dunces at collision avoidance: in a human stampede, someone almost always gets knocked over and trampled.

Running away is the horse's main defence.

**Leadership** When a band is on the march, for instance to water, they usually follow the same march order. The leader is a mature mare who, being pregnant and lactating, is one of the first to feel thirsty. When she moves, so does her foal, her friend, her friend's foal, and so on, until the rest of the band synchronises. The youngsters often come towards the back, the stallion last. He is thus in position to retrieve any straying members and protect the rear.



If other members try to induce the band to follow them, they are generally unsuccessful and have to return.

The characteristics of the leader mare have been neglected in scientific studies, though she

generally seems to be a dependable, mild mare acceptable to all. When she changes activities, so do they.

In group flight from danger, this mare is unlikely to be first, since youngsters are faster runners. They check to see that others are following, and if there is a change of direction further back they change too. Group flight cannot depend on one particular individual, and bands often merge in flight. By following the simple rules: *keep together, don't collide, synchronise with your neighbours*, any horses can run away together. This is a self-organising system that does not depend on leaders or control by authority.

**Stallion defence.** Stallions may defend their bands by threatening predators, snorting loudly, prancing high, and charging furiously at them. These measures, and their vigilance, are effective. In Leon and Asturias, where Asturcon ponies and meat horses co-habit with a large wolf population, it is the stallionless mares that lose their foals, not the ones who live permanently in harems. Foal losses are decreased by increasing the stallion/mare to ratio to higher than its norm of 1:30.

**Other forms of defence.** Horses run away from anything they perceive to be dangerous. It is their safest defence ploy, so they are anxious not to be trapped, enclosed, tied up or forcibly controlled. They dislike ravines and prefer places with good views: weather permitting, they go up to high ground. They avoid or go away from anything unpleasant or slightly scary: threat or aggression from other horses or people, unsafe ground, plastic bags, or even bad weather. They are particularly careful about keeping their feet safe and prefer to follow known paths through their home range, avoiding crossing water unless they know the footing is safe. Their cerebellum, the part of the brain that coordinates movements in equilibrium, is larger than ours, so they seldom fall down and are shocked when they do. Being forcibly thrown to the ground represents a near-death experience for a horse, which rapidly enters a state of profound shock. Even tame domestic horses seldom let us approach when they are lying down: only completely confident ones do. Sick horses do not lie down unless they have severe foot pain or colic. Thus a great deal of their characteristic behaviour involves adaptations to the necessity of running away at any moment.

When they cannot run away, they resort first to threat: flattened ears, head thrusts and rump presentation are not attacks but attempts to avoid actual physical defence, which may in itself be dangerous. If these threats are ignored, they have no other resort but physical defence: kicks, lunges or foreleg strikes. Pottokas are

particularly apt to bite in self-defence compared to other breeds, and their threats must be taken seriously. If we do not change our behaviour when they threaten us, or we try to threaten or punish them, they will escalate their behaviour dangerously.

**Social behaviour in domestic groups.** Domestic groups, even if they live in fields, are closely confined compared to feral horse bands. Home ranges for these are between 2 sq. km. on overcrowded islands and 25 sq. km. in open country or deserts. Like any other social animal, horses are more bad-tempered in their social relations when overcrowded. Domestic horses often have their bonds broken, and are not free to choose their group.

When they are fed concentrated food, their social relations alter profoundly. Natural food is dispersed; when it is scarce they spread out, avoiding competition. Rich, concentrated food in buckets, or even good hay in piles, provokes competition. Some learn that aggression pays richly; others learn that it is best to avoid them. This behaviour is widely misunderstood, for it is interpreted as a dominance hierarchy in which the “boss”, or winner, is assumed to be the group’s authoritative leader whom others obey. A further assumption is that if we make ourselves the boss, horses will obey us.

This idea seems natural and obvious to us, though horses find it difficult. To understand why, we must look at what dominance hierarchies are, why they arise, and our own behaviour.

**Dominance hierarchies.** When animals’ food takes the form of rich lumps that are hard to get, it is worth fighting over. When those animals are carnivores that hunt in groups, fighting over a kill is particularly dangerous. Although the roots of hunting aggression and aggression to one’s own kind are quite different, carnivores are armed with teeth and claws, and know how to kill. In order to prevent damage, dominance hierarchies arise. They are also common in primate groups. These include our close cousin the chimpanzee and ourselves; both are competitive animals whose social aggression needs controlling.

One strong animal becomes dominant through the use of force or threat, until no other will challenge him. At this point, he controls all resources without difficulty, including mating rights with whomever he fancies. Naturally, his subordinates try to please him, for they do not get a share of the food unless he

permits. In primate groups, they groom him; dogs jump up to lick the dominant's mouth. If he is angry, they make submissive gestures to appease him. Primates cringe, sometimes offering themselves sexually; dogs roll on to their backs, and we apologise.

In these societies, the dominant is the group's leader, since all are attracted by him. They also obey him. The angrier he is, the more they try to do what he wants. He does not allow fighting among his subordinates, though they may defer to others more powerful than themselves, and bully weaker ones, so that a hierarchical social structure arises. The hierarchy brings peace, for every animal knows its status. Its function is to reduce aggression.

In fact the social structure of primates is a great deal more complicated, and in wild primates the hierarchy is not so all-important as once thought to be. But we can recognise the characteristics of dominance hierarchies in our own behaviour, for we descend from primate groups. Democracy has been hard to achieve, and despotic dominants frequent in human history. Kings once claimed mating rights with all their female subjects. We are attracted by the powerful and the famous; we recognise authority, and (mostly) submit to it. We are status-conscious, and even invent symbols of status. We understand the concept of obedience, and are likely to become angry when a subordinate, or an animal, does not obey us.

**The horse's apparent hierarchy** does not share these features. It does not result in peace. Groups of horses are liable to go on fighting over food for years unless we take management measures to prevent them: one scientific study measured aggression rates (ears back, head thrust, bite, kick) among feral horses as 0.25 per horse per hour, and among domestic horses at feed time 47 per horse per hour. This is not peace., although it is at feed time that a hierarchy is most obvious.

Secondly, the "boss" at feeding time is not the group leader, even if she is the first to arrive at feeding time. Many scientific studies have shown this. In domestic groups it is hard to spot the leader until they escape. The horses that live free in the northern sierras usually come down for winter and are hand-fed, so the difference between "boss" and leader are clearly seen. One farmer, describing his bell mare, said "she's not the one that wins the food, she's the one that all the others follow."

Thirdly, the "boss" is not attractive to the others. They avoid her.

Fourthly, she has no command except “go away”. That is, there is no obedience, only avoidance.

Fifthly, horses have no submission signals, no way of signalling “don’t attack, I give up now” or “don’t be cross, I’ll do what you say”. If the “boss” attacks another one in a corner, there is nothing the subordinate can do to stop her. If he cannot get away, he gets hurt. Natural horse behaviour is adapted to open spaces, not fences.

What we see in these feed-time squabbles is not a true dominance hierarchy but what some ethologists call an avoidance order. Others continue to call it a dominance hierarchy by dint of re-defining dominant to mean the one that wins in repeated conflicts. Thus the common statement “horses have dominance hierarchies” means no more than “if you make them compete there will be winners and losers”. What most people understand by dominance, quite correctly according to the dictionary, is authority maintained by force if necessary. It is not a concept that horses understand. Faced by angry authority, they try to escape or defend themselves, not to obey or signal submission. We call it rebelliousness, and are apt to get angrier. Our major problems with horses arise from our thinking like chimpanzees (see also training p. 000).

### **Maintenance behaviour**

The greater part of a horse’s life, indeed all of it if he can manage it, consists of maintenance behaviour.

**Eating.** Horses eat a wide variety of bushes, trees and herbs as well as grass: gorse, sagebrush, the bark of ash and beech as well as their leaves; fruits like blackberries and rose hips; plantain, clover and dandelions. They are capable of using herbs selectively to cure themselves. They avoid poisonous plants, most of which are bitter. Domestic horses sometimes make fatal mistakes due to lack of choice. In overgrazed pasture they will eat dried *Senecio*, which causes fatal liver damage, gorge on unripe acorns after a storm or eat yew hedges, poisoning themselves.

Horses paw to reach grass under snow, to break the prickles off thistles and to dig up roots. In winter pottokas eat so much gorse they grow moustaches to protect their lips.

They eat in bouts of 2-3 hours, both day and night, and usually rest afterwards. They never eat for less than 13 hours a day. If they are in rich fields this may be too much, resulting in laminitis, especially in ponies. On their preferred drier, poorer grazing, about 15 hours' grazing is the norm.

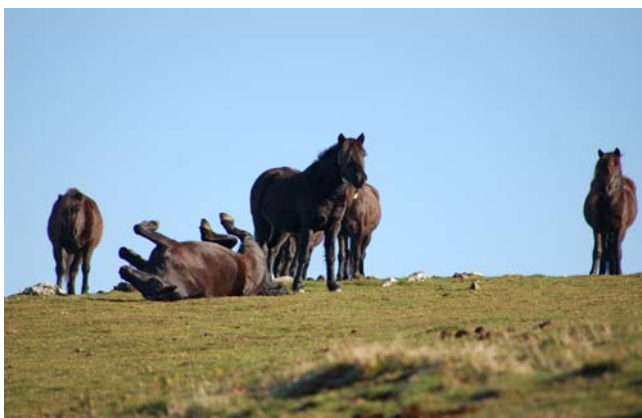
The most adequate maintenance diet for an enclosed horse is hay *ad libitum*. If hard work is envisaged, concentrates may be added. Pottokas are "good doers" and do not need concentrates, which tend to make them anxious and irritable. A little dry bread is appreciated, but wheat is not an adequate basis for equine diets. Nor is straw, which is indigestible and causes colic due to constipation, though it helps fill the belly for ponies kept on the hill in winter.

**Drinking.** Feral horses often drink only once a day, and may have to travel long distances to reach water. Horses are careful about water sources, and in enclosed fields may refuse to drink contaminated water. In corrals and stables automatic water supplies can cause problems: they may get dirty, and are at an awkward angle. Buckets are safer. Really thirsty horses do not eat.



After work, water should always be offered before food, because drinking large amounts after eating causes indigestion. So does drinking large quantities of icy cold water after long hard work.

**Rolling** relieves itching, and can be used to cover the coat with dust, mud or water as fly protection. It also keeps muscles in good trim, as does stretching.



Rolling is a group activity. Usually the stallion rolls first and last, and the whole group uses the same spot, thus infecting themselves with a group smell.

Frenetic, excited rolling accompanied by kicks and looking at the belly is a sign of colic. Sometimes heavily pregnant mares roll excessively some three weeks before due to give birth. This is not usually due to colic but to an attempt to shift the large foetus into position. Colic is highly unusual in horses kept in natural conditions, and is marked by altered intestinal rumbling sounds: in indigestion, too much, and in impactive colic (blockage due to constipation) a complete silence. It is therefore wise to press one's ear to a healthy horse's belly from time to time, to learn what is normal.

**Flies** can be a great problem, and are usually the only reason why horses use field shelters: in bad weather, they stay outside.

Resting nose to tail, seeking shade, shaking the head in low branches, stamping and tail-whisking, kicking the belly, rolling in mud, splashing muddy water on the belly, rump-scratching, suddenly cavorting about on hearing gad-flies, biting the flanks or back, rubbing on trees, standing in the sea: the horse has a large number of ways of getting rid of flies, but none is completely successful. The best is to seek breezy spots on high ground, which is what feral horses do if they can. Many migrate from low to high ground in summer, having a home range in each.

**Resting** occupies any time not spent eating or moving from place to place, some 7 or 8 hours daily. Horses can doze standing up, due to an ingenious arrangement of tendons and ligaments that suspends the head without effort and locks the back leg in place. To sleep more deeply, they lie propped on the sternum; to dream, they need to lie flat. Dreaming seems to be a way of processing information gathered during the day. Foals lie flat much more than adults, and stallions more than mares.

**Moving.** The horse is an animal of movement. Even when grazing, horses walk continually. Feral horses move some 30km. daily, and more if water sources are distant. Mature mares do not have energy to waste in play, but foals, adolescents and stallions do.

Without moving, digestion, circulation, muscle comfort and mood suffer. Stables are not adequate for horses, and particularly not for a wild horse like the pottoka. Wild animals have stronger reactions to stress than domestic ones.

**Dunging.** Grazing horses dung every three or four hours. Stallions usually dung only on special piles; mares may use a special area, but are much more careless. Horses do not eat where they have dunged, avoiding infecting themselves with intestinal



parasites. If they are the only animals in enclosed pasture they gradually use less and less of it. This causes rank, useless areas and overeaten bits where weeds invade unless other animals are rotated or the pasture is cleaned regularly.

**Urination.** Stallions mark mares' dung with urine, but mares urinate anywhere. When in season they urinate frequently and obviously, "winking" the labia of the vulva repeatedly. This catches the eye of the stallion.

**Oestrus** This exaggerated urination is the major sign of oestrus (being in season). Oestrous urine contains a pheromone, a special smell message that excites the stallion (p. 000). Feral mares are usually covered at their first oestrus after giving birth, so are seldom seen in season. Mares without a stallion come in season for five days or so in a three-week cycle; they ovulate on the penultimate day. In winter, cycles may be irregular, longer or absent and, especially in native breeds like the pottoka, mares do not ovulate.

Oestrus may be marked by mood changes, especially in young mares; by increased interest in meeting others, and immediate urination; by escapes.

### **Sense organs and perception.**

Sense organs provide an animal with the information it needs to get around in life. Perception is the way that it analyses that information to make a mental image or representation that is meaningful.

The world emits more information than any animal can deal with. Its sense organs are specialised to detect what is useful to it. We cannot smell a particular river from the middle of the Atlantic as can a salmon, see ultraviolet or polarised light as can a bee, or hear a bat's sonic pulses like some moths, because we don't need to. Horses need to detect predators, distinguish poisonous from edible plants, and smell the difference between male and female dung, amongst other things. Our specialities are different. Especially where the visual field is concerned, we are likely to think that they perceive things as we do. This is not true, and gives rise to many misunderstandings.

**Vision.** Horses have an immense visual field due to their lateral eyes. Predators come from any direction. Immediately in front, for a yard or two, they cannot see anything at all; at greater distances, they can see with both eyes (binocular vision). It is only in this part of the visual field that they have an accurate perception of distance, which is

why they turn to face unusual objects. If we restrict their head movement by holding them hard on a short rope, or with tight reins, they protest, and shy at unfamiliar objects: they are much happier on a loose lead. This goes against our instinct for control: when a horse starts dancing about anxiously, we tend to hold on harder, not give them more rope so that they can see what disturbs them.

If we walk straight towards a horse's head, we disappear as we reach him. Unless he is used to being given a titbit, he will turn his head away or back off to keep us in sight, which we interpret as not wanting to get caught. As we approach we must move to the side, keeping visible. When holding a horse, we should either be visible or, if standing immediately in front, keep a hand on his head so he knows where we are.

A horse cannot see his sides when facing forwards, so he cannot see our knees when we are riding. Young horses know exactly how wide they are, but at first they do not calculate for our knees and may bang us against posts and trees, startling themselves. Facing forwards, a horse cannot see us when we lift his back foot either. For him this is an act that requires great confidence in us, for his foot is vital for running away. He prefers to keep an eye on us by turning his head, which he cannot do if he is tied up or held firmly. Most horses give us their feet more easily when they are loose.

There is another blind zone behind, and movement there makes them defensive if they cannot turn their heads to identify it. They are far more likely to kick when tied up than when loose. Dogs like trotting behind them at exactly the point where horses can see them out of the corner of their eye, which makes them nervous.

Horses cannot see their front feet when their head is in the normal position. They walk on memories. To see their front foot placement they need to lower their heads, which they want to do when the going is rough, when entering water or mud, when stepping on the ramp of a trailer, or in any other circumstance in which the front feet might be in danger. By putting their nose almost on the ground they can see their back feet too. If we hold their heads up, they may refuse to advance at all.

Horses cannot see above eye level, so they raise their heads to see high objects. Pottokas are so small that they cannot see an adult above the waist when we

are close beside them, which makes them very insecure at first: they are more confident with children. When first taming them, we must sit or lie on the ground to gain their confidence, and crouch as we approach to keep ourselves below eye level.

By raising his head and pulling it back, as he does when frightened, a horse with prominent eyes can just see, though not very well, the head of a tall rider. This creates panic. The safest first rider for a pottok is a tiny child, whom we can hold in the crook of our arm and lift off at the first signs of trouble. Adults are far more likely to panic them, not only for visual reasons but also because their weight is unacceptable. It is impossible to stay on a horse that is determined to get rid of you, especially a small one, and any attempt to do so makes him fear and hate the idea even more.

**Visual analysis.** The information collected in the eye is crude. It passes to the brain for analysis. There are three routes of analysis, which later pool their results so we see a complete image.

First, colour. Horses do see colour, but they have only two types of colour receptor whereas we have three. Their vision is like that of a colour-blind person: good at blues, greens, yellows and browns, but not good at reds and violets. They have fewer colour receptors (cones) than we do and more low-light receptors (rods). They also have a tapetum, a kind of mirror behind the retina that effectively doubles the light at night: it is what makes their eyes shine greenish and diabolic in car headlights or flash photos. Thus their night vision is very much better than ours, though colours probably don't seem so sharp in the day.

Second, movement. Horses process more information via this pathway than we do, so they see movement much better. A tiny movement far away catches their eye and stops them in their tracks. If we look hard, we can possibly see it too, but it does not leap to our attention as it does to theirs. Their eye for quality of movement is astonishing: they recognise and react to our moods as revealed in our movement. Aggression, of course, frightens them; so does its precedent, tension, which they also avoid. Our tension does not always mean we are aggressive: we might be in a hurry, stressed by bad news, habitually tense anyway, frightened, or merely apprehensive. It does not matter to them. The sight of tension makes them nervous, since it is the first signal that running away might be appropriate. On the other hand, calm, casual, confident movements make them feel secure. Looking interested in something brings

them over to investigate. The first step to good horse management is to learn to be aware of what our movement looks like to a horse, and control it. To do this, we have to learn from his reactions, allowing him to teach us.

Many deliberate social signals take the form of repetitive movements: the winking of the mare's vulva when she is in season, the "snapping" of foals, the irritated lashing of a tail. Our signals are more effective if we put them in this form.



Thirdly, detail. We use this pathway more than they; they do not see detail well. A galloping horse does not see wire, and will crash into it if he does not know it is there. They will neigh at cows, or two people walking together, at a distance that we can see perfectly well.

The sight of a mare with a foal excites a stallion when a lone mare does not; perhaps it is the only way he can tell she is a mare. They may startle at familiar objects in unfamiliar places or orientations. Their powers of focusing are less than ours. They do not use sight to identify individuals, but smell.

**Smell.** Their sense of smell is far greater than ours, though it has not been subject to scientific investigation. My stallion once tracked lost mares 15km over mountainsides, starting at least 8 hours after they had escaped. This is as good a tracker dog. A young mare I rode backtracked herself, 5 hours after going out, winding 25km. through a pathless, bushy desert at night without making a single mistake: I checked her footprints next day. My arab pony used the smell of invisible sheep tracks to guide him through dangerous bogs. Tracking is clearly useful in returning to a group after being separated.

Some smells, like some noises, are inherently frightening, like that of dead or rotting flesh, or that of lion or tiger dung or urine. The smell of other horses on our

clothes interests them, and it is useful to wear clothes that smell of horse when taming them.



Horses want to smell us in order to identify us, and are more confident with us after doing so. Young or wild ones want to smell our face, which alarms some people. Remembering that they cannot see us when we are close in front, we must keep still. Looking down and offering the top of the head satisfies them, and feels less vulnerable to us. They may try to nibble our hair. They will smell us a hundred times before they feel they know us if they are unused to people.

A famous English trainer once said we should breathe up their nostrils as they do on meeting. This is not a good idea, for they may feel invaded and bite. If we leave things to them, they do not.

In addition to the ordinary nose, which is already large, horses have a second olfactory organ, the vomeronasal or Jacobson's organ. This is a blind sac the size of half a finger, deep within the nose. Air does not enter it unless forced, which the horse does by inhaling deeply, rolling his top lip back to close his nostrils, and pumping the air in by moving his jaw rhythmically, an action called Flehmen. The organ detects pheromones, smell-messages that change the hormones, and thus the behaviour, of the recipient. One such pheromone is present in the urine of oestrous mares, and excites the stallion; another is in amniotic fluid, and triggers the initiation of the maternal bond after birth.

Horses are apt to do Flehmen on smelling or tasting something unfamiliar, as if testing to see whether it carries an important message.

**Hearing** They hear better than us, too: lower, higher and softer noises, with a fine ability to distinguish between frequencies. Learning experiments show they have perfect pitch. They are also probably better at localising sounds, since their funnel-shaped ears swivel accurately in any direction separately.

Some sounds, like some smells, are inherently frightening: the hiss of a snake, the rattle of a rattlesnake or of galloping hoofs, soft crackling noises like an animal creeping in a bush. From our point of view it is unfortunate that these should be mimicked by sprays, the worst being those with a metal ball inside the can, and by

plastic. When we have to work with frightening sounds, the best ploy is to sing loudly to mask them.

As with smells and movement, sounds that are imperceptible to us can alarm or interest horses. Horses do not react to nothing, and it is up to us to find what the stimulus is. Often their heightened perceptions can enrich our experiences if we respect them: for instance, if we praise a horse whenever he spots another animal moving in the distance, we end up seeing far more wildlife than we would alone. Riding my stallion in the mountains, I always let him smell any dung: his reactions tell me if there are stallions nearby.

**Touch** The sense of touch varies all over the body. The least sensitive part is the wither, the most sensitive the rear belly, but they can feel a fly anywhere.

Horses find long, slow strokes of the hand more calming, agreeable and rewarding than pats and slaps, which are bracing. Scratching the withers, as in mutual grooming, has been shown to lower heart rate in agitated horses. Most horses particularly enjoy being rubbed round the sides of the base of the tail, on the inner thigh, behind the ears, on the forehead and on the cheeks, but we have to learn what kind of rub they like.

There are different types of touch receptor. The one that responds to a light pressure, as used in the aids while leading or riding, does not respond to pressure in itself but to changes in pressure. This means that if we pull steadily on a rope, the horse perceives little. However, the pressure activates muscle reflexes so that the horse pulls equally steadily back. This is not a question of will but of reflexes. The best way to use a rope or a rein is to leave it loose while not using it, and ask for a change in direction by vibrating it, opening and closing our fingers as if squeezing a sponge, like milking a cow but faster. This is difficult to describe exactly but experiment will show that a small vibrating pressure has more effect than a much stronger steady pull.

There are certain spots, used in acupuncture, that calm a horse when a vet or a blacksmith's manipulations worry him. There are three between the eyes: we press or rub there. There are ones in the front corner of the eye, in a little groove in the bone just below the eye. Pressing with a finger there sends some horses to sleep.

Pressing with a finger in the dip in the bone at the highest point of the croup is also relaxing. Books on Shiatsu massage or acupuncture explain many more such points.

**Vibration** is felt through the feet, better when they are unshod. Horses can feel other horses galloping, trains passing, and pre-earthquake tremors unnoticed by us.

**Whiskers** have a huge nerve supply and appear to tell the horse where the end of its nose is. They may also distinguish between the feel of different plants as they sort through them, rejecting one and eating another. To cut them off is to deprive a horse of one of his senses. It is banned in some countries as cruelty.

**A brief glimpse at the brain.** The brain is, of course, an immensely complex structure. Horses' brains are organised on the same principles as ours, but there are some great differences. Ours are at least two and a half times the size of theirs, but they have not increased proportionately.

The horse's cerebellum, which coordinates movements in equilibrium, is larger than ours. Falling over when running away might cause a horse to lose his life. They have a better sense of balance than we do, and an unbalanced rider or pack makes them insecure, can cause lameness, and makes certain movements difficult. If we lean forward, for instance, he finds it difficult to turn, for our weight falls on his front feet.

The part of our brain that has increased the most is the cerebral cortex. This is where we analyse incoming information, make associations and decisions, remember, and instruct muscles to act. In our case it allows us our specially human gifts of seeing cause and effect, imagining, planning, inventing, thinking of the future while mulling over the past, using language and mathematics and the like. Horses' much smaller cortex is big enough for them to have excellent memories, but plans, future, imagination and reason are beyond them. They learn that two things are connected but have no idea why; they do not know why we want them to do things; they cannot foresee; they have no concept of obedience or duty. Our way of thinking is so complicated that we imagine them to be more complicated than they are. Horses are interested in life being safe and pleasant. If an experience turns out well, they want to repeat it. If it does not, they want to avoid its repetition. When we look at their experiences in this simple way, we understand them much better.

On the other hand, their emotional centres are just as big and complex and ours, so they dominate their behaviour. In this sense they are more like toddlers around a year and a half old than rebellious teenagers who need discipline. The toddler has his emotional centres connected and working well, but his cerebral cortex is not fully wired up or functional. He is not a rational, but an emotional creature, liable to protest when uncomfortable, scared, hungry or ill. Beating him does not make him do something he fears: it makes him more afraid. He needs showing that we are not afraid to do it, and a little patience. Horses are no different.

Research on emotions in animals is still in its infancy, for the catholic church would not allow Descartes to publish his book if he did not state that animals have no souls. Since he was the father of modern science, the scientific attitude has been to regard animals as mechanical. Today, however, this view has been amply disproved. The basic emotions are regarded as fear, disgust, anger, happiness, sadness and surprise, to which we may surely add affection or bonding. The more advanced mammals, at least, show all these. Some mares are jealous, guarding the stallion from other mares. What may be more uniquely human are more complex emotions like self-consciousness, shame, nostalgia, guilt, remorse, pride, sympathy, envy and admiration. These require interaction of the emotional centres with the cortex. The toddler does not show them either.

Emotional states often parallel hormonal changes.

### **Hormones**

Hormones, which are chemical messages like pheromones, are released by one organ into the bloodstream where they travel about and affect other organs, like the brain. While the brain directs reactions and behaviour to ongoing events, hormones set the whole emotional tone and, often, motivation, so they affect behaviour too. For instance, in hunger a hormone is released that makes an animal look for food. On eating, hormone production switches off.

Some hormones whose influences on behaviour are noticeable are:

*Adrenaline*, the hormone of fear, flight, fright and ejaculation in the male. It prepares the animal for emergency action, raising heart beat rate, mobilising glucose and pumping it to the muscles, drying the mouth and producing sweat. It links fear and aggression, as we know only too well. It also removes the blood supply from the



intestines. If horses pass hours in a state of fear, as may happen for instance when driven, corralled, loaded into trailers and transported in ways that terrify them, they can suffer dehydration, intestinal stoppage, colic and death.

*Vasopressin* is released in fear and pain. It raises blood pressure by stopping urine flow. In colic, which is painful and frightening, a horse does not urinate until the pain has stopped. Some misunderstand this effect, thinking that he has renal colic, and give diuretics to make him urinate. This dehydrates him, makes the colic worse, and may kill him. Equine renal colic practically does not exist.

Vasopressin also affects memory formation, so that when an accident occurs after a period of fear, everything that happened is remembered vividly and in detail. Pottokas are sometimes subjected to brutal treatment when being rounded up off the hill and marked, but the video in each animal's mind, and the pain he suffered, will differ. Some seem to overcome their subsequent fear of man relatively easily, but others are deeply traumatised. These differences may be due as much to vasopressin-induced memories as genuine character differences in docility or resistance to domestication. This will complicate the matter of selecting pottokas suitable for breeding as children's ponies until breeders understand that brutality never pays.

Such memories are not eradicable. We can only deal with them by overlaying them with pleasant ones, a process that may be difficult and hazardous and requires special techniques and knowledge as well as infinite patience (see training p. 000).

*ACTH* is the master hormone of stress and provokes cortisol production, which reduces inflammation. It is accompanied by beta-endorphine, a morphine produced by the brain, which deadens pain. After an accident, or being thrown to the ground, the animal produces so much of both that it is in a state of shock, passive and unfeeling. If we make it trot up and down to see how seriously it is hurt, we do not get a true picture and may exacerbate the injuries, for the animal feels no pain. It is the right time to treat an injury like a wound, for he will be passive. The effect wears off after a few hours.

Wild horses in their natural life do not suffer long-term stress: they die, or go somewhere better. These hormones protect them during that period. But in artificial management, we sometimes impose stresses on a long-term basis even without realising it. The three central pillars of the horse's life are 15 hours'

munching a day, visible company, and liberty. Stables deprive them of all three. Long-term stress has drastic consequences, for a body is not prepared for it. Loss of fertility, lower resistance to infection, digestive upsets, character changes, bad temper, tics or stereotypes, and the inability to learn are some consequences.

One of the characteristics of wild animals is that their reactions to stress are stronger than those of domesticated ones: during domestication, we select the ones that adjust more easily. In the early history of domestication, vulnerable animals probably just sickened and died. Pottokas are great survivors in their natural environment, but may not be so if we try to impose artificial management on them. No matter how tame and docile, he should have his needs respected: a field, company, hours of happy munching.

*Testosterone*, the male sex hormone, is secreted in the testes. It drives male behaviour: in horses, play-fighting involving biting, rounding up mares, defending them, having wide social relations and mating. It also increases muscle, stops long bone growth before it has reached a maximum, increases vigilance and reactivity, defensiveness and persistence.

Stallions are by no means more aggressive to people than are mares or geldins, but are prompter to defend themselves if badly treated. They like close contact more than other horses, and are easier to train if well handled. However the characteristic perseverance of the male makes frustration more of a problem to them, and frustration increases aggression. Sexual frustration is not a problem: a wild stallion will cover maybe three mares a year. It is the frustration of not being able to complete his role in life that makes many a domestic stallion aggressive.

Stallions are not for children; however docile they seem, their reactions to other horses may be strong and fast, and children are not sufficiently aware of warning signals. Any colt destined to ride should be castrated. The earlier this is done, the better. Testosterone drives motivation, but sexual behaviour is learned. If he has had experience covering and herding, a gelding may continue to do so after castration. The wisest policy is to castrate as soon as the testicles descend, at a time when there are no flies. At this time, the colt barely seems to notice castration. He should be left out, preferably in clean grass, with his companions. Walking helps the wound drain and prevents inflammation; lack of stress helps wounds heal. The colt

also grows better. Later castration is far more painful, and the wound is more likely to swell and become infected. Treatment hurts, and all in all the colt suffers far more. *Female sex hormones* usually present no problems, though young mares may be strongly affected by oestrus. If we notice character changes every three weeks, that is why. The female cycle is complex, and very occasionally gets stuck at a certain stage. In this case the mare will not breed, or may seem continually desirous of the stallion, which she may then reject furiously. She needs a vet and a hormone injection to start cycling again.

### **Communication**

Horses are masters at communication, for their lives depend on it. They communicate by voice, by watching each other, by giving social signals, by interacting with each other's personal space, by smells and pheromones, and by touch.

**Calls** are mostly to do with distance, too far or too near.

*Neighs* are long-distance calls: "are you there? I'm here". Horses neigh when they have lost sight of each other or are greeting friends from a distance. Their voices are quite different and they can recognise each other's neighs. Stallions have an extra, low, nickering phrase at the end of a neigh, which helps to recognise them. When in trouble and calling for help, the neigh is higher, shorter and sounds pitiful. With practice, we can recognise what prompted our horse's neigh.

*Nickers* are lower and softer, and given at shorter distances: "come closer, friend" Mares nicker to their foals, stallions nicker to mares in courtship, and horses nicker to us when they think we are carrying food.

*Squeals* are given at close quarters, and warn the other to keep his distance.

*Screams and roars* are heard in stallion battles, which are quite noisy.

*Snorts*, which are non-vocal, are given when a horse is alarmed. They clear the nostrils of air and allow better smelling. Horses will snort loudly at a threat far away, and sometimes succeed in scaring the intruder away. When given to us we should watch out, because the horse is alarmed. Vibrating snorts show a lower state of alarm.

*Grunts* usually mean great effort, or pain, but horses often give a low grunt or two before nose-blowing.

Although horses do not use calls to do more than invite closeness or reject it, they learn our word commands easily and are capable of learning very many. They pay more attention to vowels than consonants except “sh” or “ch” or a rolling rrr, and are better at one or two-syllable words than longer ones. They also learn whistles and tongue-clicking easily. We should always use one word or sound to signify one particular action, not the same word for different actions nor several words for the same one. We should also be aware that they don’t know what a word signifies unless we teach them: to them, it is just a sound. They get very confused if we start using words in a different language.

### **Body language.**

There are two classes of signal. Social signals are given only in social situations and seem a deliberate attempt to influence the other, for they are repeated or escalated if the other does not respond. Non-social body language consists of postures or movement due to emotional states, which others can read as signals if they want. They are the same in non-social situations. Some of these are subtle (nose-wrinkling, for instance) and may not be visible to other horses, though they are to us. On the other hand, horses are extremely perceptive about tiny differences in body posture, attitude and movement.

Horses use the same signals to us as they do to others horses. Learning to interpret body language is the greater part of good horsemanship. The best way to do it is simply to observe them interacting and see what happens, without too much attempt at interpretation at first, noting the attitude of one horse and the reaction of others.

**Social signals.** They are usually clear movements, often repeated. Ones already mentioned are the herding position of the stallion, the “snapping” of foals, the aggressive flattening of the ears, the aggressive head thrust, the threatening rump presentation, and the foreleg srike (often accompanied by a squeal) which warns the other not to come too close.

*Frontal attacks* may be aggressive or defensive, and run in an escalating series: a warning ears-back, a threatening head-thrust, tail lashing, an open-mouthed head thrust, and finally a full-blown charge, including pawing with the front feet. The horse escalates as the earlier threats are ignored. Stallions are more apt to defend themselves face forwards, with foreleg strikes, rearing and pawing the air.

A lower-level signal of annoyance is simply the wrinkling of the back border of the nostril, often accompanied by ears back and a flicking tail. Nostril wrinkling is also seen when the horse is in pain.

*Rear-end action* is defensive. Rump presentation, ears back, a threatening lifting of the foot, and kicking make up this series. We should not confuse the lifting of the foot, which is a threat, with the way a relaxed horse drops one hip, turning his foot back as he rests. Given that kicking is a defence, we should be aware that the best way to stop a green horse kicking may not be to threaten, shout angrily or punish him, but to remove the reasons for him feeling so defensive. This is certainly true when trying to pick up a back foot, for instance. The more we punish him, the earlier he defends himself the next time we try (see feet p. 000).

Mares are handier at back- end action than stallions. Sometimes two mares jam themselves rump to rump and kick away at each other for some time, squealing. Neither can move away because a kick at the furthest point of its trajectory is far more damaging than one so close that it has not gathered speed, so they stay locked.

**Flattened ears**, the only ear position that gives a social signal, indicate that the horse thinks there will be a fight, though it does not indicate whom he thinks will be responsible. In fighting, a winning move is to rip the other's ear off, so they are safer flat. While flat ears often show irritation or aggression, they may also indicate that the horse is extremely afraid. Horses that have been ill-treated but then rehabilitated by someone else often approach with their ears flat, fearful that we may do them harm, even for years afterwards. The total absence of any other sign of aggression is what distinguishes this from attack. Remembering that it is simply not in a horse's nature to walk up to someone and attack them, we keep calm and relaxed and the horse will sniff us and be friendly. Signs of tension are what this type of horse has learned to fear, for they always precede the beatings he has suffered.

*Tail-lashing* may be used as a social signal, an indication that the horse is annoyed. It is an example of an emancipated signal.

*Emancipated signals* derive from an action that serves a purpose in everyday life when the motivation has an emotional content. The action is then used simply to signal the emotion. Tail-lashing gets rid of irritating flies. The horse also uses tail-lashing to show his irritation at what we or other horses are doing. Pawing serves the purposes of loosening soil to roll in, to reach grass below snow, to break ice, and to

remove the prickles from a tasty thistle: all these presuppose that the horse wants something but has not yet reached it, and is frustrated. Pawing in frustration is seen when a horse wants anything he cannot reach, like the bucket of food we are carrying or his friends. Nudging with the nose is how a foal releases milk from the udder; horses also nudge us or other horses when they want food or to demand attention. Rolling makes the skin and muscles of the back comfortable; horses also roll in colic. They also kick and look at their sides, as if they feel attacked there.

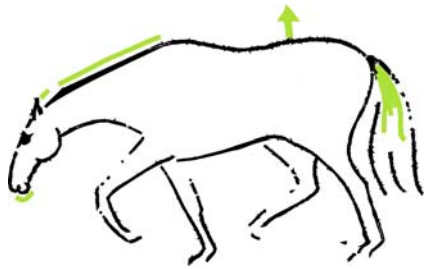
**Body language.** Like us, horses show their emotion in their bodies.

*Tension*, often due to fear, affects all the body muscles, but shows mostly in the strongest ones, the jaw and the upper line. The jaw is clenched so firmly that he cannot open his mouth and his chin goes into a tight ball. Adrenaline dries the mouth. The neck is stiff and pulled back, raising the head and opening the poll. The horse cannot bend his neck to see things, so he rolls his eyes to do so, showing the whites. The lower side of the neck bulges. The back muscles pull so strongly they invert the back, dipping it. The back legs cannot reach forward so the horse takes small steps with them, bouncing rigidly as he trots or gallops.

We must develop a good eye for tension. A frightened horse does not cooperate, and moves against any pressure on a rope or his body instead of moving so as to relieve himself of it. In other words, he does exactly the opposite of what we want. This is the result of reflexes: the horse cannot help himself. Pulling or pushing against a tense horse results in fights and struggles that get worse as the horse gets more frightened. He does not learn what we intend to teach him, that we can win by forcing and hurting him; he simply learns to fear us, and matters get worse. When a horse shows tension, we must stop what we are doing, relax, calm him down and, when we see that he has relaxed, ask again more gently. Too much pressure, or sudden jerks, always frighten them. Waiting until the right moment is a great part of getting the response we want without a fight.

The horse has an acute eye for tension, for it is the signal that another horse has seen something alarming and running away might be apt. They see our tension with equal accuracy, and it alarms them too.

*Relaxation.* Horses are totally relaxed when they doze: the bottom lip hangs down, the head and tail are low, the ears often turned to the ground to cut off sound.



Relaxed horses move with elastic steps, stepping forward well with the back feet.

*Signs of relaxation after being afraid.* As his fear passes, a horse realises that the muscles he has clenched so tightly are uncomfortable, and relaxes by stretching them, just as we wriggle

our shoulders after putting down a heavy rucksack. First he relaxes his jaws, moving his mouth as if munching something and sometimes licking too. This helps the saliva flow again. He relaxes his poll by shaking his head; he relaxes his neck by looking round, and his eye softens and loses that worried look. The last part to release is his back: he stretches it by stretching his neck down so his nose almost touches the ground. It looks as if he is smelling the ground. A ridden horse sometimes wants to stretch his back like this after a while, especially if the rider is constantly pulling the reins, which makes his back rigid and painful: it seems he wants to pull the reins out of our hands. He may do the same when approaching a stream or a rocky downhill slope, for he wants to lower his head to see his footing.

Some people think these are signs of submission. They put a horse in a pen, chase him round so he gets frightened, and wait until he realises they are not really attacking so he begins to relax. They then think the horse will follow and cooperate with them because he accepts their dominance.

This is clearly mistaken. If a wolf chases after a horse but without attacking, the horse does not signal his submission and allow the wolf to eat him. Nor does he follow a dominant: he avoids one. He never shows these signs when another horse attacks him at feeding time: he just tries to escape. We can see this every day. It is true that a horse cooperates with us only when he is relaxed and confident with us, but chasing him does not help him realise we are to be trusted. Such misinterpretations arise because people think that horses behave like chimpanzees, or us. They don't. Cooperation has nothing to do with dominance, but with wanting to be in synchrony with the herd. It is our job to represent the herd, by being peaceful, friendly, and helping them avoid danger.

*Curiosity.* Horses show tension when they are investigating things, too, but in this case they usually arch their necks, stepping cautiously, ready to whirl round and run if the unknown thing turns out to be dangerous. Others often come to investigate too, and they synchronise together as always when somewhat frightened. Sometimes colts, on managing to approach a plastic sack, nibble at it and, when it moves, clamp their jaws so firmly they cannot let go again but run off terrorized still holding it.

*Playfulness.* A youngster inviting another to play approaches with a bouncy step, a bright look in his eye, and his upper lip pulled down and backwards so far that it pushes the lower lip back.

*Pain.* A horse in pain often looks as if he is dozing, his eyelids drooped, his lower lip slack, but on closer examination we see that his nostrils are slightly flared, which is not so in dozing. A triangle made by raised tendons appears above the mouth, running up to point below the cheekbone. The tail may swish irritably. In severe pain, the horse sinks into himself, failing to react to events nearby as even a dozing horse does. On touching him his skin often feels sweaty below the hair, or leathery and dead due to dehydration.

Signs vary according to the site of the pain. A horse with laminitis tries to avoid treading on the front part of his front feet by hunching his back, putting his back feet forwards to support his weight, putting his front feet in front of the body and treading only on the heels. The feet feel hot. Laminitis is common in the spring in native ponies kept well over winter and living on rich grass. It needs treating urgently to avoid permanent damage, and is terribly painful. Pottokas are adapted to poor, harsh conditions, not rich lowland fields.

Horses do not like to show they are lame, and are capable of concealing a gradually worsening lameness by overusing other parts of the body, or compensating, until those parts too may hurt. When we touch them in painful places, they are irritable, moving away, swishing the tail and turning as if to bite us.

*Ear position* Apart from flattened ears, their position does not indicate mood but direction of attention: they look with their ears. Split attention is indicated by the ears pointing in different directions; if these change rapidly and nervously, the horse does not know where to concentrate. In a group on the march, the leader has her ears forward, the second sideways, the last ones back, so as a group they have every direction covered. On changing march order, they change their ear positions too.



When a horse is uncertain about going forward, or about what is in front of him, he turns his ears back to check that escape to the rear is possible. It is only when he gets annoyed or very frightened that they go flat.

**Position.** Since horses are so aware of the distance between each other, they can use body position as a signal, blocking each other's progress. If we imagine an invisible bubble round each horse, we can see they use this space like bumper cars to produce, direct or reduce movement. The bubble is made stronger by adopting a hostile attitude.

They perceive our space as more oval, extending in front of us. Again, it is stronger when we look aggressive, annoyed or tense. We are often not aware of the strong effects our body position has on them, thinking that we control them with ropes instead of body position. People used to moving stock know exactly where to put themselves to produce or block movement, but to many it is an art that requires learning. We learn best by experimenting with a loose horse in a fairly large pen where he can get away; the effects are more obvious if the horse is not completely confident with people.

**Smells.** Horses receive information from the smell of dung or urine as well as each



other's bodies, breath and tracks. The pheromones present in oestrus urine and amniotic fluid have been mentioned; it is possible that the smell of a stallion also acts as a pheromone, activating the mare's ovulation. Many mares do not show season unless they live with a stallion, or may not become pregnant when covered in hand.

These mares often do become pregnant on running with a stallion. An ovum is high class protein, not worth wasting unless a stallion is present. It is also suspected that the udder has a pheromone that helps the foal locate it and start suckling.

It is also possible that horses receive information from the taste of each other's saliva. In courtship and intimate interactions they nuzzle at the mouth.



Horses

constantly check on each other's identity by smelling noses, and a mare always turns to smell her foal as it starts suckling.

**Touch.** Horses usually touch each other briefly, nudging or nuzzling. They restrict these contacts to friends and playmates. Young horses touch more than older ones.

In courtship, a stallion usually stands perpendicular to the mare's shoulder in case she kicks with front or back legs, standing as far away as possible and stretching his neck to touch her briefly with his nose. If she accepts, he gains confidence and starts to touch and nuzzle her shoulder. Gradually he works his way behind, nuzzling and licking, doing Flehmen, and nipping gently. On mounting, he may grasp her neck firmly between his teeth to stop himself slipping. However, the savage biting often seen in domestic commercial stud stallions is not normal. Courtship is a gentle persuasion. It is normal that a stallion has to try several times before achieving his aim, for he often gets tangled up in her tail.

### **Our communication with the horse**

Our greatest problem about this is our egotistic arrogance: we want to be the ones who are doing the communicating, and we are certain we are doing it right. When they do not respond to a signal we accuse them of disobedience or stubbornness; we do not think that we have given the wrong signal for the response we want. We are frequently unaware that our bodies are potent signallers that may contradict the signals we think we are giving. For instance, if we stand on the ramp of a trailer facing a horse and pull on a short lead rope, he will not come forward: his respect for our individual space blocks his way. The more frustrated and angry we get, the more impenetrable our space, and the more he refuses. A better solution is to give him more rope, loosening it, and entice him forward with food.

Our interpretation of their signals is also often erroneous: we tend to think they are as aggressive and competitive as us, so that we interpret defence as aggression or disobedience. We also tend to ignore their signals that they are uncertain. They are much slower than us at deciding to go forward when they are not sure: try putting something really strange in the middle of a group of horses and watch how long it takes them to get up to it. If we try to force a horse forward before he is sure, he refuses. Giving him time to examine the problem, then encouraging him gently and showing we are happy about any advance, works better.

Many of these problems arise from not really understanding that the horse has a wholly different approach to life than ourselves. We learn how to use natural signals by watching them interact, and by interacting with them when they are loose in an experimental way: if I do that, how does he react? Is that what I was expecting? If not, how do I find the signal that he will react to in the way I want?

*Use of pressure signals: ropes, reins and legs.* Horses do not like pressure. If they are not tense, they move to release it. If they are tense, they jam up against it. Before we put any pressure on a horse to move him, we must be sure he is relatively free of tension.

We use a lead rope, or reins or legs when we are riding, in only one of three ways, jumping clearly from one to the other.

a) asking, or molesting. We use a vibrating pressure, quite gentle but insistent, much as small children do tugging their mothers' clothes to get their attention. We do not stop until the horse moves a little in the direction we want, then we release immediately. If he has not yet moved the whole way, we start again.

If we pull steadily, increasing the pressure, the horse perceives little but reflexly starts to pull back. As ever, he is a great synchroniser.

An analogy from his natural life is when he stands under a tree and a branch, swaying in the wind, taps his rump. He moves over to avoid it. Next time he stands there and the same thing happens, he moves over sooner. When we use pressure in this way, the horse soon learns to move at the first gentle vibration.

b) blocking, or resisting. When he wants to go forward, or in a direction we do not, we close the fist firmly around the rope and resist any pressure he puts on. We convert ourselves into a tree to which he is tied. A tree does not pull; it resists. We do

not need to apply pressure, just to resist however much pressure the horse puts on. He does not argue with trees.

c) accompanying, or using synchrony. If we are going along pleasantly together, we do not need any pressure: we leave the rope loose, a metre or more between us so that he can place his head to see where he is going. If we have a good relationship with him, he will synchronise with us. When we want him to advance, we start moving. If we want him to stop, we stop abruptly, a sharp, perceptible halt. Most of the time we do not need lead ropes. Leader mares don't.

If we lead him with a constant, heavy pressure, the horse either resents it and fights it, or becomes so used to it that nothing but strong pressure will move him. If we jerk and tug at the rope, he does so too. Horses are great synchronisers.

When we ride, we use our body as we would on the ground, and he feels it and synchronises with it. As he goes along, we let ourselves move with him. Our hands do not pull on the reins but move in synchrony with his head so he feels free to go forward. To stop, we lean back a little and stop our body so he feels it blocking him; we also stop our hands. To turn, we turn our body towards where we want to go so that the hand on that side comes away from his neck, leading him in that direction. We also put the leg on the other side back a little and push with it, so that we push his whole body in the direction we want. To go forwards, we give little nudges with our legs so he moves his; we do not stop until he does move, then we stop immediately. If he stops again, we start nagging again. Kicking him makes our body so tense that it blocks him from going forward.

In other words, we use synchrony, legs and hands in the same way when we ride as when we lead a horse. If we are careless about the way we lead him, we do not prepare him well for riding.

## **Learning**

In their natural lives animals learn so much, and so easily, that it does not appear that they are learning: they just seem to know. It is only in scientific studies that the processes of learning can be understood, for they can be controlled precisely. These studies have revealed the different processes and how they work, which is a great help when we want to teach animals.

Horses learn in the same ways as other animals. They are particularly good at learning things that are useful in their natural lives.

a) where everything is in their home range, or mental maps.

b) not to fear things that are not threatening, like deer or safe water crossings. Since their basic rule is to mistrust anything that has not been proved safe, they have a great capacity to get used to strange but non-threatening things. A horse cannot spend its life running away from rabbits. This is called habituation.

c) to repeat good experiences, which may mean (i) leaning to connect two things, like the sight of an apple tree with eating its fruit (classical conditioning), or (ii) learning to do something new, like mutual groom, at which foals are very inefficient until they have practised enough (operant conditioning).

d) to avoid repeating bad experiences, which may mean (i) learning not to break social norms or (ii) avoiding the events or place that preceded the bad experience. After treading on a wasp's nest, a colt learns both to avoid that place and to run away at the first sound of buzzing.

In training, we do not use the first form, at which horses are veritable geniuses. They do not merely remember everywhere they have been, which is remarkable enough: they also know how it connects together. Many a lost hunter has simply thrown the reins to his horse at nightfall and found himself taken home by a completely new route. Horses also have an accurate memory for what happened where, which does affect training. If we teach a horse always in the same place, he does not necessarily respond in others, as if to him the cues are embedded in the surroundings. We must repeat the exercises in other places for him to realise that these are universal rules.

Horses' dependence on place means that they are at first disorientated after being transported to a new home. They do not know where the escape routes are. They settle in much faster, and learn confidence in us faster too, if we spend the first few days leading them around and out for walks, showing them everything.

*Habituation.* Much of early training is habituation: getting used to us, to our touching them and handling their feet, to being brushed, having blankets and saddles and girths and the like. Habituation means losing a response, in this case fear.

It should be clear that if we punish a reaction of fear or defence, we create more fear, not less. If a horse reacts fearfully at something we propose, we stop, let

him relax, and try to think of a way to make the stimulus less fearful, for example by making it smaller, or going more slowly. Punishing fear is the fastest way of making a horse really defensive. Pottokas are even quicker to learn this than other horses. A fearful horse needs reassurance, not punishment. He is reassured by our casual, confident manner: if we seem afraid, so will he be.

Rewrads do not help much in habituation. It is repetition, seeing again and again that there is nothing to worry about, that cements habituation. However, fear grows again if we do not keep working with it. We can habituate a horse well to something but if we leave him for months without repeating it, he will fear it again, though probably not so much as the first time. We must also remember to repeat the operation in different places.

Horses' lateral eyes make things seem different on one side to the other. We need to habituate both sides of the horse, not assume that that he transfers this learning from one side to the other. For this reason, it is better that we both get used to leading him and handling him from both sides.

c) Making new connections. These do depend on rewards. A horse is rewarded by our relaxation as well as by a caress (not a slap!) or words of praise. Food rewards are not suitable with pottokas, for they become anxious, greedy and demanding, and do not concentrate on the learning. However food is helpful in teaching things they instinctively fear greatly, like entering trailers. If we leave a trailer open with a path of food leading inside, a pottoka will quickly learn not only to enter that trailer, but leap into any other it comes across. Carrots or bread are suitable food rewards. They are also useful in first taming, for a pottoka naturally fears us, and may have had such bad early experiences from people that nothing short of food will induce him to investigate us and see we are safe.

When we teach him to respond to a new stimulus, like a word command, we must have a way of producing the response naturally before trying to make the new connection. For instance, if we want him to back at the word, we first try to produce backing by pushing his chest with stiff fingers. When he takes a step back, we relax, praise him, and pause a few seconds. We then say "back", wait a second, and then push him back. With repetition, he will back when we say the word, for it acts as a warning that we will push him if he does not. When he responds to the word, we praise him well. We can repeat this two or three times, but no more, for he soon gets

bored and will do something else. We do repeat the lesson after a couple of days, and again a couple of days later, but must beware of repeating it too often simply because we want to.

What we normally mean by obedience is simply that a horse has made the right connection and repeats it willingly every time we ask. This depends on our teaching skills, which in turn depend largely on good timing and good use of reward at the right moment. There are two types of reinforcement, which is what makes the new connection stronger: positive reinforcement, or what we normally call reward, and negative reinforcement, or the removal of something unpleasant. Normally this unpleasant thing is pressure, as when we put pressure on a rope or with a leg. The moment the horse does what we want, or even starts to do it, we take the pressure off. The next time, he moves in the right direction faster.

As described earlier, it is best to use vibrating pressures, without stopping until the horse starts to respond, then stop immediately. We leave a couple of seconds for him to appreciate the peace, then repeat. If we keep pressurising despite the fact that he has made a small response, he will try doing something else to get rid of it. If we are leading him up to something he fears, we may have to be content with a step at a time: if we simply keep pressurising, he will try pulling back or rearing. A horse does not know what we want, nor does he care. What he cares about is that things work out well for him, and are clear.

Many people say that if a small pressure does not work then we should use a harder one, increasing it until the horse responds. Actually this comes all too naturally to us. The problem is that we may overdo it, so the pressure is not an encouragement but a punishment. For instance, many people use a whip when a horse will not enter a trailer. They start gently enough, waving it behind the horse, then flicking it at him, then tapping him. But when he still does not advance they start hitting, then thrashing. At this point we are punishing him for looking at a trailer, and he learns to protest at the sight of trailers from a long way off for years. Nagging works better, if we stop the moment we get a small advance.

A second problem about negative reinforcement is that the animal learns, but is not motivated. He cooperates but without interest, and is not particularly interested in new learning either. Rewards do motivate. It is inevitable that some of our training, like halterbreaking, is done through negative reinforcement, but it does

not cost us anything to add a kind word and a caress when we release pressure. An animal trained by reward approaches a new problem with the attitude. “must be a goody in this for me somewhere, I wonder how I get it”, rather than resignedly waiting for the pressure to start. It is best, then, to combine positive with negative reinforcement: they learn faster and more willingly.

If we watch an animal learning a new response technique, like first suckling, mutual grooming or opening the the door of his stable by wiggling the bolt with his nose, we realise that at first he does not know what he is doing. He just plays around randomly and suddenly he gets a reward. He remembers what the last things he did were, and tries them again. Little by little his technique improves. If he does not get a reward but a shock, or an unpleasant experience, he stops trying. When we are trying to teach a new response, then, we reward him the moment he makes a move in the right direction, like playing “warmer, warmer, colder, colder”. We do not expect the whole response at once, but are pleased with small steps towards our goal. What we do not do is punish the “wrong” response, or he will stop trying at all. We can teach a horse to put on a headcollar by hanging it above some food, so that he gets rewarded when he pushes his face against it. If we then hold the noseband open with one hand, and hold a carrot below it with the other, he will put it on himself. We will get nowhere by hitting him when he refuses to put it on, or fighting him: he will simply learn to fear headcollars.

*He does not know what we want, nor does he care. What interests him is that things work out well for him.* The easier we make that for him, the better he learns. We try to make the thing we want obvious, easy and pleasant.

**Timing.** Horses, like us, do not learn well if they are agitated or stressed. If they are, we calm them down or leave teaching until a better moment.

We leave pauses between repetitions, so that he can appreciate what has brought him benefit.

Rewards (and punishments) are only connected with an act if they come during the act or immediately after. After two seconds, they have no effect, but are connected with what the animal is doing when they arrive. This is difficult for us to appreciate, for we are well able to appreciate a rebuke or a reward for something we have done days or weeks ago. But it can produce strange effects in horses. If we have successfully taught a colt to lift his foot and let us hold it, we should say so at that



moment, or even have someone give him a bit of bread when his foot is in our hand. If we put the foot down, then reward, he soon learns to snatch it out of our hand, for we have rewarded him for having it on the ground, not in our hand. Hence it is of great value to teach them a word of praise, coupling it at first with a natural reward like being relaxed and stroking, for our mouths are always free when our hands are not.

d) Learning not to: punishment. For a horse, there is a clear distinction between social punishment, having a bad experience, and being attacked by an animal of another species. For us, with our ideas of authority and obedience, this is not so clear. We punish each other, and our animals, with the idea of transmitting: *don't do that*.

*Don't do that* in horse society is: *go away, you can't enjoy the security of my company if you behave like that*. A mare is completely permissive with her small foal. When the time comes to punish him for using his teeth when suckling, he is quite clear that her rejection deprives him of something he values.

If we punish a horse before he has learned the value of our company, he is liable to see it as an attack, and forthwith class us with wolves or lions – the more so if he is a wild horse like the pottoka.

Pottokas are usually bred in natural herd conditions and learn social norms in a natural way. They already know that biting and kicking are not social norms. If in early training they bite or kick us, it is in defence. Punishing them makes them quicker to defend themselves, for they perceive it as a wolf's attack. In other words, it is we who have to learn, not they. In response, we do not get angry nor give up entirely. We back off, and start again. We use our intelligence and imagination, those ultimately human gifts, to find a way to make our demands more acceptable to them so that we can reward them when they do accept them. It may mean we go slower, or more gently; that we reduce the shock of what we ask, try to break it down into smaller components, put more effort into explaining what we want or content ourselves with just a step in the right direction. The exact circumstances will vary, but what is certain is that this defensiveness in early training demands the very best of us as human beings: our unique ability to put ourselves in the mind of another, a quality that other animals do not share; our ability to analyse cause and effect; above all, kindness, which we too appreciate. These are wild animals. There is no reason

why they should do what we ask, except that their nature as herd animals leads them to cooperate with those they trust.

Pain and fear have far worse effects as early experiences than they do later. Horses do rebuke each other, but only because they have grown up together. If a friend treats us badly, we wonder why; if a stranger does so on first acquaintance, we turn against him. If we already have a good relationship with a horse, he will accept being told his behaviour is out of order; as a first experience, pain and fear teach him to class us as deadly enemies. In no horse is this so obvious as in the pottoka.

### **Training.**

For the trainer used to other breeds, pottokas represent a unique and challenging experience, for two reasons.

First, they are wild horses bent on survival. To be sure, among them are



individuals no different to most domestic breeds, for domestic breeds have arisen from selection of suitable individuals among wild breeds: docile, indifferent to confusion, stress and discomfort, forgiving and not too bright. Most pottokas are not. Most are strikingly undomestic.

They learn from a single experience and are



sharp as razors at distinguishing what benefits them and what does not. They decide rapidly whether to treat us as wolves or as herd members. All is black or white. A pottoka can appear untameable, savage, and two days later allow children to play under its feet as if they were foals. Traditional “teach the horse who’s master” techniques

do not work with them. We must use methods adapted to their instincts and natural ways of learning as outlined above.

pottoka,  
Confident in  
put up with

With a  
confidence is all.  
us, they are docile,  
almost anything,

do not startle and get nervous as other young horses do, and are wonderfully intelligent. Unconfident, they defend themselves fiercely. It is up to us which they are.

Secondly, they are small. They are so agile and active that there is no reason why they should not do high school dressage, but expert tiny riders are few. Pottokas are mostly for children, who are not experts and are forgetful and playful. They must be completely trustful and confident with any nonsense children might think up, from tying balloons in their manes to playing cowboys and indians. Their basic training must be geared to this requirement. It will not impede a small adult rider from schooling them further if desired.

A third consideration is that pottokas are usually bred in natural conditions on the hill, which may be extensive. Some breeders visit them regularly, toss them bread, and generally befriend them from birth. Others do not or can not. Some pottoka herds are rounded up only once or twice a year, herded into pens, hot-branded or marked by cutting their ears, and their foals are removed. Farmers used to cattle do not realise that a pottoka is far more sensitive than a cow and is terrorized by waving poles and blows on the rump. Time and tempers are short, trailer loading techniques brutal. What results is not a virgin animal but one convinced that humans are predators. Changing its mind can be difficult, dangerous and time-consuming: not a viable economic proposition.

**Techniques for breeders.** Pottokas are quick to learn. They will recognise the sound of a vehicle or its horn, and will come for a sackful of dry bread scattered about. If they are not tame, our size and movement frighten them. If we sit or lie motionless the youngsters will come and investigate us, but at first we may have to be some distance from most of the bread, with a trail of it leading to us. They gain confidence faster if we use the same arrangement every time, parking the vehicle in the same place. Foals do not have the acute perception of individual space as do adults, so they come to us quicker. By scattering bread around us and placing it on our legs they will investigate us, often nibbling our clothes or pawing them. We must try to keep still,

for movement in their blind zone frightens them and they may defend themselves. Taming a wild animal is not an active process but one of letting it see that there is no danger.

When they push us with their noses confidently, we induce them to touch us by holding bread in one hand, holding the other hand where they must touch it to reach the bread. It is a mistake to try to reach out a hand to stroke them if they are not prepared, for they will perceive it as an attack and will defend themselves. Once they willingly put their necks in our hand we can start stroking and rubbing. Foals prefer rubbing, especially on the crest of the neck and round the tail, but older animals prefer stroking. Soon we find they will let us kneel beside them.

Approaching us for food when they fear us causes conflict, and they may try to drive us away by head-thrusting with their ears back, or stand pawing, or finally decide it is too difficult and turn away. They will not attack us for bread, but may defend themselves if we make a wrong move when they are too close to see us. Horses tame themselves, in their own time. The more patience we maintain in the early stages, the faster all later work. Pottokas that are confident with us will accept anything we propose; if they are not, it is hard, tedious, dangerous work. Sitting doing nothing is not.

It is useful to place a trail of bread leading into the pens so they will enter them confidently, and to leave bread in a bucket, so that they recognise buckets and will follow them. We can then lead them around with the bucket, which greatly helps halterbreaking.

Once the youngsters come to us, the adults may too, especially the stallion. It is generally far more difficult to tame them, for they have usually been attacked (to their way of thinking) by people, and it is usually not worth the trouble. However



being able to call a herd and enter them quietly in pens avoids mass panics when we want to manipulate them. Calmness, slow, casual movement and relaxed body language

saves a lot of time: with horses, we do things quicker when we do them slowly. We can move them quietly from metres away simply by stiffening our bodies and staring them in the eye. We can separate a huddle of them by staring at a line between them and imagining it like a wall, then turning our shoulder a little to push the front ones forwards while blocking those behind. Brusque movements alert defensive grouped flight, so that they seem stuck together. When calm, they are easier to separate and direct.

If marking or injecting is necessary, these are far less traumatic for them if they already accept people and being touched. We can convince a youngster he cannot move by isolating him quietly in a corner and blocking any forward or backward movement by moving forwards or backwards ourselves. The more delicately this is done, and the greater the distance between us, the better. He will finally accept that we have him blocked, and stops even trying to escape. If we then approach towards his shoulder (be careful with angles, remembering the bumper cars) we can stroke it, run our hand over his neck and down his nose. We can then control him by blocking any forward movement with pressure from our hand low on his muzzle, bending it towards us as we push his shoulder away with our hip. Strength is not necessary: we simply block any attempt at movement by flexing his head and neck towards our hip, using that in the opposite direction to stop him following his nose. If he is in a corner, he cannot move his hindquarters away and gain impetus like that either. At this point he can be marked with a hot iron without moving or suffering much. The main trauma of branding is not the pain, which arrives some seconds after the iron, but the terror of flustered capture attempts that has preceded the marking. The quicker and cleaner we can do these operations, the less damage to their confidence. Developing handling techniques that encourage rather than destroying confidence has understandably not been a farmer's main concern.

Such handling techniques depend on the fact that the horse has less force when his body is bent in a series of curves. Like a motorbike, his strength comes from behind, and if the front is twisted he has none. They also depend on how and when we use pressure. Horses will push against a wall, fail to move it, and accept that they are blocked. Walls do not push back if they do not push against them. If we use our hands and hips like walls, releasing pressure when the horse does not push,

he understands he is blocked. It is when we keep the pressure on that he keeps fighting. Timing is all.

Throwing horses to the ground, or twisting their ears, is unnecessary and adds to the terror. Cattle crushes are too wide for pottokas and we must be acutely aware of angles as we approach them in crushes, using our body to immobilize them, not drive them up the sides. Approaching step by step, not in one continuous flow, helps. Mostly, we just try to do things too fast, and so take longer.

**The new owner.** Pottokas that arrive at our farm have often been terrified by rough handling and loading, and need a few days to settle down before we can begin work. Moving quietly around the field or corral without paying attention to them before attempting to attract them helps them lose their paranoia. A tame horse helps them at first, but later needs tying up or he will steal all the food. It is somewhat easier to tame them in a corral, using the same techniques as above, but depending on their experience it may take a lot of time, months in the case of older pottokas. Several short sessions a day are better than one long one: we often find that they stop coming after half an hour or so, not because they do not want more food but because the conflict involved in overcoming their fear exhausts them. In a corral we may use hay to attract them, removing it when we go.

We teach the pottoka to recognise our call or his name as we arrive, so we may call them in large areas. When they become too greedy we stop using food, or they can become very demanding, but in the field it is a good idea to give them one bit of bread as a reward for coming.

Pottokas should not be shut in stables, nor be expected to live alone.

**Halter-breaking.** We leave ropes hanging above food, so they get used to pushing their faces against them, but do not attempt halter-breaking until the pottoka accepts a hand on the neck and follows us: no matter if that is only because we have food, it is the reaction that matters.

We need a pen or corral and a rope so long we will be able to stand in the middle with the rope round the horse's neck without putting any pressure on the rope. The rope should have a large karabiner at one end.

We pass this end round the horse's neck, which may take several attempts as he may get frightened and run. We do not attempt to stop him or run after him, which will startle him more; with patience and calm he will let us. We clip the rope into the

karabiner so that it forms a lasso. If he runs, we let him, holding our end of the rope so there is no pressure on it and keeping calm. He will not stop if we pull, but run faster, so there is no point in trying. He needs to learn, not be forced. Finally he will stop, usually with his side to us.

When he has calmed down, moving his mouth, we start vibrating the rope with very light, repeated pressures, without stopping. If he runs again, we have probably used too much pressure; we wait until he stops and start again. He will incline his neck slightly towards us in response to our cue. Immediately, we stop nagging and praise him. After a pause of several seconds, we start again, this time not stopping until he gives us his neck a little more. Stop and praise, pause. The third time, he will probably move one front foot in our direction. Stop and praise, pause. The fourth time, he will take a whole step. Stop and praise, pause. When he moves his mouth and licks his lips he is relaxing because he understands how to release the pressure. We find he accepts a little more pressure each time. Step by step he will advance, but if we face him standing still, he feels blocked: we must either lead him with the bucket or go alongside him round the corral, for our movement provokes his. It is only when he accepts a reasonable pressure without getting afraid that we



ask him to stop.

Many will stop simply when we do, but we need to be more certain of a stop before venturing outside. We try to choose or engineer a situation where he wants to go in another direction. We say “so!”, stop, and close the fist firmly round the rope without pulling it

towards us, so that he reaches the end of the rope and finds himself blocked. If this causes panic, we try walking round the pen with him between us and the fence, as if in a corridor, and swing the left arm round to block him as we ask for the stop. We practice this until we get a good stop every time. If praised, he will soon stop at the word alone.



It is not a good idea to halterbreak off a headcollar. Many panic at the first pressure, rear and fall over; they can cause themselves serious injury which is not always obvious at first, like dislocating the bones of the neck. Equally, strong pulls and jerks can damage the delicate neck of a pottoka foal. In the way described, even a small, weak person can halterbreak a large adult horse: it does not require strength but careful teaching and good timing.

**The headcollar.** If we have not taught the horse to put on the headcollar himself, when we raise the noseband it will startle him since he cannot see it. To avoid this problem, we rub the rope around the horse's face until managing to make a loop around his muzzle, and clip this into the karabiner so it forms a crude headcollar. We can now put the headcollar on top, for the rope desensibilizes his muzzle. Undoing the loop round his nose, we pass the whole rope through the ring at the back of the headcollar so that he still has the neck lasso, which he now understands, but any pressure on the rope will also affect the headcollar. After a little practice, we can now go outside the pen, but keep to this arrangement of lasso and headcollar for the first few times.



Do not leave a headcollar on when the horse is loose in a field or even a corral. He can kill himself if it slips over a post he is scratching on. If we have done things well, he will come when called, and at the first feel of a rope passing over his neck will stand while we fiddle to get the headcollar

on.

When first passing through gates, we should be aware that all prey animals rush when they feel themselves confined: sheep even jump as they pass through gates. To pass quietly, we block the pottoka slightly with our body, stopping after every step and reassuring him. It is more important to get things right the first time than to try to correct a situation that has frightened the horse.

**Tieing up.** If we simply tie the pottoka up and walk away, he will try to follow us, feel himself snubbed, and probably get in a panic. To do things better, we wrap the



rope a few times round a pole without tying it, giving him some half metre of slack. Taking the headcollar in one hand, we push the horse's head away from us until it reaches the limit of the rope, saying "tied up" as he feels the block. We repeat this pulling the horse's head back from the pole, then towards us. If we now step back, he will not try to follow us because he has understood this explanation.

At first, we only tie him for a few seconds, increasing it gradually. It is useful to use the word because many become so well- trained that they will think themselves tied to a piece of grass if we say so, or to the ground like a western horse. This well-known cowboy technique is not taught by tying him to the ground, which is dangerous, but simply by good teaching.

Explaining things to pottokas does not come easily to us, but it works. They do not of course recognise our words, but if we mimic what we are about to do and explain as if to a small child, they observe our actions and our attitude and are reassured. Explaining in words helps us more than them: we act more convincingly.

**Walking out.** Taking the pottoka for walks is the best training technique. They are usually not afraid of any natural hazard but do need time to get used to cars passing (at first, avoid big roads, and stop cars on small roads), washing flapping on lines, dogs rushing out barking and so on. We always use a rope several metres long, leaving the pottoka about a metre of slack and coiling the rest in the other hand. It should have a couple of good knots towards the end of it. In the event of panic and flight, we do not try to stop the horse immediately (he won't) but pay out a few metres while we brace ourselves, blocking him firmly as our hands reach the knots and using the word command we have taught him. Immediately we praise him for stopping and reassure him.



If he escapes, running after him will make him run faster. Taking things calmly may have the effect of bringing him running back, especially if he does not know where he is.

Walking out bonds a horse, especially a youngster, to us more than any other activity we do with them. We are a little herd, a strange one but going along together, their major natural activity. We are definitely the leader: we know where to go, we are confident and unafraid, and we can make sure we end up in good places. Even for a professional trainer used to other techniques, leading out is the most important technique in training pottokas, and it is the only one we really need.



We must pay great attention to the way we use the rope and our hand while leading (p ooo). Pottokas are too small for any but a small adult to ride, children are not good trainers, and leading is the only way (except for long-reining, below) that a large adult can teach the pottoka how to respond to the aids. If we are careless, they cannot get this clear. Responses to the leg can be taught by pushing with the hand in the spot where a small rider's heel would touch, praising the pottoka for good responses.

During these walks, we stop from time to time to eat good grass, so that the walk is enjoyable, but only when we say so: we do not let a pottoka eat whenever she



likes, for that is always. At the stops, we play the rope over the horse's back, take off our jacket and drape it over him, tie our jersey round his neck, and in general get him used to accepting anything we put on him, in a

playful, casual manner. While associative learning (making new connections) is best done in a formal manner so the connection is clear, in habituation the more easy-



going we are the better.

We also attach the lead ropes to make reins, and walk alongside steering the pottoka, using the hip on one side and a hand on the other to represent our legs.

Walks on the lead are adequate for any horse after weaning; before weaning, a foal will follow his mother. They are the best way to get to know the reactions of a new pottoka, even if already trained to ride, and the best way for him to learn his new environment.

**Long-reining** or ground driving is an excellent technique for teaching the pottoka to go forward by himself, something that may be difficult when he is young and a natural follower.

To start, we need to go back to an enclosed space and may need a helper. A round pen, or a square one with the corners blocked off, is best. It should be big enough for the pottoka to move around freely, say 10-15m. across. We use round soft ropes about the width of a thinnish finger. Lunge lines are not suitable, for they tie themselves in knots too easily, and burn skin if pulled hard. Cotton ropes are the best.

We start with the pottoka loose. Long reins will touch his back legs exactly where wolves attack (they tear the Achilles' tendon above the hock, immobilising their prey) so a pottoka instinctively fears a touch there. To desensibilise him, we use a series of exercises with a long rope attached round his neck like a lasso. These exercises also teach him it is not a good idea to run off when frightened, so they are most valuable.

First we simply ask the pottoka to follow us, by calling him, clicking our fingers and so on. He will not move unless we do. When he does, we drape the rest of the rope over his back, and ask him to follow us again. He may be a little frightened and crowd against us: we praise him for looking for our help, and continue until he comes along calmly.

If the rope scares him seriously, he will run off. We let him. As he runs, things will get worse: the rope will flap and finally fall off between his legs, but he cannot get rid of it since it is tied round his neck. He may run for some time. We keep calm, with the attitude "well, it was your idea, look where it gets you". Finally he will stop. We reassure him, pick up the rope and repeat. This time, he will

probably follow us, for he knows what happens if he runs off. When he does follow, we praise him warmly for his wise idea.

For the second position, we revolve the neck lasso so that the karabiner or knot is at his wither, providing an anchor, and tie the rope round his body behind the elbows like a girth. This gets him used to pressure there so he will not object to a girth. Again we ask him to follow us.

Finally, the wolf position: we loop the rope round his hindquarters above the hocks and tie it to the anchor at the wither. If we tie it to the neck loop it slips down and may get tangled in his back legs. Again we ask him to follow us.



When he ignores a rope in this position, we put on a headcollar a little lower than normal, so the noseband lies only a couple of fingers' width above the mouth. Attaching the rope to the lower part of the middle ring on the opposite side, we pass it round his hindquarters above the hocks and, holding the end in one hand, step back. We must be level with the middle of his body, where our body does not invite him to us nor drive him forward. In the middle, it is neutral. Standing still, we give little vibrating tugs on the rope, without stopping. I also always click my tongue, so he learns this sound means movement is required. Little by little he will turn his head away from us, then his hindquarters towards us, and finally turn round completely. We stop the nagging the moment he starts the turn, and praise him as he comes towards us.

The first time we do this, he may try to turn towards us; if he does, we simply hold the rope firmly, blocking him, and when he stands straight again, start asking for the turn. Or he may shoot forward, in which case we hold the rope firmly and he will turn.

We repeat this two or three times more, and if we have attended well to the details he will turn at the first tiny pressure on the rope. The details are important: the position of the headcollar and the attachment of the rope encourage him to yield to the pressure with his head down, not raise his head, Our position, and the clean,

formal way we act, help make things clear for him. If we have no practice in this it is better to start by practising with a tame ridden horse. It probably has not done these exercises either, but if we make mistakes it will not matter. Pottokas learn so fast we cannot afford to make mistakes, nor waste time wondering what to do next and lose the seriousness of a lesson.

When he has learned the turn on one side, we repeat it on the other.

We now step more behind him, and, by vibrating the ropes gently against his sides and clicking the tongue, ask him to go forward. Some do, but some turn to face us. If he persists in this, we do not argue but have a helper put a lead rope on him and lead him forward, so he understands easier.

At first, we aim simply to walk calmly without asking him to go in any particular direction: we follow him, standing slightly to the side to which he is turning so that he can see us. If he changes direction, we change sides, making sure to release the rope on the other side, for if we do not it will tighten against his hind legs and make him run forward. If he seems frightened or jerks his head up continually, we have too much pressure on the ropes. They need to be loose. He may put his head right down to see us if we are directly behind him, and tangle himself up in the ropes. We avoid this by keeping out to one side (but meanwhile he learns not to panic about stepping on ropes). If there is a complete panic, we do not try to stop him but let go entirely, wait until he calms down and start again, trying to identify what we did wrong. It is usually too much pressure.

When we can do this calmly, we start asking him to go in the direction we want by coordinating three actions: we step towards the side we want to go, opening the rein on that side and asking with it if necessary, and releasing the rope on the other side. If we have a helper in front, we must remember to shout which way we intend to go, or everyone gets muddled, most of all the horse.



When all this goes well, and not before, we can ask for a stop. For this we must be directly behind the horse, invisible. This worries him until he has had enough practice in the turns,

when we do disappear but reappear again the other side. The first time, it is wise to drive him directly towards the fence, so that the apt response is obvious.

From behind, we say “so” or whatever we use as our signal for stop, take one more step forward, lower our hands and hold firmly so that he finds he has walked into a block. The very second he stops, we release. If he moves again, we stop him again. If we keep the pressure on when he has stopped, he panics. Lowering the hands is necessary to prevent him raising his head in the stop. If we repeat this he will start stopping at the voice only, to avoid walking into the pressure.



Note that we do not put pressure on by pulling. We simply stop our hands and let him walk into the block.

Long- reining is not easy to learn from a written account, but it is of such value to a trainer that it is worth the effort of learning. If we do not have a teacher, our best

teachers are tame, ridden horses or even people. A person holding a rope at chest level between his hands, connected to us via reins, can report his sensations to us. He feels a drag on the reins, feels when a vibratory tug is not an indication but an offence, and feels the difference between walking into a block and being jerked to halt. His sensations are no different to a horse’s. When he closes his eyes and feels confident in the way that we guide him, we may be more certain that we have the tact to handle a horse. This is also an amusing way to teach people and children how to handle reins.

When we can guide and stop the horse in a closed space, we take him out on walks in long reins. He may constantly stop, lower his head to eat, and step over the ropes. We can use a girth or large strap round his body with string loops that support the long reins: these should be at the same level as his mouth when he is walking with his head in the normal position, not high up by the wither where he will feel induced to raise his head when we ask him to stop.

He should not run off in panic if he is well-prepared, but if he does we let go of one rein and block with the other, so he turns to face us.

It is more likely that he is afraid to go forward by himself, and we need a helper walking in front. Little by little he should drop back so the horse is going first, but go ahead if confidence is lacking.

Long reins prepare the horse well for riding except for the weight on his back: he goes forward, stops and turns without being led. He can learn long-reining at two years old, before he is strong enough to be ridden, so that we may be sure he is well prepared for riding.

**The saddle.** We prepare the pottoka for the saddle by getting him used to carrying a



blanket tied round his back. All work concerned with the back is easier with a pottoka because his small size lets us play at leaning over him, so he will probably allow us to put a saddle on without any problem. The girth is harder. When he gallops, turns quickly, or gets tense, the girth tightens and he is liable to buck.

To overcome this problem we put the saddle on in a corral, do up the girth firmly though not overtight, and let him move freely. If he seems happy, we drive him into a gallop. If he bucks, we keep driving until he sees that

bucking does not rid him of his problem but worsens it. It is only when he is capable of galloping with a saddle without bucking that he is safe to ride.

We should take him for walks in the saddle, letting him brush against bushes. The sound at first startles him, and will startle him with a rider if he is not already used to it. We can also tie saddlebags across the saddle and put things in them, so he gets used to carrying weight and bulk. Pottokas are strong for their size and weight is not the main



problem about riding them: it is the carrying of things that stick out sideways, upwards, and do not move as part of the body that troubles them.



**First riding.** The best first rider for a pottoka is a tiny child, held in the crook of our arm so we can take him off at the first signs of trouble.

A light adult can lean across the pottoka on walks, lying over him bareback. The first time we do this, the pottok may tense up. To release tension, we ask him to turn his head to see us, and turn it in the other direction to see our feet. We let him graze and walk while we lay passively over him; the more casual we are about the process, the better. We can slide off easily, so there is no worry. It is only when we have repeated this many times, and the pottoka has shown that he has no trouble in taking a few steps, and is not afraid of our raising our arms or our head while lying over him, that he is ready for real riding.

We may decide to ride him bareback out on a walk. It is better that we have a friend to follow, and are on an uphill path: downhill, an inexperienced horse has problems about balance, and may start to run. A path is better than an open field. We first lie on the belly, then pass the leg over, asking him to turn his head to see our feet on both sides. We should be completely relaxed, not gripping with the legs at all but clasping a chunk of mane. We do not ask the pottoka to go forward but leave it to him; our friend can help a little, but should not demand that he move until he feels ready. He will then walk forward quietly, although strongly: pottokas are determined little creatures. If he tenses up, we stop and calm him, or even get off. Riding is not a competition but herd movement of a peculiar kind, and it is important he enjoys it.

We do not stay on the pottoka for more than a few minutes, getting off and on according to the terrain. At first they find it odd and tiring, and short bouts are



better. When he seems relaxed, we ask for stops by saying the word, closing the hand to block the rein and leaning back slightly. To go forward: they do not at first understand that closing the legs means go forward, and object if we start kicking. To teach them, we close the legs slightly on their sides and, when they do not respond, rock forwards pushing on the base of the neck with the hands. This is where a friend's help is most useful. If we teach them well, they soon learn to go at a small squeeze of the legs. They turn easily.

If we start in a corral and with a saddle, we ask the friend to lift us on to our belly in the saddle and repeat the same sequence: turn the head, ask for a step or two in a small, tight circle (it is harder for him but guarantees that he cannot shoot forwards too fast), and open the circle until he walks along calmly even when we raise our hands or our head. At any sign of tension, we stop, calm him down and begin again or slide off. Only when he seems completely happy about this do we pass the leg over the other side and sit up. We follow our friend round the corral turning, stopping and starting. At first the pottoka follows the friend but feels our aids, so he learns easily what they mean.

On the whole it is easier to start riding when out on a walk, and bareback so that we can get off easily, but we must be really relaxed. Once a pottoka accepts a small adult he will accept a child, whom we can lead for complete security. A good way for children to improve their guiding skills is to put cones and poles in a corral and use them to steer round. These obstacles can be made more and more difficult, like walking over blankets or boards, going under lines of washing, going up and down banks and so on.

Trotting and cantering are best first experienced outside, on an uphill path. A English trot, and a canter in suspension (standing up in the stirrups holding on to the mane) help the rider not bang on the pottoka's back, which startles him. After several practices uphill, we may trot and canter on the flat, but downhill it is not a good idea: it gets very bouncy.

It takes many months before a newly-ridden horse really gets his confidence when ridden, and we may find that he often stops to look at things or refuses to pass scary objects like rubbish containers. By encouraging and praising him when he advances, he becomes bolder; if we get angry he simply learns to fear the object. Often we have to get off, go up to it ourselves and show him we are not afraid.

All this early riding is done in a headcollar: if we put a bit in his mouth he is more afraid, less likely to go forwards, and more likely to run away or rear if we pull too hard. If we have paid careful attention to the way we use our hands he probably will not need a bit all his life. But some horses get very strong, especially if galloped a lot, or determined to eat grass, and we may find we need something more.

One simple arrangement is to pass a strap like a dog-collar through the side rings of the headcollar and round behind the horse's chin. We then attach the reins to the ends where they protrude from the side rings. Pressure on the rein then pressurises behind the chin as well as on the nose, so rein effects are stronger.

Another possibility is to use a small English hackamore, which has nothing in the mouth.

Bits are much more disagreeable for the horse if the rider does not use his hands well, which most children do not, so they usually cause more problems than they solve. To introduce the bit, we tie it on one side of the headcollar, pass it through his mouth, using food, and tie it on the other side. We then let the horse graze or eat in it for an hour or so. He soon learns to put his tongue under the bit, for he cannot eat with it in any other position, and learns to open his mouth readily. When we have done this several times, we can ride him in it with the reins attached to the headcollar as well as the bit, so that he realises that pressure on his mouth is the same as pressure on the bit. Later, we put the reins on the bit alone. We should not put a metal bit on a youngster: it should be of plastic or rubber. Children are often very rough with their hands, and if we find that the pottoka gets gradually more difficult we should improve their riding skills rather than blaming the pony or using a stronger bit. Going back to long reins and work round obstacles is usually the best idea.

**Getting what we want: "obedience" and stimulus-response in training.** Horses have no problems in producing what we want. They turn, stop, gallop, jump and stand on their back legs any old time in their field. Our difficulty is that they do not always do these when we ask or when we want. In other words, they do not do them at our signals. Our problem, then, is not in creating these acts, but of connecting them with the signals that we give. After taming, training is a process of connecting signals to acts.

If we train well, they are well connected. If they are not, then we are at fault somewhere: we have not trained well, or we are not using the right signal. Almost always problems are solved by going backwards to an early stage, clarifying what we want calmly, rather than trying to deal with them by force as they arise.



**A pottoka for the children.**

I spent the major and best part of my childhood on and around ponies, so it is pleasing to see that in Spain, which has no traditional culture of ponies, they are becoming more popular. Ponies, and most especially pottokas, are not as easy to bully as horses: they demand that a child has good manners, does not lose his temper

and does not resort to violence when he does not get what he wants. On the other hand friendship, care and appreciation get the best out of them. For an older child, they are independent transport, a great source of fantasy and adventure, healthy exercise and a way to learn responsibility.

Pottokas need space and equine company, even a donkey. Never buy a foal at weaning time and attempt to bring it up alone playing with children. It is not a puppy, and only learns social norms from other adult equids. Unless we have experience with horses, an untrained pottoka is not a good idea. They learn so fast



that they may learn what we consider as bad ideas as fast as good ones.

Trained pottokas are of course more expensive than wild ones, but a child's life and happiness are not something to economize on. If we are new to horses, we should take an experienced person along when buying unless we already know the pottoka

well. We should always ask to catch it from the field and take it out for a walk.



Pottokas are not furry mechanical toys. We need to know where we can get help if problems arise. Unfortunately riding schools are not always the best: their horses are selected to put up with clumsy beginners, and children may be taught that brutal kicking and hitting are part of normal riding. A gentle well-trained pottoka, the sort we want for the children, may not put up with this. At present finding good help is somewhat chancy, but as pottoka culture grows there are excellent trainers especially in Pais Vasco. Even if they do not know pottokas, trainers who use “natural” methods are more likely to understand their strongly survival-based behaviour than are traditional trainers used to highly selected domestic breeds.



For small children, little western saddles are safer than English ones.



Children should not ride without hard hats, and must do them up properly. Falling off is part of learning to ride, as it is part of learning to walk, and children almost never hurt themselves; but a chance stone can do fatal damage to the head.

These guidelines do not mean that the dream of having a gentle pottoka in the field, or of seeing our child flying across the hillside on one, is difficult to achieve. It does need a little thought though. It is unique among equine dreams. To know that the

friendly character in the paddock is capable of living completely wild, defending itself against wolves and bears, but of its own free will chooses to cooperate with us as if we were other members of a herd, is something special indeed, a privilege.





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