

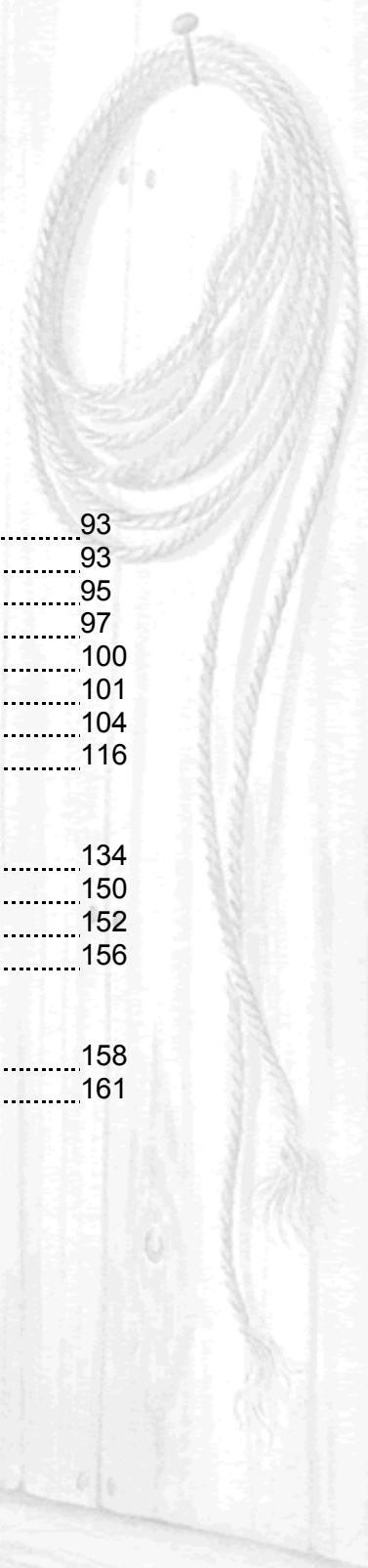
III. ANIMALS

III. Animals

- Livestock Care..... 93
 - ▶ Preventative Maintenance..... 93
 - ▶ Gentle Stock Use..... 95
 - ▶ How Horses See..... 97
 - ▶ Salt Requirements..... 100
 - ▶ Medical Care: Maintenance & Injuries..... 101
 - ▶ Veterinary Medicine for the Backcountry Horsemen..... 104
 - ▶ Shoeing & Hoof Care..... 116

- Proper Training for Livestock
 - ▶ Working Safely With Stock..... 134
 - ▶ Starting a Pack Animal..... 150
 - ▶ Introduction to Trailer Loading..... 152
 - ▶ Introduction to Electric Fences..... 156

- Getting Along in the Backcountry
 - ▶ Grazing Management..... 158
 - ▶ Backcountry Manners..... 161





Introduction

Saddling up your horse and heading down the trail for your first pack trip is not something which happens overnight. It requires a lot of consideration and preplanning, as well as, many hours of training your stock before you head off for a night in the wilderness.

Many questions will come to mind when planning for the trip:

- ▶ How many days?
- ▶ Are permits required?
- ▶ How many people and head of livestock?
- ▶ Where to go?
- ▶ What are the regulations?
- ▶ What is the food and water availability?
- ▶ What to take? - only essentials?

- ▶ Camping gear
- ▶ Personal gear
- ▶ Horse related equipment

- ▶ Kitchen set
- ▶ Feed for animals
- ▶ Emergency Veterinary kit
- ▶ How will my stock behave?

There is a large amount of information we could go over for this class. We hope we will cover most of the questions listed above, but please feel free to ask any additional questions you may have at any time. Because this is a hands on class it will have been necessary for you to have accomplished some of the basic stock training to have gotten here. For this reason we will not be going into depth on some subjects. This section of your syllabus contains some excellent articles on handling stock for future reference and to help you further down the trail.



Horse Packing Tips

By Dr John P. Hughes, D.V.M

Prevention of Problems is Much Better Than Treatment After They Occur

Worming

1. Horses should be wormed every six to eight weeks if stalled or closely confined.

Vaccinations

1. Tetanus toxoid: All horses should be immunized against tetanus.

2. Influenza: Initial vaccinations should be spaced at one to two months followed by boosters every four months. Booster shots should be given two to four weeks before going on a pack trip.

3. Equine herpes: Vaccination can be useful to avoid respiratory disease associated with this virus.

Conditioning the Horse

1. They do not have to be endurance horses.

2. Two weeks of conditioning a horse is a minimum; one month is better.

3. One half to one hour of exercise per day for five to six days with a three to five hour ride at the end of the week will satisfy most requirements for a pack trip. It is better to walk quickly and trot.

4. Horses turned out on large pastures are in better condition for a pack trip than inactive stalled horses.

5. The conditioning of pack animals is often neglected, but they will perform better if exercised previous to the trip.

First Day Out

1. This is not a race or an endurance contest! Don't travel too fast or too far.

2. Nervous horse are more apt to have problems. They tire faster and are susceptible to colic.

3. Don't try to go too fast with the pack animals. This will result in cinch sores and back problems. It is well to remember that a pack is "dead weight".

4. Packs must be balanced - a scale is best for the experienced or the experience, occasional packer.

5. Rest the animals as needed. They must become acclimated to higher elevations stop on steep grades for short rests. The horses stamina will get better and better each day you travel if acclimated.

6. Check the saddle blankets each day and shake or brush out debris.

Water

1. It is better to give horses or mules water at frequent intervals, that is, drink as you go.

2. If there are long periods between water, don't let them drink too much at one time. A hot horse and cold water equals colic.

Feed



1. It is not feasible to carry enough grain, much less hay, on trips over several days to weeks in duration.

2. Carry enough grain to give the stock about a pound each day. This will make them easier to catch and more satisfied to stay near camp. Salt is also helpful in this respect.

3. A nosebag for the grain prevents waste.

4. Turn your horses loose to graze whenever possible - three to four hours in the morning and three to four hours in the evening.

5. It requires 1 1/2 to 2 pounds of dry grass per 100 pounds of body weight for a horse at medium to hard daily riding. This could require eight to ten hours of grazing.

6. You may want to keep two horses tied while others graze to keep the stock from leaving. In case they do leave, you will have the two with which to follow and catch the other. Pick out a mare that the other stock tends to follow for one of the tied horses.

7. If you hobble one animal, hobble them all. Loose horses travel faster causing the hobbled horses to hurry which results in irritation of their pastern.

Shoeing and Shoes

1. Horses should be shod approximately one week prior to the trip.

2. Pre-shape a few assorted sizes of horseshoes to take along. Some packers take partly worn shoes taken from the animals they are using.

3. Carry at least a minimum of horseshoeing tools: rasp, hammer, nipper (puller) and nails.

4. An "Easy Boot" of appropriate size may be carried - these are very useful in emergencies.

Avoid Problems on the Trail

1. Don't try to lead too many animals, particularly in bad places.

2. Lead off an experienced horse.

Editors Note: This outline is from a presentation made by Dr. Hughes to the Mother Lode Chapter in the spring of 1984 at the general membership meeting which was held at the O.K. Davis Vet Med Teaching hospital. Dr. Hughes has taken many pack trips in the High Sierra, and knows how to pack mules and camp in the high country. His wife, Lavonne, served two years as president of the Mother Lode Unit of the BCHC in the Sacramento area.

GENTLE USE OF STOCK

By Dena Mercer

a starter list of ways to properly care for your livestock

HAULING:

If you're traveling longer than 45 minutes, leave your stock unsaddled in the trailer Heat can be dangerous to livestock if left in a trailer too long without water and proper ventilation ... unload them whenever possible Slow down when traveling; balancing in a moving trailer isn't easy Be sure that your trailer is in good shape ... check the condition of the floor, etc. Know your stock ... put those together who get along Give them a chance to "look before they leap" into the trailer. Don't tie the head too short.

BEFORE SADDLING:

- Check for galls and irritations/injuries ... treat
- Check pads for cleanliness/condition ... should be "top notch"
- Brush your animal well Check condition of all equipment. Repair as needed
- Be sure of proper shoeing Vaccination and worming up-to-date
- Know condition/age of your stock
- Break your stock to restraining methods prior to your trip (i.e.. hobbles, electric fence, tethering, etc.)
- Pack necessary first aid supplies for stock ... know how and when to use them

DURING SADDLING AND PACKING:

- Properly tie your animal
- Be sure saddle fits properly
- Load boxes/panniers evenly, heavy items on the bottom
- Limit weight according to the size and condition of the animal (150# is a good rule of thumb or approx. 12.5 to 14% of his body weight for a horse and 15% for a mule or burro ... less for older animals)
- Avoid heavy top loads
- Saddle riding stock first, pack stock last Always be aware of your animals' mood; adjust your handling techniques
- Pack only a slicker or light jacket behind you riding saddle
- Pack plenty of grain for your animals

TIE TRAIL:

- String pack stock together so that "personalities" are cohesive
- Allow enough slack in lead ropes between animals so that they can drop their head to drink (approx 3 feet front rump on one to the halter of another)
- Tie pack stock together with knot that will "slip" when you tug on it. (A bowline ALWAYS when around the neck.)
- Slow down when traveling between rocks, trees, around obstacles etc.(wait and watch for each animal to complete maneuvers)
- Pay close attention to the condition of each animal on the trail-only travel as fast and far as your oldest, smallest, or least conditioned animal can (Allow for frequent rest stops.)



- Always watch your loads. Straighten as necessary
- Plan your trip so that horses are not forced to travel too far for their physical condition (rule of thumb: 10 miles per day if horses are in good physical shape and the country is not too rough)
- Lean slightly forward in the saddle when going uphill, back downhill.

IN CAMP:

- Pack animals are always unloaded first! ... And right away!
- Construct a picket line
- Leave plenty of space between animals so that lead ropes can not become tangled
- Position animals next to each other who generally "get along"
- Tie stock long enough so that they can get their head down, but not long enough to get their foot over the lead
- Let the stock plenty of time to graze (generally a horse will need 6-8 hours of grazing in order to provide enough of a daily ration of food)
- If your horses are trained to tether (needs to be by a front foot for the safety of the horse ... many a shod animal has gotten a shoe caught in the halter), stake them so that two horses leads cannot become entangled
- Erect an electric fence right away so that animals may have plenty of feeding time
- Give plenty of opportunities to water
- Continue to check each animal daily for sores, abrasions, etc.

... REMEMBER ... YOUR STOCK WORKED HARD, THEY'RE DEDICATED, THEY'RE DEPENDENT UPON YOU ... GIVE THEM YOUR BEST CARE!

HOW HORSES SEE

By Robert M. Miller, D.V.M.

The eyesight of the horse is quite different from our own. They have five senses, just as we do: hearing, taste, feel, smell, and sight. These are known, respectively, as the auditory, gustatory, tactile, olfactory, and visual senses. The first four named are very similar, in the horse, to our own, although they are much keener in horses than they are in humans. This is understandable in a prey animal who depends on instantaneous flight from danger in order to survive in the wild.

In is the horse's vision that differs markedly from others; and in order to understand horses, we must understand what they see and how they see. In pre-historic times great herds of horses roamed the grasslands of the earth. These animals provided food source for predators such as lions, wolves, and primitive humans.

The predator creatures have frontal vision. That is, their eyes are placed at the front of the head. Consider the eye placement of a cat, dog, a human, and an owl or a hawk. The eyes are located frontally. Both eyes see the same thing. This gives these predators, stereoscopic vision. The brain sees to slightly overlapping images, and this creates depth perception, the ability to judge distance.

Depth perception is necessary for the hunter. The lion, for example, is swift but short-winded animal must be able to intercept the flight of its fleeing prey, or it will miss the opportunity for a meal. Similarly, the primitive human hunter needed to judge distance accurately in order to kill his quarry with a thrown spear.

Horses have lateral vision. Like other prey animals such as wild sheep, goats, cattle, deer, antelope, rabbits, and many birds such as ducks, geese, quail and turkeys. Their eyes are located on the sides of their heads. Although this costs them good depth perception, it has the advantage of giving them a very wide field of vision. By moving his nose a bit to the left or right, a horse can see completely around himself.

In addition, he has a very large eye, one of the largest eyes for its body size in the animal kingdom, and this helps give him excellent peripheral vision. Moreover, horses have excellent night vision, due to a special reflector in the retina of the eye. It is this reflection, the *tapetum lucidum*, that makes horses' eyes seem to glow in the dark (because they reflect the light) and enables them to see quite well in all but total darkness. We humans have very limited night vision because we were daytime hunters who sat around a fire in a cave at night. This means that horses, grazing on a starlit night, are able to see the movements of a stocking predator and react accordingly.



Research has been done regarding color. Horses have limited color vision (compared to ours) because their retina has fewer color receptors, or specialized nerve endings that detect color. They see yellow best. Green and blue are identified to a lesser extent. They see red the least.

Now we know why we should always say something as we approach a standing horse. He may be sleeping with his eyes open, and when detecting our approach, he may suddenly act defensively.

The fear a horse may show crossing a stream, puddle, or slight depression is reasonable in an animal that cannot accurately judge depth. A horse trailer looks like an endless tunnel to the inexperienced horse. Or a trailer, as well as a stall, may look like a deep cave. Caves held nameless terrors for wild horses. For an animal who can detect motion as vague as a bird fluttering in a tree across a canyon, or the flickering ear of a cow hiding in the brush, simple moving objects can be terrifying. A bit of plastic flying through the air, or the leaves of a tree moving on a windy day, a piece of white paper on the ground, a black chard stump or a culvert can provoke the desire to take off in horses, especially if they are untrained.

We humans have excellent focusing abilities. The lens of our eye, especially if we are young, can quickly change its shape when we shift our gaze near to far. So, we can be reading a book and then look up to see the view. In a couple of seconds our eyes adjust and the view comes into focus. As we age and our lens lose some of their elasticity, it will take longer to focus very close to our eye. That is when we need reading glasses, even if we have had excellent vision all our life.

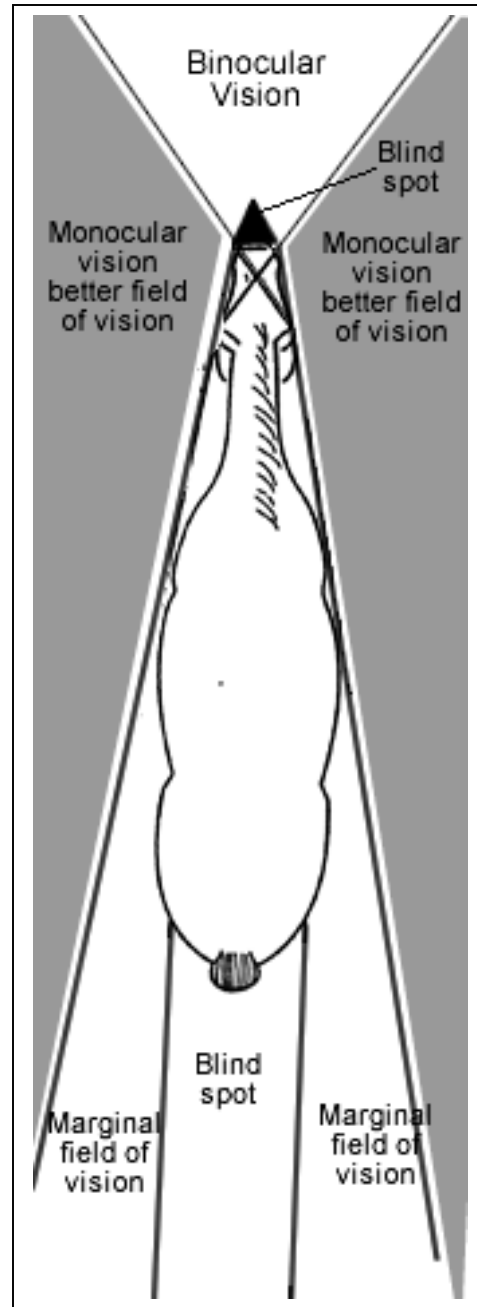
The lens of the horse's eye is relatively inelastic. Horses focus primarily by using different parts of the retina of the eye to see objects that are near, far, or at middle distance. It's kind of like a human wearing bifocal, or trifocal eyeglasses. The head must be tilted to a certain angle in order to focus. That is why a horse will tilt his head and arch his neck in order to see something in front of him on the ground. At liberty, he will lower his nose to smell the object. Under the saddle he is restrained by the bit and can only arch his neck and cock his head to bring the object into focus on a certain area of the retina in one eye.

KEY REMINDERS:

1. Horses have laterally placed eyes. This limits their depth perception but gives them a wide field of vision. Each eye functions independently and sends a different message to the brain.
2. Horses see quite well in the dark and can sleep with their eyes open.
3. Horses can detect motion not visible to us and react accordingly.

4. Horses have limited color vision and see mostly in black and white, although they can see some colors

5. In order to for-us, horses must alter their head position. This is why horses will snap their head to an upright position when alarmed. They do this in order to focus on approaching danger and in order to assume a flight position. This behavior is common cause of injuries to both horses and humans.





DON'T FORGET THEY NEED SALT

By Larry L. Berger, Ph.D., University of Illinois

Salt is routinely added to livestock diets. Because it is such a common feed ingredient, it is easy to forget the important part it plays in meeting nutritional needs by supplying sodium and chloride.

Even though the animal's body contains 0.2 percent sodium, it is essential for life and highly regulated. Sodium constitutes about 93 percent of the basic mineral elements in the blood and is crucial in regulating blood pH. Sodium is required for muscle contraction, nerve impulse transmission, and the rhythmic pumping of blood to the heart. Efficient absorption of amino acids and monosaccharides from the small intestines also requires sodium.

As a primary element in blood, chloride is also essential for life. The chloride shift, which moves chloride in and out of the red blood cells, is essential in maintaining the acid-base balance of the blood. Chloride is also necessary for the production of hydrochloric acid, which is required for the absorption and digestion of most nutrients in feedstuffs.

Salt is the best source of both sodium and chloride, each of which is necessary to optimize the production of all farm animal species.

Salt requirements of horses are greatly affected by level of activity and degree of heat stress. For example, horses that sweat profusely can lose as much as 82.5 grams of sodium per day. Horses with low salt intakes become fatigued and exhausted more easily when performing strenuous exercise. Milk production will also be reduced in mares experiencing a salt deficiency. Common signs of a salt deficiency include licking or chewing of mangers, fences, dirt, rocks, and other objects.

Grazing horses are typically fed salt by using salt blocks. If the horses are housed in a stall and fed a complete feed, usually .5 to 1 percent salt is added. If the diet contains only a small amount of concentrate, salt is usually included at 1 percent of the dry matter.

HEALTH AND MEDICAL CARE OF BACKCOUNTRY STOCK

Detlev Lange, D.V.M.

Preventative Care

Condition of Stock:

- Body weight – better overweight than underweight
- Physically in good condition. Exercised and prepared before the trip into the backcountry.
- Regular wormings – Tetanous Toxoid
 - ▶ Sleeping Sickness (Spring)
 - ▶ Rhinopneumoitis
 - ▶ Influenza (Spring & Fall)
- Shoeing – No less than 10 days before trip. Leave lame or crippled stock at home.

Condition of Equipment:

- Saddle pads, cinches, and saddles should be clean, well oiled and in good condition.

Temperament:

- Don't take problem horses or mules – shyers, kickers or chronically ill.
- Teach them to tie and hobble.

Have a First Aid Kit Along and Know your Vital Signs:

- **CRT** – Capillary Refill Time: thumb pressure on gum under upper lip/release/ and count seconds until color returns. This test is a measure of heart and circulatory function. 1-2 seconds is normal. Longer times 2-5 seconds indicates an impaired circulatory function such as shock, dehydration or endotoxemia.
- **Color of Gums:** Pink is normal. Pale or white color may indicate an impaired circulatory function. Gray may indicate dehydration or toxemia.
- **Pulse Rate:** Pulse – feel submandibular artery at middle of lower jawbone. Normal resting rate is 40-45 beats per minute. Rate normally increases with exercise (80-100) and returns to normal after rest.
Sustained high heart rate (80-100) may indicate stress, pain, toxemia or shock.
- **Heart Rate:** Listen with stethoscope on chest behind elbow. Normal resting rate is 40-45 beats per minute.



- **Respiration Rate:** Trachea (the wind pipe is best). The barrel is best for lung sounds. Normal rate is 12-18 per minute. Rate normally increases after exercise, stress or flight and return to normal with rest. Sustained high respiratory rates may indicate pneumonia or abnormal lung function.
- **Gut Sounds:** Approximately 1-2 per minute. Check right and left sides. High pitched tinkling = gut distention with fluid and gas. Low pitched rumbling = movement of large volumes ingesta and gas. No sound may indicate loss of gut function as in severe colic.
- **Rectal temperature:** Normal is 100-101 Fahrenheit. Elevated temperatures (102-105 F) may indicate heat stress, bacterial or viral infections.
- **Skin Fold Test:** Pinch or tent skin over area of shoulder. A delayed return (several seconds) to normal position may indicate dehydration.

Types of Injuries and Problems

Colic

Usually transient – can be very serious

Listen for gut sounds

No sound: static intestinal gut

High pitched: gas with gut distention

Low pitched: rumbling, motile gut

RX: Distract from rolling

Analgesics – Bute, Banamine

Exhaustion and Tying Up

Rest, oral electrolytes

Prevent by conditioning exercise, good body condition and general adjustment to altitude.

Lacerations

Depends where located

Keep clean, scrub and shave edges.

Bandage

Antibiotics

Irrigate with saline

Wet/dry dressings

**Hoof Injuries**

- Open for drainage
- Pack with iodine and cotton (7% iodine)
- Antibiotics (Pen G.)
- Warm Epsom salt soaks
- Tetanus protection essential

Eye Injuries

- Irrigate with saline

Rope Burns

- Treat the same as chemical or thermal burns
- Scrub
- Medicated wraps: moist saline with triple antibiotic ointment
- Antibiotics
- Potential to become severely infected

Puncture Wounds

- Drainage is very important
- Antibiotics
- Tetanus protection essential



VETERINARY MEDICINE FOR BACK COUNTRY HORSEMEN

CHOKES

The horse with an esophageal choke (blockage of the esophagus) will have feed and saliva draining from both nostrils. Often the horse will be shaking its head and be in obvious distress. All feed and water should be removed until the blockage is relieved. If the horse continues to attempt to eat or drink there is an increased chance of inhalation of saliva, water and food particles. Inhalation of this material can lead to severe pneumonia. In most cases an obstruction caused by feed will be relieved within a few hours without special therapy. Massaging the throat area may help reduce the blockage in some cases. Persistent blockage will require veterinary assistance.

A common cause of choke is the rapid eating of very dry and hard feed. Hay or feed left in trailer for long periods of time can become very dry. The hungry horse returning from a pack trip is at risk of a choke. The normal horse may secrete several gallons of saliva each day. Dehydration and stress will reduce the amount of saliva available. Saliva serves to lubricate and moisten feed as it is chewed. A reduction in the amount of saliva, rapid eating and unusually dry or hard feed set the stage for esophageal blockage.

COLIC

There are few horse problems anymore frightening than to have a horse start acting colicky in the back country. The fear may be that of losing the horse for fear of walking out.

Colic is a broad term, which includes many conditions, which cause abdominal pain in horses. There are many symptoms of colic. Some horses will begin to sweat, look at their flanks, curl their upper lip, and walk aimlessly. As pain become more severe, they lay down, often getting up and laying down frequently, circling, pawing and rolling. They may stretch out and attempt to urinate (this may lead one into thinking that the horse cannot urinate however this is seldom the case).

Spasmodic colic may be the result of intestinal spasm (contractions), which can be caused by nervousness, hunger, and rapid drinking of large amounts of cold water. Fortunately, most of these colics last less than an hour. Dipyrone is appropriate for this type of colic.



Gas colic can occur when there are feed changes or when fermentable rations (i.e. grain) cause a large production of gas. Light exercise such as walking the horse may help the movement of gas through the bowel and relieve the distress.

Obstruction within the intestine can interfere with the passage of gas and food material. The severity of the colic will be related to the location and type of obstruction. Enteroliths (intestinal stones), sand, non-digestible material (nylon cord), and feed can all be causes of obstructive colic.

First aid will consist of walking and dipyrone, large amounts of mineral oil (i.e.. one gallon) by stomach tube may assist in the passage of the obstruction.

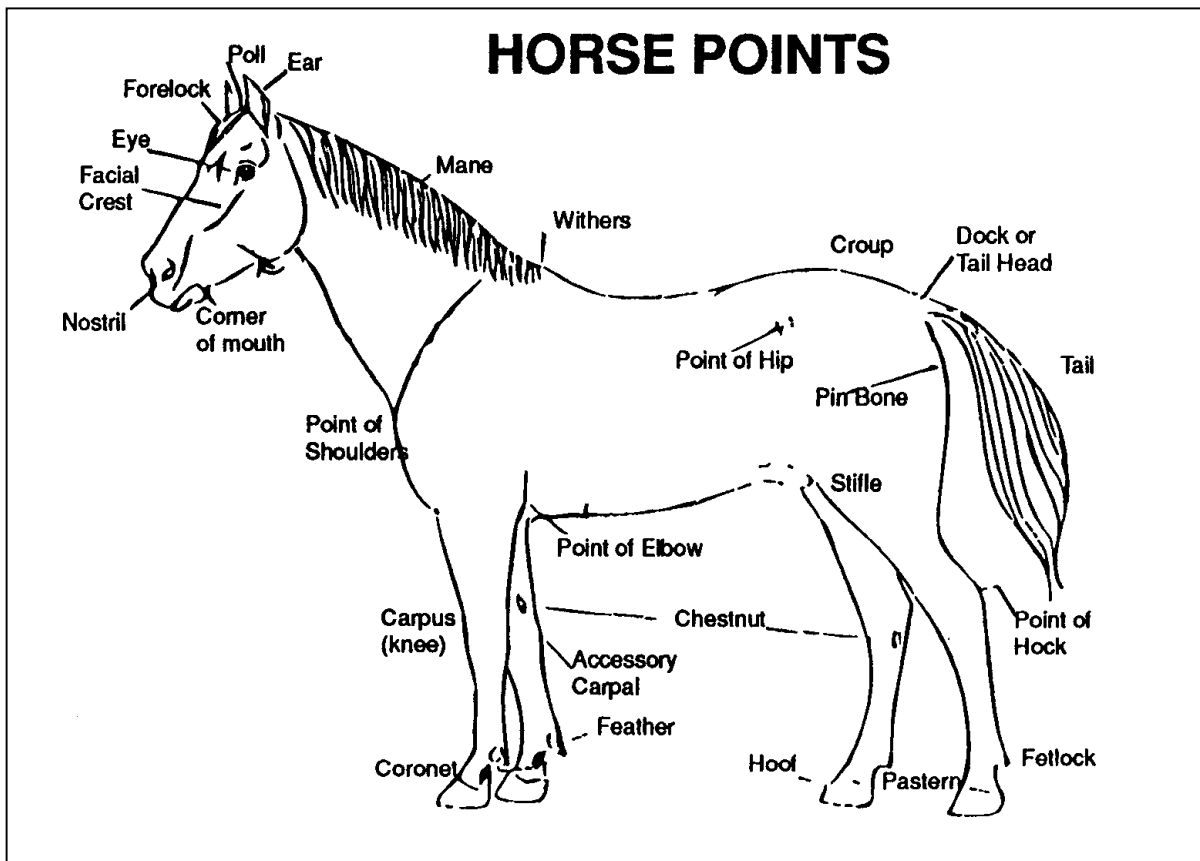
Colic due to intestinal displacements such as twist or torsion are usually severe and fatal. Medical care consists of pain relief until veterinary care can be obtained for diagnosis. Early surgical correction of the displacement may often be the only hope for recovery.

We seldom know the cause of a horse's colic at the beginning. The initial therapy for most colics can be light walking and dipyrone. Most colics will be due to spasm, gas or obstruction within the bowel. These have a reasonable chance of recovery within 2-3 hours. Prolonged and increased pain with failure to respond to walking and dipyrone indicates the possibility of a more severe problem. The decision to seek help should be made early if the horse is to have the best opportunity for recovery. Those of us in veterinary practice recognize a therapeutic trailer ride as a colic remedy. Often time the horse has recovered by the time it reaches the veterinary hospital. Such a trip should not be considered a waste of time since had the horse not recovered it would certainly be in dire need of veterinary diagnosis and care.

There are as many home remedies for colic as there are horsemen. The use of Bell's drops, onions per rectum, turpentine on the navel, soapy enemas, garlic pastes, chewing tobacco, and drenching with kerosene have all been used to "successfully" treat colic. An old adage of medicine is "do the patient no harm". As long as these remedies are not harmful, they may be accepted. However, if there is a delay in diagnosis and proper treatment due to their use they may be of questionable benefit.

Conditions, which may seem similar to colic are: Muscle spasms, muscular exhaustion, tying up, excess saddle or girth pressure.

Your veterinarian can instruct you on how to evaluate the vital signs of your horse i.e. pulse rate, respiratory rate, and capillary refill time. Your veterinarian can also recommend appropriate medication for colic therapy. Some of the drugs are "prescription" label and require instruction as to their dosage and use.



LASHES / GASHES

BLEEDING WOUNDS

The normal horse may have about 7% of its body weight in blood, i.e. a thousand pound horse about 9 gallons. Thus, loss of a few pints is not life threatening. However, most of us feel compelled to reduce blood loss from a hemorrhaging wound. Hemorrhage below the knee or hock is best controlled with a pressure bandage applied directly over the wound. Clean absorbent material i.e. gauze pads, should be placed over the wound followed by cotton padding then secured with gauze or vetwrap. This should not be so tight as to cut off blood flow i.e. not a tourniquet. The bandage should be left in place several hours even if it becomes blood soaked. The blood soaked bandage can be replaced later with a clean dry wrap. Wounds around the pastern may bleed severely and often require that the entire hoof be included in the wrap to be effective.

Large gaping wounds i.e. wire cuts on the forearm, chest or other muscular areas usually have minimal blood loss due to muscle constriction at the site. "Blood stopper" powder and purple sprays are of little or no benefit in the control of



significant hemorrhage. It is preferable to use an antibacterial or sulfa powder to protect the wound. Wounds which may be sutured should be kept moist and free of contaminants; i.e. no purple spray or blood stopper powder. Furacin ointment or soluble wound dressings are a good choice. A sterile saline solution (1 teaspoon of salt per quart of boiled water) or a "weak tea" color prepodyne solution can be used to irrigate wounds.

Deep penetrating wounds should be explored for foreign material i. e. wood. Sometimes a prepodyne soaked gauze pack placed into the wound will aid drainage and reduce swelling.

Bleeding wounds in the sole of the hoof can become serious problems. A penetrating wound in the sole should be pared out to allow drainage. The wound should be packed with prepodyne soaked cotton and bandaged. These injuries sometime require surgical treatment and extensive antibacterial therapy.

Lacerations of the lips, tongue and scalp heal quickly and are often candidates for cosmetic suture repair. Eyelid lacerations should be sutured to preserve the ability to collect tears and protect the eye.

Injuries to the eye itself may be difficult to evaluate. The horse often closes the eyelid and there is considerable tear formation.. The cornea often becomes cloudy as a result of the inflammation. The frequent use of an ophthalmic ointment (no cortisone) will reduce the irritation of a corneal abrasion.

Rope bums around the pastern or those that encircle a limb require special attention. Left unattended an encircling rope bum can restrict circulation and lead to serious complications below the wound. The area should be kept moist i.e. furacin ointment under a padded bandage. The use of phenylbutazone to reduce inflammation is of great benefit.

Hoof wall fracture i.e. shoes torn off, bleeding quarter cracks, wounds through the coronary band etc. are special problem the require a combination of veterinary and farrier skills. Any flap or fragment may need to be pared or rasped off. Bleeding wounds should be packed with prepodyne soaked gauze and bandaged. An Easy Boot may be necessary to protect the foot and allow the horse to travel.

LUMPS / BUMPS

Lumps and bumps on saddle and pack stock can alter their use or performance in the backcountry. Most lumps and bumps are due to accumulation of fluid in tissues as the result of inflammation. The usual signs of inflammation are swelling, soreness, redness and pain. Anyone or all of these signs can be present as the result of inflammation.



Blunt trauma such as in kick wounds, falls, or collisions with immovable objects may result in inflammation of the soft issues and muscles. Soft tissue swelling, called edema, will develop within a short time after injury. Simple edema is usually reabsorbed as inflammation subsides. Application of cold - i.e. packs or cold water will reduce inflammation and shorten recovery time. More severe injuries may result in bleeding beneath the skin or in the muscle. The blood accumulation and swelling that results are know as a hematoma. In most cases the blood clot in the hematoma contracts and a straw colored pool forms within a few days. This fluid filled lump is called a seroma. The serum will tend to migrate downward to the lowest point. In the case of a chest injury, the swelling may gravitate down to between the front legs or along the chest floor in the girth area.

A soft swelling, which seems full of fluid, may require drainage to allow healing. Caution should be exercised in the drainage of such swellings - tapping into the area may introduce bacteria, which brings the risk of abscess formation. It is best to avoid opening hematomas or seomas while in the backcountry. The possibility of secondary infection and continued bleeding could result in a real medical emergency.

Special care must be taken in the saddling of stock with edema or swelling. Pressure from cinches or saddles on edematous tissue can cause severe ulceration and tissue slough. Swollen withers and backs are especially sensitive to pressure and deserve special consideration in padding, rigging and load. Phenylbutazone is a good anti-inflammatory drug and can be used safely in most cases. Topical cortisone ointments are useful on small areas.

Swelling below the knee or hock can be treated with cold water i.e. standing in creek or river and padded support wraps. Bandages on lower limbs should be well padded i.e. cotton sheets under felt wraps. Elastic or stretch bandages if improperly applied can cause strangulation and pressure sores. Wraps should be redone on a daily basis along with water therapy and massage with glycerin-based medication.

Allergic reaction may cause welts and raised patches over a large part of the body. The eyelids may swell, the face become puffy and the legs stock up. These allergies can be the result of material eaten by the stock or in some cases insect bites. Treatment with cortisone drugs is usually effective. Dexamethasone (Azium) is a cortisone

drug often used by veterinarians. If your horse has a history of insect bite sensitivity, you may need to have a cortisone drug in your emergency kit. One of our High Sierra packers attempted to treat his mules eyes with Preparation H. Even though Preparation H is sold to reduce swelling of certain inflamed tissues, it temporarily blinded the mule. Mosquitoes, ants and other biting insects can cause multiple bumps on sensitive horses. Location of your picket line away from



area of insect exposure is the best prevention. Some insect repellents are helpful; however, most are short-lived and costly for an entire string of stock. Phenylbutazone or Azium may shorten the recovery time for severely affected animals and relieve their distress.

MUSCLE DISORDERS THE CLINICAL PICTURE

1) You finally finish tying the last pack while your friend has been circling on his four year old filly. This is their first mountain trip and the nervous filly dug a big hole at the hitching rack while the packs were being tied. The string has just left the trailhead when your friend calls out that his filly is sweating and is walking funny behind.

2) It has been an uneventful trip into the wilderness taking most of the day. The horses and mules were turned loose in the meadow while you enjoyed the first camp meal. At dusk you stroll out into the meadow and find your saddle horse standing away from the other stock that are quietly grazing. As you approach, you notice he seems distressed, has flared nostrils, and is quivering. When you try to move him, he will not walk.

3) The last day of the trip you leave the canyon floor at midday and work your way up to the trailhead. It is warm and the creeks you crossed last year are dry. By late afternoon you notice the third packhorse is lagging behind so you change his position and take him on lead. At the trailhead you unsaddle the stock and offer them a drink in the packing corral. The horse you led won't drink, is breathing fast, and seems depressed.

4) The first stop on the trip is about two hours out. The trail is mostly downhill and the going is easy. The horses get restless after having drank at the spring and you tell your friends to get aboard to continue. As you leave the spring one rider falls behind. You stop to see if there is a problem and he says his horse is acting strange and doesn't want to walk.

MUSCLE DISORDERS - WHAT AND WHY

There are several conditions, which involve muscle function in horses. These conditions include: tying up, azoturia, Monday morning sickness and exhaustion. Muscle inflammation (myositis) or as it is technically termed "rhabdomyolysis" occurs as a result of a number of predisposing factors.

DIET / EXERCISE - The typical case is one of horses that have irregular exercise while being maintained on high energy rations. Symptoms most often occur when work is resumed after a period of rest. Significant changes in the duration or amount of work performed may result in myositis particularly in horses not conditioned for such work.



DISPOSITION / HORMONE FACTORS - Nervous or "high strung" horses are more commonly affected. There also seems to be a higher incidence of myositis in fillies or mares as compared to geldings.

GENETIC FACTORS - Heavily muscled horses and horses with a high percentage of "fast twitch" muscle fibers have a greater myositis risk factor than others.

PREVIOUS HISTORY - Horses that have been affected with myositis are often prone to reoccurrence of the disorder.

OTHER FACTORS - Such as environmental temperature, humidity, load, and stress all influence the horses ability to maintain hydration and normal muscle function.

PREVENTION

Regular exercise patterns and appropriate conditioning prior to work are important. Reduction in high-energy rations during period of non-activity will reduce the risk of myositis. In some regions, Vitamin E and trace element Selenium supplementation has been useful in reducing the incidence of muscle disorders.

Electrolytes (trace elements in body fluids) particularly sodium and potassium are involved in normal muscle function. The mineral content of the ration may require consideration of electrolyte supplementation.

Hydration (adequate body water) is essential for normal blood circulation to muscles and is crucial factor in muscle metabolism.

Some nervous horses will benefit from a low dose of tranquilizer prior to activity.

CLINICAL SIGNS

Horses suffering from muscle dysfunction offer a wide array of symptoms. A change in disposition i.e. expression of anxiety, excess sweating, or failure to sweat, stiffness, reluctance to walk out may progress to muscle quivering or muscle cramping, pain, increased heart and respiratory rate and elevated body temperature (103'105'F). Severely affected horses may knuckle or go down and unable to rise. During the period of muscle damage, products from muscle damage break down may appear in the urine giving it a dark brown color. There may be secondary kidney damage from the flood of degenerating muscle products into the blood stream.



Myositis can be confused with colic, pain from improperly fit tack (i.e. pressure or chafing injuries), and lameness from other causes. Evaluation of the horse's attitude, and vital signs, (pulse, respiratory rate, capillary refill time, temperature and palpation of muscles) is of benefit in determining the severity of the condition.

TREATMENT

Astute judgement is necessary to determine if continued exercise is advisable. Simple muscle spasms or cramps may respond to walking if little or no muscle damage has occurred. However, continued exercise of the horse with myositis can lead to even more severe muscle damage. If there is any doubt as to what the condition is - stop any further exercise. Horses with mild cases of myositis that are well hydrated may benefit from low doses of tranquilizer to reduce anxiety. Nonsteroidal anti-inflammatory drugs such as phenylbutazone, dipyrone or banamine give good symptomatic relief. Horses that are dehydrated need ample water to restore body fluids. Concentrated oral electrolytes and tranquilizer are not indicated in dehydrated horses. Elevated body temperatures can be reduced with water sprays or showers. Standing in running water is of benefit. Very cold water should be avoided over the heavy muscled areas as it may increase cramping.

In severe cases, prompt medical attention is necessary. Large volumes of special electrolyte solution may be given intravenously or by stomach tube. Relief of pain and distress may require frequent treatments with muscle relaxants and analgesics.

Horses that recover from an episode of myositis should be allowed to rest and rehydrate for at least 24 hours prior to traveling. Even then, careful judgement is necessary to determine the level of activity or stress the horse can endure.

NUTRITION FOR THE BACK COUNTRY HORSE

WATER

Water is the most simple element in equine nutrition, yet remains the most important. Adequate hydration is necessary for circulation and transport of nutrients as well as being an essential part of the metabolism of energy, protein and minerals. The horse uses this store of water and electrolytes during work. Without adequate body fluids, the function of the many body systems is disturbed: The horse has a digestive system very different from ruminants (i.e. cattle). The horse has a small stomach (2-4 gallons) capacity with a large hind gut which is important in water transport. Recent scientific studies indicate that particle size of ingesta, in the gut of the horse may play an important role in



water-holding capacity. This factor may be significant in the ability of the horse to tolerate periods of reduced water intake. The irregular access to water in the backcountry makes it important that our consideration of foodstuffs maximize natural water retention. Forages provide maximum particle size as compared to cereal grains. Thus, rations with maximum roughage are important in combating dehydration on backcountry trips. Horses should be allowed time to drink whenever possible to maintain adequate water reserve in the gut.

ELECTROLYTES-MINERALS

Electrolytes - elements such as sodium, chloride, potassium, calcium, phosphorus and others are present in all body fluids. These elements are essential in muscle and nerve function. Reduced levels of electrolytes are associated with disorders such as myositis (tying up) and thumps. Salt is the natural source of sodium and chloride and should be provided for stock on extended backcountry trips. Large salt and fluid loss occurs from sweating (4 gallons/hr.) during heavy work. These losses may not be replenished in adequate amounts by some rations. Alfalfa is high in calcium and potassium; while cereal grains are high in phosphorus. A total cereal grain diet in the back country may lack adequate electrolytes for maximum muscle function and energy metabolism. The use of supplemental electrolytes is of benefit, but the correct balance of these elements is most important. A simple electrolyte solution is one containing 1 level tablespoon of table salt (NaCl) and 1 level tablespoon lite salt (KCl) in 1 gallon of water. Concentrated electrolyte solutions or pastes are actually contraindicated in dehydration. Adequate water must first be available before electrolyte supplements are considered.

PROTEIN

Protein requirements can increase during prolonged work. The adult horse requires about 8- 10% protein in its ration. Alfalfa hay is a good source of protein (14-16%) depending on maturity and method of harvest and storage. Good grass or oat hay may have 6-8% protein. Corn is low in protein (i.e. 6-8%), while good quality oats or barley may have 10-12%. Extended trips in areas of limited forage will require consideration of protein levels in feed.

ENERGY

Energy is provided by both roughage and cereal grains; however, in different forms. This energy is utilized differently, according to the foodstuff. Roughage provides energy in the form of cellulose, which requires microbial digestion in the hind gut for utilization. Cereal grain provides energy in the form of starch, which is digested more rapidly in the gut and is available soon after ingestion. Peak levels of blood glucose occur within 2-3 hours of cereal grain feeding; whereas, energy levels from roughage peak more slowly, but are more prolonged. Thus,

the type and duration of work will determine the type of feed and when best fed for optimum benefit.

Energy levels (as measured in calories) in feeds can be another consideration when available forage or regulations require packing feed. Good quality alfalfa hay has about 1,000 Cal./lb; grass hay 800 Cal./lb; oats 1200 Cal./lb and corn 1600 Cal./lb.

Estimate of energy requirement in the horse:

- Maintenance 1600 Cal./100 lbs body wt.
- Weight Gain (adult) 7500 Cal./per lb.
- Light work - (slow trot, walk, no sweating) 1600 Cal./hr.
- Moderate work - (canter, climbing, slight sweating) 3200 Cal./hr.
- Heavy work - galloping, climbing, heavy sweating) 9600 Cal./hr.

The 1,000 lb. packhorse might have an estimated daily caloric requirement on an 8-hour trip of 16,000 Cal. for maintenance and 27,000 Cal. for heavy work. It is common that our saddle and pack stock lose some body weight on extended trips unless rest days and extra nutrition is provided.

ROUGHAGE

The horse has a minimum roughage requirement for normal digestion. This has been estimated at 1 % of body weight (i.e. 10 lbs. for the 1,000 lb. horse). The roughage requirement takes into consideration particle size. Finely ground roughages such as those found in some pelleted rations may be lacking adequate particle size for optimum digestive function and water retention. If natural forage is available, it may require 6-8 hours for grazing for the horse to gather this roughage requirement. Some regulatory agencies require only processed feeds in the backcountry for noxious weed control. When we pack processed rations, we should consider the horse's roughage requirement.

IN GENERAL

Horses can vary in their nutritional requirements. We all recognize the "easy keeper" and the "hard keeper." Age, physical condition and body frame are other factors which may influence nutrition requirements.

A simple formula of 1-2-3 may also be used to estimate feed requirements. 1 % of body weight for roughage requirement; 2% of body weight for roughage requirement, maintenance and light work and 3% of body weight for roughage requirement, maintenance and heavy work.

Most horses will eat about 2% of their body weight daily. When heavy work requires a large number of calories, the horse may not be able to eat enough



roughage to satisfy his total caloric requirement. A combination of high-energy cereal grains and roughage is necessary to satisfy the nutrient demand.

Good nutrition for backcountry saddle and pack stock combines common sense, experience and the art and science of feeds and feeding.

FATAL INJURIES

Fatal injuries and terminal illness of horses may occur in the backcountry as well as at home. Careful evaluation of vital signs and observation of the individual will help determine an appropriate course of action

VITAL SIGNS

Capillary Refill Time - After firm thumb pressure on the gum above the incisor teeth - normal white print become pin about a second.

Heart Rate - Normal resting pulse of 40 to 45 per minute. Respiratory Rate - 8 - 16 per minute at rest

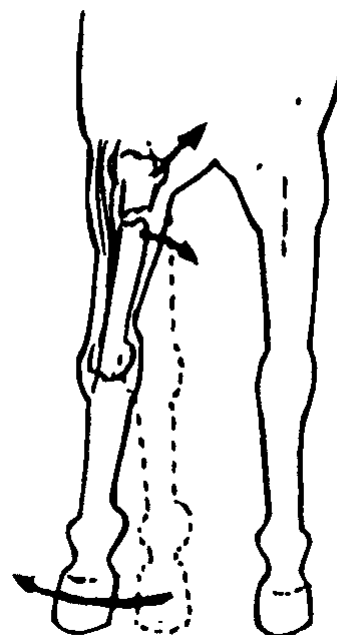
Hydration Level - Skin pinch remains elevated for 6 - 10 seconds in severe hydration.

HEAD INJURIES

Bleeding from the nostrils is seldom a mortal injury in the horse - fractures of the sinuses interfere with breathing; bleeding from the ears may indicate skull bone fracture. Brain or spinal cord injury may cause nystagmus (jerking movement of the eyes), head tilt, disorientation, unsteady gait, inability to negotiate turns or complete paralysis

FRACTURES

Most long bone fractures are apparent from limb angulation or examination of involved areas. Fractures of bone in heavily muscled area i.e. the femur are difficult to differentiate from severe muscle injuries. The horse that has a non-weight bearing lameness can have a fracture of the coffin or pastern



bone. Similarly, the horse with an infected puncture wound or abscess will also be non-weight bearing. Careful examination is required to differentiate these conditions. Fractures of the long bone can be stabilized with splints, which may allow the horse to be moved.

The splint should immobilize the joints above and below the fracture.

MUSCLE DISORDERS

Severe cases of azoturia or extreme exhaustion may result in a horse going down and being unable to rise.

HEMORRHAGE

Severe laceration involving arteries and veins along the neck and in the groin may result in fatal hemorrhage.

COLIC

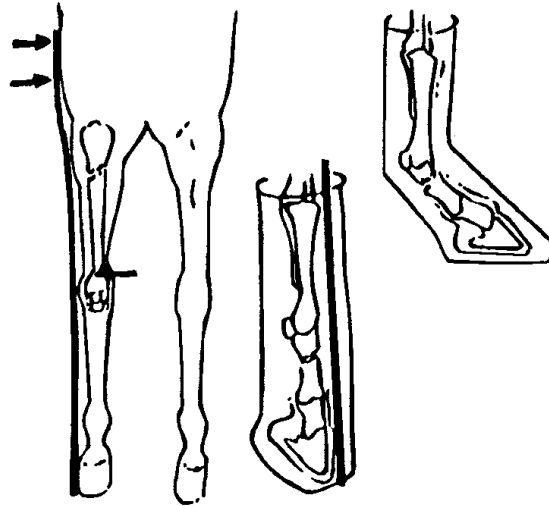
Horses with terminal colic usually have a history of prolonged severe abdominal pain, prolonged capillary refill time (4-5 seconds or longer) with heart rate over 100 - often the color of the gums becomes ashen gray or purple.

RESPIRATORY CONDITIONS

Critical chest involvement is indicated by fast respiratory rate, flared nostrils, labored breathing and obvious distress.

EUTHANASIA

The horse with fatal injuries or terminal illness may require euthanasia for humane reasons. The humane destruction of the horse is best performed by a lethal injection by a veterinarian. In the back country, there may not be such an option and humane destruction by gun shot is necessary. The appropriate site for shooting a horse is at the intersection of lines drawn from the eyes to the base of the ears. When possible, the horse should be euthanized as far away as possible from water, trails, or campsites and preferably out of sight for aesthetic reason. The carcass may have to be dismantled to relocate in an appropriate area. Agency officials should be notified of the disposition of the carcass.





SHOEING

Don't start a trip with loose shoes or stock that is about due to be shod.

A good rule of thumb is to shoe 7-10 days before embarking on a trip.

Learn how to nail on horseshoes if possible.

Take minimum shoeing equipment and extra set of shoes

Can keep the set that was last taken off and use in an emergency

Easy boots can be lifesavers in an emergency situation

I am sure every one of us at one time or another has thought what will happen when and if my mule or horse throws a shoe in the back country. We all must go prepared to replace one or more shoes. When this happens, first try to find the shoe that has just come off. This shoe will be much easier to replace. If unable to find the shoe that has come off, the next step is to unpack your "shoeing kit". This is the kit you never leave home without! At this point we must clean the hoof and the shoe removing all old nails. Straighten shoe if need be. This may be done on a rock or ax. Nail shoe back on and be on your way to camp. As a rule, I only use three nails on each side of the shoe, the reason for this is that if your animal pulls a shoe off and a piece of the hoof is ripped away you will always have a good nail hole of which to replace the shoe and be on your way.

Your kit should have the following in it:

- ▶ HAMMER- any small hammer is good. Fence pliers make a good hammer and can also be used around camp.
- ▶ RASP- Ask your horseshoer if you can have one of his old worn out ones. This will work fine for a rasp and also for a clinch block. For safety reasons, cut the tange off the rasp.
- ▶ PLIERS- Plain old slip joint or wire pliers may come in handy.
- ▶ NAILS – Always take an assortment of city head sizes. Know which direction the nails go into the shoe so you will not injure the hoof.
- ▶ OLD SHOES- Ask your horseshoer the next time he shoes for you. Keep the old shoes and always take a front and hind shoe off of each one of your critters.

A SHOEING TIP

By Bill DeCarteret

Remember to shoe your stock about a week before leaving on your pack trip. This way if their feet happen to be a little tender they will have chance to heal up before you go.

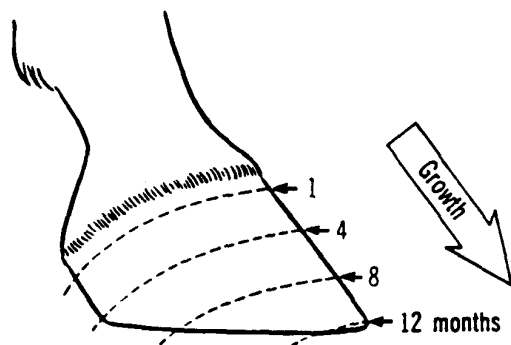


When having your stock shod, ask you shoer to please not remove any sole from the foot as this will provide a little more protection from rocks and rough terrain.

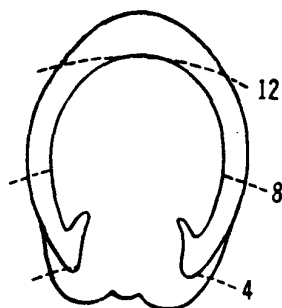
Trimming the Foot

A horse should be shod or trimmed every six to eight weeks, depending on his hoof growth. A healthy horse will always have a faster hoof growth than an unhealthy horse. A younger horse will also have fast hoof growth because the younger the horse, the more exercise he will have, and his body as well as his hoofs will grow faster.

I have trimmed colts as young as nine days old. If a colt is not born straight, this can ' be very helpful. After the first trimming, every eight weeks should be sufficient. The reason many horses are not straight is because people do not realize how important it is to start trimming a young horse and to keep him trimmed regularly. To do this will prevent many problems later on in the horse's life.



Hoof growth

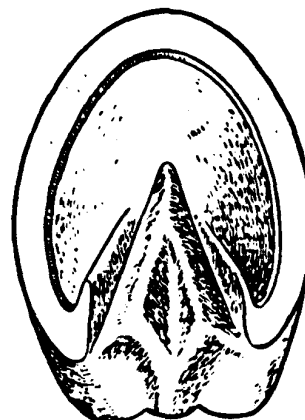


Notice how the wall is thicker at the toe.

Ground surface



Front hoof



Hind hoof

After you have looked at the horse from the front and side and have fixed your mind on his angle, you have probably made your decision as to what should be done. But make one final examination before picking up the foot or trimming it. Walk in front of the horse approximately ten feet away and look at the top of the hoof at the hairline. The hairline should be level. This is the easiest way I have found to determine where to start trimming. If the hairline is high from the center of the toe to the outside of the heel, this side should be lowered first.

After you've pulled off the shoe and have cleaned the foot, it should be carefully prepared by being trimmed down to its proper size and all extra growth of the wall and sole removed. To do this requires judgment, for there are scarcely two feet alike. Some grow faster than others; some are high heeled, and some are low; some have thick soles and are very concave while others have thin soles and are flat. One good measure to use when trimming the sole with your hoof knife is to take your thumb and press lightly on the sole. If you feel the sole give from the pressure, do not trim any more. You are getting the sole too thin and this will cause lameness and a vulnerability to puncture wounds.

I never like to cut away any part of the live frog - only the dead rough edges. Remember one thing: a horse will shed his frog twice a year, usually in the spring and fall. When you see the frog becoming loose, you should not get excited. Two or three days later it will shed off. As the horse sheds his frog, what was a sensitive frog will turn into the horny frog. The only way a horse will be sore in the frog will be from a nail puncture, cut, or bruise, unless he has a bad case of thrush, which we will discuss later.

Take caution when trimming a baby colt for the first time. Try not to make any mistakes. Have a good handler at the head and line the colt up along a wall or fence so that he is unable to move away from you. Remember that a horse is never spoiled until you have made your first mistake. Notice how I hold the hoof in one hand and trim with the other. This allows me to trim without getting his leg in a bind.

Before actually trimming be sure that both feet are at the proper angle. You will see in the picture that one heel is slightly higher than the other. Then, after trimming, again check to be sure that both feet are even.

Now take the hoof nippers and start trimming at the center of the toe, removing as much dead horn as possible. Be careful not to trim too much. Set the foot down, look at the angle, and then walk in front of the horse to see whether the hairline is level. If so, then pick up the hoof, and holding the leg by the ankle with the foot relaxed, sight down the hoof to see where you should rasp. Finish leveling the foot, then take the hoof knife and trim away the excess sole. Remember this: the sole should never be lower than the horny wall, and the sole



of the hoof should never touch the shoe. If the shoe is nailed on when the sole is lower than the horny wall, sole pressure will result. (You may have been taught that sole pressure will occur if the shoe is too tight, but it really can't be too tight if the foot is trimmed properly.) If you follow this practice, you should never have a problem with sole pressure.

Next, measure the hoof that you have trimmed at the center of the toe from the hairline to the bottom of the toe and then go to the opposite foot, measure it to the same length, and place a mark. (I prefer using a tape measure or divider; I get more accurate readings.) This method assures you of having both front feet trimmed the same length. The reason for starting to trim at the center of the toe is that it is easier to start at the mark and move back towards the heel. When trimming a horse that is unlevel, it is a good idea to trim the high side first. Set the foot down, check to be sure you have trimmed enough to make him level, and then trim the opposite side of the hoof. If you trim the low side first and then go to the high side, you might take off so much on the low side that you will be unable to level him. After trimming, if you are not sure that you have the same angle on both front feet, you may take a ruler and measure each heel. This will tell you if one heel is lower or higher than the other.

When trimming the foot to the proper length and angle, be sure that the wall is the same thickness on each side of the hoof. Many farriers have trouble because they leave a flare (the wall thicker on one side than the other). If the flare is rasped off until both sides are equal. When you set the foot down, you will be able to see the improvement to the foot - it will be more uniform in size and will line up with the leg better. When rasping off the flare be careful not to rasp off too much hoof.

Notice the hoof after the flare has been removed. The walls are now the same thickness on each side. Many foot problems can be eliminated if you take the time to do this. At first, it will require that you spend more time on each job. but the reward will be extra customers.

Notice first the right hoof-after it has been trimmed. The hairline is even, Then, study the left foot -its hairline is u me we no When trimming, if the hairline is level, you know that the foot is level.

When leveling the horse and sighting down the hoof, always hold the horse by the ankle and let the hoof hang normally. This will allow you to see which side is low or high. If you hold the hoof, instead of the ankle, you may twist it or pull it out of line, and then you will be unable to see to level him properly. When sighting down the hoof, if you are not sure that you have the foot trimmed level, measure each heel. This will help you to determine whether the hoof is level or not.



After trimming the hoof, look at the thickness of the wall on each side of the hoof. If the wall is thicker on one side than the other, they should, as nearly as possible, be made the same thickness. The extra thickness is called a flare, and if you rasp it off before starting to nail on the shoe, many problems will be eliminated in nailing on the shoe. Once you have adjusted this situation, it should never occur again. If you will follow this advice, you will straighten many horses without realizing it.

The Importance of the Frog

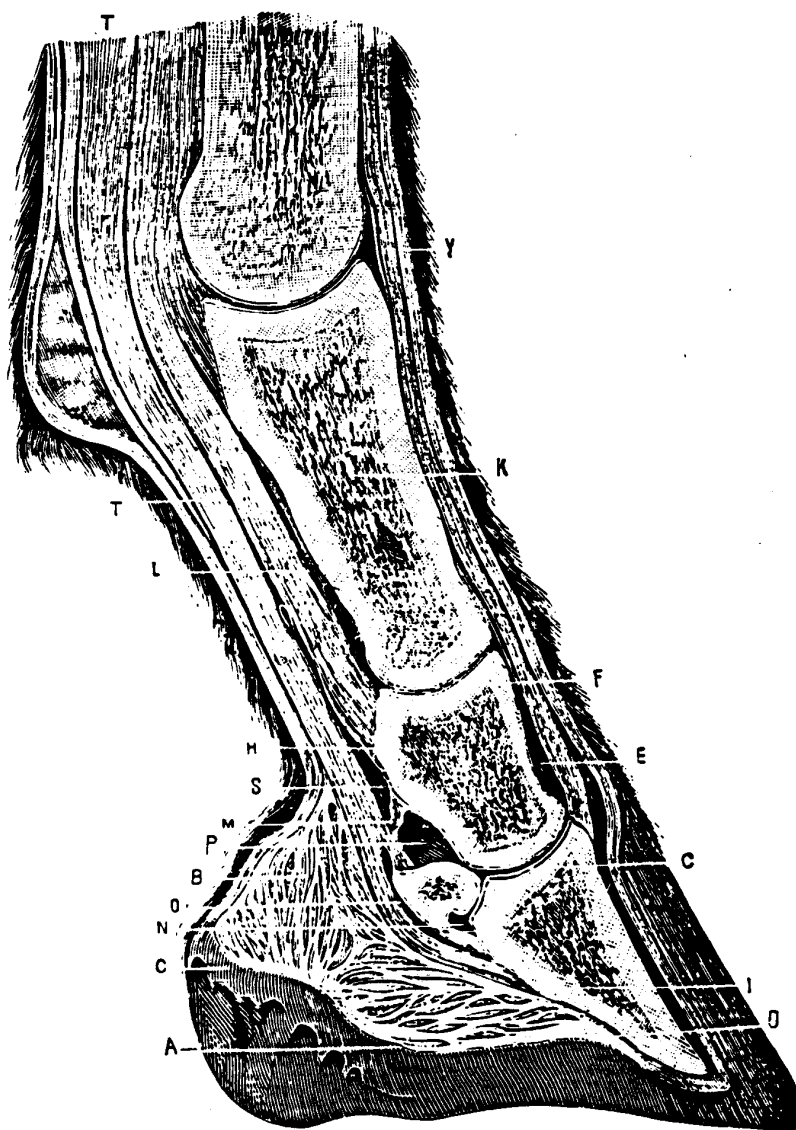
The first subject I cover in one of my lectures is the importance of the horse's foot and particularly his frog. There are two frogs in the horse's foot: the horny frog and the sensitive frog. The plantar cushion is considered by many to be the sensitive frog. The horny frog has no feeling. According to the old saying, "No foot, no horse." An even more accurate saying is "No frog, no foot." The frog is vital to a horse's health; it is what pumps the blood in and out of the foot - his second heart. It is also his shock absorber and cleaning mechanism. The frog functions in this way: as the foot makes contact with the ground, it first serves as a cushion to soften the impact, then it spreads the bars of the foot apart, which opens the valves and allows the blood to flow into the foot. Finally, the frog cleans the foot. As the horse lifts his foot, the dirt and filth is forced out.

There is one characteristic about the frog that I would like to emphasize. The horse will shed his frog twice a year, usually in the spring and fall. He will begin to shed his frog at the point of the frog and continue backward. When some people see the frog loosening, they become concerned and think he has a serious disease. Shedding the frog is a normal life pattern and should not be considered unusual or alarming. The horse is just shedding one frog so that the sensitive frog can replace it and become the horny frog.

When a horse has problems with his frog, he is susceptible to various diseases, such as contracted heels, side bones, thrush, navicular disease, etc.



The Anatomy of the Horse's Hoof and Leg



The horse's hoof is one of the greatest engineering feats of the Creator. It is designed to absorb tremendous shock. When you consider the size and weight of the horse and examine the hoof, you are impressed with the ingenious design and functions of this amazing structure. However, the design of the horse's hoof depends on its proper maintenance. A horse is only as good as the man who cares for him. It is tragic that so many horses are in poor health or lost completely because of negligence on the part of owners. This is one area that the Master Farrier should emphasize to his customers a horse's hoofs must be taken care of on a regular basis.

Cannon Bone

The cannon bone is located just below the knee, and it with the long pastern bone forms the fetlock joint. In the front legs, the cannon bone is oval shaped and flat. at the upper end. In the back legs, this bone is longer. The flat upper end of the bone forms a large working surface for the knee bones and the lower end attaches ligaments. Though exposed to unusually heavy stress and strain in its partial support of the weight of the leg, this bone is very strong and not easily injured. It has been said that no man-made structure could withstand the force that is placed on the cannon bone at speed. This bone also functions as a lever and plays a direct part in determining the speed of a horse. A long pastern and a relatively short cannon bone is the best arrangement for a speed horse, and there is less chance of concussion to the upper legs. If the front of the cannon bone becomes irritated or the skin torn, shin splints can result. Poor conditioning and overexertion are common causes of this irritation.

Long Pastern Bone

The long pastern bone is about one-third as long as the cannon bone and similar in shape. It is located between the fetlock and pastern joints, and connects with the cannon bone to form the fetlock joint. The upper end of this bone has three grooves that attach to the lower end of the cannon bone. At the bottom of the bone, there is one depression, which forms the joint to the short pastern bone. The long pastern bone is smooth, except for the sides of the upper portion and an area on the underside. These rougher areas allow for better attachment of ligaments. The function of the long pastern is to increase flexibility of the fetlock joint, which also reduces concussion. Ideally, the cannon bone-long pastern bone joint allows for no lateral movement, and the slightest variation can greatly affect the stride. The flexibility, length, and angle (or slope) directly influence the smoothness of a horse's gait. Horses with long pastern and short cannon bones develop into good speed horses because this bone arrangement increases leverage. Those with long and sloping pastern bones are undesirable because the structure is weak and the hazard of developing bowed tendons is greater.

Short Pastern Bone

The short pastern or coronary bone is cube shaped and is about half as long as the long pastern bone. It is connected to the long pastern bone at the pastern joint, and helps to form a column of bones from the fetlock joint into the hoof. The upper end of the short pastern bone is concave with two depressions on the top to cradle the long pastern bone, and has attachments for tendons. The bottom of the bone is convex with one depression. The function of this bone is to allow the foot to rest evenly on the ground by permitting it to move from side to side and to twist back and forth. A severe blow to this area can result in Exostosis or false ringbone.

Coffin Bone

The coffin bone is located in the hoof, and together with the short pastern bone, forms the coffin joint. The front feet have round, flattened, and wide coffin bones; in the hind feet, this bone is pointed, rather steep, and narrow. It is perforated with tiny holes and light in weight, which allows the animal to exert less power in movement of the legs. The coffin bone is very porous and fragile and easily fractured. It contains nerves and blood vessels, which form the foot's sensitive structures and cushion the area between the bone and hoof.

It is also a point of attachment for the main tendons, which provide leg motion.

Sesamoid Bones

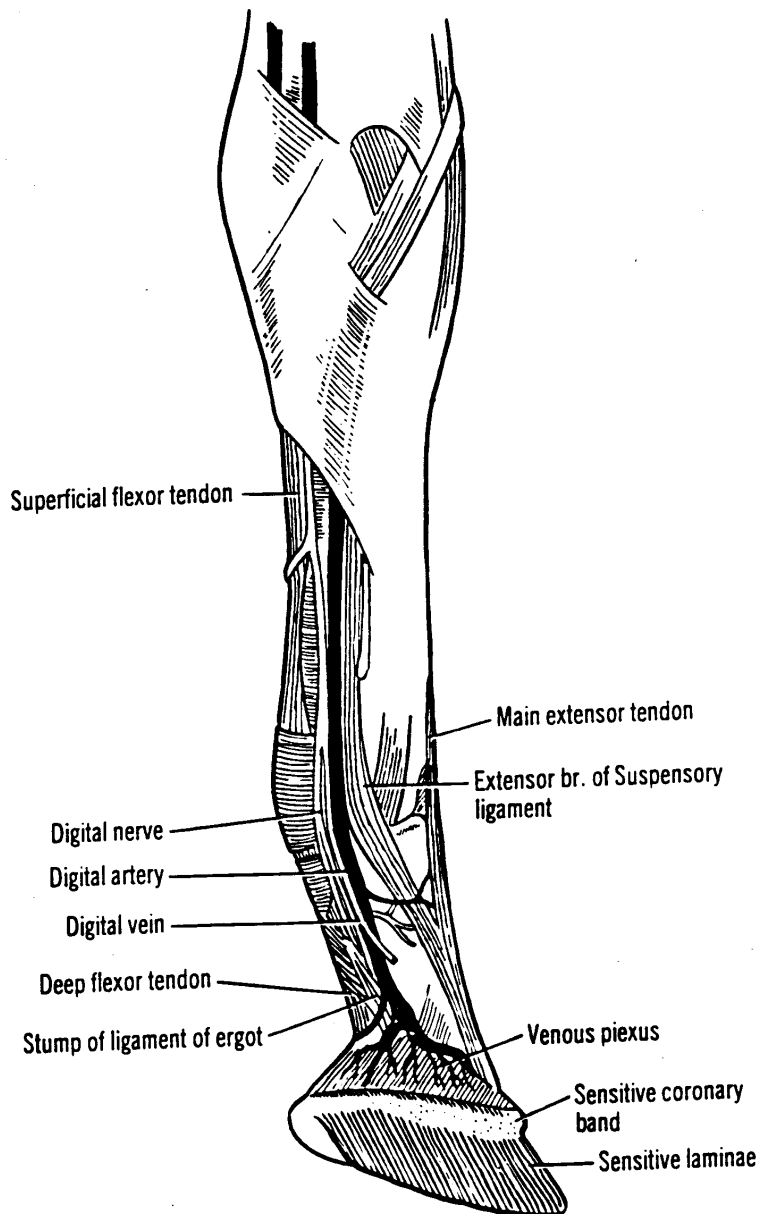
The two sesamoid bones, located next to the cannon bone at the back of the fetlock joint, have three main functions: to serve as a bearing surface for the flexor tendon, to strengthen the cannon bone in the joint, and to give leverage to the tendons and ligaments, which add support to the upper leg. These bones, which are shaped like small pyramids, are attached by ligaments to the long pastern bone. Occasionally, these connecting ligaments may be torn, resulting in a "popped" sesamoid, or may develop sesamoiditis (inflammation of the bone).

Navicular Bone

The thin navicular bone (or shuttle), attached to the coffin bone by ligaments, is part of the coffin joint and shaped similar to a boat. It is positioned between and underneath the short pastern bone and the coffin bone and is located where it can easily be injured, bruised, or irritated. The deep flexor tendon passes directly underneath and the navicular bone serves as a leverage point for the tendon, so that it can easily slide over the bone.

Splint Bones

The (two) splint bones are shaped like icicles and located on the backside of the cannon bone, with one on each side. These bones are tapered at the bottom and larger at the top to form a cradle where the knee rests. The splint bones reach to the lower section of the cannon bone. The cannon bone and splint bones aren't immediately joined together when a colt is first born, but usually fuse together later. The splint bones protect ligaments, tendons, blood vessels, and nerves that extend down the back of the leg and aid in support of the leg.





Phalange

The phalange consists of the pastern bones and joints. The three most common names for these bones are the first phalanx (long pastern bone), the second phalanx (the short pastern bone), and the third phalanx (the coffin bone). These three bones determine the angle of the horse and must be kept straight, in line with the shoulder. The angle of the rear legs is usually slightly higher than that of the front legs. The horse carries more weight on the front feet and legs, thus putting more wear on the pastern joints, the horny walls, and heels of the front limbs.

Fetlock joint

At the fetlock joint, these four bones meet: the cannon bone, long pastern bone and two sesamoid bones. The cannon bone fits into the socket formed by the pastern and sesamoid bones. This formation restricts movement, other than backward and forward motion in line with the tendons. If the fetlock joint is not well lubricated and properly positioned, it will not operate correctly.

Bone Cover

The articular cartilage is the gristle covering the surface of the bones at the joints. It helps absorb concussion and provides a smooth working surface. Periosteum (bone skin) covers the bone except at the joints. It nourishes the blood vessels and serves as a lubricant.

Ligaments

Ligaments are located in all joints. They join the bones together and hold the tendons close to the bones in the proper sockets.

Capsular Ligaments

Capsular ligaments are found in all joints. The outer layer is tough and fibrous, and the inner layer is a delicate tissue which secretes fluid that lubricates the joints.

Funicular Ligaments

These strong cord-like fibrous materials bind and hold the bone in place. Before these ligaments tear, the bone will usually fracture. They vary in size, depending upon their location.

Annular Ligaments



Annular ligaments are composed of the same material as the funicular ligaments and bind the tendons where they pass over the joints, as in the knees and hocks. They are particularly useful as they hold the fetlock joints and other joints in the hoof. Thus, the horse can sleep in a standing position.

Suspensory Ligament

The suspensory ligament is attached to the cannon bone between the two splint bones. It lies next to the cannon bone and about halfway down divides into two branches, which hold the sesamoids in place. The ligament then continues downward to the bottom of the hoof and joins the coffin bone.

Tendons

Tendons connect muscle to bone and to the horse's limbs. There are two types of tendons: the flexor and the extensor. One moves the limb back into place (flexor). The other extends it forward.

Deep Flexor Tendon

The deep flexor tendon passes down the rear of the cannon bone behind the splint bones and sesamoids. It continues under the navicular bone, where it becomes wider and thinner and finally connects to the coffin bone. This is the tendon that is affected by navicular disease.

Superficial Flexor Tendon

The superficial flexor tendon passes behind the rear of the cannon bone, through the suspensory ligament, and becomes wider as it reaches the fetlock area. Just below the fetlock, this tendon divides and allows the deep flexor tendon to pass through. It attaches to the rear of the head of the coronary or short pastern bone.

Digital Extensor Tendon

The digital extensor tendon passes over the outer side of the knee or hock and attaches to front of the coffin bone.

Lateral Extensor Tendon

The extensor tendon straightens the leg in mid-air and pulls the limb forward while in stride or motion. The tendon slides up and down the leg and is connected with nerves, arteries, and blood vessels. This tendon does not exist in the hind legs.



Elastic Structures

The elastic structures, are the tissues of the hoof (lateral cartilages and plantar cushion) found only in the horse. The lateral cartilages and plantar cushion serve as a cushion and they expand the hoof upon contact with the ground. If a lateral cartilage is damaged, side bones start forming.

Lateral Cartilage

The lateral cartilage is at the rear of the hoof between the quarter and the bulbs of the heel. It is very flexible and elastic. The outer surface of this cartilage connects to the coronary band and the sensitive laminae.

Plantar Cushion

The plantar cushion lies inside the lateral cartilages and is enclosed by the coffin bone, navicular bone, and the deep flexor tendon. It also forms the bulbs at the heel. The plantar cushion helps to absorb shock and relieves pressure and irritation of the navicular bone and tendons. The cushion is shaped like a frog with a crease through the middle.

Sensitive Foot Structures

These structures are responsible for the growth of the hoof. This growth process begins in the perioplic ring and the coronary band because they create and hold a moisture in the hoof that is essential for growth.

Coronary Band

The coronary band has one of the most important functions in a horse's hoof. It is the part of the hoof where the skin and the hide join with the hoof wall. The skin and hide run downward and backward, covering the coronary bone and the lower portion of the lateral cartilage. The surface of the coronary band is covered with papilla, which grows the horny tissue of the wall. The coronary band ends with the heel or bulb of the hoof, but the papilla form two rows between the sensitive laminae and the sensitive frog. These rows form the bars of the hoof that keep the foot from splitting open. The bars are made like a door hinge-, as the foot makes contact with the ground. the bars are pushed open, allowing blood to enter the foot. When the foot is lifted from the ground, the plantar cushion and the sensitive frog help close the bars and force the blood out of the hoof.

Perioplic Ring

The perioplic ring surrounds the coronary band. As the hoof grows, it grows downward. Its function is to hold moisture in and dryness out. When a hoof is rasped excessively on the outside. this valuable moisture is lost.



Sensitive Laminae

The sensitive laminae is a covering for the coffin bone and is located between the coffin bone and the horny wall. It connects the horny wall and the inner structure of the hoof - When a horse is quicked, this is the part of the hoof that is penetrated and/or damaged.

Sensitive Sole

The sensitive sole is a thin layer of tissue on the lower surface of the coffin bone just above the horny sole. It is covered with papilla, which forms the horny sole.

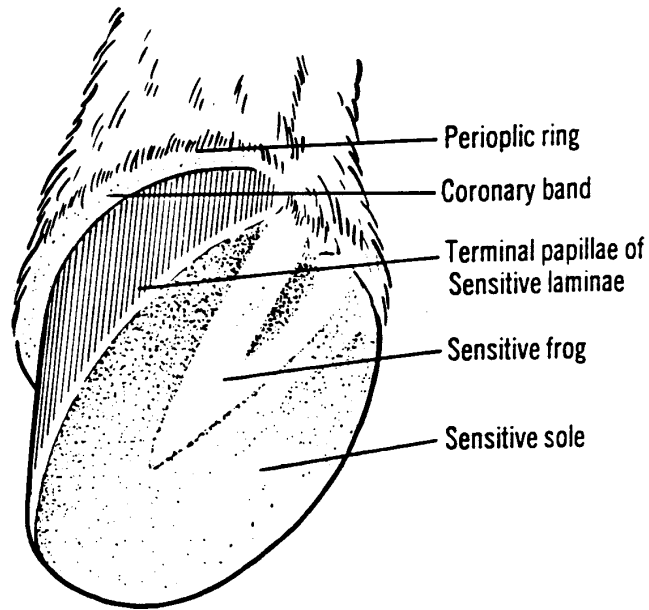
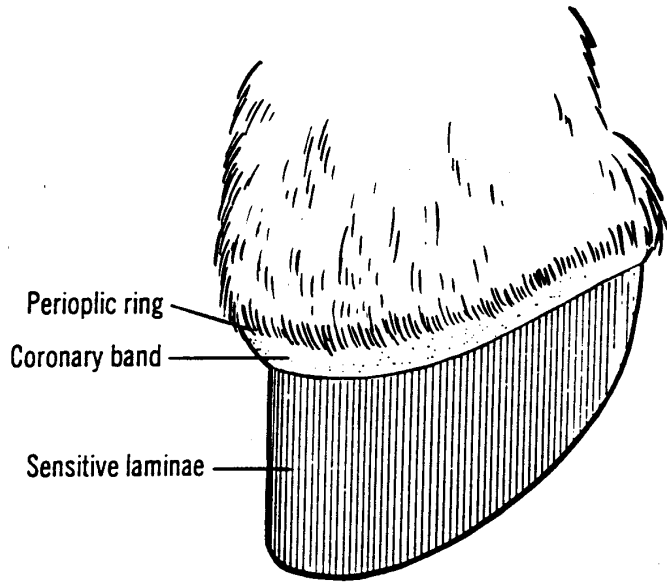
Sensitive Frog

The sensitive frog is located above the horny frog. It is filled with nerves and blood vessels that nourish the inner and outer structure of the lower limb. It has been called the pump that pumps the blood in and out of the leg. The sensitive frog will begin to withdraw when a horse has contracted heels, thus causing the heels to contract further.

Horny Structure

The horny structures are those structures from the white line out: the periople, horny wall, horny sole, horny frog and white line. These structures have no feeling, are very tough, and will carry the weight of the horse. A hot shoe can be placed against the horny wall without pain to the horse, but should not be done to excess as it dries out the hoof. The horny sole and horny wall are less flexible than other structures. They are made up of many tiny tubes that are bonded together by an adhesive element. The frog, white line and periople contain moisture and are flexible.

Sensitive structures



Horny Wall

The horny wall is of prime importance to the farrier since it is this wall that the farrier works with when he nails on a shoe. At the heel, the horny wall is thinner and has a tendency to collapse. It grows downward from the coronary band and is nourished from the coronary band and from ground surface moisture. The walls grow to different lengths, sometimes as much as twelve to fourteen inches. The horny wall is very strong, yet flexible.

Horny Sole

The horny sole is similar to the horny wall (except that it is concave) in that it has no feeling and the thickness varies with every horse. The horny sole protects the laminae and only the necessary amount should be trimmed. Further trimming will expose the live sole and will cause peeling. The sole should not be trimmed beyond this point.

White Line

The white line connects the sole and the wall. It may not always be white in color, it is sometimes gray or cream colored, depending upon the color of the hoof. The white line is soft horn but is surrounded on the outside by hard horn. Its thickness will vary, usually one eighth inch or less.

Horny Frog

The function of the horny frog is one of the most crucial in the hoof of a horse. It is often referred to as a horse's second heart. The frog is a rubbery-like cushion, found in the back of the hoof. It serves as a shock absorber for the sensitive frog or plantar cushion, which protects the navicular bone and coffin bone. The horny frog also allows blood and moisture into the hoof. This frog is shed twice a year, in the spring and fall.

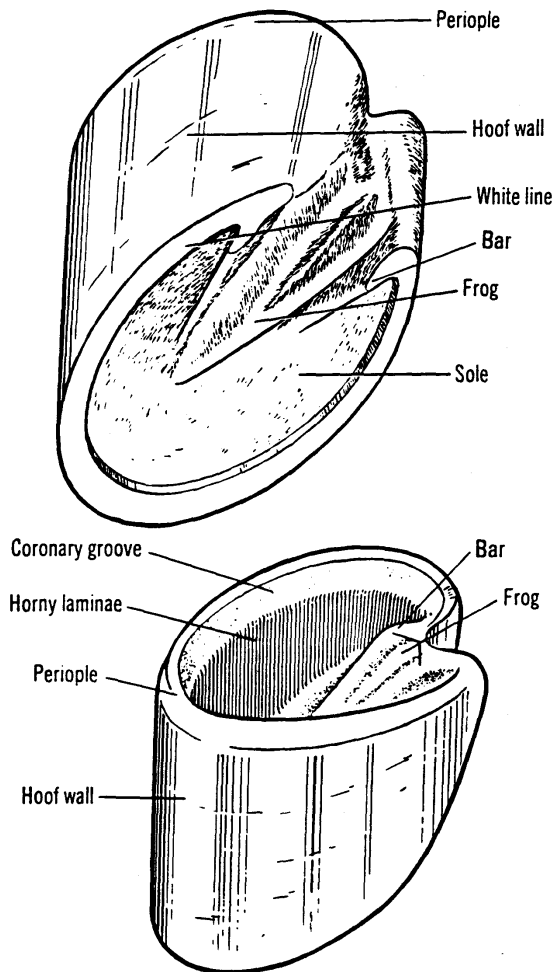


The Horny Frog

Periople

Periople is the soft horn secreted by the perioplic ring that covers the coronary band. The periople hardens after exposure and creates a hard protective covering for the hoof wall.

Hoof structures



Bars of the Hoof

The bars of the hoof are similar to a hinge on a door and are very important. They encase the frog on each side, extending from the quarter of the frog to the heel. One of their functions is to aid the frog in expansion and contraction of the foot.

When preparing the foot for a shoe, the dead bar should be trimmed out. You may be concerned about cutting away too much bar, but if you were to take the foot apart and examine it, you would see that the bar is about an inch deep in the sensitive structures of the foot. So you don't have to worry about paring away too much dead bar unless you become careless.

I don't like to trim away an excess of bar - just enough so that the foot will shed dirt normally. If the bar is left even with the outside wall, the hoof will not clean or function properly and becomes dry and hard.

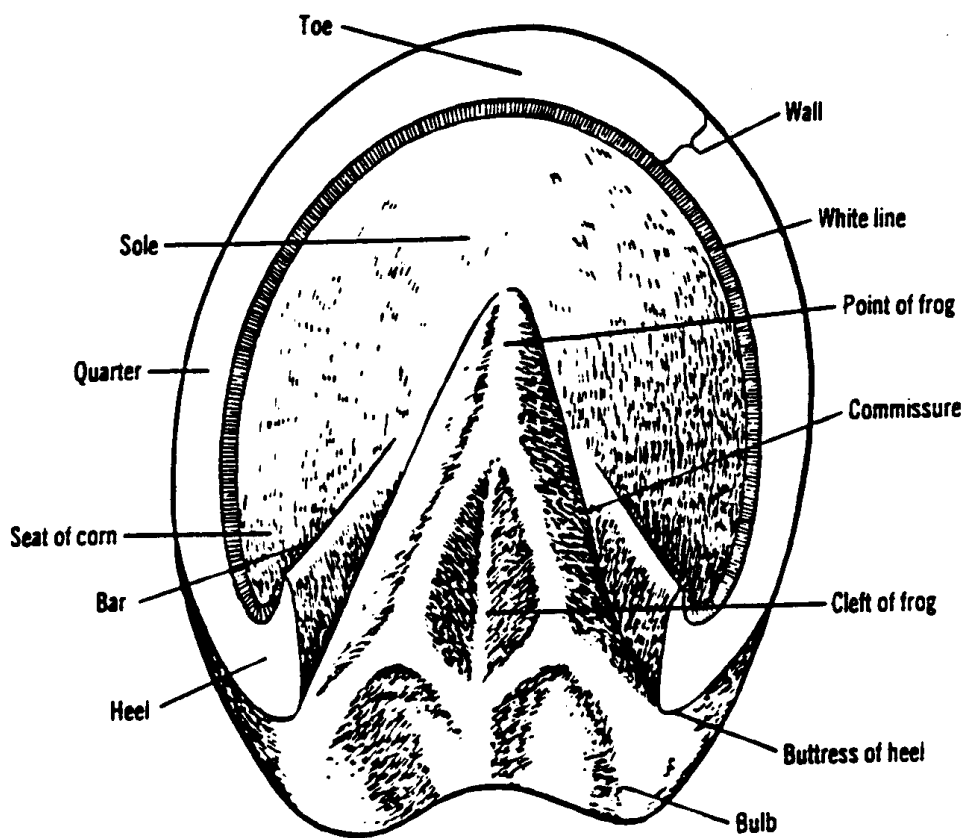
You have probably been taught that the bar should never be trimmed away on a flat-footed horse. But a big, round hoof doesn't usually have dead bar because the sole tends to rest flat on the ground.

Use common sense in trimming away dead bar. If it is higher than the sole, trim the dead bar so that it is flush with the sole. When this is done, the foot can clean out properly.

Without the bars on each side of the foot serving as braces, the foot would burst wide open.



Bars of the Hoof
Notice the depth of
the bars.





WORKING SAFELY WITH HORSES AND MULES

Possibly the greatest need of the inexperienced man or woman who must use a horse or mule is a few simple instructions in the safe use and care of them. Safe use and care should not only include the man, but the animal as well. Horses and mules are expensive, they are subject to injury, and furthermore, a horse or mule is a dangerous creature if he gets into the kind of a jam that requires struggling for survival. When a horse is disorderly, is being subjected to pain or injury, or is going through an experience that causes him to have fear, his reactions may not be predictable. At such times, even an experienced horseman cannot always anticipate the animal's reaction or his next move. Therefore, safe practices call for, proper care of the horse or mule.

In making suggestions for safe practices in use of animals, consideration is given to instincts and habits of the horse and mule and to the vulnerable phases of their use. Remember, there is a reason for each of the following suggestions! Time and space would not permit a full explanation for each, but if each is practiced faithfully, some expensive and painful experiences can be prevented. Remember also, these suggestions are given to prevent accidents and injuries. We have many very good horsemen using stock, and it is natural that some of their everyday practices would not be in 100 percent agreement with these safety instructions. It should be mentioned that some of the more serious injuries from the use of stock have been received by the very experienced horsemen in the Forest Service. This may be due to two factors: (1) they often use horses more days per year than do less experienced personnel; and (2) they usually do more dangerous work with horses than does the novice, such as leading stock, shoeing stock, fast riding, gentling, or breaking broncs and colts. Commonly, the novice uses gentle stock, and the experienced man or woman has more spirited animals. One thing is sure; if there are accidents, there is room for better practices in the use of animals.

We hope we will not be criticized by the experienced man or woman for suggestions, which are not just as they would do them. Hopefully, the novice will try to learn safe practices from them. If some painful and expensive accidents can be prevented, our goal will be accomplished.

ALWAYS USE SAFE PRACTICES

This section of this handbook is a revised and updated version of a handout pamphlet prepared for the United States Forest Service in 1952. The pamphlet titled "Working Safely With Horses and Mules" was written by S. Cooper Smith.

A. Working Around Stock

1. Always speak to an animal when approaching from any direction.
2. Stand opposite the left shoulder when working with an animal.
3. When it is necessary to put a hand on a horse or mule, approach from the left side and place hand on the neck just in front of the shoulder.
4. If an animal is loose and will only allow you to approach it from directly in front, place your hand upon it as far from the tip of its nose as possible. If you cannot reach its jaw or neck, pat very lightly between the eyes. The proper place to touch it is on the neck, just in front of the shoulder on the left side.
5. If an animal is tied solidly, always stay away from a position directly in front of him. A tied horse or mule can only go two directions, backward or forward. If it is tied solidly enough that it cannot go backward and it has any fear, of you or anything else, it is going to go forward right over the top of you.
6. If you are on one side of an animal and desire to be on the other side, do not pass under his head or neck. Speak to him, place your hand high on his hip and pass directly behind him to the other side. Maintain hand contact all the time. Remember always, if the animal became unruly while you were crawling under the tied lead rope, you would be in a very dangerous position. As stated before, a safe practice is to stay away from a position directly in front of a horse that is tied solidly.

B. Tying Stock

1. Anyone who uses stock must know how to correctly tie an animal. Many accidents, injuries, and inconveniences occur every year because of improper tying. **THERE IS NO EXCUSE FOR IMPROPER TYING!**
2. When you tie a horse, tie him to a solid anchor about 4 feet from the ground. If he is tied to such things as a rotten post or rotten limb, your tent frame, or a piece of machinery, there is a great danger to you and the animal should stress on the lead rope cause the anchor to move and frighten him. Anything that can be moved is a dangerous anchor for a horse or mule. **ALWAYS TIE WITH A QUICK RELEASE KNOT!** Tie with no more than 3 feet of halter rope between the haltered horse and the anchor and about 4 feet up from the ground.

3. Select a place to tie the horse or mule, so he cannot walk around it in a complete circle. Should an animal walk around a tree or post until his rope becomes short; there is a danger of him pulling back and either breaking loose or being injured. Also, should you try to give assistance while he is floundering, there is a definite possibility that you may get injured.
4. When a horse is tied, there should be about 6 inches of slack in the halter rope if the horse's nose were touching the ground. Too much slack invites a danger of him stepping over the rope. If he does step over the rope, there is a danger of him breaking the rope, his anchor, or injuring himself. There is also a danger of you getting hurt trying to release him when he is floundering with his foot over the rope.
5. As mentioned previously, always tie an animal with a knot that can be untied easily if he becomes unruly. A good quick release tie-up knot is illustrated later. (Refer to the section on "Knot Tying" for all knot illustrations.)
6. When tying or leading an animal, it is always a dangerous practice to tie a rope around an animal's neck. If a rope must be tied around the neck, a bowline knot should be used as it can be untied under strain, and it will not allow the rope to draw tight and choke the animal. .
7. It is never a good practice to tie with bridle reins. Reins are not designed to withstand the stress of a 1,000-plus-pound animal. You will only tear up equipment and maybe end up walking home to boot. There is no replacement for a good strong halter and halter rope when tying stock. Tying with reins can also result in the bit causing serious injury to your horse's mouth or head.

C. Horse Sense, Horse Characteristics, and Horse Safety In General

After a rider has caught the horse, gotten a halter on him and safely tied him up, there are some things which should be known about that horse in particular and horses in general.

Among these are:

1. Personalities and Intelligence

Horses and mules have personalities just like people. They may be shy, bold, nervous, lazy, etc. A rider must learn the personality of his horse and handle him accordingly.

Horses and mules are not machines; they are capable of thinking. However, they are not too bright and cannot reason.

Will eat themselves to death (founder on grain if you let them).

Can learn to trust you, if you earn it. Will also distrust a poor handler. Lack confidence in frightened riders.

Can learn to fear you.

Can learn to understand and recognize word commands and tone of voice.

Can sense your fear or tension (you transmit it with hands and legs), and they respond to your moods.

Cannot concentrate long or think of two things at once; lose train of thought easily. It's up to the user to keep them on the right track. Can be taught through reward and punishment.

Are not always alert to hazards (holes, wire, etc.).

Have a two-sided brain; must be trained to both sides of body.

2. Natural Fears

Afraid of fast movements, especially around their head.

Afraid of unfamiliar objects (sheet of black plastic, some stumps, etc.)

Afraid of things that move toward them (stranger with out-stretched hand, backpacker with backpack, etc.).

Afraid of surprises of any kind.

Afraid of unfamiliar smells and sounds.

Afraid of strange horses.

Afraid of sneaky movements.

Afraid of things that follow them (like a trailing rope).

Will react to protect themselves if scared (striking, bolting, bucking, etc.).



3. Physical Traits

Need rest.

Must have shoes.

Love grain (oats, corn, barley).

Legs, back, and head are fragile (if injured, can be fatal). Extremely strong--humans cannot compete.

Get out of condition just like us.

Can strike with front feet and kick with back feet.

4. Miscellaneous

They tend to resist direct, steady pressure.

Creatures of habit--you can depend on this.

They are not faithful to humans like dogs.

React unnaturally to wind, rain, snow, etc.

Are less manageable in the springtime.

Some are spoiled--these can be dangerous.

Do not like to be patted on the head.

Do not like to be touched lightly, especially on the flank.

Do not like to be looked at directly in the eye.

Some horses just plain do not like some other horses.

Even the most domesticated have a wild streak.

Will act unusual or different if something is wrong (loose shoe, tight cinch, etc.) so look for the problem, if this happens.

Will try you out for patience.

D. Hauling Stock

1. Trucks

In the Forest Service much of our stock hauling is done in trucks specifically purchased and equipped for hauling up to 10 head of horses and/or mules in a single load.

A stock hauling truck needs sides that are solid, at least 40 inches high, with an overall height not less than 64 inches. It should have a hardwood or treated floor of a nonskid design, and an inside width of at least 88 inches to allow animals to be cross-tied. Depending on the size of your stock, each animal needs 24 to 28 inches of room with average-size animals requiring about 26 inches.

Animals should be haltered and led into the truck individually and tied head to tail with cross ropes between each animal. Horses and mules ride much better in a fully loaded truck; they have enough room to be comfortable but not enough room to act up.

Horses and mules that work together; i.e., pack string, should be hauled together. They become accustomed to each other and fighting, kicking, and biting are much less of a problem. If you have a particular animal that bites while being hauled, he can be tied with his head forward or back, and hauled either first or last in the truck. A head and eye guard or a shield on the front of the truck box is necessary to protect stock from flying rocks, insects, etc.

2. Slip-in Racks

Slip-in racks are economical and handy for hauling a single horse, but can be extremely dangerous if used improperly. A good reliable heavy-duty pickup is a must. It should have a heavy-duty rear end and a 3/4-ton suspension with brackets to fasten the slip-in rack to the truck box. Only very gentle stock should be hauled in this type of rack. An animal that is shifting his weight can easily cause the pickup to sway severely.

3. Trailers

Before loading a horse in a trailer, be sure it is safely hooked to the towing rig and is as stable as possible. Examine the trailer floor for weak spots, especially after long periods of nonuse, such as over winter. Check tires and be sure lights and brakes are in good working condition.

A safe practice in loading a horse in a trailer is to drive him in rather than to lead him. There just is no logical inducement for a horse to crowd into a

trailer with you, and you run a chance of getting hurt. If he is difficult to load, locate the trailer in a position that allows use of barriers to act as aids. A simple way to load a contrary horse in a trailer is to back the trailer into the corner of the corral. Have the right side of the trailer so close to the corral fence that the horse cannot walk around the trailer. Have the back of the trailer less than the length of the horse from the back fence. Then the horse should be backed into the corner of the fence and the lead rope threaded through the tie ring of the trailer and pulled from outside the trailer on the left side. If the position of the trailer is proper, the head and neck of the horse will be over the ramp if it is a ramp type of tailgate, or just inside the trailer if it is a swing type tailgate. When the lead rope is pulled, and with some urging, the horse will have to walk in. He cannot run backward because of the fence. A little urging will force him into the trailer. Use the tie ring on the right side of the trailer as a lead ring to prevent him walking around the trailer to the left.

Do not use a barbwire fence for this kind of an arrangement.

If a corral fence is not available, a tree and a log, or a bank may be used as a substitute.

You may want to feed your horse in your trailer beforehand to make him accustomed to the trailer. Again, be sure the trailer is blocked and anchored, so it cannot move as this may frighten or injure him.

A gentle, but stubborn horse can often be loaded by use of a 6- to 8-foot soft rope with the ends tied with a bowline knot around each front pastern. Pull one side at a time, thus walking the horse into the trailer.

Also, you could use the rope around the horse's rear. With the horse's head at the rear entrance of the trailer, pass the halter rope to the front of the trailer and through the tie-down ring or out the side of the trailer. Tie a strong rope to the back corner of the trailer, pass it around the animal's rear and dally around the other back corner of the trailer. Pull slack from rope on the dally end and snug the rope against the animal's rear. Now coax him ahead with a pull on the halter rope and pull slack from rear rope as the animal moves forward. A horse will often sit back hard on the butt rope and then step into the trailer when he realizes he cannot back up. **CAUTION!** Always wear gloves when using a rope in this manner. Also, the person holding the halter rope must be very alert not to pinch fingers between rope and trailer if horse pulls back quickly.

If for any reason it is necessary to walk into a trailer ahead of a horse, a halter and halter rope is recommended to lead with. However, if a horse is exceptionally unruly, you may use the bridle reins to lead him. You should have the halter on under the bridle. Have a hold of the reins about 1 foot from the bridle bit. This gives very good control of the actions of the horse. He is not so



apt to go around the end of the trailer, or to leap in and hurt you. Remember, a horse always leads better if you are not looking at him!! Also, if you are away from him and are standing to the left side as far as you can get, you will have less chance of receiving injury should the horse become excited. Always keep a hold on the reins 1 foot from the bit and let your hand direct the actions of the horse.

If a bridle is used to lead an animal into a trailer, always take the bridle off of the horse after the tailgate is fastened. If you try to haul him with the bit in his mouth, he may injure his jaw or mouth seriously. His floundering in the trailer may cause a traffic accident or damage the trailer.

In fastening the tailgate, the safe position to work is always at the side. There is danger of getting kicked from a position directly in the rear. Also, if it is a ramp or swinging type of tailgate, serious injury might result from standing behind the tailgate should an animal back up before the gate is fastened.

Always fasten the horse into the trailer at the rear before tying his lead rope. Either close the tailgate and fasten it or place some sort of barrier between the partition and the side of the trailer behind the horse to prevent him from backing out. This is to prevent the horse from hanging back on the tie rope, breaking it, and maybe injuring himself or a man, or damaging the trailer.

Always tie an animal in the trailer with a lead rope as soon as the tailgate is closed. Tie him to the outside position of the trailer if there are two animals in one trailer. This will prevent them from biting each other. A horse in the trailer needs enough slack to allow him to stand up to the front of the stall, against the manger. In case of two horses, the slack should be just enough to protect the other animal from being bitten. If the animal is unruly or if for any reason there is danger of him going over the front of the trailer (for example; a trailer without a manger in it), tie another rope in the halter ring, run it along the other side of the animal and tie it to the rear end of the trailer. Have it tight enough to hold him back.

An animal should be tied in a trailer with a knot that will untie easily and rapidly. It is dangerous to take up extra rope by tying a bunch of knots in it. Lay the surplus rope in the manger or even let the horse stand on it in the stall of the trailer.

Untie the animals before you let the tailgate down. This is always a safe practice.

Many horses and mules have become mean to load in trailers and vicious about hauling by the practice of hauling two in a trailer without a partition. To prevent accidents and to teach horses to enjoy riding in a trailer, always use a partition when two are being hauled at once. Many horses have been injured and more than one trailer has been tipped over because there was no partition.



If one animal is being transported in a two-horse trailer, fasten the partition to one side so he can use the entire stall. If only one animal is standing in the trailer and the partition is fastened in the middle position, there is much danger of him falling over the partition and landing upside down on the other side. This is very dangerous to the animal and the driver.

When hauling stock, always drive as if YOU were in the trailer or truck box where the stock are. A gentle, easy ride makes for easier loading of stock, not to mention a safer trip.

E. Preparing to Saddle

A horse or a mule should always be curried and brushed before saddling. The withers, back, and cinch area are the critical locations. Britching and breast strap areas are also important. Brushing may be sufficient; however, a currycomb should be used to remove mud, dried sweat, etc. A spring wire curry is not advised, because it may cut open old injuries or scratch the animal's back causing infection. A rubber curry is better. You may want to use the spring wire curry in the springtime when heavy shedding of winter hair occurs. To brush a horse, begin at the head and face, continually talking to him and looking him over for abnormalities. Brush one side front to back, and then go to the other side and brush front to back. This allows the hair to lay properly. You should let the animal know where you are and what you are doing or going to do, at all times. Stay close to the animal and maintain hand contact. Look for sores, ear mites, worms, etc., and determine the general condition of the animal. During brushing, you can determine an animal's disposition for the day, and you can develop a psychological relationship over time with the animal.

F. Protecting Your Animal's Back

Protect your horse or mule against having a sore back. Always be sure his back is clean. Be sure his blanket is clean and smooth. Keep wrinkles and folds out of the blanket. Always ride straight in the saddle with your weight well balanced. A good horseman never sits lopsided in the saddle, so his weight bears harder on one side than the other. If possible, avoid carrying a lot of weight over the horse's kidneys (lower back). Heavily loaded saddlebags are first-class back chowers.

Do not put a cold, wet blanket on a horse and work him hard before the blanket has dried and warmed. It will gall his back. The hot sun will cake the sweat on a wet blanket. If your horse is hot at lunch time, either loosen the saddle a little, let the air under it and leave it on him, or take it off and lay the blankets wet side down.



Keep sticks and leaves out from under your saddle. If you are riding in brush, clean out from under your saddle often.

Let air under the blanket often if your animal's back is hot. When you stop to rest on a hill, get off, loosen up the cinch and lift the saddle and blanket up to allow air onto the bare back.

G. Cinching

A cinch should be just tight enough to allow you to slip your flat hand under the latigo with ease. If you cannot slip your hand under the latigo, from front to rear, without pressure, the cinch is too tight. In saddling with either a riding saddle or packsaddle, adjust breast collar and breaching after cinching saddle.

Walk your horse a few steps after cinching him up. When you are ready to mount him, examine the cinch and be sure it is the right tightness. Develop the habit of always examining the cinch before mounting. Also, if you get off your horse and intend to stay off for some time, loosen the cinch about two holes or 2 to 3 inches on the loose end of the latigo.

H. Mounting

When you prepare to mount, examine your cinch and stand at the animal's left shoulder facing toward his rear. Hold the reins evenly in the left hand (same amount of slack in both reins). There should be just enough slack in the reins to relieve any tension on the bit. If you do not know your horse, it is well to have about 6 inches of slack in the right rein. When this is done, if a horse jumps while being mounted, a quick pull will automatically pull his head sharply toward the left and may prevent him from bucking. Hold the reins at the top of the horse's neck just in front of the saddle and grasp a lock of mane in the same hand to use as a balance. Holding the stirrup with the right hand, put the toe of your left foot into the stirrup and pull yourself up and into the saddle with the right hand by using the horn of the saddle. If you cannot perform this operation without unbalancing your horse and making him catch his balance by stepping towards you, try this alternate method. From the same position, place the left hand on the horn with a grasp on the reins. Place the toe in the stirrup with the aid of the right hand as before, and then grasp the swell (pommel) on the right side of the saddletree, and with the right hand pull yourself into the saddle.

To dismount, pick a safe place to dismount, stop the horse and do exactly the reverse to mounting, be sure both of your boots are loose in the stirrup, then dismount landing on the ground standing beside the left shoulder of the horse facing the rear.

SOME CAUTIONS: When mounting and dismounting, place horse in position so his left side is up hill or have him on level ground. Be sure to keep your shoe in the stirrup only to the ball of the foot. Be sure you do not have shoes with a sole that will hold the stirrup. Do not ride with hobnail shoes or other soles that will not slip out of the stirrup. Cowboy boots or packer type boots are best. NEVER ride in tennis shoes. This type shoe will easily slip all the way through a stirrup. Vibram-type soles are not good for riding. It is recognized, however, that this type boot is often used for riding because they are the standard Forest Service work boot, and in working conditions, most employees will be wearing this type of boot. If you get in this situation, BE AWARE OF THE HAZARD and USE EXTRA CAUTION. Ride with only your toes in the stirrups.

I. Reining

It is important that you be mindful that the bit in the horse's mouth has a design that gives a prying leverage on the horse's jaw. Proper use of the reins calls for just enough pressure to serve as a signal to the horse. Too much pressure is distressful to the horse and is dangerous to the rider. Excessive pulling on the reins may force the horse to back up and be completely and dangerously out of control or it may cause him to rear over backwards. Many serious injuries have been caused in this manner.

To direct the horse forward, the signal is given by leaning forward in the saddle, making a clicking sound, and then by a touch from the heel of the rider. A light touch is usually sufficient. A harder kick is sometimes needed with less sensitive animals. The amount of persuasion is learned by the trial method. The direction of the animal is indicated by pressure from side to side on his neck by the reins and leaning in the saddle in that direction. If the horse is to turn left, press the reins (lightly at first) on the right side of his neck and lean in the saddle to the left. To stop the horse, say "whoa" and lightly pull on the reins and lean in the saddle to the rear. As soon as he has stopped, release the rein pressure and sit up straight. Be alert at all times and keep your back straight and your feet in the stirrups, just to the ball of the foot. Move your hips with the horse and keep your upper body straight and still.

J. Leading A Pack String

When leading an animal while riding, hold the lead rope in your right hand and your reins in your left hand. Keep the rope free of the saddle and saddle parts (saddle bag, rain coat, etc.) as well as your feet to eliminate danger of becoming entangled with it in case the horses become unruly. Experienced horsemen, at times, use the horn of the saddle to lead by. This is done by wrapping the lead rope one-half turn around the horn and holding the end of it with the right hand.

Remember, NEVER tie the lead rope to the horn of your saddle or make a solid loop in the end of the lead rope and hook it over the saddle horn. If it is

necessary to have the right hand free for a few moments, either shift the lead rope into the left hand, without the wrap around the horn, or make a one-half wrap and tuck the end under the right leg.

The main dangers of leading a horse while riding are (1) getting yourself tied up in the lead rope; (2) getting the lead rope under your saddle horse's tail; (3) getting the lead rope tangled up in the saddle bags or rain gear; (4) getting the saddle horse tangled up; or (5) getting the lead horse tangled.

Keep excess slack out of the rope (about 3 feet is a good average), so your horse cannot step over it, especially with a hind foot. Never allow the lead rope to be below your horse's hock. This will also keep the lead horse from stepping over the lead rope.

Use your arm to maneuver the lead rope to keep it out from under your horse's tail. Watch this particularly on switchbacks on the trail. If your horse gets the rope under his tail, stop him. If he will not raise his tail and release the rope, get off and lift his tail up and let the rope drop. If the rope is drawn through, by pulling, while the tail is clamped down on it, it will burn the horse and he will become unruly. A horse that has been burned is nervous about a recurrence. If flies are bad, it may be impossible to keep your horse from switching his tail over the rope. In this situation, it is best to wipe your stock with a good horse fly repellent. CAUTION! NEVER use human insect repellent on horses. It may cause them to lose their hair. If horse fly repellent is not available, another method is to just tie your horse's tail to the saddle string on the left side. If the situation is really troublesome, this stunt might save you from getting hurt.

Be sure you untie the tail before you loosen the saddle cinch.

If you are leading more than one animal, be sure to use good strong halters. Leading with a bridle is not advised.

The safest way to fasten the lead rope in a pack string is to tie the lead rope to a breakaway pigtail that is fastened to the front rigging ring of the packsaddle on each side. The breakaway should be made of a rope that will break with a pull of about 300 to 400 pounds (3/8-inch nylon or manila pigtail rope with 1/4-manila breakaway is good). This will prevent injury to any more than one horse if one animal should fall or pull back, and yet provide reliable control under normal travel conditions. Leave enough slack in the middle of the rope, where it passes over the top of the saddle, to allow it to be doubled back through the rear D-ring of the saddle tree. Extend it about 1 foot to the rear. An overhand knot tied in the doubled rope makes a loop over the pack animal's hips to tie the lead rope of the next animal into. (Refer to knot illustrations.)

NEVER pigtail a lead rope to light saddle parts such as saddle strings or breaching straps. You will only tear up equipment. It is a good idea to equip even your riding saddles with pigtails.

If you are leading more than one saddle horse and have no pigtail, a good way of tying them together is to tie the lead rope to the front horse's tail. Use the sheet bend knot. To tie this knot, double the tail, slip the rope through the fold, wrap it around the doubled tail and slip the loose end under the tight end where it came up through the fold of the tail. Several wraps of the rope around the tail will serve to use up extra rope and also to take care of the extra tail. This is the same knot used to tie two ropes together.

Leave just enough slack in the lead rope to allow the horse being led to drink at a creek crossing, but not enough that he might step over it.

Always avoid becoming entangled in a rope that is tied to a horse or mule. Keep your feet free of lash ropes while packing by placing them on the rump and neck of the pack animal. If two animals are tied together, keep clear of a position that may result in your becoming entangled between them.

K. Carrying Tools

It is not safe to try to hand-carry things on a horse. It is always dangerous to try to mount an animal with something being carried on your back or in your hand. This disrupts your balance, you may spook the horse, and/or you may fall on the item being carried. If you must try to carry a tool or any other article, first try to tie it onto the saddle in such a way that it cannot possibly become loose, and cannot chafe or hang against you or your horse. Be sure all cutting edges are well sheathed. If you cannot tie your tool on the saddle, mount your horse first, then have someone cautiously hand you the tool. If your horse shows fear of the tool, do not take it on the horse. If you are alone, place the tool on a log, stump, fence, or someplace where you can reach it, then mount, ride to it and take it, providing your horse does not object. Once more, let us caution against mounting with the tool, knapsack, or even a lunch bucket. It is a dangerous practice. Permanent, painful, and costly accidents are on record from this dangerous practice. It is always dangerous to have a knapsack on your back while you are mounting or riding horses. It is safer to tie packsacks, etc., to the saddle horn than to wear them.

L. General Care

To be really safe in the use of stock, one must give proper care to the stock. Besides keeping your animal's back and saddle blankets free from sweat and grit, and cinching properly to avoid injury, you also have the responsibility of seeing that your stock have rest, feed, water, salt, and foot care in the proper amounts and at the proper time. You must also work your stock with feelings



and judgment to prevent abuse, exhaustion, and crippling or other injury. You must always remember that you are afoot, regardless of where you are, whenever your horse becomes incapacitated.

1. Water

Be sure your animals are not thirsty when you start your day's work. Water, if possible, at least every 2 hours of the day. If you water every 2 hours, and if you intend to keep moving immediately after watering, the animal may be allowed to drink all he wishes. If he has not been watered at frequent intervals and if you are stopping for an hour and your animal is thirsty, he should be allowed to drink only a small amount until after he has cooled off. Cool your stock by removing the bridle from your saddle horse, remove packs from pack animals, loosen cinches, and allow them to stand and cool. Do not unsaddle until they are cooled down. As soon as they have ceased to be nerved up from the strenuous work of the day, they should be allowed to drink all the water they want. If they are confined to a corral that has no water in it, they should be watered again later in the evening and also before their morning feed.

2. Feed

Next to the demands made of the horse or mule in the way of energy expended as labor and his water needs, the most important item in his care is feed.

The factors in which you are interested are the proper kinds of feeds, amounts needed, and schedules. The cost of feeding the animal enters into the picture, but more important is the health and efficiency of the animal as a working tool.

A good general feed ration is recommended. (More on that later.)

Some suggestions on feeding might be helpful. If it is possible to allow your animals to eat for an hour at noon, a great deal of difference will be seen in their endurance during the trip and their condition at the close of the season.

A horse should not be fed grain while he is hot from sweating or when he is tired and nervous from a strenuous day. Avoid colic and indigestion by feeding him some hay or grass first at the close of day, then water him and feed him his grain.

If he is not going to be grained at noon, give most of his grain in the evening after work, and after he has had time to cool and rest. One-half pound of grain and 2 pounds of hay for each 100 pounds of body weight of the horse is

a good ration. This formula is good if the horse is worked or ridden at least once a day.

Pellets are good for backcountry use because they reduce the amount of bulk that must be packed (as opposed to packing hay). Pellets, however, do not provide the bulk necessary to fill an animal's stomach and must be supplemented by grazing or feeding hay. Also, many horses and mules do not naturally take to pellets, and therefore, animals must be broken into them over a period of time.

A good way to teach a horse or mule to be easily caught is to carry a pocket full of pellets and offer them as "goodies" from time to time, especially when you are not intending to use the animal. A bucket of oats is equally effective. An animal that cannot be caught is not much good. CAUTION! NEVER walk into a bunch of stock with a bucket of oats. You could easily be kicked or bitten as they fight each other to get at the oats.

3. Salt

Keep salt available to the animal at all times. Salt should be in all pastures and corrals where stock are to be kept for extended periods. Feeding a variety of salt entices your animals to use more salt and consequently, drink more water. Three types of salt are commonly used. Trace mineral, which is a relatively hard block; iodized, which is a softer type block; and sulfur salt, which is also a softer block. Sulfur salt seems to make a noticeable difference in the number of ticks found on the animals, especially in spring and early summer. Sulfur salt and iodized salt seem to be easier to eat because they are softer, especially for old animals.

Salt blocks are available in 4-pound size blocks for use on the trail.

4. Foot Care

Guard against injuries to your animals. A crippled horse is useless or may even be dangerous. Keep all loose barbwire picked up or fastened to fence posts.

Do not allow your horse to visit with a horse on the other side of a barb wire fence. If a horse paws the fence, he is sure to get injured, and you may become injured trying to free the foot. NEVER tie your horse to a barb wire fence.

Keep your horse well shod and regularly re-shod for safety to you and for lasting service from the horse. Shoes should be changed every 6 weeks to 2 months. It is dangerous to use a horse longer than 2 months without re-shoeing.



A major step toward having a good safety record in use of horses and mules is having PRIDE IN YOUR OUTFIT!! A well repaired, good looking, well groomed, and cared for outfit helps to generate interest in your stock and equipment. If you have interest in them, you will enjoy using them, and through use, you will develop knowledge of use and care of these working tools. Safe working habits will develop which will ultimately protect man and beast.



STARTING A PACK ANIMAL

@Copy write by
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John Lyons says there are three rules to training that must be applied at all times: (1) The human can never be hurt. If you think something is dangerous or that you can be hurt in any way, then don't do it. Think of something else to try. (2) The animal cannot be hurt in any way. (3) The animal must be calmer after the session than it was before the session began. John also says we need a plan and we need well, defined goals.

We make one of our biggest mistakes when we begin with our goal, by doing so we frustrate ourselves, and our stock. As handlers we have time to plan what we want from our stock. The animal needs preparation time also. Allow the animal preparation time by using a dependable system of communication, which allows the animal the opportunity to respond to a subtler cue from us.

There must be at least one step between where we are and where we wish to get. The more steps we can define between where we are now with our animals and our goal for this particular session the better off our animals and we will be. Then proceed one step at a time. Do not advance a step until the present step is mastered totally. That way our animals will receive the best training possible.

Our ultimate goal is to get the animal to pack. The steps between now and then are most important and each must be mastered before attempting the next.

We begin with the most thorough "sacking" you can imagine. Our sacking involves many phases with many steps to each phase.

The first phase is to "hand-sack" the animal. Rub, scratch and pat the animal all over his body, top to bottom, from one end to the other and definitely from both sides. Be gentle - move slowly but deliberately. We do not want to hurt, frighten, nor confuse the animal.

We are trying to win the animals trust and build it's confidence. We want to eliminate its fears. We want the animal to remain calm and accept anything we do to it.

The animal is exposed to empty grain sacks next. These are rubbed all over the body. Next comes sacks filled with empty cans, and then flags, ropes, jackets, saddle blankets, everything we can get our hands on. Be careful not to hit or poke the animal with any of the sacking objects.

We progress to loud noises and quick movements, goats, dogs, ducks, backpackers, llamas, cattle and even camels if we had access to them. Never avoid dealing with an animal's fears. Expose the animal to small amounts of fearful things at a time. Always back off just before the animal decides the pressure is too much and tries to take off. This way you are able to raise the fear threshold.



All kinds of walkovers are the next series of obstacles. Poles, logs, bridges and large diameter plastic pipe, all on the ground, then we elevate one end and then both ends. This kind of work improves coordination and helps build confidence.

We next introduce plastic tarps to the animals. They are asked to walk over blue plastic, which is something new and simulates water. The plastic also helps with bridges.

Never force the animal to step on anything. If the plastic is too scary to step on, work on leading exercises until the animal walks calmly by the plastic, back and forth. Then try to get one foot on the plastic. It's OK if the animal pulls its foot off again. Praise him and encourage another attempt at crossing. Soon his confidence will permit him to step on and off and on until he calmly walks across.

All the time, when working on the ground, the handler should work on both sides of the animal.

The next phase involves holding two sheets of plastic and asking the animals to walk between them, as if on a bridge with rails. Hold the plastic sheets up about 8 –10 feet apart, then move them closer together as all the "students" gain confidence by calmly passing between them. When things begin to get dull, you can have a holder shake one side of the plastic. Not too vigorously at first. This really scares some individuals.

Finally they are asked to walk underneath the plastic, which simulates having the manta thrown over, covered bridges, thick forest and brush or caves.

We are about to saddle up. The pads are introduced, then the saddle with all its rigging. Finally the soft packs are added and the animal is led about during each phase to get accustomed to the feel, and sounds of the equipment.

At last we are ready to manta and tie a light pack on the neophyte.

It is essential that you lead the animal about during each new episode so that he can deal with insecurities and gain confidence.

Some animals will tolerate being packed up with a real load for the first time without any of the sacking we do before hand and not even complain until you try to lead them off. Now is when you may wish you had sacked and led about to get the animal accustomed to the feel and sounds of the pack and equipment, as he bucks out and ruins a good saddle and set of boxes along with breaking a lash cinch and destroying much of the camp goods he had in his pack.

We just think the preparation and training are worth it. Besides it gives us another excuse to work with the animals we love.



TRAILER LOADING

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Look at the trailer from the animal's perspective and realize that horses and mules are not cave dwellers, but nomad. They naturally avoid small confined areas. They do not know this contraption is totally safe and when towed properly, poses no danger.

Most two-horse trailers are small, narrow, and not tall enough to invite entry by most of our animals. Once inside, the animal has to contend with smells, noises, and eventually movement, all of which are unnatural and not very reassuring to inexperienced stock. Trailers tend to sway and bounce too much for comfort also.

Therefore we might expect difficulty when asking them to load into a two-horse trailer for the first time. A step-up type trailer or ramp load makes no difference with regard to our technique.

A stock trailer is another story. They are usually roomier, not as dark and less threatening as a result.

We don't believe that anyone can force load an average size and weight horse or mule that absolutely refuses to get into the trailer without injuring someone, the animal or a person, sooner or later.

We use the same method to load animals with "bad" loading habits that we use on stock that has never been loaded before.

The animals should be taught to load consistently, quietly and on cue each and every time. There is always danger in trying to force an animal into a trailer, so don't do it!

We believe that nearly all horses and mules can be taught to load themselves. It takes time, patience, repetition and a means of communication the animal can understand.

You as the handler become the teacher; the animal becomes the student. As the teacher, you must have a goal (the goal is to teach the animal to load into the trailer).

Once you determine the goal, your job is to create a lesson plan. The lesson plan has steps within it that the student can complete. Within the plan there are



“sub-goals”. To reach each sub-goal there are multiple steps. This same reasoning can be applied to all training.

Each of us would like to begin with our goal, but we cannot. We cannot successfully and consistently teach an animal to load by taking it to the trailer and making it get in.

As we become better teachers, our animals become better students.

Trailer loading, when broken down into steps, is a leading lesson. Teach the animal to walk beside, behind, or in front of you on cue.

First off we cannot drag a full-grown horse or mule anywhere. The animal is taught to drive forward using a short whip to encourage forward movement.

While the animal is stopped, tap its rump with the whip. If our arms were long enough we'd use our hands. The whip is an extension of our arms.

Stop tapping the instant he takes a step forward. We are teaching the animal movement on our command. We cannot teach him anything positive if he doesn't move his feet. If he leans forward, that is a small improvement over standing still. Stop tapping if he leans forward. Let him think about it for a short while.

Use poles for walk overs during the lessons, also use narrow places between trailers, buildings, haystacks or lumber piles and teach the animal to walk beside you and not on you when passing scary objects.

Establish boundaries around yourself. Make sure to keep the animal out of “your space” by teaching them they have a space of their own.

Establish a respectful relationship with your animal. Always demand that the animal you are handling pays attention to you. Work on exercises to get the animal's attention during handling.

If at any point the animal becomes confused or doesn't understand, backup a step in the lesson plan, return to a point where the animal responds correctly to you.

There may be times when the whip is used for discipline. These times are rare and could easily become abusive if the handler is not aware.

Set the rules of handling: Never work with your stock when you are angry, never try to get “even” with an animal, limit disciplinary actions to 3-5 seconds time limit.



Always discipline acts of aggression. Your animal cannot be allowed to bite, strike, kick or run over you. The only acceptable form of discipline with the whip is to strike the animal below the knees, and then only once or twice during the unacceptable behavior. NEVER STRIKE ON THE FACE OR EARS. Always reward on honest effort, no matter how small.

Once you approach the trailer, keep his head pointed at the door. His body may be sideways, but his head is pointed at the door.

Tap his rump for movement. If he drops his head to smell the floor, stop tapping. He is thinking about getting in. If he puts one foot in and paws the floor, stop tapping, again he is thinking about getting in.

This method may require more patience than you have ever used on anything before, but it is worth it! Always accept small increments of improvement and praise the animal for these improvements.

Keep his head pointed toward the door. Tap for movement and stop tapping when he leans forward, steps with one foot in, or leans over to smell the floor. Be patient. Each time will be shorter, and you will have a calm animal that will load into anything, anytime when it is all over.

The animal will go part way in and come out several times, he is learning that it's OK to enter and get out. He will go in farther each time and stay longer before coming out. As long as the animal and handler remain calm, learning is taking place.

Remember to rub and praise the animal each time he does what you ask him to.

Reward for proper behavior is better than punishment for improper behavior.

It is not necessary to have feed in the manger. Simply allow the animal to stand quietly when inside and let him come out on his own as many times as he wants to until he will remain quietly inside the trailer.

Only after the animal is relaxed do you begin to close doors. Close the opposite door first. Rattle things and make banging noises. Allow the animal to back out. Reload him and close doors and make sounds again. Continue to repeat this process until they are relaxed enough to stay in the trailer while you close and open doors.

The most common mistake in loading stock is to pressure on the lead rope. When the animal feels a pull on the rope while being loaded they naturally resist by pulling back, this becomes a tug-of-war that can end in lost patience and possible injury.



The time to teach trailer loading is now. Don't wait until you are in a big rush, pressed for time and not long on patience. Plan on spending two or more hours. If it takes less, super! Don't rush it!

We must be able to distinguish between teaching the animal to load and simply getting the animal into the trailer.

If you avoid "tricking" the animal into the trailer and shutting the door, you can avoid the wreck that will follow. An animal that feels "trapped" can explode and cause damage to the trailer and serious injury to itself or its handler if they try to help it while in the trailer.

Remember when the animal puts his foot on the trailer floor and takes it out, that first step in when loading up is also the last step out when unloading.

He is learning to unload at the same time that he is learning to load.

We don't want an animal that is stuck in the trailer and won't unload once we get him inside.

Remember, it's always worth taking the time to teach your animal to load correctly.

One session in school does not make a graduate. One loading lesson doesn't teach a horse to load. Be willing to repeat any part of the session, as the animal may need. Expect nothing; be prepared for anything.

If you don't have the time or patience to deal with your animal over loading, then you won't have the time to deal with the vet when it all goes wrong.

THE PORTABLE ELECTRIC FENCE

By Sue Euer

The portable electric fence kits are the greatest things since bubble gum as far as I am concerned. My husband and I are cattle ranchers and have used all kinds of electric fencing for years. My biggest concern camping with horses are tying them to trees, high-lining or tying to my trailer all night at a trailhead. I know my stock doesn't get a very restful nights sleep and neither did I, worrying about what kind of wreck they might get into.

There are many different kits on the market from the very, very basic to the really complete ones. I prefer a compact kit for packing and for storage. The reels with locks on them are the best, so you don't have to cut the tape and tie knots in it. I have also tested the different politape and prefer the ½ inch white. The wide tape is much more wind resistant and weighs too much for packaging. Also through use I found that the yellow and orange tapes tend to disappear in the dark. The white stays reflective, even when there is no moonlight.

Kits come with many different types of posts. The three-piece 54" fiberglass posts are my choice. They are easy to assemble and very compact. I admit there are more pieces to work with and assemble but it only takes 15 minutes to set up a pen and even less if you have someone with you. The post insulators are also very handy when you have trees or tall brush that you can use to tie to. I carry baling twine and run it through the hole of the insulators and tie off to trees and brush to use them for posts. I have also put a spike about the same diameter as my posts in my kit so I can pre-punch a hole for the fiberglass posts when I am in really hard ground. If you do mess up the points on the posts you can re-sharpen them on any bench grinder.

The controller I use works with 6 D-Cell flashlight batteries and puts out an average of 7,000 volts. It is very compact and will hang on one of the posts or you can tie it to anything. The batteries last for a long time. My horses are in an electric fence for about five months during the summer when we move our cattle to the Sierra. Their pasture is about an acre and after 120 days of continuous use the fence was still putting out 5,000 volts. Not many people get to go on vacation that long. I also use my fence around our winter home in the spring to graze off all of the extra grass that seems to go to waste. You don't have to make a complete circuit with the new controllers so you can make a three-sided pen off of an existing fence.

Other little tips are to always train your animals to the electric fence at home. Don't take them to a strange place and throw them into something new and expect not to have problems. Don't make the pen too small. I have seen people make them the size of a box stall and when the horse rolls, they come up under the fence or if they get spooked by something in the night, they won't have room to move and not get into the fence. I don't claim to be an expert on electric fencing but I am a user of it and am glad to share some of my experiences with you.

GETTING ALONG WITH THE PORTABLE ELECTRIC FENCE

BY DENA MERCER

The use of portable electric fences to contain stock in the backcountry may be the best device since the advent of the bota bag. Or it could be a nail in our coffin, hampering our BCHC's quest for a gentle use of the land. As with any tool, *it is only as good as the person using it!*

Used properly, these fences can preserve the meadows we use. Because animals are not restrained to small areas by tethering, the usual trampling of those grasses is eliminated. Your horse is considerably more happy too; it can roll and walk freely. As for your comfort, you will probably sleep better that your best horse is within a fence instead of on the end of a rope risking being tangled or injured.

Below are some tips to insure the successful use of the electric fence. Please read these carefully. You may even want to take this article along with you this season to remind you of the "does and don'ts". As you use your fence you may discover a few tips to add to the list.

- If you fence across a stream, be SURE to choose an access with a gradual slope. Stock should not be allowed to break down stream banks.
- Put as few head as possible inside the fence. YOU know YOUR stock, so if everything will stay around with Ol' Dobin inside, kick everything else out!
- Move the fence as necessary so that the area is not overgrazed. If the grass is sparse, move it often. The idea is to leave the area looking nearly unused!
- Acquaint your stock with the fence BEFORE leaving home. Usually one ZAP is enough to convince "Dobin" and "Star" to enjoy the space inside the fence!
- If the fence is among trees, be sure your stock is shown the fence before you turn them loose. (Can you imagine their surprise! .I'd rather not).
- DON'T fence near a trail, lake, or another's camp. If possible set the fence up where it is difficult for others to see.
- You may want to bell "Ol' Dobin". Escape isn't likely, but covering all your bases never hurts!
- It is strongly suggested that you purchase the larger roll of tape (650 feet) to prevent over grazing the meadows. Even when feed is abundant the smaller roll is too short.

Note: Dena Mercer is a teacher and volunteers for backcountry historical research for the Park and Forest Service.

GRAZING MANAGEMENT FOR PACK AND SADDLE STOCK

By Bill DeCarteret

Management Alternatives

- **Free Roaming** in pasture, drift fencing or at large in the entire forage area.
- **Partial Control** using hobbles or cheeking.
- **Complete Control** by tying to a picket line, staking out on a rope, high-line picket (grazing along a line tied 6ft. in the air and up to 60' long) or by putting up a portable fence.

Free Roaming

- **This is the preferred alternative** as it is the method that is gentlest on the meadows and streams. Stock, when free to graze as they wish, will usually avoid wet areas, will graze over wide areas reducing the chance of damaging impact. There is also much less danger of injury to the animal, and dropping concentrations are reduced.
- **Herd Preparation** is necessary if free grazing is the chosen method. Feed all stock that is to go on the trip as a herd. Watch and determine the pecking order; bell the leader or a period of time. Get the herd use to eating from a feedbag. Train them to come when you call by rewarding them with a nibble.
- **Planning the Trip.** Good planning includes checking the grazing regulations. Check with other users about good places to camp. Plan to camp in areas where the terrain is appropriate for free grazing, or there are pastures or drift fences. The first night out is the most critical; try to plan to use a secure location if possible.
- **At Large Techniques:** belling the leader serves at least two purposes. It makes the animal easier to find and it tends to keep the other animals close to the leader. Location of your camp is important. You should be downstream from the major forage area and close enough to any outlet trail that you can here them pass. Make yourself aware of the terrain around you and what if any tracks from other animals are evident in the area. Know the difference between "old" and "fresh" tracks. Hold the animal on a picket line until dusk. After turning loose note the general direction they are moving. And most important, WRANGLE EARLY, at or before daylight. Remove bell when all of herd is accounted for. If some are missing start checking tracks to locate where they may have gone. When you get back to camp give each animal his morning feeding.

- **Pasture or drift fences.** There is no reason to tie up all night if there are drift fences or pastures. Be sure and check all gates and walk the fence for possible openings. It is still advisable to bell a lead animal. It is comforting to hear and helps train the stock to stick together.
- **Good Habits and Manners** mandate that you do not tie to trees for any significant length of time, especially if your horse is digging a hole by pawing. Use a picket line set up at least 200' from camp and water. Avoid disturbing other campers and users by allowing your stock to disrupt their camp. Help others with their stock if possible. Scatter manure wherever you find it.

Partial Control

- A. **Hobbles** as a grazing restraint are not only dangerous to use and damaging to the legs of the animals, but they are usually not effective if used for more than a day or two. If horses have not learned to travel with them they can be used in an emergency. Some tri-cuff hobbles offer limited movement and are more effective in controlling an animal but there is also more risk in the animal getting tangled in the contraption.
- B. **Cheeking:** Two animals fastened together by a 12" length of chain fastened between the upper cheek rings of their halter. The animals have to work in unison in order to graze. A commercial packer in Inyo Forest uses this method of control, which is based on the fact that two animals cannot travel up a narrow trail side by side. However there are definite risks involved that are unacceptable to most horsemen.

Complete Control

Picketing with a stake and about 30 to 40 feet of rope. In order to avoid a disastrous rope burn, the animal must be trained well in advance of a backcountry trip. Even then you should be prepared to treat your animal for rope burns. To avoid serious impacts on the meadow, you should move the stake whenever you can see a definite ring in the grass - at least every 3 to 4 hours. Some regulations do not allow this type of picketing.

- A. **High Line Picket Line:** 50 to 100 feet of rope is tied between two trees so that the lowest point in the span is at least seven feet in the air. Tie the horse to the line using a ring or a large loop in the lead rope. The slack in the lead rope should not extend below the horses head. The horse is able to graze along the line and to each side, since every time he put his head down the line above him is

stretched down. As he lifts his head, the lead rope is raised back to the original height. If properly set up, and if the picket rope is kept very tight, is relatively safe. But if the picket line ever becomes slack --- you are about to have a real wreck and probably hurt a horse to worry about.

- B. Leaving Stock on a Picket Line** for most of the time is an alternative for complete control. Your animals still have to eat so you must either pack feed or allow them at least two hours to graze twice a day. Great care must be exercised to avoid animals becoming tangled in either their lead or the picket line. The impact to the soil beneath the picket line will be great, so site selection – dry mineral soil – is very important. Before you leave, fill in any holes and make the area look untouched.
- C. Electric Fence:** The development of a lightweight fence charger made the portable electric fence more attractive to back country users. Proper use of this method of control is gentle on the resource. Be sure that you fence enough to minimize the impact to the meadow. Groups with more than two or three animals should keep the leaders of the herd inside the fence and let the rest graze outside the fence.

Note: This article was reconstructed from notes and outline from presentation made by Bill DeCarteret at the 1989 Backcountry Horsemen of California State Convention. Mr. DeCarteret is a retired professional packer out of Mineral King in the Sequoia National Park.

BACKCOUNTRY HORSEMEN OF CALIFORNIA

HIGH COUNTRY MANNERSA COMMON SENSE GUIDE FOR
GENTLE USE OF THE BACKCOUNTRY**TRAILHEAD MANNERS**

- ▶ Leave your vehicle parked with other visitors able to exit, park, load and unload around you.
- ▶ Be sure to lock your vehicle doors, camper shells and tool boxes.
- ▶ Clean up all food scraps. Bears will break into your vehicle, if they suspect it contains food.
- ▶ Do your part in keeping the trailhead clean and accessible to others. Bring a rake and shovel.
- ▶ Use proper sanitary facilities at the trailhead
- ▶ Communicate and cooperate with others departing.

**TRAIL
MANNERS**

- ▶ Be polite and helpful when meeting livestock, backpackers, hikers, and other users of the wilderness.
- ▶ Always yield the trail to faster hikers or riders. Move aside as soon as you can and let them go on ahead.
- ▶ Common sense and courtesy should prevail in matters of right-of-way on the trail. In most cases, riders and pack animals do have the right-of-way. Those traveling uphill have the right-of-way over those going downhill.
- ▶ To ease possible congestion, avoid stopping in the trail at a creek or trail junction. Move to the next available place to pull out and get completely off the trail.
- ▶ Loose herded livestock are difficult to control and, in many places, illegal. It is wise to lead all your animals to minimize the chance for trail conflicts.
- ▶ Remove obstacles from trails whenever possible rather than riding around them, as this creates a secondary trail.
- ▶ Stay on the trail. Cutting switchbacks creates erosion.
- ▶ Explain to those not accustomed to stock that a biker can control his/her movements on and off the trail easier than a rider can control the movements of a string of pack animals.
- ▶ Some horses and mules can be skittish while on the trail, therefore, it is wise to give them some room.
- ▶ Explain to those not accustomed to stock, that it is safer for you, them and the resource, to step to the down-hill side of the trail and to stay in sight. Be sure the person feels safe before you start to pass.

Explain to hikers that it would be helpful to speak in a calm voice to the animals as they pass, thus assuring the stock that the colorful biker is not a bear. Remind them not to touch the animals as they go by and to please wait a few seconds before starting along the trail.

- ▶ Leaving any equipment in the middle of the trail, near a water crossing or bridge is like leaving your suitcase in the middle of the highway. Your equipment may get run over.
- ▶ Dogs can be good companions where permitted on the trail. Dogs not familiar with livestock can be intimidated and scare the stock. Remember to keep dogs under control at all times so they are not a threat to the safety of other visitors or to wildlife.
- ▶ An "encounter" session with local llamas and their handlers before you enter the backcountry might be worthwhile.

**CAMP
MANNERS**

- ▶ Set up camp on hard ground away from grass and marsh areas where you and your stock will appreciate being away from mosquitoes. Be sure the location is at least 100 feet from any water source.
- ▶ Proper sanitation practices are very important. Choose a site at least 100 feet away from any water source or campsite. Use a shovel or trowel to bury human waste.
- ▶ Choose a campsite that has plenty of feed or pack in pellets and grain.
- ▶ If you need to restrain the stock, tie to a high line located on durable ground, 100 feet away from any water source, and out of sight of other camps and trails.
- ▶ The use of a portable electric fence is encouraged as it is an excellent way to control grazing pack and saddle stock. It is important to train them to respect the wire or tape prior to setting up in the backcountry. Move the fence often to avoid excessive impact on the meadow.
- ▶ Use only dead and downed firewood for fuel. Conserve wood by using a propane or gas stove for cooking.
- ▶ Pack out all garbage and trash. This means food scraps too. Remember foil does not burn.
- ▶ Remove, scatter or bury all manure in the campsite and at the trailhead.

PROPER PREPARATION

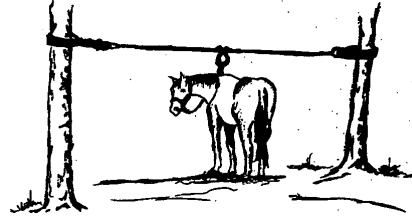
One of the most important aspects to consider when planning any trip is proper planning and preparation. This is especially true of backcountry trips. Try to be prepared for any eventuality.

- ▶ Consider the goals and needs of the group: scenery, lakes, fishing, moving camp, ages and experiences, etc.
- ▶ Know where you are going. Ask those who have been there before. Know how long it will take you to get to your destination each day of your trip.
- ▶ Know what maps you will need, study them and know how to use them. Have a compass along.
- ▶ Find out if you need to have a wilderness and/or campfire permit. Ask if there are any restricted areas you will be going through.
- ▶ Find out if you stay overnight at the trailhead. Learn what facilities are available: corrals, water, one night stay limit, manure dumps, etc.
- ▶ Know how many people are in your group and what kind of appetites/restrictions they may have.
- ▶ Determine if there is enough feed, water and proper campsite for each day's destination.
- ▶ Have first-aid kits for both people and animals, directions for use and a flashlight.
- ▶ Have at least one emergency light-weight meal along for the group.
- ▶ Be sure to have the appropriate clothing and equipment for the season.

A MESSAGE TO HORSEMEN FROM YOUR FOREST SERVICE



Horses, Mules, Burros and Llamas too!



- ▶ Have "strike anywhere matches" or a lighter in waterproof containers.
- ▶ Take only the minimum number of animals needed.
- ▶ During short stops, you may tie horses to trees which are at least eight inches in diameter.
- ▶ For long periods, tie horses to a high-line stretched between two sturdy trees. A good rule of thumb is 7 feet away from tree and 7 feet high.
- ▶ If you picket horses, move them often.
- ▶ Keep tied, picketed, and hobbled horses well away from camp, lakes and streams. Tie, picket, or hobble horses only in dry areas to minimize trampling.

WHO ARE THE BACKCOUNTRY HORSEMEN OF CALIFORNIA?

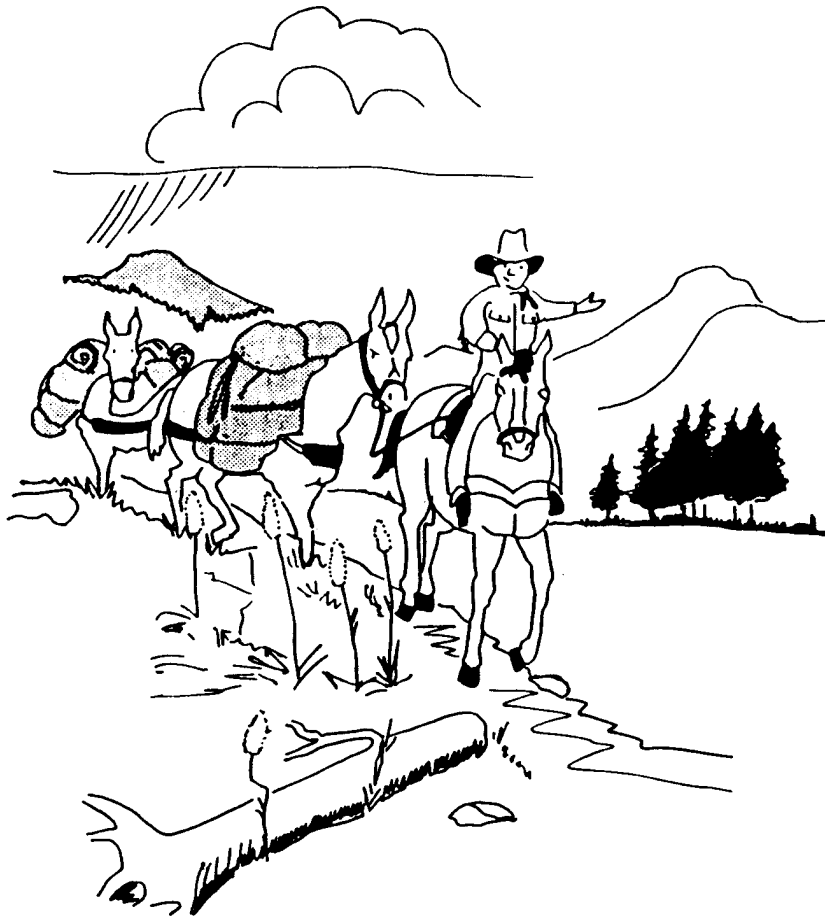
The Backcountry Horsemen of California is a group of dedicated men and women working to preserve the historic use of trails with recreational pack and saddle stock. They perform public service activities for numerous land management agencies and they are continually working to educate their members on how to be "Gentle Users."

The use of livestock has played an important role in the American culture. California and the western states have particularly had a long tradition of using pack and saddle stock in the backcountry. The Backcountry Horsemen of California carry on this tradition in modern times. With this use comes the responsibility and obligation to care for our public lands and to ensure their use for generations.

The Backcountry Horsemen of California work in cooperation with government agencies to help clear trails, maintain historic sites, construct new facilities, sponsor educational seminars and clinics, and assist with service projects as requested. They also strive to stay current on relevant issues and to provide input on management plans and activities that pertain to backcountry trails on public lands.

The Backcountry Horsemen of California focus their efforts in three key areas: Service Projects, Education, and Public Lands Issues.

MOUNTAIN MANNERS



**Back Country Horsemen
of Montana**

P.O. Box 5431, Helena, MT. 59604



What are Back Country Horsemen ?

Back Country Horseman (BCH) is an organization dedicated to protecting, preserving and improving the backcountry resource. BCH share a common interest - use of horses and mules for recreation on backcountry lands. BCH is dedicated to public service, providing horsemen with an opportunity to influence laws and attitudes that regulate the historical right to use horses on public lands.

What is the purpose of BCH?

The main purpose of BCH is educating people to reduce environmental impact on the resources and help create a positive public awareness of the recreational horseman. BCH offer time and equipment to government agencies for such tasks as packing out trash, clearing trails, building trailhead facilities and other projects that will benefit both horsemen and non-horsemen.

Why keep public land and trails open for horse use?

The horse has earned a place in our western heritage. Its usefulness and devotion have been second to none. It is the charge of the BCH to assure that horse use is preserved in its rightful place for future generations. This can best be accomplished by our individual efforts to promote wise horse use that results in minimum impact to the backcountry resources.

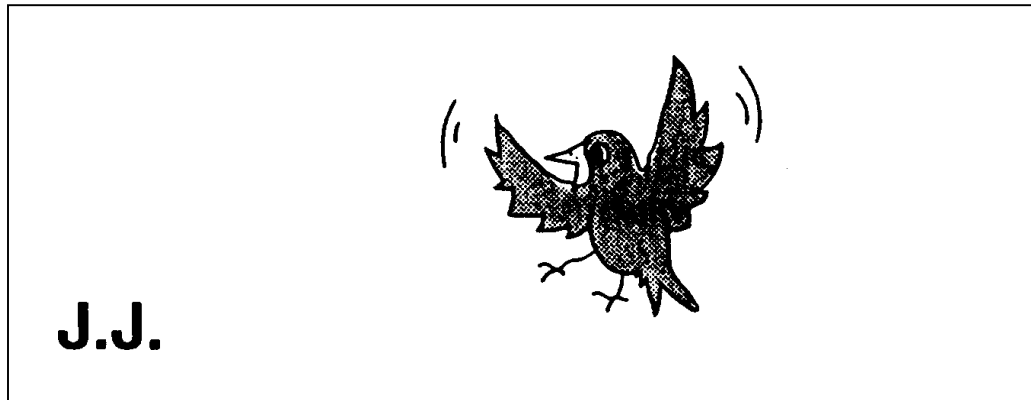
Back Country Horsemen Mission Statement

1. Perpetuate the common sense use and enjoyment of horses in America's roadless backcountry.
2. Assist the various government agencies in their management and maintenance of resources.
3. Educate, encourage and solicit active participation in the wise and sustaining use of back country by horsemen and the general public.
4. Work -sure that public lands remain open to recreational stock users.

This book is published by Back Country Horsemen of if Montana in cooperation with the U.S. Forest Service. The concept for it originated within the Mission Valley Club. Cheryl Fraser of Helena did the original drawings. The cover drawings were done by Dave Owen of Kalispell and a Washington BCH member, Sherri Hill, did the highline sketches.

This publication is the result of efforts by a great many people, all of whom donated their time and talents.

If you look closely you will see that Jeremaiah Jay, better known as J.J., is in almost every picture. He's been watching back country users for a long time and has become a wise old bird. Listen closely and pay attention to what he has to say on the following pages.



**Montana Back Country Horsemen State Chapters
"1,500 Members Strong"**

Interested in joining Back Country Horsemen?
Contact a club in your area.

Absaroka BCH P.O. Box 1321 Livingston, MT. 59047

Bitterroot BCH P.O. Box 1083 Hamilton, MT. 59840

Cabinet BCH P.O. Box 949 Libby, MT. 59923

Charlie Russell BCH 3029 Wells Fargo Drive Great Falls, MT. 59404

East Slope BCH Box 943 Valier, MT. 59486

Flathead BCH P.O. Box 1192 Columbia Falls, MT. 59912

Gallatin Valley BCH P.O. Box 3232 Bozeman, MT. 59772-3232

Greater Yellowstone BCH 4525 Pine Cove Rd. Billings, MT. 59106

Last Chance BCH P.O. Box 4008 Helena, MT. 59601

Mission Valley BCH P.O. Box 604 Ronan, MT. 59864

Missoula BCH P.O. Box 2121 Missoula, MT. 59806

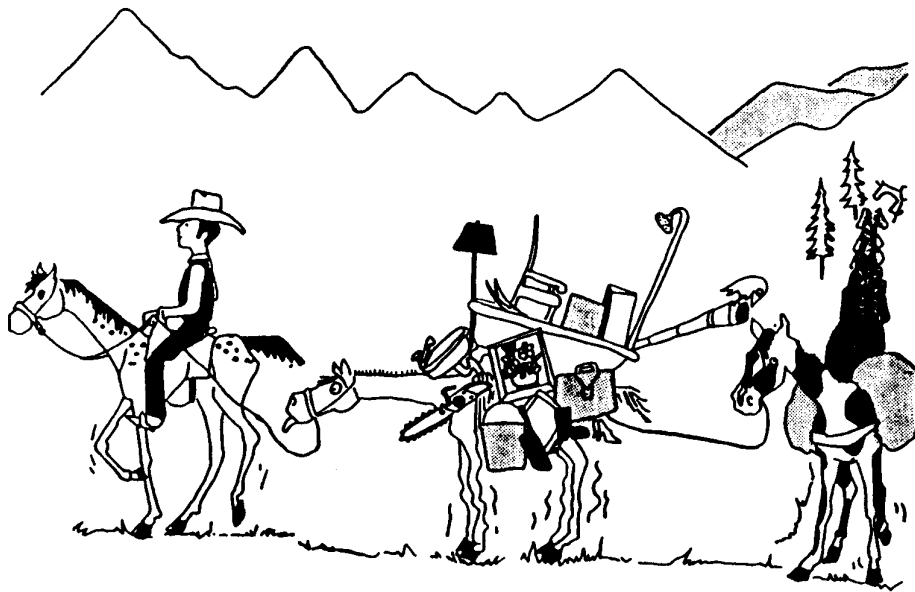
Sanders County BCH P.O. Box 15 Paradise, MT. 59859

Tobacco Valley BCH 4835 Airport Rd. Eureka, MT. 59917

Formation of Back Country Horsemen took place in the Flathead Valley of Montana in 1973. It gradually grew and spread throughout Montana and into Idaho. In 1985 groups in Washington and California joined with Idaho and Montana to form Back Country Horsemen of America. They presently have over 6,000 members and expand into Wyoming, New Mexico, Utah, Oregon, Nevada, and Colorado.

Back Country Horsemen of America, P.O. Box 597, Columbia Falls, MT. 5,9912.

TAKE ONLY AMOUNT OF DUFFLE NEED



Did you bring the kitchen sink? In all seriousness, ask yourself is that item really necessary? But don't leave at home the things you really need. Remember your axe, shovel and bucket. A saw may be a good idea. Rain gear and a warm coat are a must even when the sun is shining. A first aid kit may be worth its weight in gold. Fly and insect repellent are a good idea for both humans and horses; also horse gear, including a brush and maybe shoeing equipment. Make room for a rope to be used as a high line.

Use lightweight gear. Camper cloth tents weigh only half as much as canvas. Dehydrated foods are lighter and take less space than canned. Put contents of glass jars and bottles into plastic containers.

FEWER HORSES MAKE LESS WORK, WORRY AND IMPACT

LOCATE CAMP AWAY FROM TRAILS



THIS LOOKS LIKE GRAND CENTRAL STATION!

Set up your tent away from trail, 200 feet from water if possible, and apart from other campers. Pick a site that will stand the traffic. The edge of the clearing along the trees may be best. Avoid wet spots. Use the existing fire ring. If you build, a new one, tear it down when you leave.

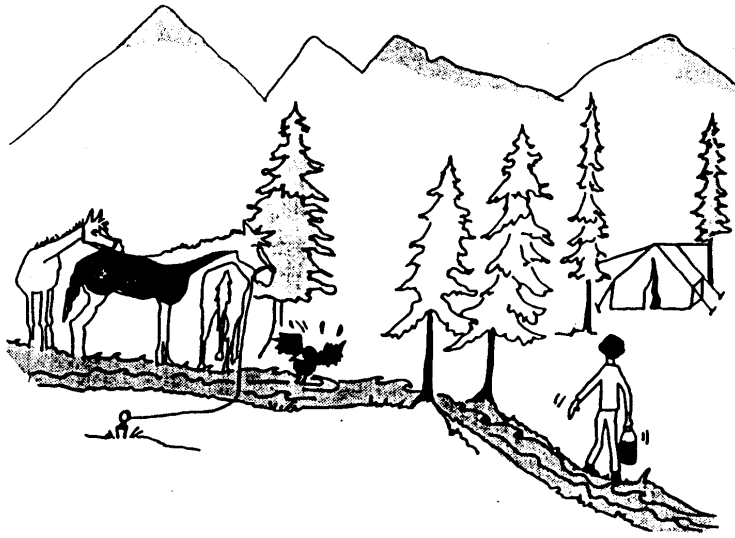
DO NOT TIE STOCK TO TREES



Probably nothing gives horsemen more bad marks than tying to trees. The scars are visible for years. A ROPE HIGHLINE IS A GOOD SOLUTION. There is a section showing how to use one in the back of this book.

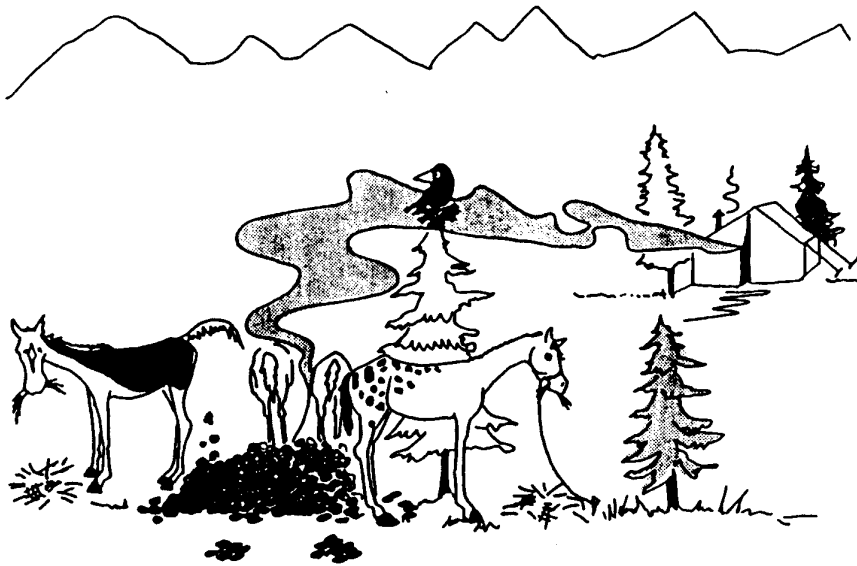
Use hobbles on a pawing horse. Horses get lonely. Providing a horse with company will eliminate much cause for pawing. Train your horses at home to use hobbles and picket ropes and to be tied overnight. Fill holes when leaving camp.

KEEP STOCK AND TOILETS AWAY FROM WATER



Tie stock away from water - 200 feet, if possible. Locate your toilet at least 200 feet from water too. Use that shovel for disposal of human waste. If the camp is to be used for a number of days (like a hunting camp) dig a pit. Fill it in before you leave. Think about those folks camping downstream.

TIE STOCK AWAY FROM CAMP



WHERE YOU TIE IS AS IMPORTANT AS HOW YOU DO IT. Get stock out of the immediate camp area. A grove of trees on dry, solid ground is ideal. If you are one of those people who can't bear to spend the night away from your horses, pitch your tent out in the woods with them rather than bringing them into camp with you. Scatter manure when leaving camp.

KEEP A NEAT CAMP

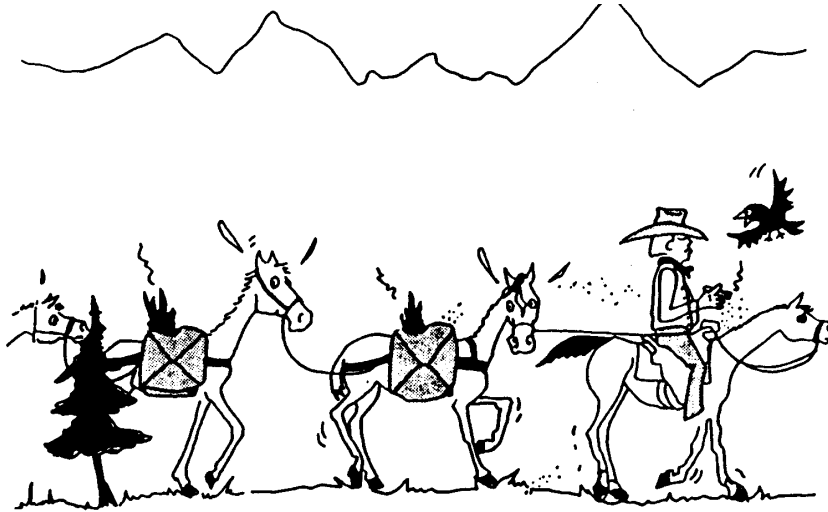


Pack out your own garbage plus that left by others. Check campsite and be sure nothing is left. Burn what you can, including all food scraps. Throwing cans in the fire for a few minutes will clean them up. Tie a pole between two trees for storing your gear and tack. When you leave take it down, plus any other poles you've found and stack them out of sight. **KEEP IT NEAT AND LEAVE IT CLEANER THAN YOU FOUND IT!**

BE NEAT - DON'T LITTER



That garbage probably all came out of the saddlebag. There must be room to put it back in. Take pity on our bird and remember that this is his home that you are trashing.

DON'T SMOKE ON THE TRAIL

During fire season, stop in a safe place if you get a craving for the nicotine. There may be a hot time in the forest if you aren't careful with your fire. Douse your campfire with water and stir when leaving camp.

BE POLITE WHEN MEETING OTHERS – ON FOOT OR HORSEBACK

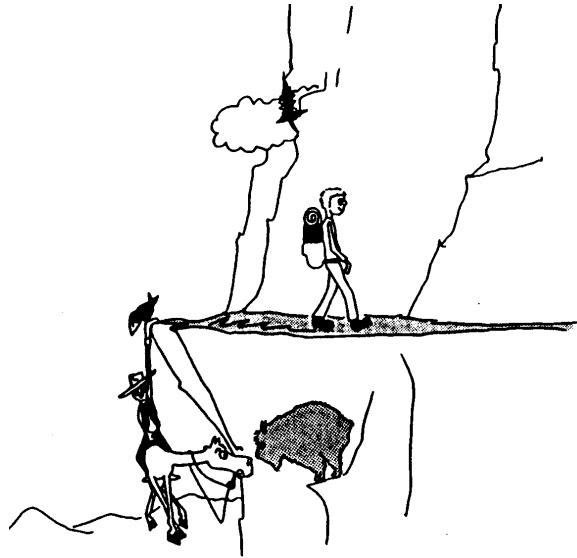
ALL PEOPLE ARE CREATED EQUAL! Even though the horsemen were using the trails long before it occurred to anyone that hiking could be fun, we must remember it belongs to the hikers too.

GIVE RIGHT OF WAY WHEN POSSIBLE



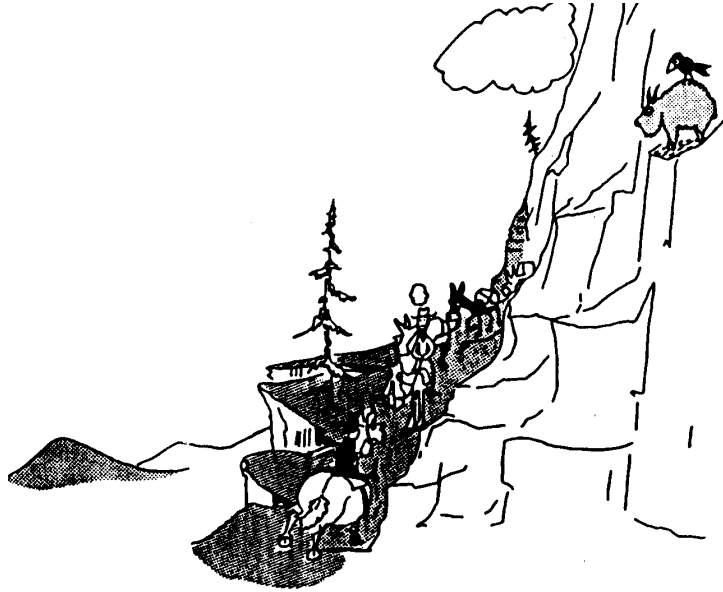
Regardless of the rules, **COMMON SENSE SHOULD PREVAIL**. If you have an opportunity to get off the trail, do it. Remember you're out there to enjoy yourself and feel good. If you want a fight, go to your favorite bar.

HORSES DO NOT ALWAYS HAVE THE RIGHT OF WAY



Most of us have had at least one horse that never learned that hikers are just people. Speak to them and try to get them to answer. Your horse will react better to a talker than he will to the strong, silent type. Give the hikers plenty of time to get off the trail in a safe spot they are comfortable with. **DON'T CROWD, DON'T PUSH**. It might be you and your horse that end up over the bank. Think safety first.

Very few horses are fond of motor bikes. Take your time and be careful. You might avoid one of those spectacular wrecks that make great stories, but aren't much fun at the time.

SADDLE HORSES SHOULD GIVE WAY TO PACK STOCK

Obviously one saddle horse is easier to control than a number of pack animals. Uphill strings have the right-of-way over downhill. On some heavily used trails incoming traffic has the right-of-way until noon and outgoing in afternoon. Regardless of the law, observe the common sense rule. GIVE WAY WHEN POSSIBLE.

WHEN OVERTAKEN LET THEM BY AT FIRST OPPORTUNITY

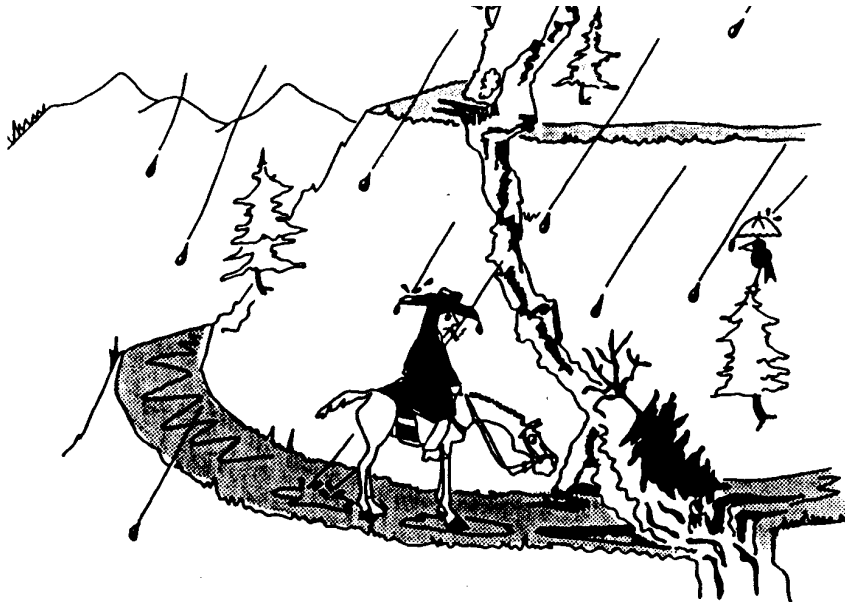
GOOD MANNERS MAKE GOOD FRIENDS. No one has too many of either.

DON'T CROWD THE HORSE IN FRONT OF YOU



Many horses get nervous when crowded, and nervous horses may do strange things. It's a good way to get kicked and this can ruin your day and maybe your whole trip.

STAY ON TRAIL. DON'T TAKE SHORT CUTS



Horsemen are not the worst offenders for cutting switchbacks, but those that do leave a good-sized furrow, which may turn into a gully next spring.
STAY ON THE TRAIL.

KEEP DOGS UNDER CONTROL



Your dog is probably well behaved, but other people's can be a nuisance. If you can't control it, leave it home.

HIGH PICKET LINE

A preferred method of tying horses is with the use of a high picket line'. This is a line stretched between two trees approximately seven feet above the ground. Lead ropes are tied along the high line. Horses seem more relaxed and content when tied to a high picket line than with other methods. They seldom pull against the line because there is nothing solid to pull against.

Where the high line goes around the tree, the bark should be protected by padding, a cinch, or a 20 wide nylon 'tree saver' strap.

The high picket line prevents the horse from getting around the tree, damaging the bark or root system. As with other methods of restraining horses the high picket line should be set up away from the immediate camp area. Away from the trail and ' back in the trees where the least ground cover will be disturbed is the best place.

The lead rope may be tied directly to the high picket line as shown in Figure A, or a loop knot, Figure B, can be tied at intervals along the high line. A ring or swivel can be placed on the line before the loop knot is tied. This is handy because the loop knot has a tendency to tighten on the lead rope making it difficult to untie.

The loop knot can always be loosened and moved to suit any spacing or situation. If the lead rope is tied directly to the high line as shown in Figure A, a half hitch thrown over the loop will keep it from working loose.

There are three things to be cautious about when using the high picket line:

1. There should be a swivel, or the lead rope will become twisted or unraveled as the horse moves around.
2. Tie the lead rope short enough so that horses will not become tangled in it.



3. Keep it tight. The double dutchman knot shown in the drawing will do this. The high picket line is to keep stock from damaging trees or their root systems. If the lead rope is allowed to slide along the high line, it defeats the purpose of this method.

1 1/2" hemp rope makes a good high line. Nylon is too stretchy. Multifilament poly rope is best. It will stretch more than hemp, but is stronger, lighter, and will not soak up water. Many horsemen use their lash ropes for high picket line.