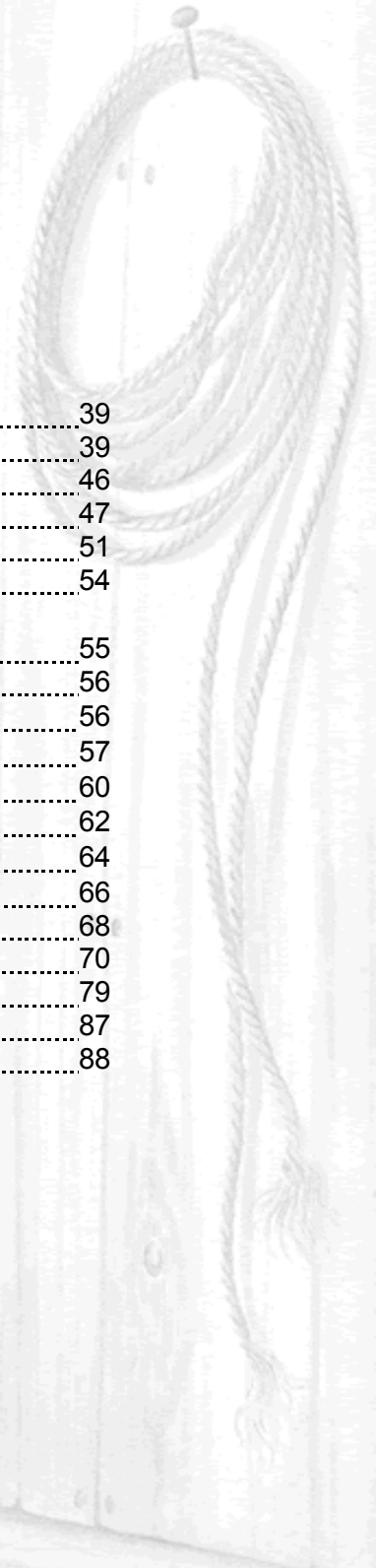


II. USE OF PACK EQUIPMENT

II. Equipment

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INTRODUCTION TO PACK EQUIPMENT

RIDING EQUIPMENT FOR FOREST SERVICE USE ¹

Many differences in opinion exist in the selection of riding gear. However, the intent of this section is to give the beginning rider some basis for making a selection of equipment from the bewildering array of style and designs on the market.

We must realize that each piece of equipment and the style was designed to fit a particular requirement or set of conditions. These particular requirements may or may not be present in our job. Therefore, lest we get gadget happy and load up our old crow bait with a lot of useless plunder, let's take a look at the needs under our working conditions.

We will be riding only gentle horses, we hope, although they will be of all breeds, sizes, and temperaments. Our work will take us out in all kinds of weather, over all sorts of goat trails, through steep, rough country. Our horses will be jumping logs and gullies, shying at real or imaginary varmints, and acting real frisky when stung by a swarm of yellow jackets. These old ponies are also going to slip and fall now and then, so we might as well expect it.

A. Saddle Tree

Under the above conditions, we will need a saddle that we have some chance of sticking to during the normal jumps and spins of our horse, and yet one that we can bail out of fast and clean in the case of a fall. A flat forked slick seated roping saddle would leak the rider all over the place in the first situation, and a form fitting bronc rig would trap him in the second. Our saddle needs, therefore, tend to be somewhere in between these specialized designs. Be sure the saddletree fits the horse to be ridden, as an ill-fitted tree will sore the horse and also could be dangerous to the rider should he throw a fit because of it.

A low setting medium width fork, 12 to 14 inches, with a moderate undercut swell will provide enough leg purchase to keep the rider aboard during most jumps and whirls and will prevent his sliding over the horn while riding downhill. A well-dished cantle is also necessary to block the rear exit from the saddle but it must be low enough to spare the rider's back when his horse is jumping or descending a slope. A well-dished

¹ The basis of this section is a paper titled "Riding Equipment for Forest Service Use in the Rocky Mountain Region" by Tom W. Sears, United States Forest Service, 1965. Significant changes to express state-of-the-art equipment and methods-of-today have been made.

cantle will also keep the rider from riding too far back on the saddle, which can result in a horse with a sore back.

B. Seat

The saddle seat that will remain comfortable all day long has yet to be invented. Foam rubber or sheepskin padding help some, but after they have been soaked in a summer rainstorm, the squashing sound and feel can be somewhat annoying. Saddle comfort depends largely on the shape of the seat and one seat cannot, of course, fit all individuals. However, the most generally accepted concept is wide and flattened near the cantle but narrowing in and slightly sloping upwards towards the front.

C. Rigging

The position of a saddle on the horse's back is determined by the bars of the tree, which are sculptured to fit the contours over the withers. The position of the rigging on the saddle merely moves the cinch forward or back.

The full double or Spanish rigging position, so popular on the plains, places the cinch close behind the horses front legs and will cause cinch sores when used on extended downhill rides.

If we back the rigging up to the center fire position, the cinch falls over the flexible portion of the horse's chest and his wind is restricted on the climbs. Therefore, we had better compromise again, and settle on the 3/4 or 7/8 rigging position.

The 3/4 rig, when installed with the regular rigging rings has the disadvantage of restricting the forward swing of the stirrup leathers. This makes riding uncomfortable and off balance, especially when going downhill. Fortunately, this has been remedied by several patents such as the "flat plate," "all leather," and "rig-in-skirt" rigs. An adjustable rigging is available that allows for two-rigging positions. These are normally "in-skirt" rigs which will allow a saddle to be rigged in more than one position and is therefore more versatile.

D. Flank Cinch

The flank or rear cinch is designed to hold down the rear of the saddle during heavy roping. It has no other purpose. When in use it must be worn loose, about 2 inches below the horse's belly, so that it will not restrict breathing. In this position, the cinch can constitute a real hazard to the horse by scooping up limbs and brush stobs. It may even cause him to buck or become unruly which will place the rider in danger.

E. Stirrups

Experienced riders carry about half their weight on the stirrups. Therefore, foot comfort as well as seat comfort must be considered. Cowboy boots are specifically designed with a steel reinforced arch to distribute the contact of the stirrup over the entire foot. The narrow oxbow design stirrups are made to conform to the arch of the cowboy boot and are unexcelled for contest riding, in which holding a stirrup is of primary importance. However, for all day riding even with cowboy boots, the oxbow is tiring and if ordinary boots are worn, they can be pure torture. The best bet for our use is the flat-bottomed Visalia design with a 2 to 4 inch tread. They are not only more comfortable but safer in that they permit quicker dismounting in the event of a spill. The cowboy who has to run a horse much over rough ground has learned to ride with short stirrups and a short rein. Then if the horse stumbles, his head goes down and the rider is pulled out of the saddle and into the clear by the short rein.

Avoid metal stirrups of any kind as they can be crushed into your foot by a rolling horse and you are stuck with him for sure: this has happened.

F. Stirrup Leathers

The stirrup leathers on a new saddle must be shaped to hold the stirrups at right angles to the fenders. This is done by soaking the lower 8 inches of the fender and stirrup leather fold in water, then twisting the stirrups a half turn past the desired position. With the saddle on a rack and the stirrups in this position, shove a short piece of two-by-four through both stirrups. Now hang a weight to the two-by-four until the leather dries.

Once this set of the leathers has been obtained, it must be maintained. Your safety when mounting depends, in many cases, on your being able to get both feet in the stirrups without fumbling before the action commences. Never hang up your saddle by a stirrup, as this will straighten out the set. If your saddle gets wet on the job, use a stick to hold the stirrups in position when you hang it up to dry. When adjusting stirrup leathers, always pull your slack from the top without disturbing the stirrup fold at the bottom. Use of the Blevins or similar type stirrup leather buckles rather than laces provides a neat secure fastening and are quickly adjustable.

G. Spurs

Use of spurs is not as common today as in the past. However, spurs are not strictly a giddy-up device as most novices think, but can be an important link in the communication system between the rider and his horse, when used properly. When the reins are used to signal the desired

action of the front end of the horse, corresponding signals to the rear end, by means of the spur, speeds and coordinates the whole movement. For example, a left turn is signaled to the horse by pressure of the rein on the right side of his neck and simultaneous pressure of the spur on his left flank.

Spurs should be worn low on the counter of the boot with the lower edge of the band just even with the top of the heel. The underslung heel of the cowboy boot was designed in part to permit a spur to be pulled off the heel in case of a hang-up.

If you do not know how to use spurs and do not have someone to instruct you, do not use them!

H. Bridle

Since we are talking about horse communication, let's not forget the bridle. The bit should be of the short cheeked grazing type with a medium port or post in the mouth piece. Long cheek bits are apt to injure a horse's mouth in case of a fall or by the rider applying too much pressure by pulling excessively on the rein.

The curb bit is probably the most commonly used of all bits and is also the most severe. It gives the rider the most control but can cause the most damage if improperly used. When purchasing curb bits try to buy only bits with a separate hole for attaching the curb chain. If both the headstall and curb chain fasten in the same hole, it is easy to pinch the corners of your horse's mouth.

The standard width of most bits is 5 inches. This will fit most full-grown horses, but individual measurements of the width of a horse's mouth should be taken. Curb bits come with different size ports ranging from straight (no port) to a high port, with the majority of animals taking a medium port.

A stainless steel bit is preferable over an aluminum bit. The extra weight makes the bit "hang" in the horse's mouth better than do lighter bits.

Jointed snaffle bits with a copper mouthpiece are a good bit for starting a young horse.

Hackamore "bits" are an excellent choice, especially for fall use. They have nothing that fits in the animal's mouth so they do not need to be warmed before they are used in cold weather. (Remember, your horse's mouth or tongue will stick to metal in freezing weather.) Because there is nothing in the horse's mouth to cause an injury, if used improperly, the

hackamore is the most "forgiving" steering device for the inexperienced rider. High spirited or "green" horses should not be ridden with a hackamore. Use a hackamore only on a well-trained horse.

It is a good idea to rotate bits periodically so horses do not develop a "hard mouth" and become less controllable. It is also a good idea to remove a bridle when horses are allowed to graze. Reins should be of the open or split type of flat leather. The fancy braided rawhide reins, round reins, and rein chains are designed for use with spade bits, which will not be discussed here.

The headstall may be of either the split ear or brow band type, but should have a throatlatch to prevent the horse from rubbing the bridle off.

Nose bands are useful only when a martingale or tie-down is employed. We can usually dispense with this extra trapping.

Another important part of the riding or pack animals headgear is the halter. A halter must be strong and long wearing, and be able to fit under a bridle with little or no interference to the bridle. The flat nylon type that is available today is a good choice. Be sure they are equipped with good quality hardware. A mule halter should be constructed of good harness leather with a latigo leather side pull. The initial cost of these halters is high, but they wear like iron, and if properly cared for will last 20 years or more.

Ten to twelve feet of ½-inch soft spun nylon makes a good lead rope. This rope should be eye spliced into the halter. Do not use a snap to attach rope to halter. Few, if any, snaps are strong enough to withstand the pull of a horse that pulls back.

I. Ropes

We probably would not be doing much roping of livestock in the course of our official use. However, we may carry a rope just to snake logs out of the trail or to picket a horse.

To facilitate carrying a rope, many western saddles come equipped with a husky 1/2 to 3/4 inch leather strap on the right side of the forks. The use of this secure lashing has resulted in death or injury by dragging, in several instances, when the rider's foot has become entangled in the rope coils during a fall or bucking ride. Let's take a tip from the southwestern cowboy and replace these straps with a light leather horn string that will break under such circumstances. For the same reason, never carry your rope tied to the saddle horn.

J. Blankets

The purpose of the saddle blanket or pad is to protect the horse or mule from the saddle and the load that is placed on him. Be aware that many commercially available blankets today are designed for the Sunday rider, horse shows, and rodeo riders. Most are not designed for continuous use and the wear and tear they will normally get with Forest Service stock.

A good pad will have these features:

- 1) It must be thick enough to protect the horse from the saddle even if the saddle does not quite fit the horse perfectly.
- 2) It must be absorbent and wick sweat from the horseback to allow cooling.
- 3) It must allow for good airflow over the back of the horse for cooling and little heat buildup.
- 4) It helps if the saddle blanket is of a material that will not harbor bacteria or fungus to prevent skin diseases.
- (5) It also helps if the saddle blanket material can be washed and kept clean.

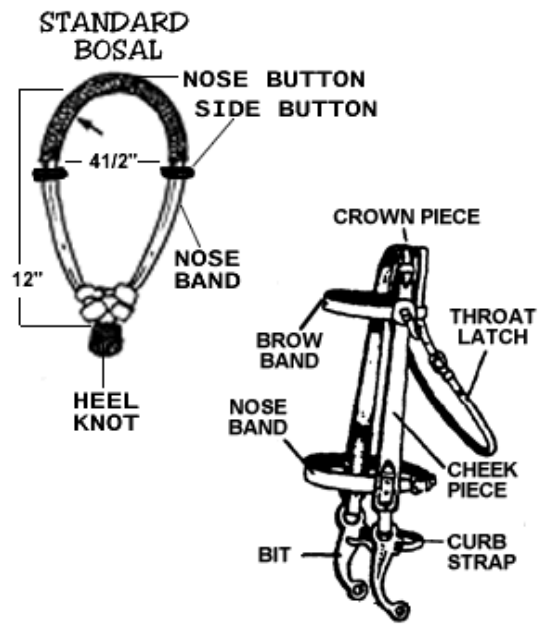
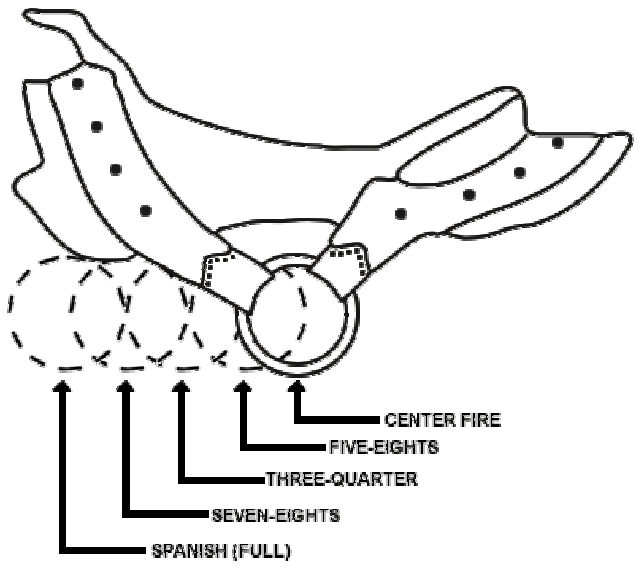
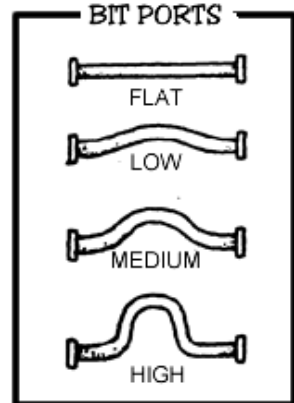
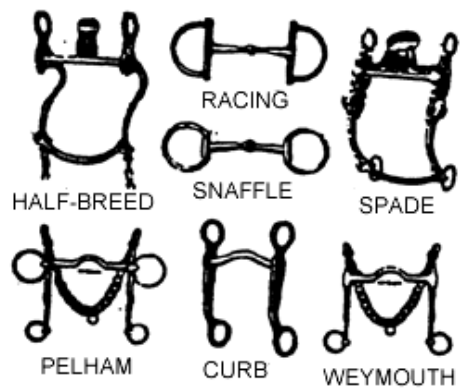
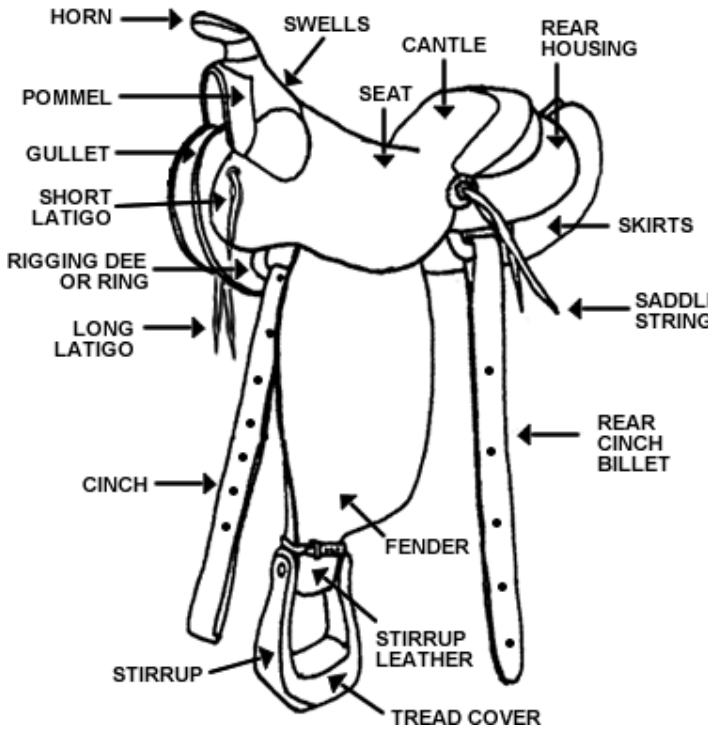
Remember, you must protect the animal from the poorly fitted saddle and the weight of the pack over long periods of time.

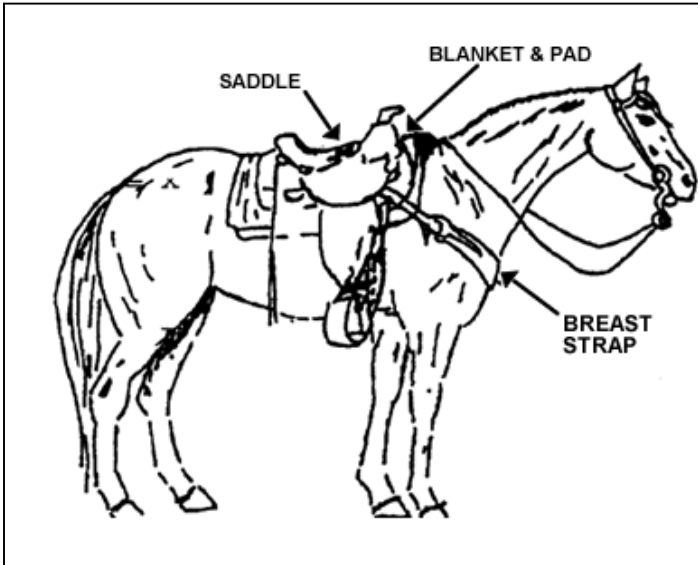
Artificial sheep skin pads, like the "coolback" are excellent. A 30 by 40-inch pad is recommended for pack stock. For riding stock, 30 by 34 inches is sufficient.

K. Cinches

Cinches are like belts, and each horse has his size and must be measured to fit. The correct fit should be measured from about 3 inches behind the elbow of the right front leg to 3 inches behind the elbow on the left side. There is a perfect flat spot on each side of the horse, and this is where the cinch ring should fit to prevent soaring the horse or mule.

Cinches should be made of wool or mohair to allow for maximum airflow and cooling and be at least 4 inches wide or more. There are also new cinches out in the market, which are quite acceptable.



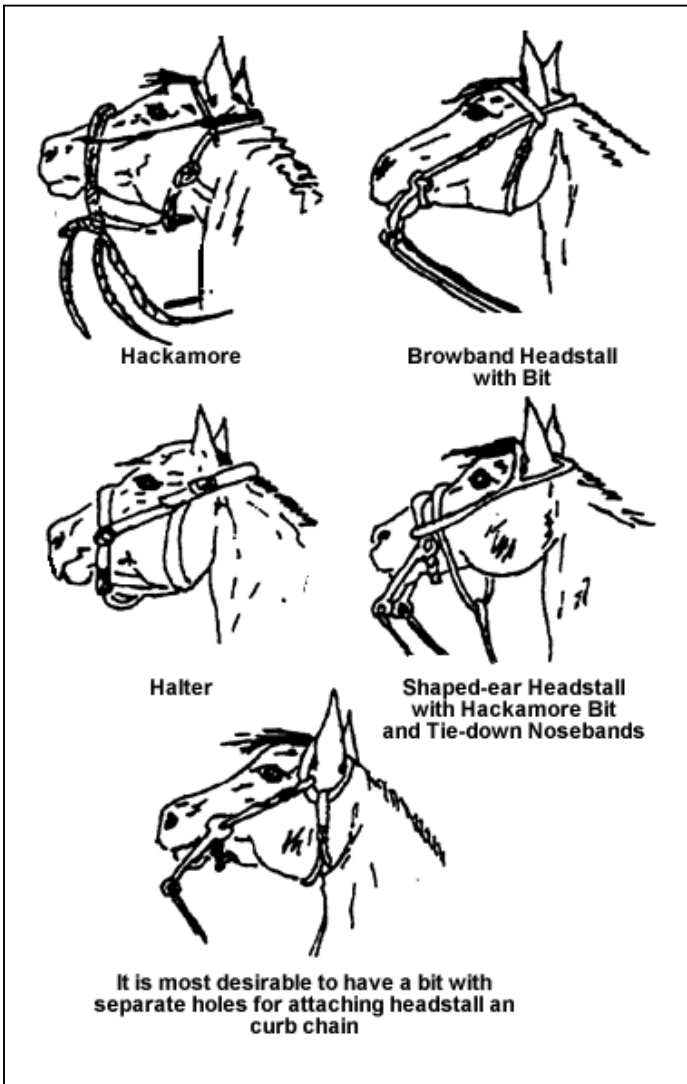


SADDLE FITTING

The saddle should be placed so that the fork is over the horse's withers and the tree is directly against the shoulder. The front girth draws a straight line immediately behind the front leg. Saddle blanket or pad should stick out about 2 inches all around the saddle. The front girth should be pulled only tight enough so that the rider's hand can slide underneath. The breast strap must be adjusted so that the horse is able to breathe and walk easily.

CINCH FITTING

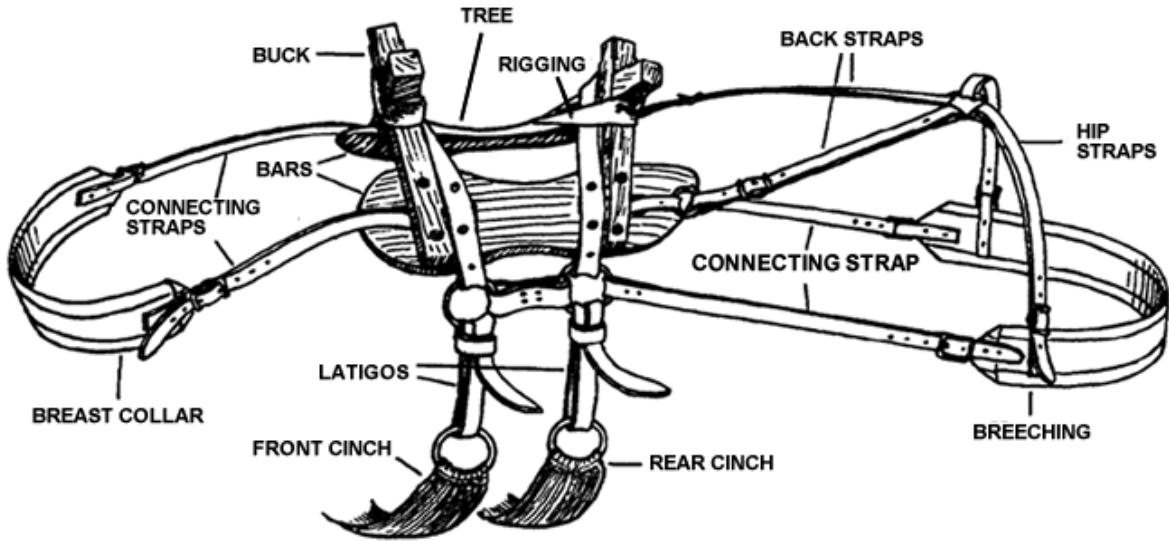
The proper fitting of the cinch is of utmost importance. To achieve maximum comfort and safety from your saddle, see that the cinch is **CENTERED** underneath the horse at all times, with careful regard to the size of the horse.



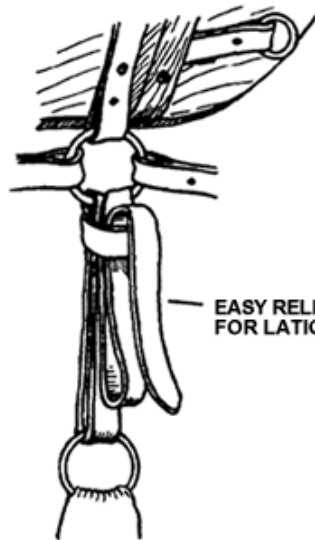
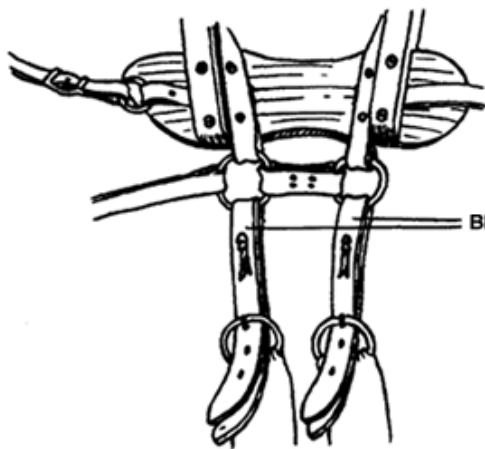
The proper stirrup leather length can best be decided while mounted on your horse. As the first adjustment, raise yourself in a standing position so there is enough space between crotch and saddle for the clearance of the palm of your hand when laid flat. As a second check adjustment, lower yourself to a sitting position with your knees slightly bent so you can just see the tip of your toe as illustrated.

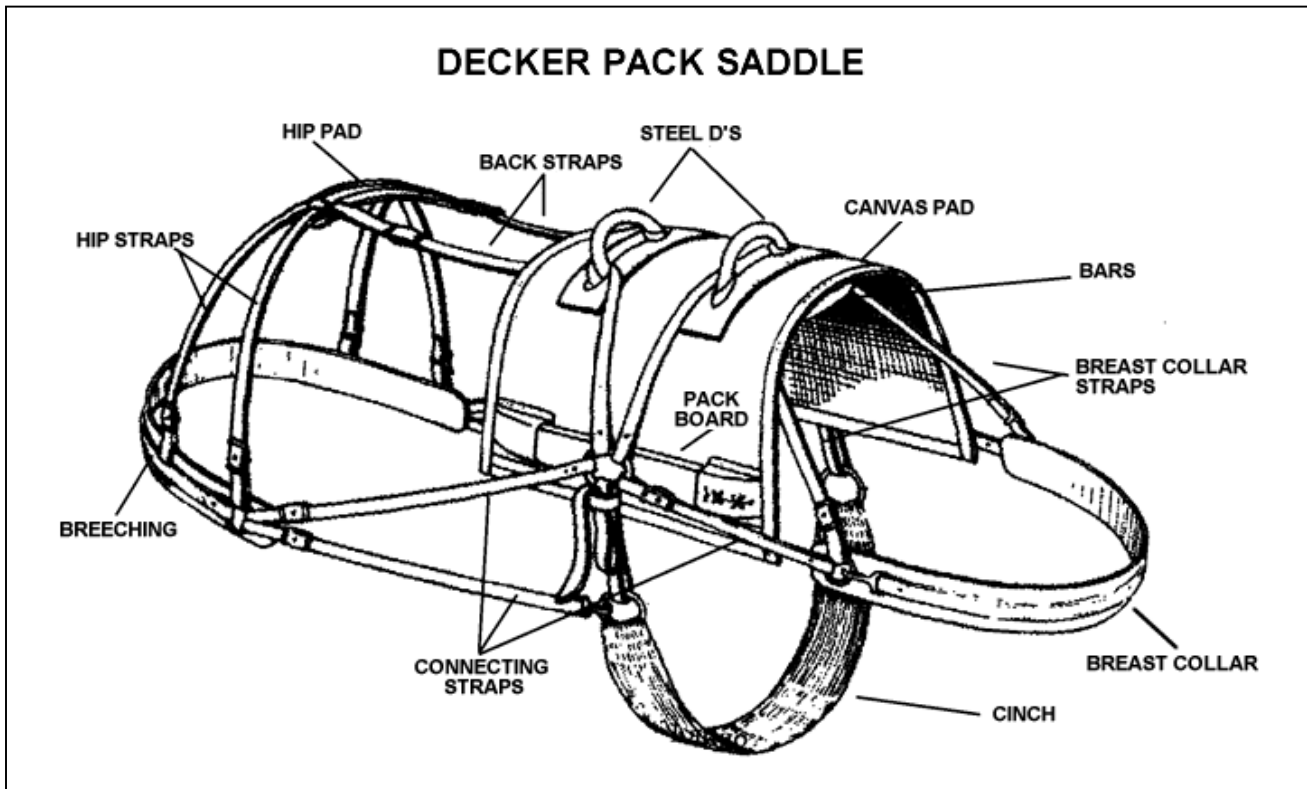
HUMANE HORSE PACK SADDLE

"Humane" is the name of this particular model, which differs from "standard" sawbucks by having bars that fit better to the horse's back.



RIGHT SIDE OF SADDLE





**U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE**

SPECIFICATION NO. MSF-307

DECKER PACK SADDLE

Original Design 1920

Revised March 1937

Revised August 1988

General Information:

A substantial type of pack saddle suitable for use on mules, and for exceptionally heavy duty. Any variation from the indicated specifications must be approved in advance by the Forest Service.

DETAILED SPECIFICATIONS

TREE -

Material: The saddle bars shall be constructed of well-seasoned cottonwood, free from knots, checks, and other defects. The iron forks shall be forged from mild steel.

Dimensions: Shall be as shown on detailed drawing attached hereto and made a part of this specification.

Workmanship: The saddle bars may be rough-shaped with a bandsaw, but due to their curved and peculiar shape, handwork is necessary when finishing them. Bars shall be a minimum of 1 1/2 inches thick with ends tapered and/or rounded to no less than 1 inch thick. The iron forks shall be hand forged to the shape shown on the drawing and securely riveted to the bars. A soft iron 7/16-inch carriage rivet having a 1 -inch or larger head shall be used. The rivet head shall be countersunk in the saddle bars approximately 3/8 of an inch below the surface of the tree. The countersunk holes shall then be filled over the heads of the rivets with plastic wood filler. The saddle bars shall then be dressed smooth and treated with two coats of spar varnish or boiled linseed oil to prevent checking. Bars shall not be painted.

RIGGING

Material: The rigging consists of all the strap work with the exception of the latigo and shall be constructed from No.1 grade black harness leather, American tanned, 12 ounces plus, No.1 grade, Herman Oaks quality or better, split to a uniform thickness. Heavy stainless steel hardware shall be used. Thread used shall be white, three strand twist nylon, or better.

Dimensions: All rigging dimensions shall be as shown on detailed drawing.

Workmanship: All points of fastening shall be hand-riveted using No.9 copper harness rivets and all rivet heads which may come in contact with the animal shall be smooth and well set into the leather. The hip pad assembly, Parts Nos. 24,12, and 13 shall be machine stitched with white three strand twist nylon, or better, approximately seven stitches to the inch and shall also be reinforced with three No. 9 copper rivets.

The breast collar billets, Part No.2, shall also be sewed and riveted in the same manner as the hip pad assembly. The ring, No.24, is sewed and riveted in the billet on the off side of the breast collar while on the near side the snap, No.15, is in the billet. The billets, No.11, are made from No.1 grade latigo leather reinforced with a piece of harness leather, part of No.31. It is important that latigo leather be used at these points to prevent the rings from chafing through. The latigo leather billet and reinforcing piece are riveted together and the whole is securely fastened to the saddle bar with not less than four No.9 round head, blued, wood screws. The length of the screws should be such that they do not quite penetrate through the thickness of the saddle bars. The piece of reinforcing leather (use harness leather) should be large enough to permit spacing the screws far enough apart so that they will not split the wood of the saddle bars.

Billets No.6 are shaped from harness leather in the manner shown in the drawing. The buckles, No.20, are fastened to the billets with two No.9 copper rivets. The assembly is secured to the saddle bar with three No.9 round head, blued, wood screws.

LATIGO

Material: Shall be made from No.1 grade latigo leather, 3/32 of an inch in thickness.

Dimensions: 1 1/4 inches wide by 5 feet long and tapered to 7/16 of an inch at outer end.

CINCHES

Material: Twenty-one-strand mohair, double ring, with rings woven in. Ring dimensions 3 1/2 inches I.D. and 1 3/4 inches I.D. Lengths as specified by COR. The body of the pad shall be constructed from No.2 hard texture duck canvas. Chap leather (4 to 5 ounces) is acceptable for the binding and shoe pieces; however, it shall be free from obvious defects such as cuts, flabby spots, and breaks. The slats shall be constructed from hard wood (oak) that is free from knots and defects. Thread shall be white, three strand twist nylon, or better.

Dimensions: All measurements of the finished pad shall be as shown on drawing.

Workmanship: Binding of pad shall be machine stitched white, three strand twist nylon, or better, not less than five stitches to the inch. Shoe pieces shall be sewn and riveted to the top layer of duck only. Six No.9 copper rivets to each sheet shall be used. A piece of scrap leather shall be used under the heads of the rivets to prevent pulling through the duck.

APARAJÓ PAD/(Half-breed)

Material: The body of the pad shall be constructed from No.2 hard texture duck, meeting Federal Specification No. CCC-D-771 a, Type 1, as amended. Belly leather or B grade harness leather is acceptable for the binding and shoe pieces; however, it shall be free from obvious defects such as cuts, flabby spots and breaks. The slats shall be constructed from No.1 common ponderosa pine, or equal, free from knots and defects. Thread shall be not less than No.6 Irish flax harness thread.

Dimensions: All measurements of the finished pad shall be as shown on drawing.

Workmanship: Binding of pad shall be machine stitched with heavy waxed harness thread not less than five stitches to the inch. Shoe pieces shall be riveted to the top layer of duck only. Four No.9 copper rivets to each shoe shall be used. A piece of scrap leather shall be sewed under the heads of the rivets to prevent pulling through the duck.

EQUIPMENT CARE AND HELPFUL HINTS

Rain Gear

Chaps, medium length raincoat and a good hat make as good a weather protection as you can get. The raincoat should be of good material so that it won't snag easily and it should fit well so that it won't flop and spook your stock. A darker earth-tone color that won't reflect light is the best as some bright colors will spook the stock. Horses and mules do not see color, but do see reflected light from bright colors. A raincoat that breathes is also advantageous, as it will allow you to work and not sweat too much. Canvas that is treated is as good a material for a good raincoat as you can get, as it breathes, won't snag easily, and can be purchased in good earth-tone colors. Most plastics and man-made materials are too light, noisy, and hot when used in warm weather.

Chaps

Chaps are a must for a packer and should provide several functions. Chaps protect the rider from brush and snags, keep him dry and comfortable in most weather conditions and keep the rider's clothing clean. They should be comfortable to wear, not too heavy and fit like a baggy pair of jeans.

Bat-wing chaps or shotgun chaps are the best and should be made of split chrome or oak tan leather. Bat-wing chaps should have three snaps and a wing of 9 inches or less. Shotgun chaps should have heavy duty zippers, starting at the top and ending just below the knee.

Shotgun chaps are preferred because they do not flop around when moving around pack strings or hiking. They also keep clothing clean and dry when working around stock and camp.

Saddle Bags

Saddlebags should be of reasonable size; 8 by 10 inches or 10 by 12 inches, with a 3-inch gusset and a good flap to close the pocket with two buckle straps. Leather is best, but canvas or nylon ones will work. All saddle bags should be permanently fastened to the rear housing via saddle string and conchos, and they should be fastened down to the rigging to prevent flopping when the horse trots or runs. Do not load your saddle bags too heavily as

they ride on the lower back of the horse. Saddle bags should not weigh more than 6 pounds total. Usually lunch, camera, small flashlight, gloves, and small field glasses are appropriate things to carry in your bags.

Cleaning and Oiling Leather

Riding saddles, pack saddles, and all leather should be wiped clean after each trip and thoroughly cleaned and oiled at least once a year. After each trip, saddles and all leather equipment must be dried and wiped clean with a soft clean cloth. This process will lengthen the life of the equipment and save time in costly repair or replacement. Dust should be wiped from all rigging and as far up under the seat jocky and rear housing as possible. Stirrup treads should be cleaned and all mud and dust removed.

At least once a year, all saddles and leather equipment should be disassembled as far as possible, dried, wiped clean, and saddle soaped with a good glycerin saddle soap (Leather New is a good example). After saddles and leather equipment have been saddle soaped, they should be oiled with a good saddle oil. Never oil a latigo. The oil used should meet these standards: It should penetrate and preserve all leather, it should waterproof the leather, it should not stain clothing, and last of all, if possible, it should protect the leather from rodents. CastorTM oil meets these requirements. Neats FootTM oil is good oil that is normally available in saddle or hardware stores. However, Neats FootTM oil is more likely to stain clothes and is more attractive to rodents.

Padded riding saddle seats should not be oiled but should be waterproofed with a good sealer such as SnowsealTM. Oiling riding saddles, pack saddles, and all leather equipment will save time and money in repairs and replacements.

Types of Leather

There are many types of leather, and caution must be used so that poor quality leather is not incorporated into leather equipment used extensively in the mountains, as it will not stand the hard use. When men and livestock depend on the leather equipment for safety and to transport equipment and men over mountain trails, it must be of good quality. American tanned leather is preferred; oil tanned for latigo and some straps and chrome or oak tanned for rigging and most support straps and stirrups. Oak and chrome tanned leather is used for harness leather and is the best for all pack saddle parts and rigging on riding saddles. Leather should be American tanned and at least harness quality for all repair of leather equipment.

CARE OF SADDLE AND PADS

Proper care of a good saddle will assure long and satisfactory service. Your new Ray Holes Saddle will require a much shorter breaking-in period because it is properly constructed to start with. The skirts are hand blocked around the bars and under no circumstances should any part of the saddle be dampened in water except the stirrup leathers and lower portion of the fender. These should be dampened with a sponge and lukewarm water, then set to suit the rider's taste and allowed to dry or partially dry before riding.

Such methods as soaking a new saddle in the horse trough or creek are not only ridiculous, but also dangerous. New skirting leather requires about six months to set. During this period it should be kept as dry as possible.

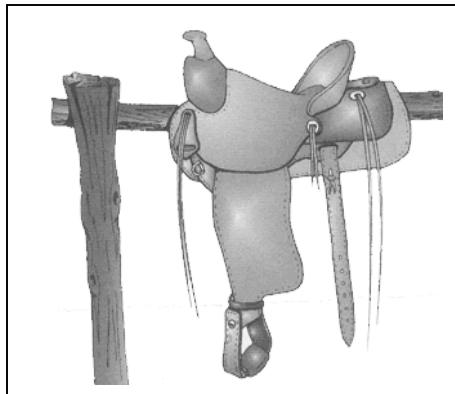
In areas where heavy rains and moisture are unavoidable, the saddle should be given a protective coating of Saddle Butter or similar leather preservative as often as necessary. Keep in mind that while some oil is very beneficial to leather, it has little, if any, value as a waterproofing.

At your request, we will gladly give your new saddle a coating of Saddle Butter, which is the trade name for the special dubbin we make for saddles that are to be exposed to excessive moisture and hard use. Saddle Butter should not be used on the tooling of show saddles, as tallow's and hard waxes in its composition are difficult to remove from the cuts and oil background of flower stamping. On show saddles, use Saddle Butter on the under-side the leather.

Cleaning and oiling a saddle should be done as often as necessary, depending on the conditions your saddle has been exposed to. Range saddles should be cleaned, oiled, and

treated with Saddle Butter at least twice yearly. Additional soapings are beneficial.

Before oiling your saddle, Clean all dirt and dust off with a damp sponge and saddle soap, being sure to give the parts which come in contact with the horse and sweat, such as fenders and stirrup leathers, special attention. These same parts will require more oil or Saddle Butter. When the saddle is nearly dry, oil lightly and apply Saddle Butter, being sure you do not miss the rigging and stirrup leathers which will have to be slid out from under the side jockey part way in order to reach all surfaces.



Do not oil excessively. Saturating leathers with oils opens the pores, making the leather flabby, thus causing it to collect dust, which has an abrasive action on leather. Remember, any dressing can be applied too heavily.

Oils and greases for leather should be pure and of either animal or vegetable origin. When using neatsfoot, be sure it is pure, not compounded with mineral oil, as most of it is today. These compounds are sold under misleading names such as "Prime Neatsfoot Oil" or "No. 1 Neatsfoot Oil." Avoid oil that is not labeled "Pure Neatsfoot." If you use unsalted butter, be sure it has been washed clean. This will prevent rancid odors developing.

Always set your saddle on a rack or pole when not in use, if possible. If necessary to lay it down, lay it on its side with all leathers straight. Saddles are made for hard use but not abuse. A little care will repay you well in the' form of many years of satisfactory service.

EQUIPMENT CARE PRODUCTS



Since its creation in 1936, SADDLE BUTTER has remained the finest leather care product available. SADDLE BUTTER replaces the natural oils in leather. It will soften that dry leather and will create and maintain the mellow feeling you desire in old or new leather.

SADDLE BUTTER gives a superb waterproofing with its mix of natural waxes which buff-out to a hand rubbed finish when dry



Fiebing's Neatsfoot Oil 100% Pure A natural preservative for all leather articles subject to rugged use and exposure. Use before exposure to repel water and protect against stiffening. Use after exposure as a restorative to soften dried out leather. Recommended for saddlery, gun cases, boots, moccasins, shoes, baseball gloves and other leather items.



Since 1942 CHAP WAX has proven itself the finest natural wax waterproofing application for top-grained leather products. CHAP WAX provides extra protection from rain, snow, mud and other barnyard elements.

Use CHAP WAX on Chaps, Chinks, Quilted Saddle Seats, Boots, Shoes and other leathers needing protection which results in extra life! CHAP WAX can also be applied over SADDLE BUTTER for added protection. Equally popular DRI-BOOT is essentially the same formula as CHAP WAX only labeled differently for boot and shoe stores.



TRAILER SAVER is the revolutionary way to help stop the corrosive actions of animal wastes. TRAILER SAVER is a neutralizer, sanitizer, deodorizer, and cleaner all in one, that helps save your trailer. TRAILER SAVER goes deep to neutralize the corrosive effects of the acids.

The inviting aroma of apples greet you and your horse when you use TRAILER SAVER. This appealing scent is pleasant to work in and also is added to help calm nervous horses, making trailering a better experience.



Paste Saddle Soap, an effective cleaner and conditioner for all types of leather and saddlery goods.



Rancher's Wax Oil is a superior leather care preserver and waterproofing that gives extra protection against the harsh leather damaging conditions found in the barnyard and corral.

Use on; work boots and leathers



Rawhide Dressing was developed by a professional rawhide braider. This fine dressing is used to clean and preserve your fine rawhide products.

USE OF EQUIPMENT

Packing the Army Way

Copied from the Army Manual circa pre 1900

General Rules

Pack animals should be allowed to drink on the march, when they indicate their thirst at fords, etc.

Pack animals should be groomed, etc., and treated on the same basis as a saddle animal, in order to get the best results.

Their backs should be carefully examined for burrs before putting on the blanket or aparejo. The hair should lie smooth and in one directions

The animal must always be blinded when putting on the aparejo and loads. If necessary to move to another position, remove the blinders, move, and then put them on again.

A pack animal when he puffs himself up while being loaded or just before cinching *should not be kicked in the belly to expel the wind*. Puffing gives the animal brief pleasure and does not affect the lashing or cinch any - for it has to be tightened anyway a second time shortly after the march begins, owing to stretch and give of the rope.

The animals should be treated with kindness.

A pack animal must have confidence at all times in the men of the outfit for without such implicit confidence, time is lost in packing and thousand of other irritating ways. The man is not on the animals back all the time with spur and bit to hold him in hand and therefore confidence and affection, if possible, should be established by uniform kindness. Fords, bad trails, etc., can be negotiated when this confidence exists where there would otherwise be nothing but balkiness and confusion.

A load should never be adjusted uphill. Turn the animal so he faces downhill.

Keep the pack train closed up, head to haunch. Do not allow it to straggle out. A wild and erratic animal may be haltered to the pack ahead Generally a pack train quickly settles down to a single file.

The complete march for the day should be made without an extended "rest halt" if possible, and then go into the day's camp. In a hilly or mountainous country, short halts are necessary to straighten the loads, tighten them, etc.

If a pack animal falls and it is necessary to cut the lash rope, cut it at the standing part. It will more quickly drop the load and do less injury to the rope.

The aparejos should be removed at the end of a march and the animals allowed to roll. This is true unless their backs are lathered and overheated and the air is too keen or cold.

When emergency compels the packing of very heavy loads beyond the normal, or there is a long march do not allow the animals to wander from the single file or lie down. Every means should be used to keep them on their feet and marching. They can keep on marching when, if they lie down, they cannot get on their feet again even with the load off. Stupendous loads have, in emergencies, been packed on a mule that could carry it as long as they were marching. This is a rule for emergency only, "keep them going."

When two or more packers are with an outfit the one-man hitches should never be used. Two packers should always work together.

Pack transportation is continually a matter of judgment, experience, and common sense. It cannot be formalized like a military maneuver. It is intended for the most flexible and mobile service under all conditions, whether in the field of exploration or for military purposes.

Efficiency can best be secured by preventing inexperienced interference.

STANDARD OF ORGANIZATION FOR MILITARY PURPOSES

A pack train consists of:

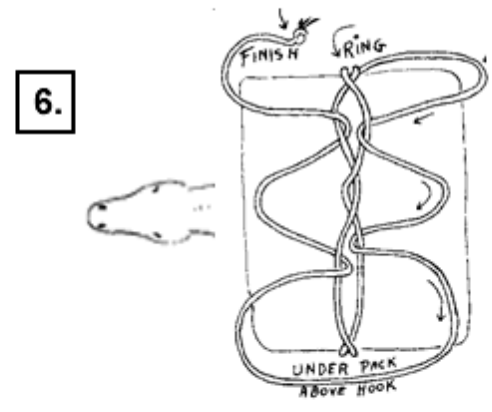
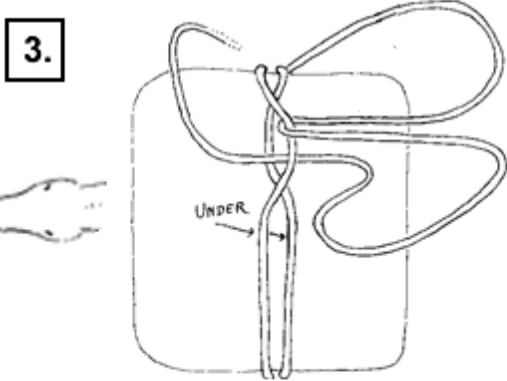
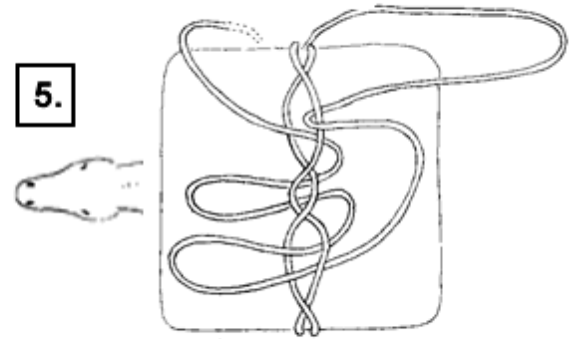
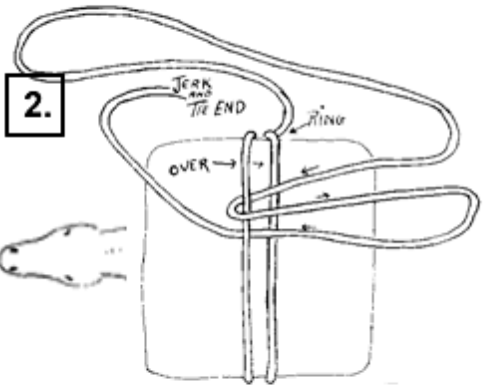
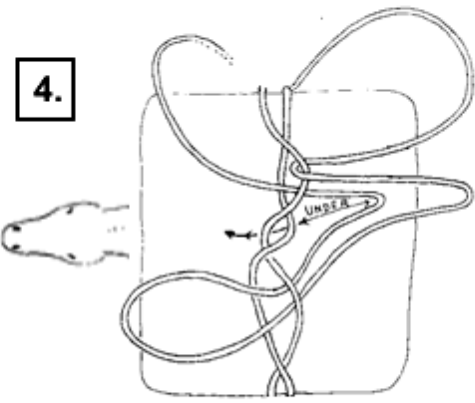
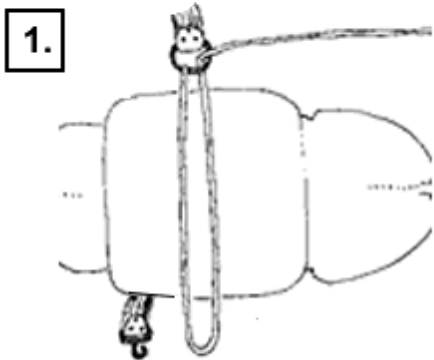
50 Pack Mules	1 Cargador
1 Bell Horse	1 Cook
14 Riding Mules	14 Packers
1 Park Master	

And complete outfit for camp and subsistence and the requisite number of riding saddles mid aparejos.



DOUBLE DIAMOND HITCH

A Double Diamond hitch can be made to fit and secure awkward or bulky loads. As with other diamond hitches, the double diamond helps to "bring down" a high bulky pack.





THE MOUNT WHITNEY DIAMOND

By Charlie Morgan

There are many ways to tie a "Diamond" some are easier to tie than others, but they all do the same thing which is to hold your load in place as you travel over the trails of the back country. Each one of us that pack use a hitch that they feel is best. There is no right way or wrong way when it comes to hitches. The one that works for you is best for you. If you really want to get into an argument just suggest that your way might be better when it comes to packing. Oh well. I'll chance it! I share with you some reasons why I feel the Mount Whitney Diamond is the best hitch for most loads.

The Mt. Whitney Diamond (MWD) is fastest to tie, uses the shortest length of rope, is easiest to learn and holds the load as good or better than most hitches. All diamonds tend to tighten the load to sides of the pack animal, and are able to hold a high top load in place by the basket like arrangement of the rope created by the diamond.

Why do I think the MWD is better than the box hitch? (Remembering this just my opinion) The MWD lash rope is usually about 40 ft in length while the box-hitch requires a 50 ft. rope. The MWD stays tighter than a box-hitch, and is easier to tighten while on the trail. All diamonds hold a top load better than the box hitch. Advocates of the box-hitch point out that it pulls the side loads out and away from the sides of the pack animal as if this was a benefit. The fact is that as long as the panniers or boxes are the right size for your animal the only thing that "pulling the boxes out" does is shift the center of gravity higher on the animal and increase the amount of weight that is distributed by the bars of the pack saddle. The only time you should want to pull the side loads off the sides of the animal would be to avoid chaffing the animal because your panniers are too large and are rubbing the shoulders or hips. For example, would you carry a backpack that had some sort of harness that pulled it away from your back and shifted all the weight to the shoulder straps? I rest my case!

Why do I use and prefer the MWD over other kinds of Diamond Hitches? Speed and ease of tying and side load holding capability.

The MWD is one of the easiest diamonds to tie. It is very easy for one man to throw and still get a nice snug hitch. From start to finish you only cross to the off side one time. When unpacking the entire hitch is easily removed without going to the off side, and the lash rope comes off free of knots.

The MWD tightly supports both ends and underneath each pannier, some diamonds do not offer this support. This is especially useful when packing a floppy kind of side load such as dunnage using slings and you want to support the ends of the dunnage bags protruding out of the sling.

Most packers in the Sierra use either the MWD or a variation for want of a name I call the "Vest Side Diamond" (VSD). These hitches are mirror images of each other with the MWD finishing to the front of the animal the VSD finishing to the rear.

I prefer the MWD for three reasons: First, while throwing the MWD hitch the slack loop (see illustration sheet) which must be passed over in both types passes or is flipped over the rear of the animal this cannot be done with the VSD because it would have to be tossed over the head of the pack animal. Second, the most important tightening pull which is the first pull that stretches out the diamond is made to the rear with the MWD and thus settles the load more or less to the rear of the animal. I have often seen loads shift forward on a pack animal with a high top load, but seldom have I seen a load shift backwards. Third, I prefer to finish to the front so that I can tie off by throwing a half hitch around the rope supporting the pannier about midway down and pulling loop of rope across and around to the rear of the pannier where it is tied off with a couple of half hitches and the slack tucked away. This cannot be done if you finish to the rear as in the VSD.

I have used the Mt. Whitney Diamond for about 45 years and it has served me well. In fairness to those who use other hitches, I know several that have used other hitches for longer than 45 years, and they seem to do very well.

MOUNT WHITNEY DIAMOND HITCH

Charlie Morgan

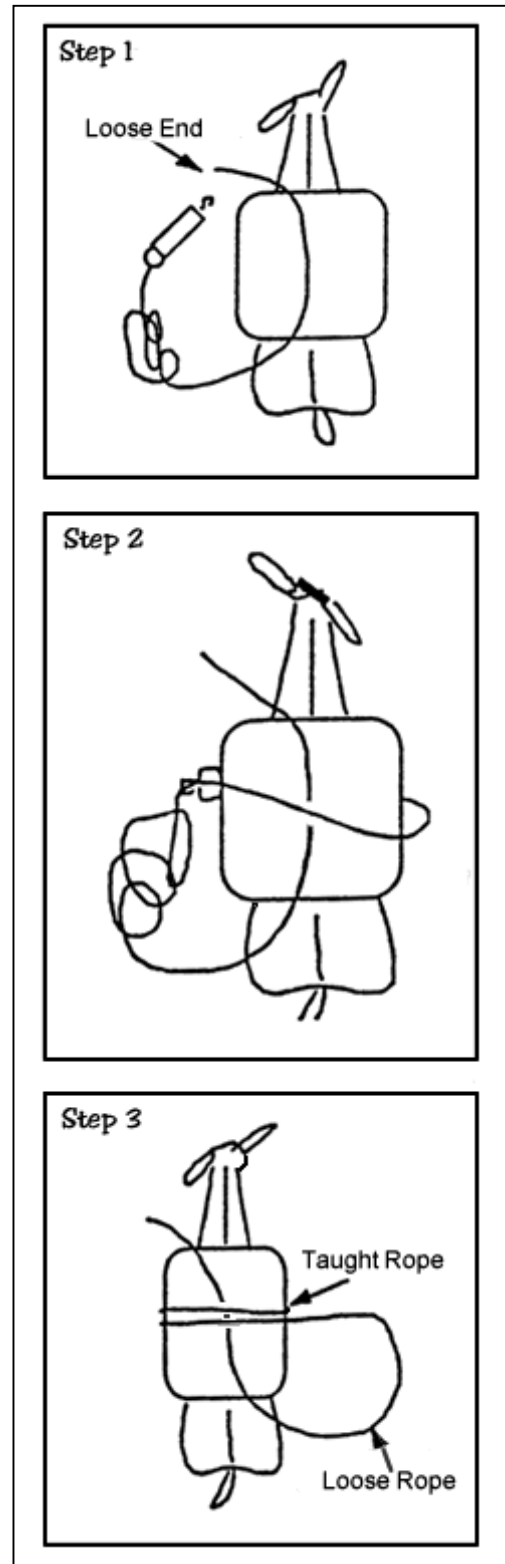
I don't believe anyone knows where the "diamond" hitch originated. William Russell was accurately painting it in the late 1800's, but it no doubt originated many years before that. There are many ways to tie it, and as far as I can see, they all achieve the same goal. Packers have argued for at least a century over which is better the diamond or some other hitch, such as the box hitch.

It is a simple hitch to learn, and will serve effectively on most loads. It requires about 40 ft. of rope; I prefer $\frac{1}{2}$ -inch cotton or spun nylon, and a 36 inch lash cinch which has a hook at one end.

STEP 1. Loose end of the lash rope is placed parallel to the pack animals back with the end of the rope to the front and about a foot off the ground.

STEP 2. Place lash cinch and rope around the pack and the barrel of the animal. Hook lash rope, with hook open to rear, and pull lash cinch back until the hook is just clearing the animals' belly. Pull snug but not tight.

STEP 3. Pass or toss the remainder of the lash rope across to the far side, keeping the loose rope to the right of the taught rope.

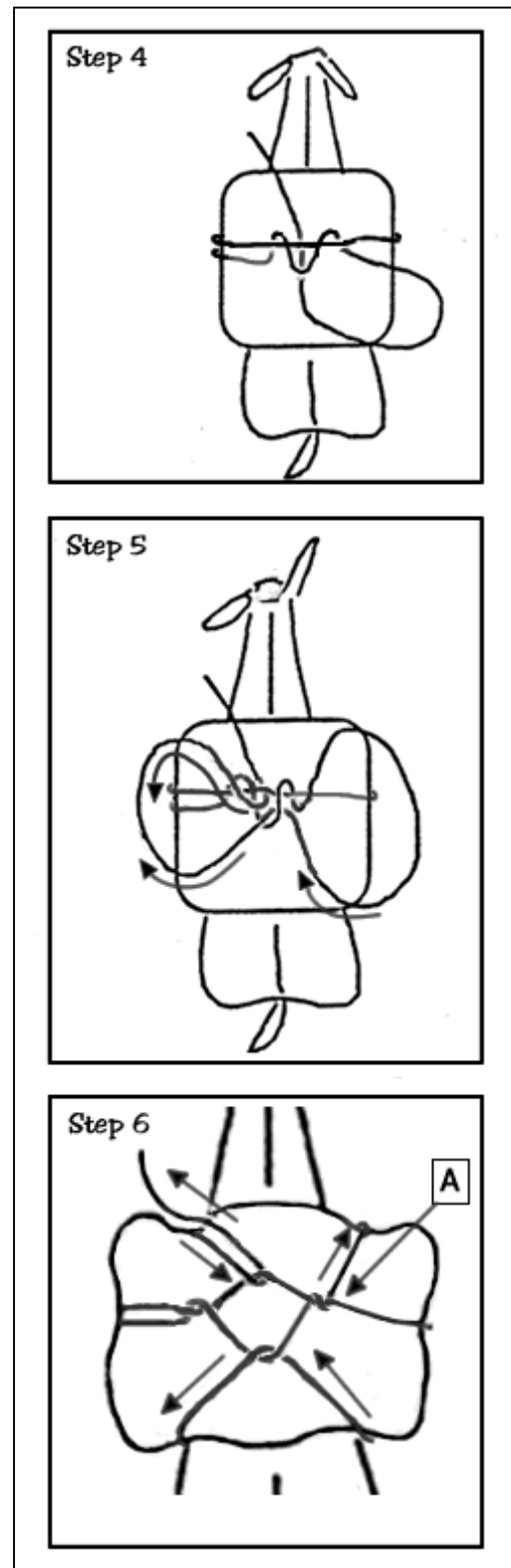


STEP 4. Pull a small loop in the loose rope under the taught rope and back over the top and place towards the rear (as in the illustration). The rope placed in Step 1 should lie beneath the loop, grasp that rope and go to Step 5.

STEP 5. Pull a fairly large loop using the loose end part of the rope through the small loop created in Step 4 (see Step 5). Now tighten the cinch until the taught rope is fairly tight (The ultimate size of the diamond depends on the amount of tension created). Next start pulling the slack out of the loose rope; follow the twists of the loose rope around the taught rope taking care not to drastically change the position of the twists in relation to the load.

STEP 6. After all slack is out to point "A" pull the rope down around the left side-load, (follow the arrows) keeping the rope tight at all times and in the center of the box or pannier. Next pull the slack through the rope that will make up the rear point of the diamond, and proceed to wrap the left, or rear side-load. Pull the slack to the front and you have created a diamond on top of the load. Tie off with a couple of half hitches and tuck away any loose rope.

HAPPY TRAILS!



BOX HITCH

Charlie Morgan

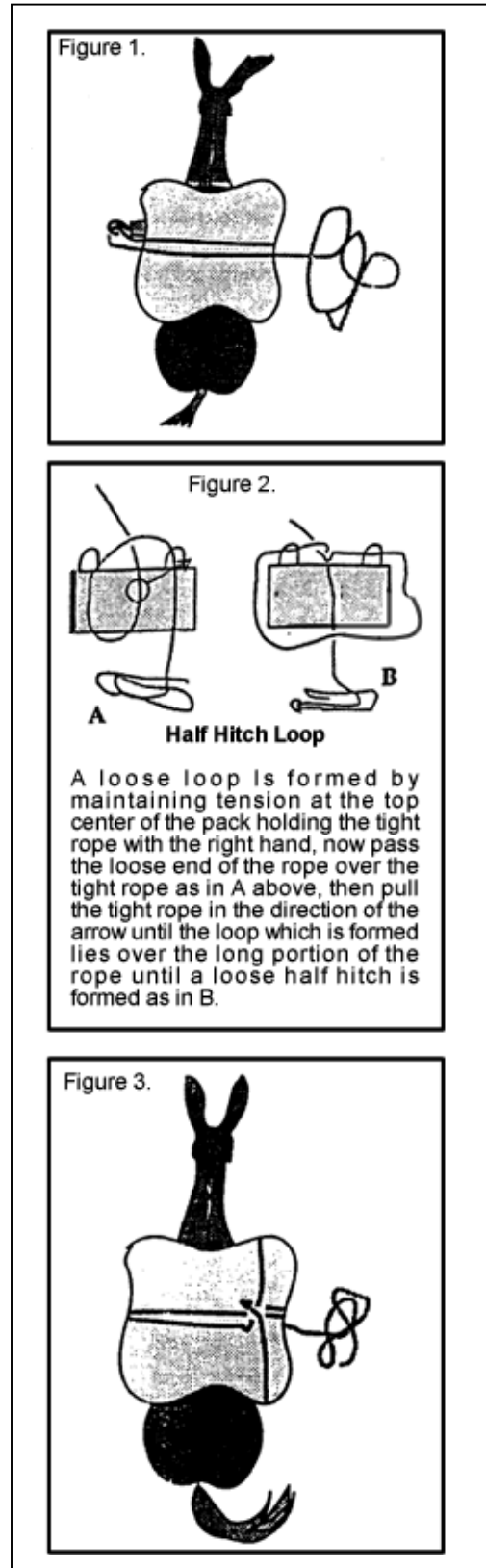
The box hitch is one of the most popular hitches used in packing loads on horses and mules. The hitch requires the use of a lash rope which is made of either cotton, poly or nylon rope and is about 50 foot long and is tied to a 30 to 36 inch cinch which has a hook on one end. Steps to tie the hitch are:

Step 1. Start tying the hitch by passing the lash cinch over the animal, back under the belly and with the hook always open to the rear, run the rope through the hook and then toss the balance of the rope over the animal (see Figure 1.)

Step 2. Pull the rope fairly tight through the hook until the lash cinch is snug against the belly. Adjust the rope being careful so that when tightened neither the hook nor the ring touches the belly of the animal. When snug most packers take an extra turn or place a half hitch around the lash hook to assure that the a rope does not slip back through the hook reducing tension on the rope.

Step 3. Maintaining tension on the rope move to the off side by stepping behind the animals hind quarters and create a large loose half hitch (See Figure 2).

Step 4. Keeping tension on the rope proceed to wrap the rope around the top center of the pannier down and under the right corner across and under the left corner and then up over



the top left center of the pannier and back to point of the beginning.

Pull the rope back under the top of the loop and then reach under the pannier and pull the long end of the rope very tight. The bottom of the loop will be pulled towards you and then all the rope in the loop will be tightened (see Figure 4)

Step 5. When the far side is complete, keep the rope tight and move back to the other side and repeat steps 3 & 4 on the near side.

Step 6. When the near side is complete, tie off the rope on the top of the pack with a couple of half hitches, and tuck in all loose ends of the lash rope. If you have completed all steps correctly your pack will look like Figure 5.

You are ready to hit the trail with loads tied with a respectable hitch that if tied tight and your loads are all balanced correctly, will get you to your destination with little trouble.

One objection to the box hitch is that often the cinch loosens as the animal travels and the load settles. This can be overcome by using a "cheater strap" which is a piece of leather strap with buckle on one end. The rope is fastened to a separate ring. The strap is run between the ring at the end of rope and the lash cinch ring and buckle. The strap can be tightened on the trail to take up slack.

HAPPY TRAILS!!

Figure 4.



This drawing illustrates how the rope should pass under each corner of the pannier and how the long end of the rope passes under the half hitch loop and when the long rope is tightened a portion of the loop which is under the pannier will be pulled tight towards the packer. This action, as you will see, helps to lift and pull the pannier away from the side of the pack animal (one of the benefits of tying this hitch)

Figure 5.



WESTERN BOX HITCH

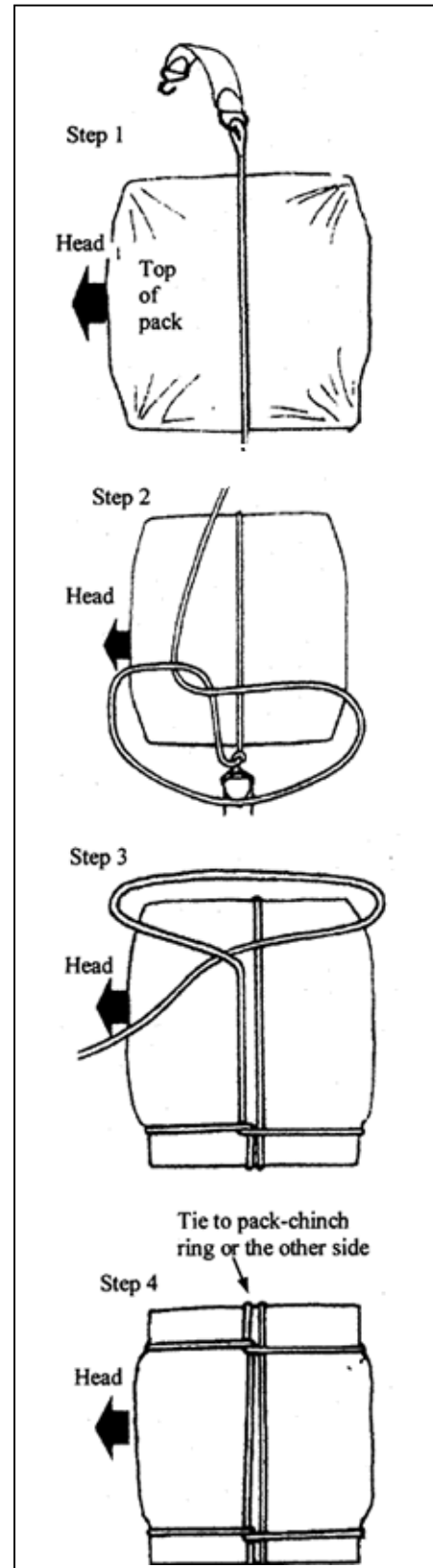
"There are many ways to skin a cat"

The Western Box Hitch is "perhaps" the easiest hitch to tie. It has been around since man started placing loads on animals. Problem is, it's not a very good hitch for top or bulky loads. It will however, serve quite well when using boxes. Today, this hitch is not used much, but was a popular hitch in the southwest. This hitch requires much less rope. Where the Locking Box Hitch requires about 50 ft. and the one man diamond requires about 40 ft, the Western Box Hitch only requires about 30 ft. This can be a problem if you plan to use the lash rope for a highline. Its best to have too much rope, than too little

THROWING THE BOX HITCH

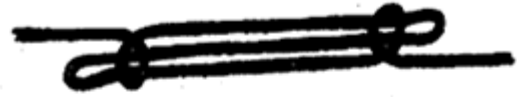
Step 1: Throw the cinch on the end of the lash rope under the horse/mule from the right side. (Some packers throw the lash cinch over the pack and catch it with their left hand.) If the horse or mule is gentle enough, toss the rest of the lash rope over the pack to the ground on the other side.

Step 2: From the left side, the rope is tightened on the pack by pulling the rope upward through the hook at the end of the cinch. An extra turn is taken around the hook to keep the rope from slipping. Tension is maintained while placing a half hitch around the box or pannier. Tension is maintained while the packer moves around the right side of the animal, by tucking a part of the rope up and under the tight rope already coming over the top pack. Throw the rest of the lead rope over the pack to the right side of the animal.



Step 3: Next, the right hand grasps the hanging rope and repeats placing a half hitch as was done in Step 2. All the time maintaining tension on the rope coming over the top of the pack.

Step 4: Tie the rope to the pack cinch ring with a couple of half hitches. Excess rope can be tied back across the top to the opposite half hitch. A sheepshank can be used to shorten the rope if needed. [Horace Wells]



You can use a sheepshank to shorten the rope.



Use half hitches to tie lash rope to the cinch ring.



Or tie excess rope back across the top to the opposite half hitch

THE WESTERN SIERRA "LOCKING" BOX HITCH

"There are many ways to skin a cat"

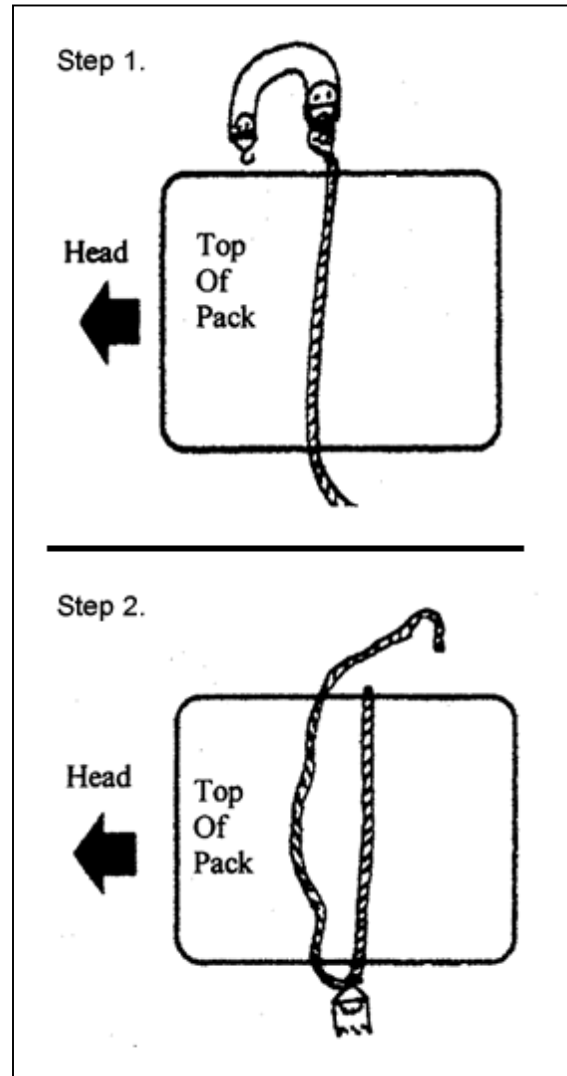
The box hitch is used more today in the Sierra than any other hitch, but this was not always the case. During the hay-day of packing the diamond (of some form) was used exclusively. The box hitch was seldom used. Not until the 1950's did the box hitch gain popularity. The reason was the use of boxes. Before the 1950's, tourists would stay out for three or more weeks. The packers would stay out with the tourists, cooking and wrangling. The food was different then also. They didn't have all the processed foods we have today. With the coming of better-processed foods and shorter trips, the use of wooden panniers came into their own and less top loads were packed. So, commercial as well as recreational packers began using the Box hitch more and more.

THROWING THE BOX HITCH

Step 1: Throw the cinch on the end of the lash rope on the ground under the horse or mule from the right side. If the horse or mule is gentle enough, toss the rest of the lash rope over the pack to the ground on the other side.

Step 2: From the left side of the animal, the rope is tightened on the pack by pulling the rope upward through the hook at the end of the cinch. An extra turn is taken around the hook to help keep the rope from slipping. Tension is maintained while the packer moves around to the right side of the animal by tucking a part of the rope up and under the tight rope

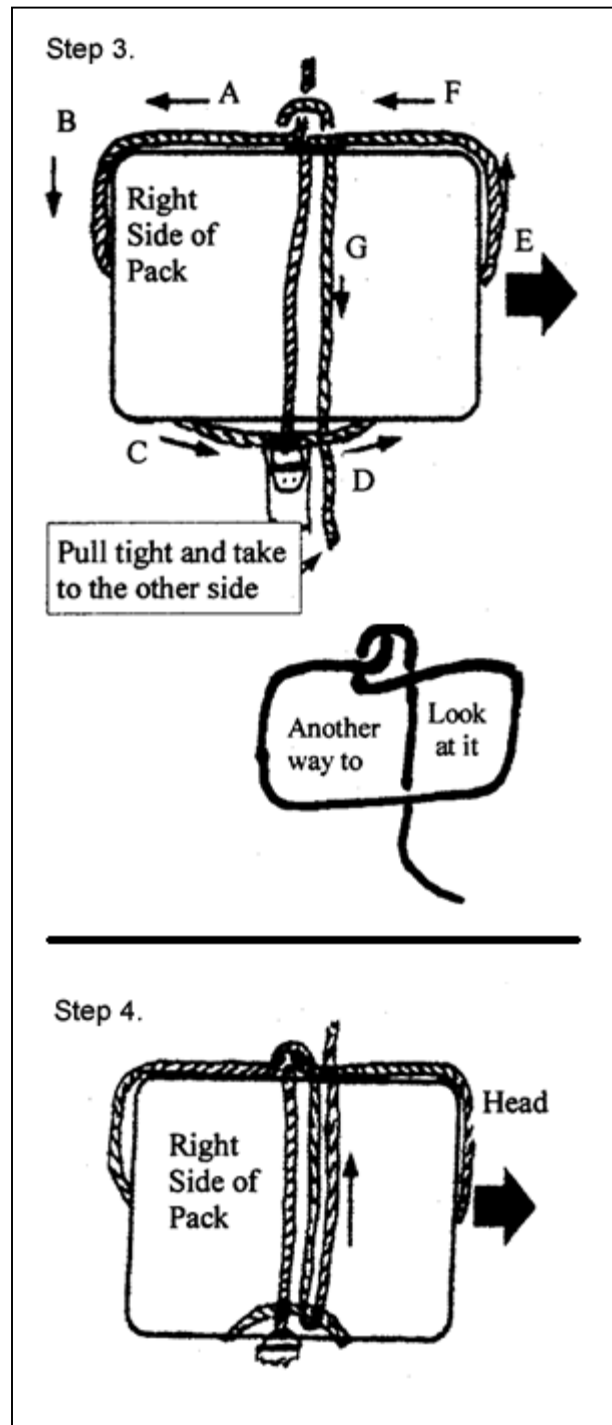
already coming over the top of the pack.



Step 3: From the right side of the animal, pull on the rope with the left hand to take up tension while the right hand brings the rest of the rope on over. The right hand then grasps the hanging rope near the ground and brings it over the left hand to near the top of the pack. The right hand then maintains tension as it brings the rope to the right over the pack. The right hand next brings the rope down, around, under and between the box and the animal. By pulling up on the part of the rope that now extends on down to the ground, the bottom of the box is brought out to a position four or six inches from the side of the animal.

Step 4: Repeat Step 2 & 3 on the other side of the pack. Securely fasten the loose end of the rope to a tight strand near the top of the pack, so that tension is maintained while traveling. You have just completed the Western Sierra "Locking" Box hitch.

[Horace Wells]



THE ONE MAN DIAMOND HITCH "WESTSIDE"

"There are many ways to skin a cat"

It is true that mules are often slow, ornery, mean, lazy, dirty, noisy, bothersome, peripatetic and stubborn. And yet they are comical, friendly, dependable, smart, uncomplaining, hardworking, sure footed, easy keeping and long lived

There are almost as many different ways of throwing a diamond as there are packers who throw them, but the one sketched on page 20 is most satisfactory. It can be thrown faster than any good hitch; it is easily thrown by one man, it holds as well or better than any. This particular hitch was used almost exclusively by the packers of the Kings, Kaweah, and Tule Rivers on the west slope of the Sierra in the past and is still used by some today.

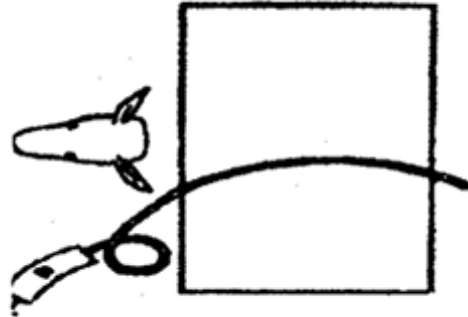
THROWING THE HITCH

Step 1: The first move is to face the mule on the near side and lay the lash rope across the top of the pack from front to back (throwing the "front-to-back" rope). The cinch and most of the lash rope are simply left in a heap on the ground to one's left, while the end of the rope hangs down about to the ground near the mule's left hind leg.

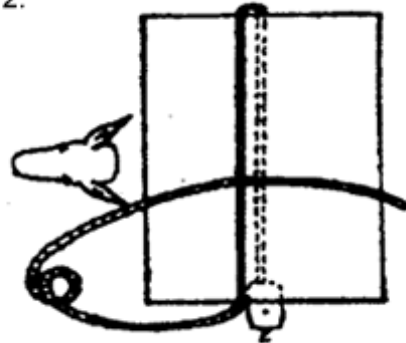
Step 2: The next move is to pick up the cinch from the ground and throw straight across the pack from the near to the off side (throwing the "side-to-side" rope). The cinch is then drawn up underneath with the left hand. (Some packers can throw the cinch over and catch it with their left hand, as it swings under the mule's belly). Here the cinch

is centered in the middle of both "box or pannier." The side-to-side rope is hooked into the cinch and the latter is pulled up fairly snug.

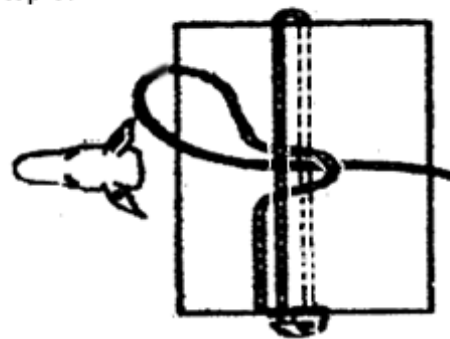
Step 1.



Step 2.



Step 3.



Step 3: The "side-to-side" rope is then brought up and doubled to the left of itself till it reaches the "front-to-back" rope, where it is tucked under itself.

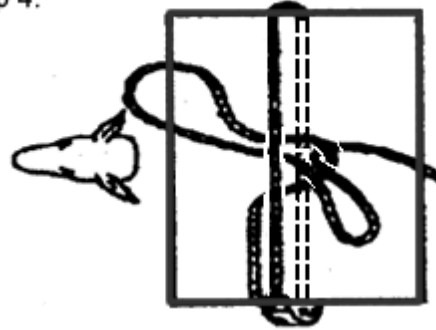
Step 4: The fourth move consists of pulling the "front-to-back" rope up from under the loop formed by the double "side-to-side" rope. This is perhaps the hardest to master. Remember to pull the underlying "front-to-back" rope up, through and towards you as you face the mule's near side.

Step 5: The offside part of the loop formed in step 4 is passed around the off-side box or pannier.

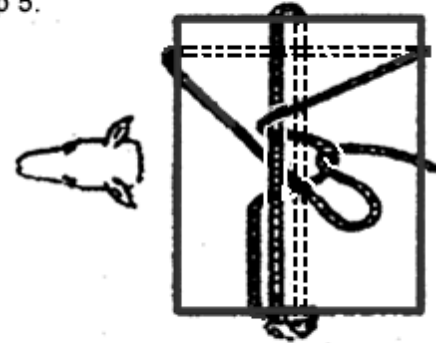
Step 6: Finally the offside loop is held taut while the near side loop is tightened. Having "snuggled up" the hitch all around, a final hearty heave is given featuring the packer's leg and arms as lever and the mule's posterior as fulcrum. While it is very hard to describe a hitch clearly, I hope this attempt will prove helpful to those who are interested in doing their own packing. Seldom has it proven unsatisfactory. However, those who know will readily agree with me, that throwing the hitch is by far the smallest part of the packer's work.

[Norman "Ike" Livermore]

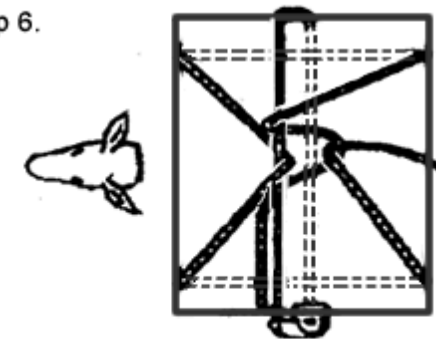
Step 4.



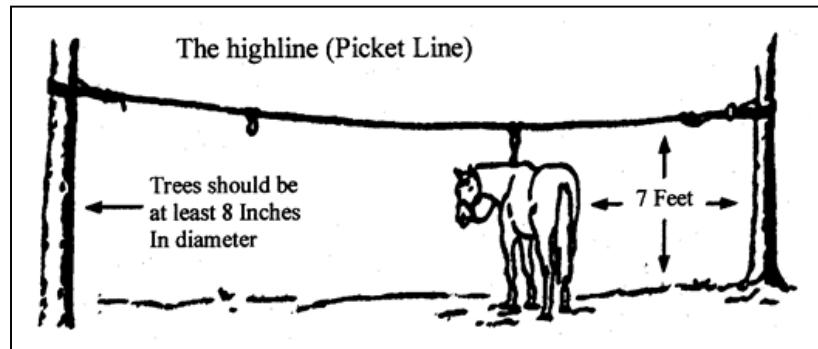
Step 5.



Step 6.



HIGHLINE (Picket Line)



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

Where the highline goes around the tree, the bark should be protected by padding, or a 2" wide nylon tree saver strap.

The highline prevents the horse from getting around the tree, damaging the bark or root system. As with other methods of restraining horses, the highline 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 highline as shown in Figure A, or a loop knot; Figure B, can be tied at intervals along the highline. 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

Figure A.



Figure B.



Figure C.



Tie one end with a bowline



Use a Dutchman on the other end to tighten the highline

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 highline 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 highline:

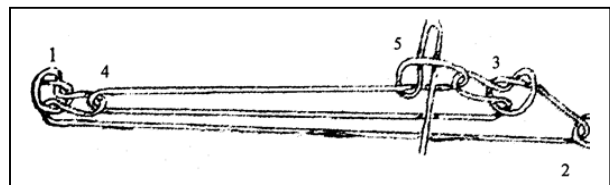
1. There should be a swivel, or the lead rope will become twisted or unraveled as the horse moves around.
2. Tie the lead rope short enough so that horses will not become tangled in it.
3. Keep it tight. The double Dutchman knot shown in the drawing will do this.

The highline is to keep stock from damaging trees or their root systems. Diameter of trees should be at least 8 inches. The highline should be 7 feet high and stock should be tied 7 feet from trees. If the lead rope is allowed to slide along the highline, it defeats the purpose of this method.

1/2" cotton rope makes a good highline. Nylon is too stretchy. Multifilament poly rope is best. It will stretch, but very little. It is stronger, lighter, and will not soak up water. Many horsemen use their lash ropes for a highline.

DOUBLE DUTCHMAN KNOT

Use this hitch for a highline as tight as a fiddle string. Tied right, its easy to untie since it doesn't jam. Make the knots and loops in the numerical order indicated. Start with knot (1) 8 or 10 feet from the ring on your tree-saver. Knot (3) should be close to the ring. If your rope is long or has a lot of stretch you may need more distance between the loops.





MAKING UP PACK LOADS

By Charlie Morgan

Introduction

Man has been packing animals as beasts at least since recorded history. The ass, horse, mule, llama, elephant, camel, and even the cow have all been used as the primary means of transportation in areas where the cart or wagon could not be utilized. Even today many people in the third world countries rely on pack animals to pack their goods to remote places. In the United States the pack animal is still used by commercial packers as well as the agencies as a means to transport supplies to remote areas.

This booklet is directed to the recreational packer. 'Ibis is the way I learned to make up my loads for a back country pack trip. You must remember that this is in noway the last word on the subject. One thing for sure about packing and working with animals, is that there are many ways to get the job done. What works for you is the best way. There is no right way or wrong way -- but there may be a better way.

In the United States most packers use mules, horses or burros. . The equipment used by all is basically the same varying only in size and dimension. There are many kinds of pack saddles on the market The most common types are the "Sawbuck" and the "Decker." For the purposes of this booklet we will be talking about the most common in California which is the "Sawbuck" pack saddle with a breeching and double cincha. The Decker saddle is very similar in function to the sawbuck. Differing slightly in rigging and a great deal in the design of the tree. "Packing With Horses and Mules" by Smoke Elser discusses techniques for using the Decker rig.

Llamas are be growing in popularity, and their equipment is similar, but the techniques of making up the loads will be somewhat different, and will not be addressed here.

PACKING EQUIPMENT

In all of our discussions we will assume the use of some form of the sawbuck saddle. Basically a pack load consists of side loads and a top load. The side load on a saddle is usually hung from the forks of the pack saddle, and obviously the top load is then placed on the base provided by the side loads. This equipment used in making UP a side load can be as simple as a length or rope or as complicated as some mechanical contraption designed for special use Some sort of box, pack bag or sling is the most common today. A pack cover is nice to keep your goods clean and dry, and in addition a lash rope is usually used to



secure the load. Following is a description of the various types of equipment we use.

1) Pack Boxes -- modern boxes are usually aluminum or plastic. However wooden boxes are fairly common and inexpensive to make. Fiberglass makes a good box, but is usually too expensive. Some very serviceable boxes have been made by stretching a green cowhide over a box and letting it dry - resulting in a rawhide box. I prefer boxes with lids, but many like to use open topped ones. The box may or may not have loops for hanging the box to the forks of the packsaddle. If it has loops, I prefer that they be adjustable so that the box may be adjusted as to level and to height on the side of the animal. If the box does not have loops you must either use a sling or some sort of rope hitch to hang it on the animal. Boxes may or may not have lids. I prefer boxes with lids that have a system for fastening down tight.

The advantage of using a box is for the protection it offers the items that are packed within. In addition the boxes are handy to have in camp for rodent free storage and also can serve as a seat or small table. At night we seldom hang our food to protect it from bears. We fasten the lids down tight and set a noise trap (stacked pots and pans) on top of the boxes hoping that the bear will be delayed long enough getting into the boxes and the disruption of the trap will awake us. The box must be sized to fit your animals. A common mistake is to make or buy boxes that are too large and therefore can possibly gaul or rub the shoulders of the animal.

2.) Pack Bags (Leather Ends or Panniers) -- Like the boxes they are usually used in pairs and can be made from a variety of materials. The most serviceable are made of heavy canvass and have leather ends (hence the name), leather chafes and protected comers. The best sets have adjustable leather loops for hanging on the animal. An all canvass bag will work, but does not have the useful life that a good pair of Leather Ends provides. The bags may or may not have lids, most do not. The bags may or may not have straps that hold the contents within each bag, and they may or may not have a "buck strap" which passes from one bag over the top load and fastens to a buckle in the opposite bag. The bag should be sized so that it fits the animal. While the soft comers of the bag is much more forgiving than the comer of a box, too large of a bag can cause some chafing.

The pack bag is the most versatile of all side load equipment. It has flexible sides that will accept items that are too large for the box. By placing a cardboard box within the bag you have the same utility of a pack box. An assortment of items may be placed in the bag and they are well protected. I prefer bags with two straps that keep the contents of the bag tied down within the bag. If you travel with just one pack animal I would recommend that pack bags be used. If you take a second animal then add a set of boxes, a third animal, another set of bags.

3.) Pack Slings -- Seldom used by the recreation packer --but popular with the commercial packer. A pack sling generally has a bar from which too loops for hanging on the packsaddle are attached. In addition two addition long straps (7ft) are attached and along with a square of canvass keep the contents of the side load contained.

The pack sling can be used to pack all types of items. In addition to the pack boxes mentioned earlier, the sling can be used to pack dunnage bags, ice chests, bales of hay, bags of grain, lumber, posts, firewood and much more. The sling is lightweight and usually economical to purchase. Since they are removable from the pack box they do away with loops on the boxes, which are in the way in camp.

4) Pack Covers (Mantees) -- are highly recommended to keep the contents of your load dry in a storm and offer protection from dust and dirt that is inevitable traveling on the trail. They are usually made from cotton duck, synthetic materials such as nylon, reinforced plastic or rubberized fabric. The minimum size is 4' by 6'. I prefer a cover made of Cordura Nylon that is about 5' by 7'.

The most common covers are canvass that may or may not be waterproofed.

The pack cover is not only useful to protect your load, but also has many uses in camp from a windbreak, rain fly, bed and saddle cover. We usually take two per animal, giving us more to use in camp and offering a little more rain protection. The synthetic covers dry faster if they do get wet, and do not become stiff and hard to handle as does the cotton duck. The white duck is more traditional, but nylon is more colorful and practical.

5.) The Lash Cinch and Rope -- most pack loads are tied down with a rope. There are less traditional systems on the market that uses a system of nylon straps to secure the load, but that system will not be discussed here. A lash cinch is usually made of canvass or mohair with a ring in one end and some sort of hook in the other end. There are many kinds of hook some of wood, aluminum or wrought iron. The most common in use today is the cast iron hook. A 3/8" to 1/2" diameter rope varying in length from 40 ft. to as long as 60 ft. is attached to the cinch. Using this rope various types of hitches may be tied to secure your pack load to the animal. Various types of rope can be used most commonly they are either three strand hemp (manila), cotton, dacron or nylon. Some people use braided nylon or polyester rope, which is more expensive but makes an excellent pack rope

In California three strand cotton rope is traditional, however the modern synthetics have distinct advantages in strength and durability. Another advantage that synthetic has over cotton or hemp is the fact that they remain pliable when wet, which is not true for cotton or hemp. The lash rope usually serves as a



picket line rope in camp, so strength as to be considered when selecting the rope of your choice.

6.) Bucket Harness -- not used by many commercial packers, but hand addition to the equipment for the recreational user. Made of leather or nylon the exact design varies, but basically is a harness made to fit the bucket (or dishpan). The harness slips over the pan and has straps that are fastened under the rope of the pack hitch and buckled down nice and snug.

The harness solves the problem of where to put an awkward to pack item, but also has some other uses. For example: we often put our lunch under the bucket where access is easy on the trail and takes part of the load off the saddle animals, Under the dish pan we put our two (usually wet at packing up time) canvass buckets from which we have just dumped the last of the water on the fire.

7.) Over the Saddle Pack Bags. -- are useful for the back country packer that has limited stock, and does not mind walking. This piece of equipment is usually made of canvass, cordura nylon, or reinforced vinyl. They are used over a regular riding saddle. Most have straps or a hole in the material that goes around the horn and behind the cantle. The most practical have some sort of light weight breeching that serves to keep the side loads from swinging forward into the shoulders on down hill stretches. Again the bags should be sized to fit your animals -- many of the commercial bags available are much too large, in my opinion.

The obvious advantage to this sort of equipment is that once camp is reached and the bags are removed you have a saddle horse to use around camp. One disadvantage, unless you have a lot of help, is that bags must be loaded after they are set on the animal. This means that extra care must be taken to maintain a balanced load. Also there is usually no adjustment as to height on the animal's sides.

Other types of side load equipment used less frequently will not be considered here. Some such equipment is. Post or lumber hooks, open sided boxes to carry bulky items that you want to have easy access on the trail. 'Ibis type of equipment is seldom used by the recreation packer.

PREPARATIONS BEFORE PACKING

There are certain steps we usually take prior to making up the side loads. They have to do with protecting the items you are packing as well as making the job easier. One of the goals you should be trying to reach is to pack as light as possible. It is amazing how much you can take and still keep within a reasonable number of pack animals. Some of the steps we take are:

1. When buying your grub, avoid glass and cans as much as possible. This packaging is not only heavy going in, and doesn't get any lighter coming out. Many staple items can be purchased in plastic containers, or can be re-packed into either Zip Loc bags or freezer containers. If you will only need a cup of flour, don't take a 2-pound bag.
2. We re-pack our grain into more manageable cloth sacks that weigh no more than 25 lbs. These bags are easier to distribute throughout the loads than a 75 lb. sack. We usually plan on 2 lbs. of feed = animal per day.
3. When traveling below 8,000 ft. elevation we use a "soft sided" ice chest. It fits into a leather end and offers almost as much protection as the bulkier (they never get smaller) hard sided chest. Before going into the chest, all perishable meats are wrapped with many layers of newspaper, which serves to insulate very well.
4. We protect each potato, tomato, fruit, onion and Avocado by wrapping them individually in newspaper and then re-packing them either into a pack box (if there is room) or a small cardboard box. Each wrapped tomato, fruit and avocado is coded with a number to identify, which should be used first.
5. All clothing is packed in soft-sided dunnage bags no more than 30" long and not over 12" in diameter. Supplemental smaller dunnage bags are used if more space is needed. Regular sleeping bags are left to be folded as flat as possible rather than rolled in a loose roll.
6. Eggs are left in their original carton with a second carton split apart and placed around the original and secured with rubber bands.
7. On an extended trip of more than four or five days we pack into separate cartons the food and other items required for each day. This includes bread and cookies, but does not include fresh items such as fruits, vegetables. Some staple items such as TP, paper towels, coffee, etc. are distributed at intervals. Boxes are selected that just fit the amount of food and other items for the day. Each box is marked with it intended day of use. These boxes are usually not too large, and 5 or 6 days food may be packed thus into a set of leather ends. Organizing your food in this manner is especially efficient on a traveling trip where you move almost every day.
8. We use mesh nosebags to feed our grain -- four of these weigh less than one canvass nosebag.
9. We carry a basic shoeing kit -- rasp, pullers and hammer. Horseshoe nails are placed in a small leather pouch and extra shoes (generally good used shoes that have been pulled off of animals we are taking) This kit is wrapped in a canvass roll and weighs about 7 to 9 lbs. with shoes.



10. Brushes, Curry Combs and Bells are carried in a cloth sack. To reduce rattle, stuff rags or paper in the bells.

11. Lately we have used an electric fence in some areas. The posts are rolled and wrapped in canvass, and the charger, insulators and tape are carried in a small duck bag. The posts weigh about 12 lbs. and the bag containing the rest weighs about 7 lbs.

12. Aluminum pots and pans that nest into each other are the most efficient for both space and weight. We use aluminum frying pans rather than cast iron. Occasionally we will pack a small (8 inch) cast iron Dutch oven if we have space available.

13. When possible buy fresh meat in vacuum packed large pieces As long as the seal is not broken and the package remains reasonably cool the meat can be kept for up to two weeks. The same is true for hot dogs, smoked sausage, bacon, ham etc....

14. Cans of frozen juice are better than packing ice to keep the ice-chest cold --- they can be used after they have thawed and are a tasty treat in the backcountry. Frozen pre made spaghetti works as well, and makes a quick meal later in the trip after it has thawed.

MAKING UP YOUR SIDE LOADS

The importance of "balance" cannot be over stressed. It is important that each side of the side load weigh close to the same. Some minor compensation for imbalance is possible as you place items in your top load, but it is much easier if you don't have to worry about such a problem. The balance of your load must be achieved by the time you tie the hitch for a good riding load. The balance must be achieved not only in weight but in bulk. Often times a bulky item of lighter weight will balance with a compact item of heavier weight. You may or may not want to carry and use portable scale to check your weights. I weigh my loads at the start of the trip, but do not carry scales on a trip due to their weight. I rely on my ability to come close to the same by lifting each bag separately. Be sure you have checked your ability to do this with a scale before relying on it for your own use.

We will talk more of "balance" when we start to load the animal. For now lets talk about using the various kinds of equipment for side loads, keeping in mind that we want the two side to way the same.

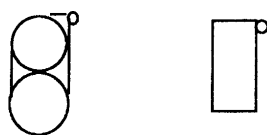
1.) Pack Boxes - are useful for packing what we call the kitchen items. Utensils, a lantern, staple food items, butane canisters, cook pan, pot kit, matches, fragile items such as eggs, bread, cookies, etc., a flashlight, first aid kit and the first day's groceries.



Carefully fit each item in the box remembering to balance your load and to pack items tight enough to avoid rattles (Some stock hates it and it is annoying to listen to as you ride down the trail.). Remember to pack the heaviest item to the bottom (and to the animal side of the box if possible). If you have glass items be sure that you separate glass items with non-breakable items. We use paper to wrap about every other can or jar. This protects them plus reduces the chance of an accident. The last to go in are the eggs and bread (hopefully you still have room). We strap down the lids and we are ready to put them on the mule. If your boxes do not have hangers you will have to sling them up with a set of slings, which we will talk about later.

2. Pack Bags Loads -- load the bags about the same way you would your boxes - - heaviest objects to the bottom and to the towards your pack animal as much as possible. With the leather ends is necessary to be careful that the side next to the animal is as flat and soft as possible. Longer lighter objects may be placed on top of the dunnage load and held securely with the two cargo straps. We usually pack grain bags in the bottom of leathern ends. If you tie the bags loosely you should be able to fill the entire bottom of the bag. Cardboard boxes filled with food fit nicely in bags, and as the food and supplies is used up the bags can be refilled with items from your top loads.

3. Sling Loads -- larger objects work best for a sling load. For example if you had four dunnage bags of about the same size and weight they would make an ideal sling side load. It is important that the bar and loops of the sling be placed level with the inside top of the side load. If not the load will either ride to high on the side or be too far over into the top of the side load and hang awkwardly. See sketch below (end View):



Heavy cardboard boxes approximately the size of a normal pack box (Example A lettuce crate) could be used in place of pack boxes. After the contents were are used up, the box can be burned and dunnage that had been on top made up into side loads.

Slings are also useful in camp if you need to pack firewood into camp, either on your pack animal or on your own back. They are excellent for packing bales of hay, short or long lengths of lumber, bags of grain, large propane bottles. You might want to consider using slings on your fourth or fifth animal. Our choice of equipment is: One animal -- leather ends, Two animals -- 1 set boxes and 1 set leather ends, Three animals -- 2 Set Leather Ends and 1 Set boxes -- Four Animals --2 leather ends 2 sets boxes.



TOP LOADS

Some items almost always have to be packed on top such as shovels, rakes, fishing rods, tables, folding cots and chairs. Items such as these are put aside as you make up your load. In addition bulky items such as large tarps, sleeping bags, mattresses may be reserved for your top load especially as you leave on the trip. Later some of these items will be moved down into your boxes or leather ends

PACKING UP

Our loads are all nicely made up - and balanced - and now it is time to start loading the animals for our departure. The right load for the right animal is a decision we must make. You don't want to put the heaviest load on the smallest or youngest animal. You don't want to put a load that is obviously top heavy on an animal that rocks the load. You don't want to put the load with the shovel and rake handle sticking out on the lead mule, so that it sticks "Molly Mule" who is following behind in the eye. Don't start packing until all your loads are made up and decisions are made. It is not fair to make the loaded animals stand around any longer than is necessary.

Re-snug your cinches just before loading -- remember some animals tend to "blow" up a bit at cinching time. It is really embarrassing to get your load all tied down and look down and you can see daylight between Molly's belly and the cinch. Before you tighten up it is wise to reset your pad so that it is as high in the gullet, as you can get it. Do this by loosening the girth, pull up on the pad and be sure and move it slightly back so that no hair has been roughed by going against the grain. Placing the pad high in the gullet allows air to flow down the center of the animals back and also usually prevents the slipping of the pad out from under the saddle, which is no fun at all.

Always place the off side (right side) of the load on first, as soon as possible hand the near side on. It is unkind to leave one side hanging there while you decide what to do next. Once both sides are on pull each side out and try to settle them into place, now step back, and take a look!

From the side the top of the load should be almost parallel to the animals back - if not -- adjust the hangers on the side load so that are at the right angle. Now check to load from the rear the bottoms of the side loads should be about even -- if not -- adjust the straps once more until they are. Go back to the near side and gently rock the load from side to side as if it were on a balancing beam. Any imbalance of weight or bulk should show up at this time. If there is a problem you might be able to adjust for it by hanging the heavy side slightly higher or you may be able to compensate by placing heavier items of your top load the lighter side.



Once you are happy with the position and the balance of the pack bags it is time to put on your top load. Ideally you don't have high and heavy top loads so you just have to worry about a few things. Be sure that no object such as a shovel or axe comes in contact with the animal

at any Point. Arrange your items to make your load as square as possible, at the same time maintain the balance required for success. Long objects should be placed so that they extend out the rear of the load and nothing protrudes in front that could possibly hook onto another animal or something such as a tree or post.

Everything is nicely in place and now it is time to put on the pack cover. Once well trained this is usually not a problem, but you sure don't want to walk up to a green animal and just throw it in the air over the pack. You just might end up picking up the pieces of your load and start all over again. You maybe should have been a little more careful on how you opened up the cover. The cover should be centered nicely and we like to tuck in the comers of the cover under the side load and in a manner that you can see the forks of the packsaddle from the front and rear.

All Done! Nope, now comes the fun part. Tying the hitch. We prefer the Mt. Whitney diamond, but if you know another hitch that is all right too. Anything that gets the job done is O K by us. Once tied its time to hit the trail--- look back often because even the most perfectly balanced load sometimes starts to shift and if you don't watch out you may end up with a load under Molly and that is surely no fun - especially if your are on the narrow trail above BIG HOLE.

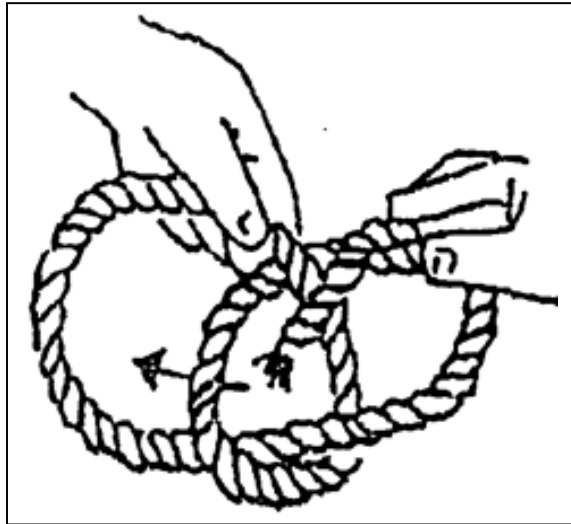
CAMP EQUIPMENT CHECKLIST

1 Shovel	2 Dish Pan	1 Propane Stove
1 Rake	2 Linen Buckets	1 Tent
1 Axe	1 Large Tarp	1 Folding Table
1 Fence Tool	1 Utensils Kit	2 Folding Chairs
1 Fire Grate	1 Pot Set	4 Propane Bottles
1 Asst Rope	1 Water Pitcher	1 Portable Shower
1 Pr. Pliers	4 Aluminum Plates	

STOCK EQUIPMENT CHECK LIST

1 Bell	1 Shoeing Kit	4 Feed Bags
1 Brush	1 Medicine Kit	5 Lb Block Salt
1 Curry Combs		

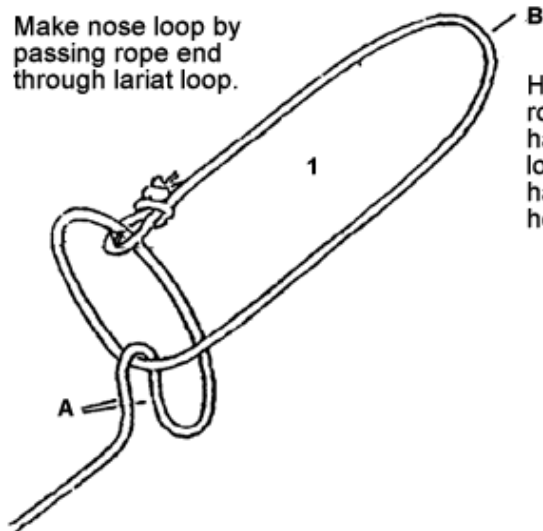
USE OF KNOTS



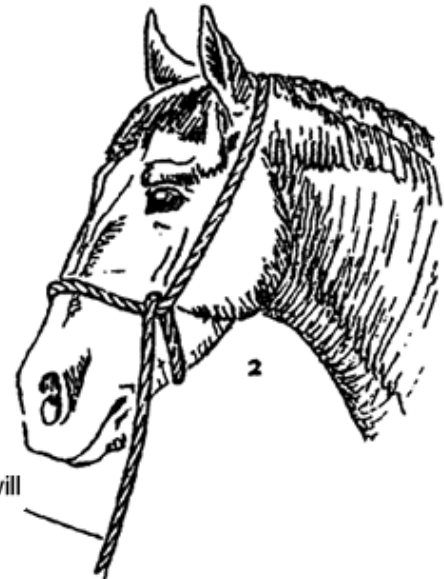
It is essential that you practice your knots over and over until you become proficient at them before you embark on your first trip. This may make difference of whether your stock remains safe and uninjured. It may even prevent you from having to make the long journey out on foot 1.

EASY LARIAT LOOP TYPE HALTER

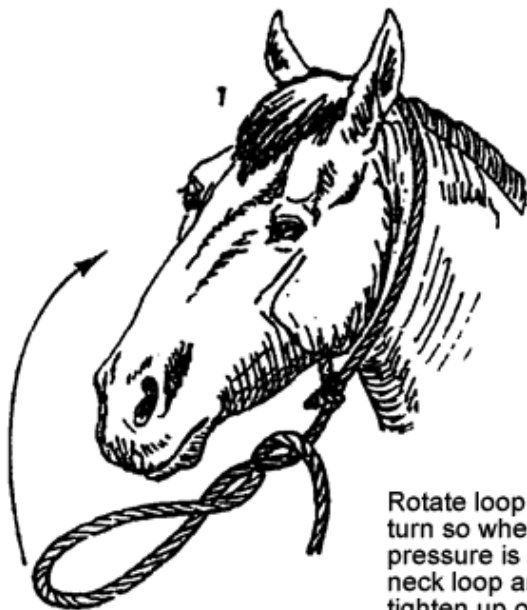
Make nose loop by passing rope end through lariat loop.



Hold both sections of rope at A with left hand to maintain nose loop. Hold B with right hand and slip onto head.

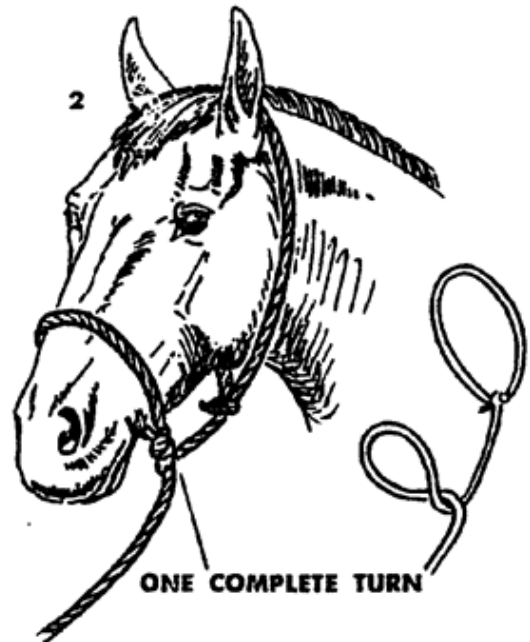


ROPE HALTERS



Rotate loop one complete turn so when lead is pulled pressure is transferred to neck loop and doesn't just tighten up on nose loop.

When lead end is pulled, one-half turn will tighten nose loop.



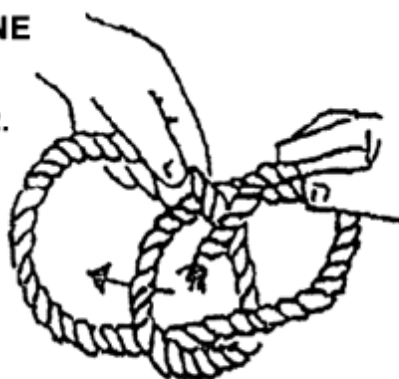


BOWLINE

1.



2.

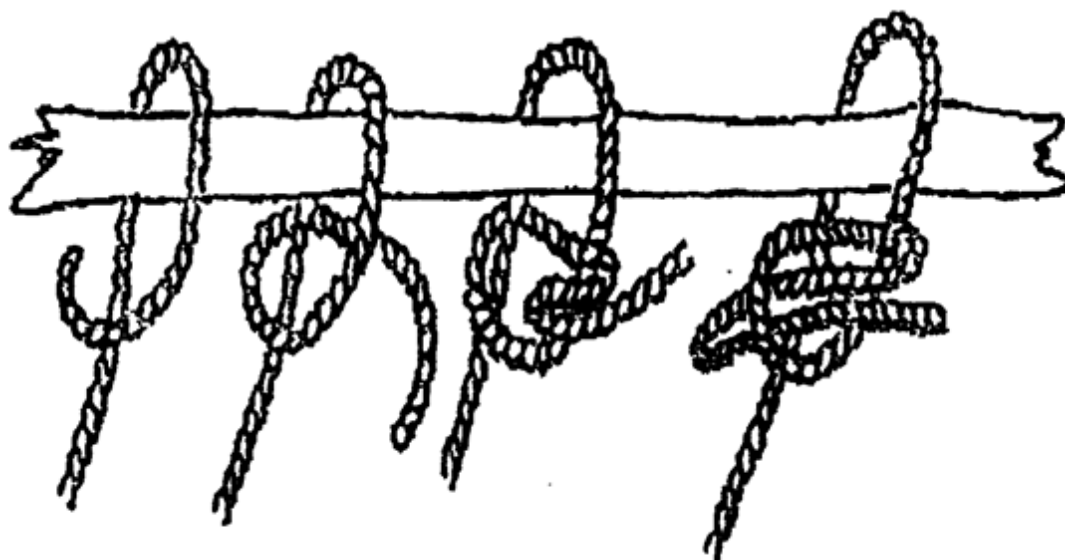


3.

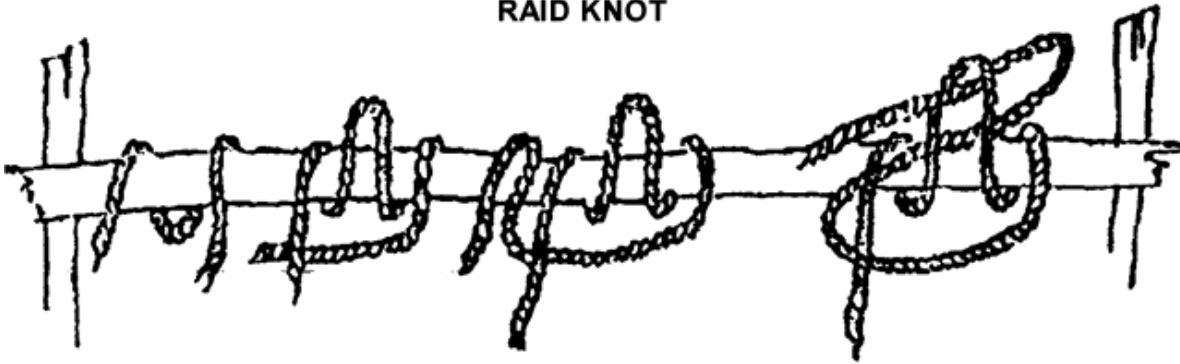


SLIP OR MANGER KNOT (left handed)

Can be tied by passing rope under or over tie rail.

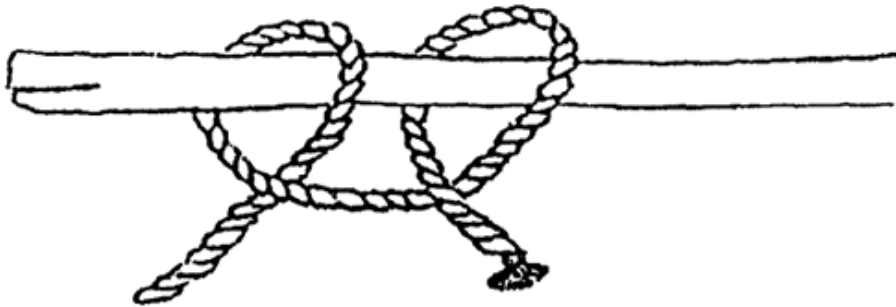


RAID KNOT



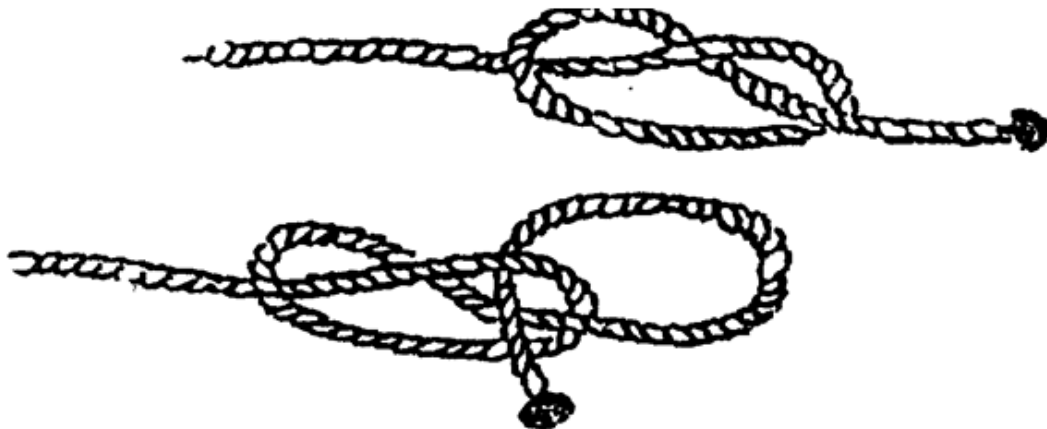
This is the old bank robbers' "get-away-fast" knot.

CLOVE HITCH (two half hitches)



HONDA

(must have the end knot to prevent from slipping through)



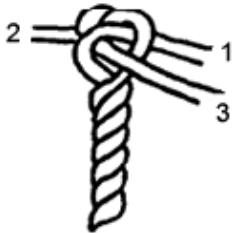
BACK SPLICE KNOT



a) Unravel about 3 to 4 inches. Fold center strand (1) down to form loop.

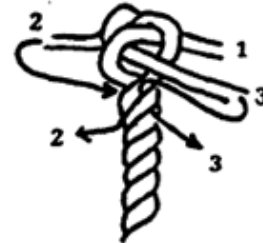


b) Wrap 2 around loop formed by 1. 2 should pass over 3. Pass 3 through the loop formed by 1.



c) Tighten crown knot by tugging each end in turn. Go around several times to keep the knot even.

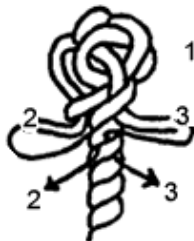
Now weave the splice.



d) Choose any strand to begin weaving.

Lace it over the strand below, under the strand below that, then out. The arrows show this for strands 2 and 3.

Do this for all three strands. If you become confused, notice that a strand goes in between the twists where the strand to the left comes out. (3 goes under where 2 comes out.)



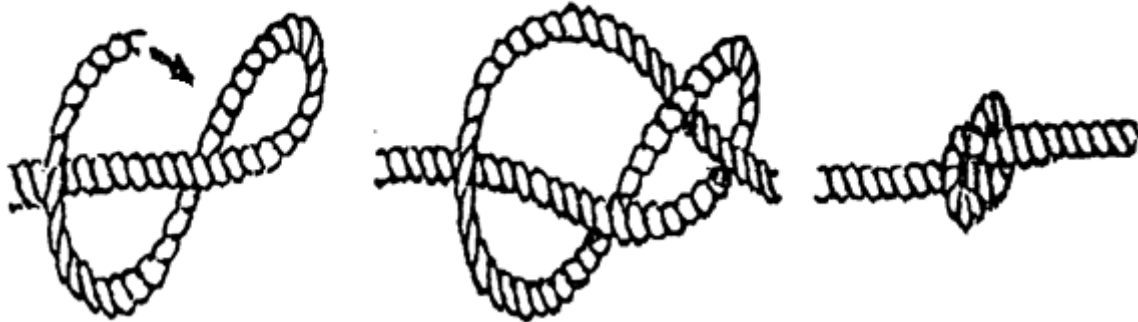
e) The result of d. Strand 1 disappears in back.

Repeat at least two more times with all three strands (arrows).

Roll between your palms to tighten. You can clip loose ends for appearance, but leaving them protruding can give you a better grip on the end of a lead rope.

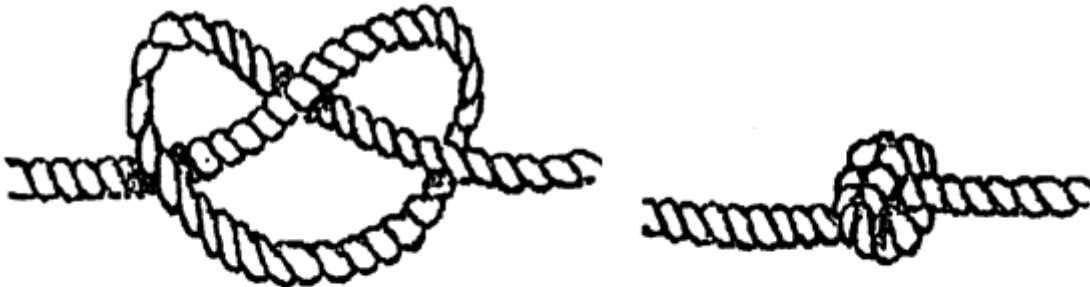


f) back splice woven through two cycles. One more will complete it.

FIGURE EIGHT KNOT

This is much easier to untie than the overhand knot - it is larger, stronger, and does not injure rope fibers. It is the best knot to use to keep the end of a rope from running out of a tackle or pulley.

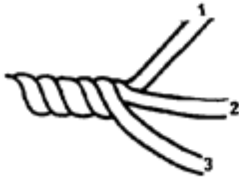
To Tie: Make an underhand loop. Bring end around and over the standing part, Pass the end under and then up through the loop. Draw up tight.

OVERHAND KNOT

This is the simplest and smallest of all knots. In general, use it only on small cord and twine, because- it jams, is hard to untie, and often injures the fiber.

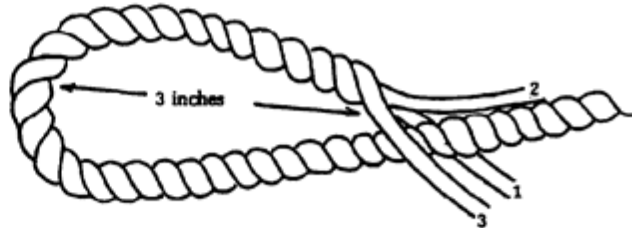
To tie: Make a loop near the end of the rope and pass the end under and up through the loop. Draw up tight.

EYE-SPLICE



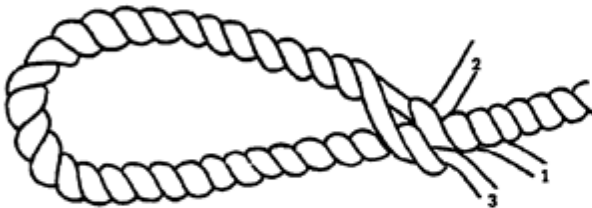
a)

Unravel three to four inches. One strand (in this case 2) will appear as the center strand



b)

Fold over to form an eye. Three to three and a half inches (the width or four fingers) is a good size.

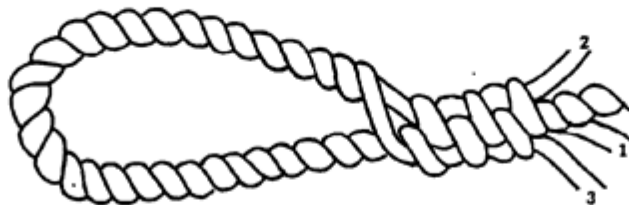


c)

Insert the center strand (2) under any twist of the rope.

Turn splice 1/3 turn so strand 3 is on top and thread it under a twist so that it emerges between the two twists between which 2 was inserted.

(Not shown) Turn splice 1/3 turn more so that strand 1 is on top. It should be inserted between the twists where strand 2 emerges and should emerge between the twists where strand 3 goes in. This is the trickiest step. If you get it right the splice will appear symmetrical with all three strands pointing away from the loop and with each emerging between different twists.



d)

Front c. It is a simple matter to keep working strands alternately over and under the twists below (exactly like the back splice) until step c. has been repeated at least three times.

Roll the splice under your boot and trim the remaining ends.

KNOTS USED TO TIE TO A HALTER RING OR TO A LASH CINCH

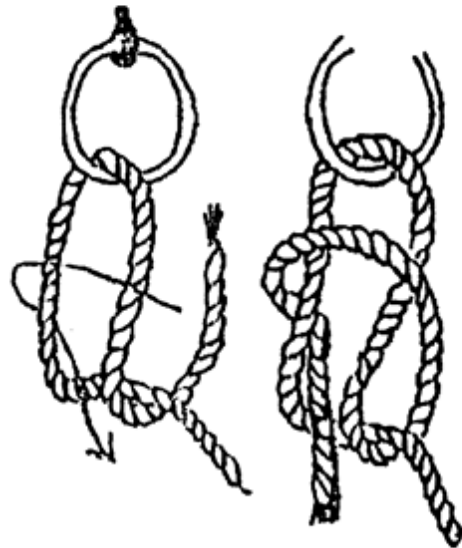
Anchor Bend



The anchor bend is used to secure a rope to a ring.

To tie: Give the rope two turns about the ring, thus affording a larger wearing surface than with the common hitches. Finish the knot by making two overhand knots to the standing end of the rope

Non-Slipping Halter Tie



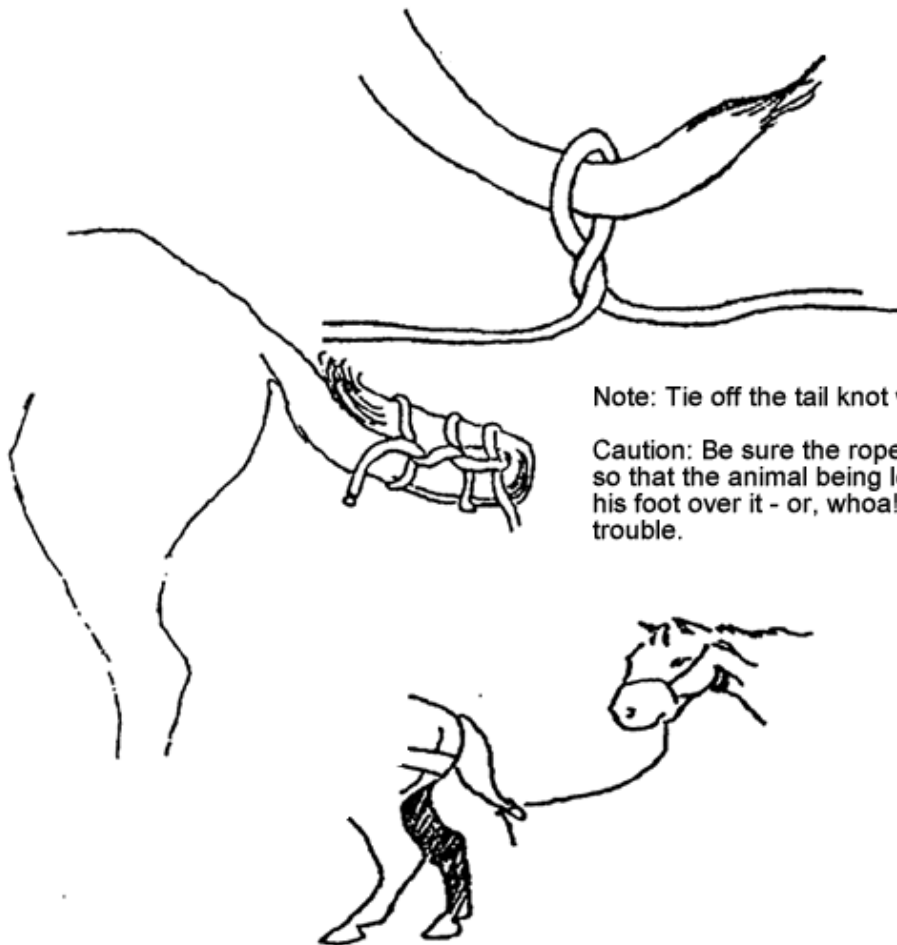
Use the non-slipping halter tie to fasten a halter rope to a ring. To tie: Place the end of the rope through the ring and around beneath the long portion of the rope. Move the end of the rope as indicated by arrow. Draw up tightly.

KNOTS FOR TYING A STRING OF PACK ANIMALS TOGETHER

Pigtail Knot: Use small breakable baling twine and tie to sawbuck; leave loop in the end to tie lead rope too.



Tail Knot



Note: Tie off the tail knot with a slip knot.

Caution: Be sure the rope is short enough so that the animal being led cannot put his foot over it - or, whoa! You've got trouble.

Build a Rope Halter

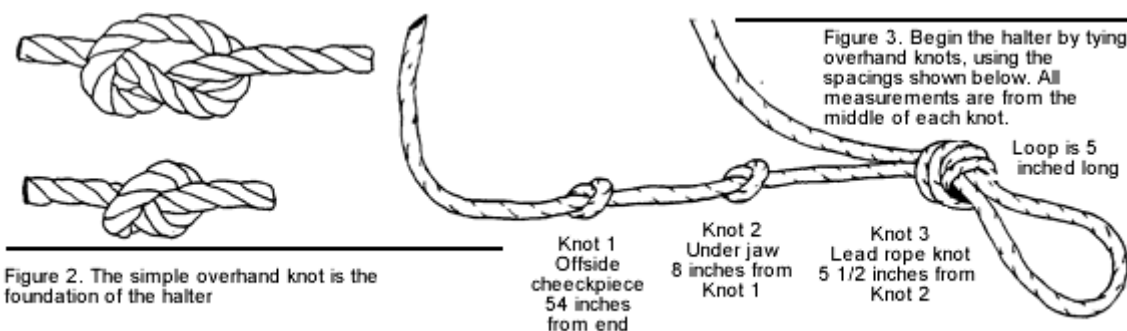
If you can tie a shoelace you can make one of these stout attractive halters
Article and Illustrations by Gayle White

It's easy to understand why rope halters are so popular with horse people. They are super strong, with no hardware to break and no stitching or eyelets to tear. They are economical, can be made quickly, and you can pick the color and rope combination that suits you.

The halter in Figure 1 is made by tying overhand knots, which are shown in Figure 2. An overhand knot is the same knot you tie in a shoelace. Tie the knots at the correct intervals on one length of rope, then go back and tie intertwining overhand knots on the original knots. The resulting double overhand, or blood knot, delineates the parts of the halter.

Select rope for your halter that's strong, as well as stiff enough to help the halter hold its shape. With a tensile strength of 2,000 pounds per square inch. 1/4-inch diameter Perlan Accessory Cord, shown in Figure 1, works well. This rope has a nylon core with a woven nylon sheath. It comes in many colors, holds its shape well, and can be found in the rock-climbing department of sporting goods stores.

Another good rope is the economical 3/8-inch-diameter twisted poly rope. The rope is rated from 1,700 to 3,000 pounds, and can usually be found at your local hardware store or lumberyard.



1) Begin with a 21-foot length of rope. Melt the ends over a flame, or tape them to prevent unraveling. No other tools or equipment are needed. Construction begins at the long end that goes over the horse's head, proceeds through the parts of the halter, then returns to end at the same place, resulting in the double length of rope over the poll that is used to fasten the halter.

2) Using the spacing shown in Figure 3, tie the offside cheek piece overhand knot (Knot 1), and the one that goes under the jaw (Knot 2). Tie all knots tight enough to stay in place and keep the spacing correct, but make them so that they can be loosened.

3) Now make the loop where the lead rope attaches. and tie that overhand knot (Knot 3). using two strands together.

4) Tie the noseband knots (4 and 5), using the spacing in Figure 4.

5) Return to the loop where the lead rope attaches and untie the knot (Knot 3) tied earlier. Make the loop and tie again, using four strands this time. The loop will now be only 3 to 3 1/2 inches long, because of the additional rope used to tie the larger knot. Check the spacing between knots frequently, adjusting as necessary to retain the correct proportions and measurements for the halter.

6) Now return to the overhand knot under the jaw (Knot 2), and tie a double overhand knot. Here's how to do it:

Loosen the original overhand knot and run the end of the rope containing no knots through the middle of it, passing on the same side of the loop as the rope used to tie the original knot (see Figure 5). Tie another overhand knot intertwining the first, as shown in Figure 6 and 7

Pay close attention to how the second overhand knot is tied upside down with the loop formed by the second knot passing over the top of the first knot.

The second knot is made inside the first, and the rope passes out the middle of the first knot on the same side as the rope leaving the original knot. The second knot is opposite from the first. While it's upside down (see Figure 8); but if it's turned in the same position as the first

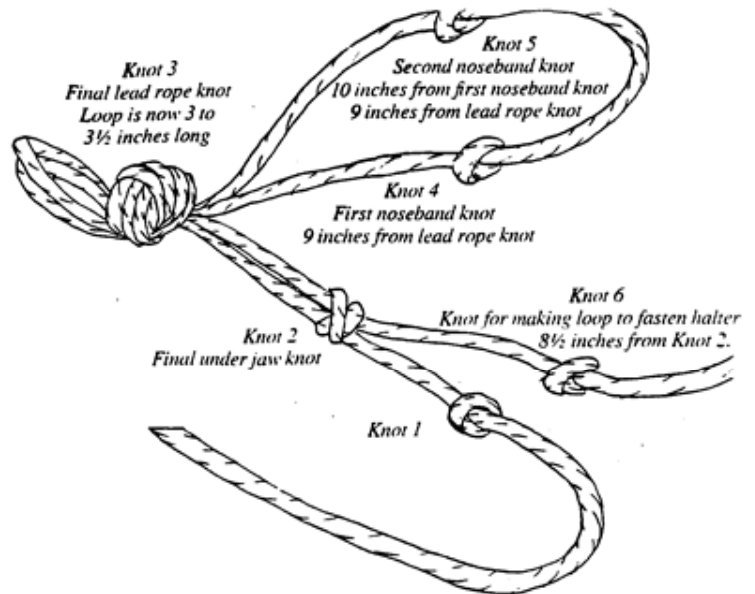


Figure 4. After making the noseband knots, the lead rope loop overhand knot must be retied, using four strands of rope. The loop will now be smaller (approximately 3 to 3 1/2 inches), as additional rope was allowed in the initial measurements to compensate for tying the larger knot using four strands.

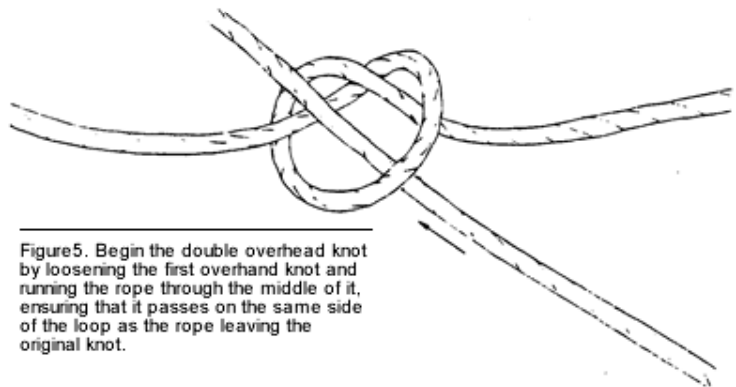


Figure 5. Begin the double overhand knot by loosening the first overhand knot and running the rope through the middle of it, ensuring that it passes on the same side of the loop as the rope leaving the original knot.

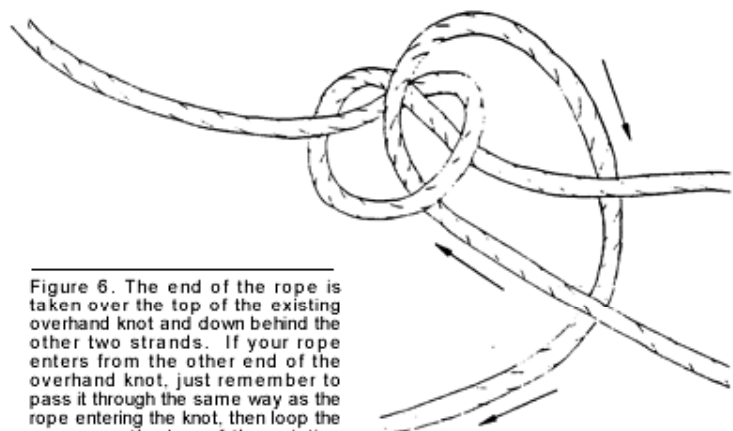


Figure 6. The end of the rope is taken over the top of the existing overhand knot and down behind the other two strands. If your rope enters from the other end of the overhand knot, just remember to pass it through the same way as the rope entering the knot, then loop the rope over the top of the existing knot.

Tighten both knots for the resulting double overhand knot (Figure 9). You might need to move the strands around a bit to overlap more squarely before the knot lies flat.

7) Next, make Knot 6, using spacing in Figure 4, and return the end of the rope back through Knot 6 to make the loop for fastening the halter (Figure 10). Make the double overhand knot, as explained above, to complete the loop (Figure 11).

8) Return to the noseband and complete those double overhand knots (Knots 4 and 5), using the spacing in Figure 12. Be sure that the rope does not get twisted or tangled with other parts of the halter.

9) Finish the offside cheek piece double overhand knot (Knot 1).

10) Even the remaining ends of rope by cutting only the longest end. Then melt the ends together, or tie a small overhand knot for case in fastening the halter.

When using your new halter, fasten it as shown in Figure 13 by tying a half hitch to the loop end. If the half hitch is made on the rope going over the poll, it can come untied when pressure is exerted on the halter. Attach the lead rope to the halter by a no-slip knot, and you will eliminate any chance of hardware breakage.

For a small investment and a minimum amount of time, you have made a sturdy and serviceable piece of equipment.



Figure 7 The end of the rope is then looped over the rope that was fed through the first overhand knot to make the second overhand knot. Feed the end of the rope our through the center of the first knot, passing on the same side of the loops the rope leaving the original knot



Figure 8. Align the two overhand knots under each other and tighten. Make adjustments, if necessary, to ensure the correct spacing for the halter.



Figure 9. The final knot should look like this Even though flit, overhand knots might he properly tied, you might need to rearrange the knot to form properly when tightened

Figure 10. Make an overhand knot, then run the end of the rope back through it, forming a loop. Now make another overhead knot inside the first to form the final knot, and loop for fastening the halter

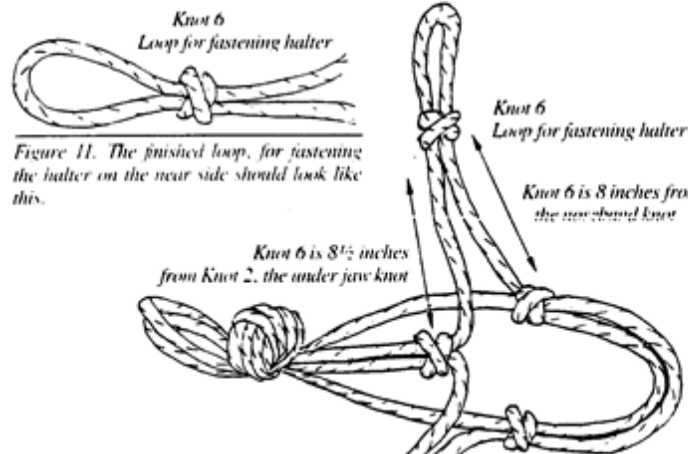


Figure 12. The halter takes shape after tying the double overhand knots.

This noseband knot is 8 inches from Knot 1, the offside cheekpiece knot

Figure 13. When using your halter, be sure it is fastened with the half-hitch made on the loop end. If the half-hitch is made on the rope coming over the poll, the rope can easily pull through and leave you without a horse.