WAR DEPARTMENT

OFFICE OF THE QUARTERMASTER-GENERAL

MANUAL OF PACK TRANSPORTATION

QUARTERMASTER CORPS

BY

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brace and pulls taut with right hand. (This is termed a "primary cinch.")

Holding latigo in right hand, he takes hold of rear corner of boot, the left holding front, brings aparejo well forward to place, and calls out "Cinch!"

At this signal the "off" packer passing in rear observes that the aparejo is straight on the animal, takes hold of latigo in between the near packer and the mule, the palm of right hand up and of the left down, and places right knee on boot of aparejo.

The near packer holds latigo far enough back to permit him to raise his left foot to boot of aparejo, his left hand in front of his right, both palms up. The two packers then pull together, reach forward, taking a second and similar pull, and, if necessary, an additional pull to bring the eye or hole of cincha to edge of boot.

The cincha must be in center both at top and at boots of aparejo.

The "off" packer, holding slack of latigo with right hand, takes hold with the left below the right, palm down, the thumb grasping latigo underneath. He brings the latigo up, resting the butt of palm of left hand near top of aparejo, the fingers gripping the top thereof; with the right hand passes the end of latigo from above through finger loop and receives it with the two first fingers of the left hand; holds slack below left with right hand and pulls the end with left, taking slack well in. The latigo being drawn taut by this action, the end is engaged between the standing part of the latigo and the top of the aparejo and is thus caught in place. (See figs. 10, 11.)

FORMING THE LOAD PREPARATORY TO LOADING THE MULE.

SEC. 24. Take a coiled lash rope and unwrap cincha (sec. 11); hold coils and cincha at point of lacing in left hand; release as many coils of rope as will leave, say, from 10 to 15 feet extended. Swing the coils held in left hand toward the right and place on the ground, cincha underneath.

Now take the side packs, which make up a load, and place them lengthwise on lash rope, the heavier pack underneath. Take a coiled sling rope, unwrap and place crosswise on load. Then pick up the end of lash rope, extended on ground, coil and place on load.

In preparation for loading the mules the cargo is thus formed in separate loads according to the number of mules available. (See fig. 109.)

SLINGING THE LOAD—HOW TO PLACE THE SLING ROPE ON THE APAREJO.

SEC. 25. Take hold of the sling rope, about 5 feet from one end, with the left hand, the two last fingers gripping the rope; with the right form as many coils as may be necessary, according to the size of the load, and receive the coils between the thumb and two first fingers of the left hand, at the same time retaining the grip on the rope beyond the coils with the two last fingers of the right hand. Now receive the coils from the left hand, between the thumb and two first fingers of the right hand, and, retaining the grip on the free ends of the rope by the two last fingers of each hand, throw the coils over the aparejo to the off side, separating the ropes at the same time, as the length of the packs may determine. A loop of the rope

is thus made to hang down on the "off" side of the aparejo, while the two ends called, respectively, the "front" and "rear" ropes, hang down on the near side. (See fig. 11.)

If, due to the size of the load, it is necessary to lengthen or shorten the loop on the "off" side, do so by taking or giving slack on the rear rope, never on the front rope; the latter should be allowed to hang nearly to the ground.

HOW TO LIFT SIDE PACKS AND PLACE THEM ON THE APAREJO.

SEC. 26. The "off" packer stands facing the sides of the packs; takes hold of the uppermost pack at each end, hands well under, and raises it to his knees; raises it from knees quickly to breast and carries it to "off" side. If heavy, incline the body forward and raise quickly, throwing the head and shoulders back. Rest lower edge of pack on aparejo and allow flat side of pack to come down on aparejo.

The upper edge should ride flush with the center or top of aparejo.

The "near" packer lifts in similar manner and places his pack so as to lap about four inches on top of "off" pack. Weight of packs being equal, this will permit the "near" pack, after "braking," to ride level with the "off" pack.

HOW TO SLING THE LOAD AND TIE THE SQUARE KNOT.

SEC. 27. The "off" packer, standing somewhat away from the mule, as a brace, supports his pack in place with left hand, palm against the center of the pack and slightly underneath it, so as to balance the weight of the pack.

With the right he picks up the front and then the rear parts of the loop of the sling rope and brings them up to center, the left hand receiving them between thumb and forefinger and holding them taut against the pack.

He then passes the loop of the rope over his right shoulder, and when "near" packer calls out "Rope," he throws the loop lightly over with his right hand. If thrown hard it will bound back. Should there not be sufficient rope to pass to "near" packer, he pulls on the rear rope sufficiently to do so.

The "near" packer takes a similar position to that above described for the "off" packer and supports his pack with the left hand in the same manner. With the right hand he picks up the front rope and brings it to the center of the pack, the left receiving it between the thumb and forefinger and holds it taut against the pack.

Now take the end of this rope in the right hand, call out "Rope," to "off" packer, and quickly place the rope on top of the loop as it comes over. Pass the end through the loop from above and draw down taut, letting the right hand slip down on rope to near the edge of pack.

The load is now held in place by the rope as though caught in a bight. The loop of the sling rope should never be placed above or below the swell of the pack, as the rope then loses its retaining hold on load. This does not apply to box loads.

Now place the left-hand edge of palm resting on top of rope below its engagement on the swell of pack, raise the rope with the right hand so as to give opportunity for the last two fingers of the left

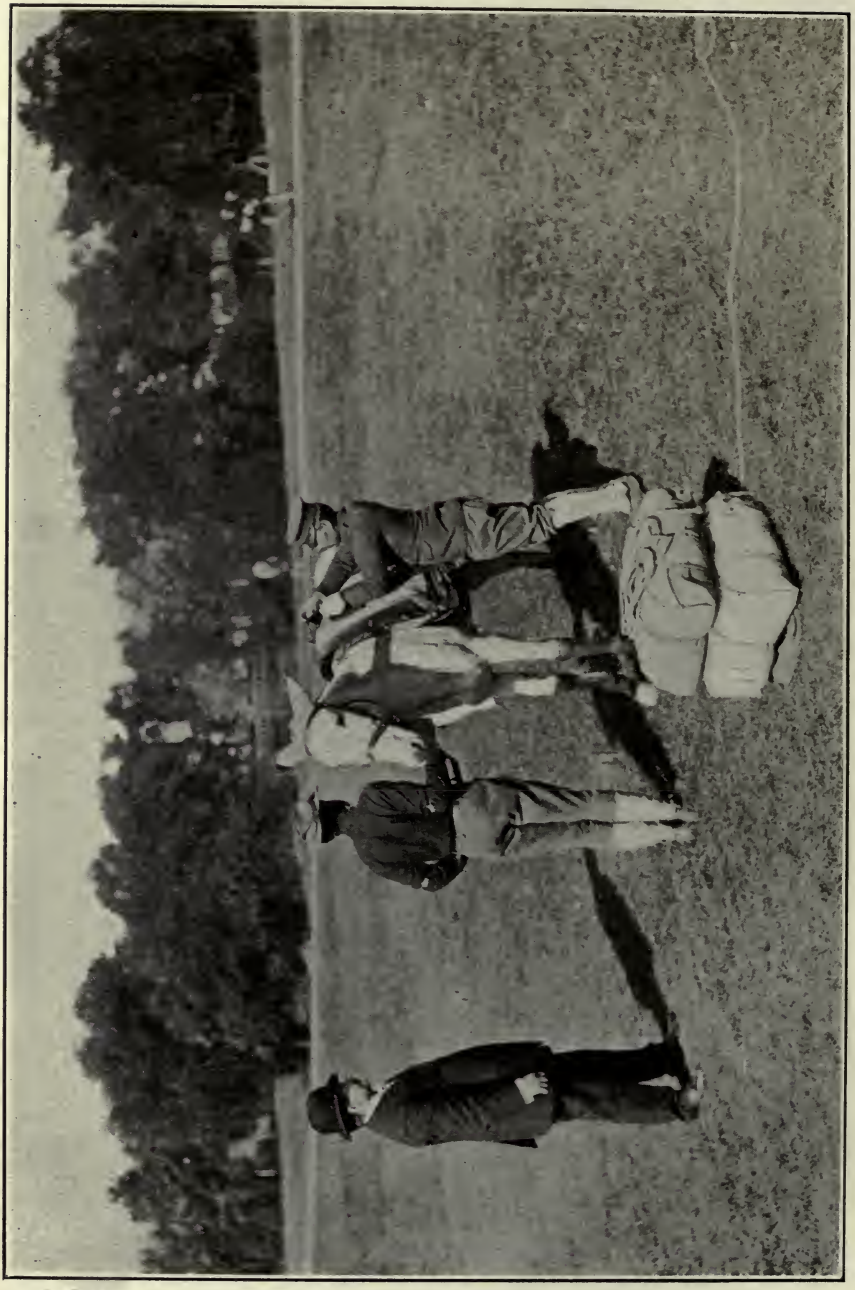

FIG. 10.

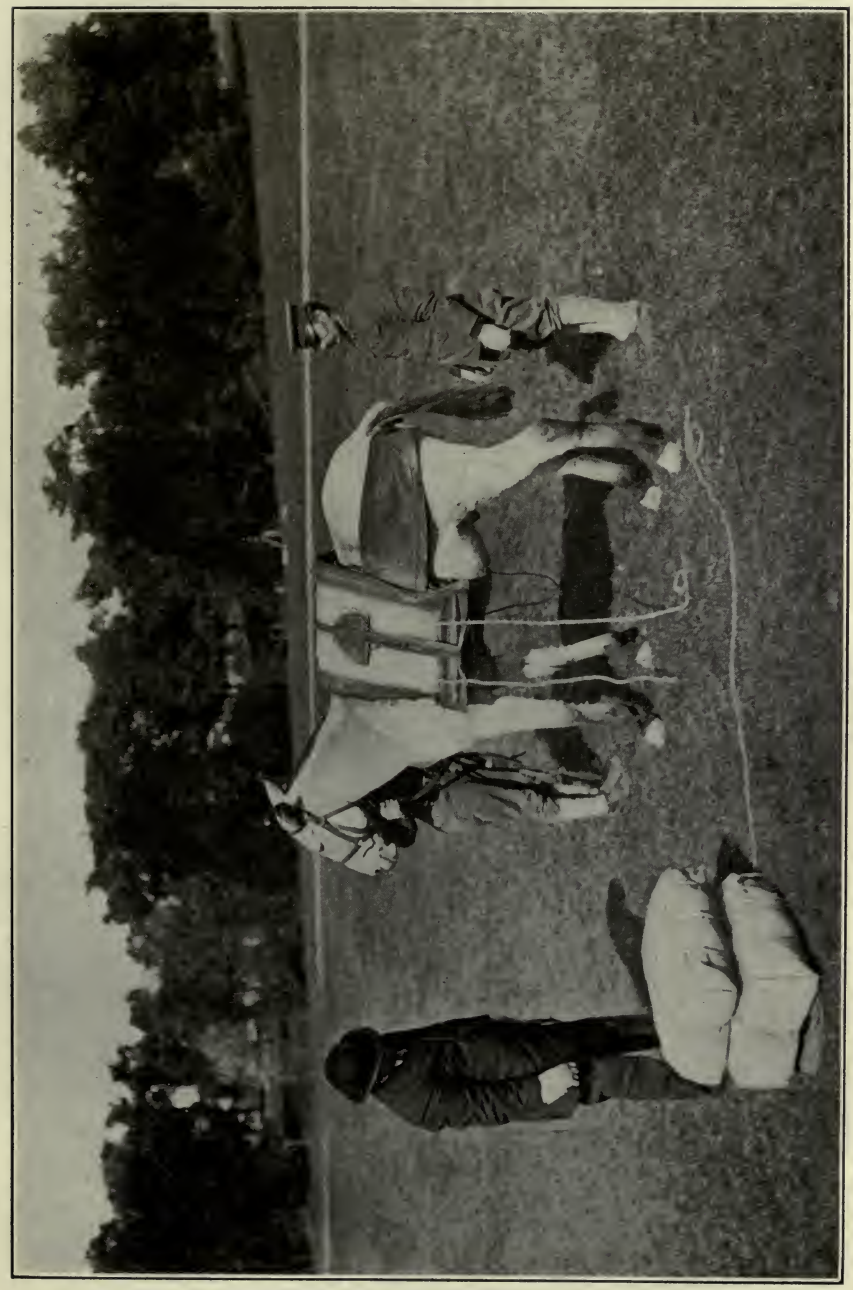

FIG. 11.

hand to grip it, and keep the rope compressed against the palm, the free end hanging down.

Now reach down with right hand and pick up the rear rope, bringing it up snug against pack in rear of the front rope. Receive it between the points of thumb and first two fingers of the left hand, allowing the free end, or portion, to hang to rear—*never* allow this portion to cross over the front rope, to avoid confusing them. You will learn this.

The fingers of the left hand now hold the front and rear ropes, the free ends of each rope hanging down.

Now take the front rope in the right hand, pass it over and under the rear rope from right to left, and pull taut, allowing the last two fingers of the left hand to escape from under the rope as it comes down taut, and allow them to fall in front of the rear rope (not in rear or behind it).

Now, again, bring the "front" rope over the outer or free end of "rear" rope from right to left and up toward the thumb of the left hand, receive the rope by allowing the thumb of the left hand to fall down on the crown or loop of the front rope formed by this operation, and bring the thumb-holding rope toward the palm of the hand, and hold it there.

Now take or grip the "rear" rope, and pull down taut, and the square knot is tied. (K, fig. 14; see also fig. 63.)

Coil up the extra rope, pass the coils from rear to front between the rope and the top of the pack, and draw snug.

(The parts of the sling rope are designated as "s" in figs. 13 and 14).

NOTE.—In forming a granny knot in distinction from the square knot the loop at top and bottom divides the running ropes. In the thief knot in distinction from the square knot one end of the rope is on the left and the opposite end on the right, whereas in the square knot both ends are on the right. (See figs. 63, 64, 65.)

HOW TO "BRAKE" A SIDE PACK.

SEC. 28. The "off" packer does not "brake" his pack; if put up properly it is already in position. The "near" packer "brakes" the load.

The "near" packer, the square knot being tied, calls "Hold," indicating that the "off" packer must hold his pack in position. To do so, he will place a hand on each corner of pack, stand well out, and brace against load.

The "near" packer places a hand on each lower corner of pack, raises the lower edge well out and up, causing the front edge to work down and in, even with the off pack. If found difficult, when the pack is well up alternate the hands down and up until the pack is flush with off pack; then allow or cause it to settle on aparejo.

"Near" pack having been lapped four inches, packs of equal weight should "brake" flush. When the weight of the two packs varies, lap accordingly, and brake until rope becomes taut, and settle. Do not try to brake a box load, as it will stand out from aparejo; "hold" and settle.

Always remember the more equal the weights of the two packs the less trouble they are when traveling, and the closer they are slung together the better they will ride.

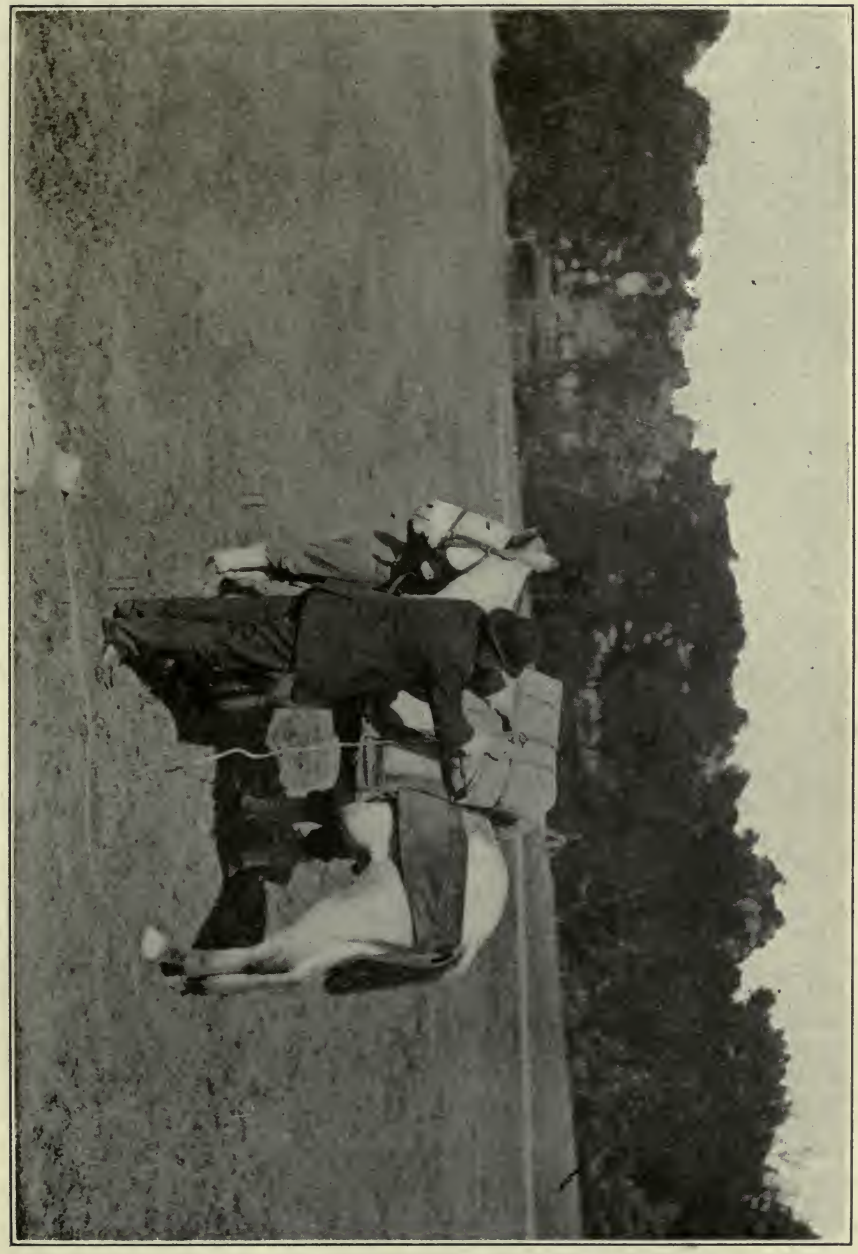

FIG. 12.

HOW TO DOUBLE SLING SIDE PACKS WHEN LENGTH OF PACKS REQUIRES IT.

SEC. 29. Place the sling rope on the aparejo, with the loop on the "off" side, leaving only enough of the ends on the "near" side to tie with. The packs being in place, the off packer proceeds and passes loop to near packer, as in single slinging, separating ropes as much as possible.

The "near" packer supports his pack with left arm, and grasps the rear part of the loop on top of pack with left hand, with right reaches down, picks up the rear rope on aparejo, and ties the two ropes together by a square knot, getting the packs well together in doing so; then throws the front of pack well up, to come even with rear end, picks up ropes in similar manner as at rear, and ties square knot. "Brake" and settle packs in usual manner.

HOW TO CROSS SLING SIDE PACKS WHEN TOP PACKS ARE NECESSARY.

SEC. 30. The "near" packer takes a sling rope by its middle and passes the ends over to "off" side, retaining sufficient of the loop so that when "off" pack is in place the loop can be passed up to its upper edge.

The "off" packer then puts his pack in position and supports the pack with his left hand, at center of pack. With the right hand he picks up the front and rear rope and brings them up to center of pack; receives them in left between thumb and forefinger, ropes pressed taut against side of pack.

With right hand he coils the ropes hanging down, coiling on left thumb, and throws coils over center of pack to "near" side. He then separates the front and rear ropes. The right hand now supports the pack, and the left receives the loop when passed up by "near" packer.

The "near" packer, after the off pack is in position and the ends of ropes have been thrown over, passes the loop to the "off" packer; he then separates the ropes on "near" side. Placing "near" pack on, he calls out "Rope," and proceeds to tie as in single slinging. (Sec. 27.)

The top pack is now put in place between the two side packs and above the sling rope.[a]

Just before tying the sling rope it is sometimes found necessary to get packs closer together. In such a case the "off" packer takes hold of the rear rope and pulls toward him from below, the "near" packer giving slack on front rope, as held in bight of sling, and pulling down on rear rope to take in the slack as rendered by the "off" packer. When enough has been taken the "near" packer calls out "Good."

If the "near" packer desires more rope to enable him to tie, the "off" packer will pull on the rear rope from above with the left hand until the "near" packer takes slack by drawing on the front rope, thus pulling the bight or loop of the sling farther over to his side.

If packs are high the "off" packer passes sling to rear with left hand, the "near" packer reaching from behind to receive it.

In passing loop to "near" packer over load, or from behind, it is well for the "off" packer to hold the loop with the thumb, the fingers extended, as he can thus more readily indicate position of rope to

[a] In the operation the side packs should be carried high enough to support the weight of the top pack to bind the load.

"near" packer. Always place the packs lengthwise. Top packs should never be carried when possible to avoid them. They cause delay and are troublesome.

HOW TO DOUBLE CROSS SLING SIDE PACKS WHEN LENGTH OF PACKS REQUIRES IT.

SEC. 31. The *near* packer takes a sling rope by its middle and passes the ends over to the "off" side in similar manner as in single cross sling with the exception that the rope is evenly divided—that is, by retaining as much of the loop on the near side as the ends indicate on the "off" side; proceeds and ties as in double slinging, i. e., at rear and front.

LASHING THE LOAD—HOW TO FORM THE DIAMOND HITCH.

SEC. 32. In the formation of the diamond hitch and tightening of the load, two packers are employed. One, termed the "near" packer,

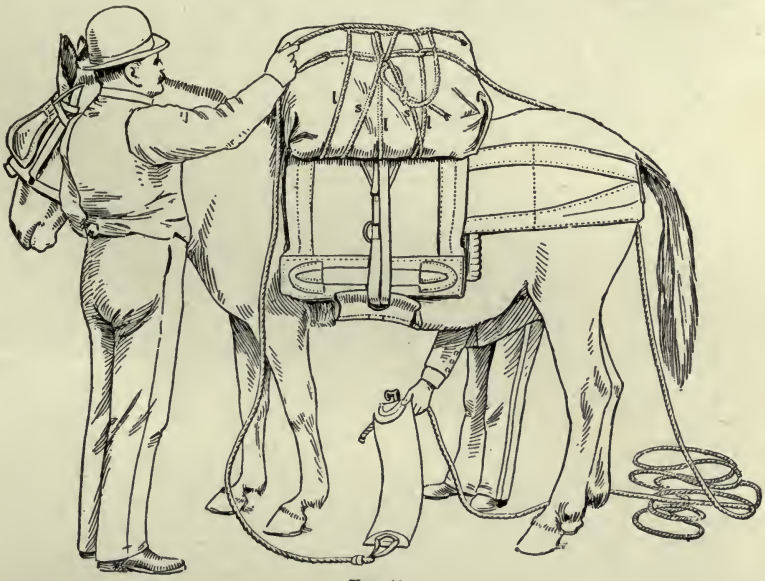

FIG. 13.

stands on the "near" side of the animal, looking toward rear; his mate, termed the "off" packer, stands on the "off" side, facing toward the front. The side packs being slung on the animal (secs. 26–27–28) the "near" packer throws the end of the lash rope in rear of animal, and the cincha portion under the animal's belly, convenient to the "off" packer, who picks them up and holds them in the left hand, as indicated in fig. 19, and stands erect.

(1) The *near* packer now picks up the rope, about 5 or 6 feet from cincha, and holding about 2 feet of rope between the hands, stands close to the animal's neck; now with both hands extended downward, he draws the right hand backward, to give impetus to the motion, and with one motion he swings the rope fore and aft between the side packs, clearing the animal's haunch in the action, allowing the rope held by the left hand to drop. (See fig. 13.)

Now, holding on to the rope held in the right hand, he draws on the running portion between the packs, bringing the right hand down by the side, arm's length, and reaches up with the left hand and grips the rope, so as to have the back of the hand upward. This brings the thumb under the rope (do not get the fingers under). He then draws on the running portion between the packs, in similar manner as done by the right hand, bringing the left hand down by the side, arm's length; do not let go of the rope held in each hand.

Now, with an outward and circular motion, bring the left hand holding the rope to the elbow of the right arm—this leaves the rope, or loop, on the outside of the right arm—and raise both hands to the position as seen in fig. 14.

Next bring the right hand to the center of the pack, and with one motion, both hands assisting, throw the "standing" rope, held in the



FIG. 14.

right hand, over the center of the load, to the "off" packer; the "running" rope, held in the left hand, over the mule's neck.[a] (In this action the back of the left hand rests on the mule's neck as seen in fig. 15.)

Now, draw sufficient slack on the "running" portion between the packs, about 6 or more feet, to form the rear half of the diamond, and throw this rope to the rear of the "*near*" pack, allowing the rope to go free from the hands. (This rope now becomes the "rear" rope.) Next take hold of the running rope on the mule's neck, the left hand forward of the right, and with the assistance of the "off" packer, bring this running rope to the center of the load (fig. 16), by

[a] The separating of the standing from the running rope is done purposely, to avoid confusing the "off" packer; both ropes should never be thrown together. Further, when throwing the standing rope over the load, *do not* give the rope a wild outward and circular swing, else the standing portion below the hand will become engaged around the rear corner of the aparejo and cause delay, with perhaps a strenuous expression from the "off" packer.



FIG. 15.

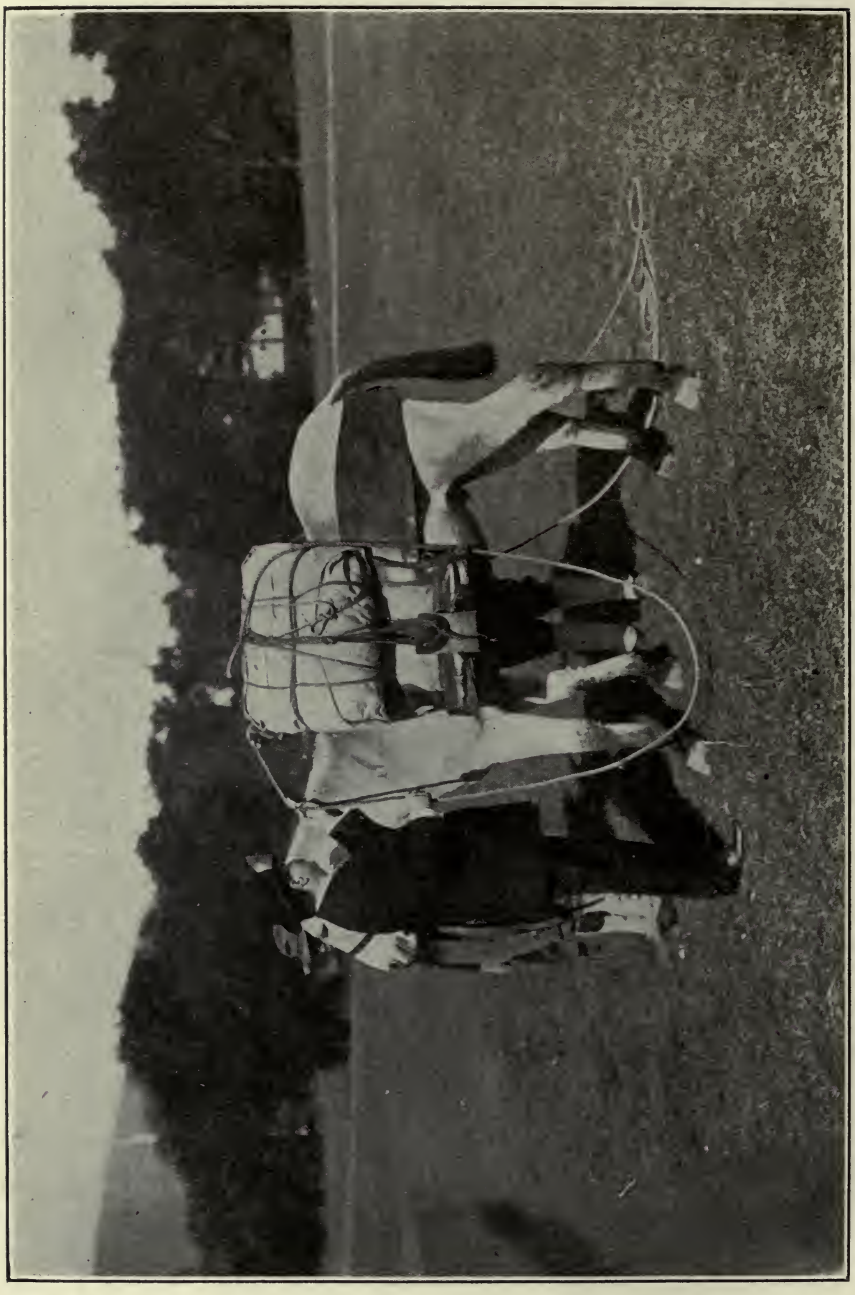

FIG. 16.

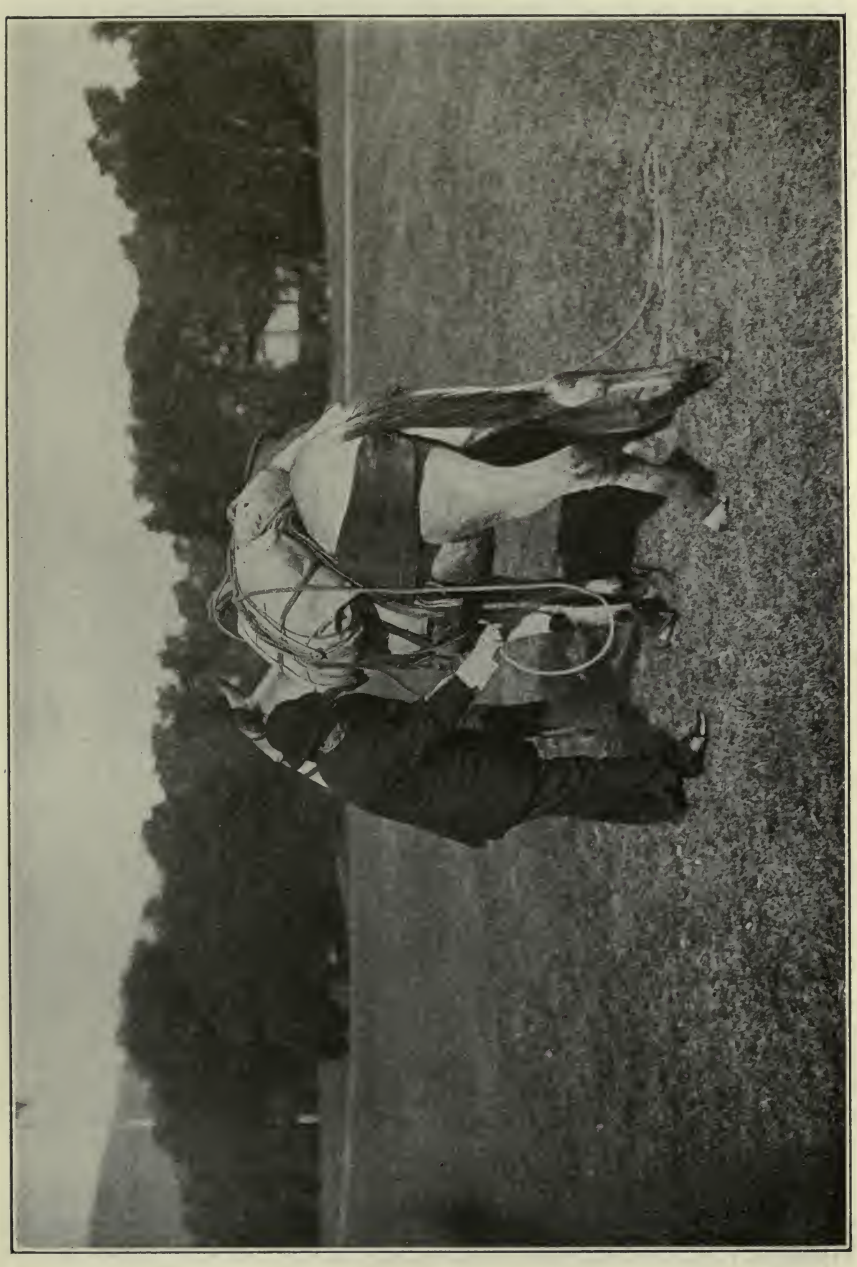

FIG. 17.

the side of the standing rope; both packers should perform this action together, never singly; it causes confusion and delay.

The right hand now slips down the rope to a point about midway between the pack and the "boot;" reach for this rope by passing the left hand *between* the standing rope and the aparejo, and grip the rope above the right hand; now, both hands assisting, slip down the rope and parting from each other, on each side of the standing rope, hold the rope in a horizontal position, with a space of about 10 inches between each hand; jam this portion down between the two cinchas under the aparejo, and the hitch is *"formed"* on the "near side," ready to tighten. (See figs. 17 and 18.)

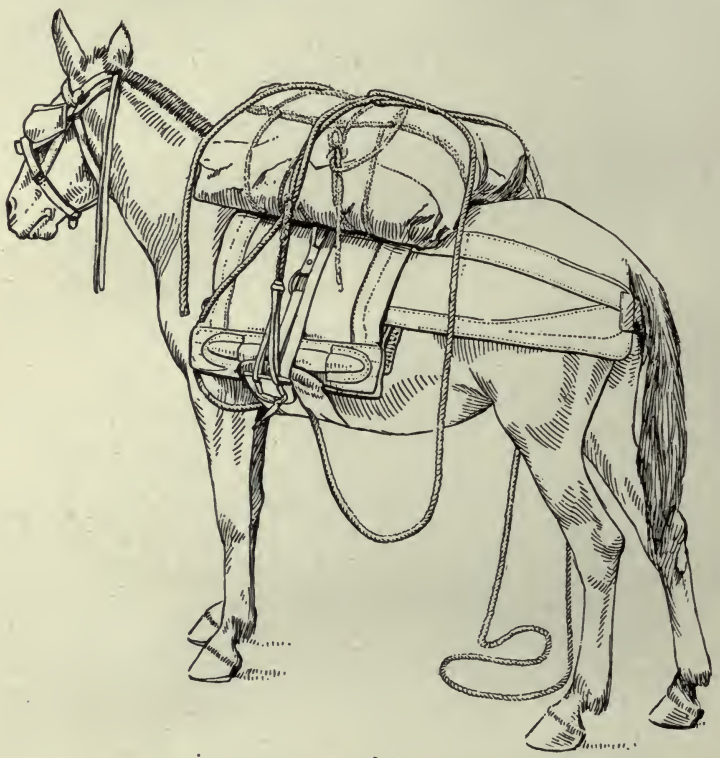

FIG. 18.

To avoid confusion, I have explained the formation of the hitch by "near" packer, in the first instance, as is customary in the practice of instruction. Now, we will take up that portion in the formation of the hitch devolving on the "off" packer.

(2) The *off* packer, having picked up the end of the rope and cincha, holds them in left hand, mouth of hook to the front, stands erect and waits for the standing rope to be thrown over the center of the load. (Fig. 19.) As the rope comes over he grips it as high as the arm will conveniently reach (fig. 20) and immediately places the cincha hook in position under the aparejo, about 6 or 8 inches, and draws down the slack on the standing rope, by one or two quick pulls, and lowering the hook for convenience, he engages the standing rope



FIG. 19.



FIG. 20.

on the hook from in, out; or from above, down. This leaves the standing rope next to the aparejo and the running rope on the outside of the hook. (Fig. 21.)

(After engaging the rope, do not hold the rope taut on hook.)

Now, place the left hand, holding the end of the rope on top of the running rope, between the right hand and hook, and grip both ropes, the thumb under the running rope; now allow the right hand to slip upward on the running rope, and with the assistance of the "near" packer, bring this rope to the center of the load. (Fig. 22.) In this operation the left hand will immediately follow the right to the center of the load; this will bring both hands together. (Fig. 23.)

Now, with the right hand draw the end of the rope forward, held by the left hand, so that about 12 inches will fall on the "near" side of the animal's neck and the hitch is formed on the "off" side, ready to tighten the load. (Fig. 18 for the "near" side and fig. 24 for the "off" side.)

It will be seen that the hitch is now laid ready to tighten. This tightening is a progressive action, beginning on the near side and going by the rear all around the animal, assisted greatly by the taking of the ropes out of their line of direction.

(3) The *near* packer, to tighten the load, places the left hand, palm down, on the side and center of pack; with the right hand he grips the running rope in the rear of the standing rope on the side of the pack (fig. 25) and brings it between the thumb and index finger of the left hand; now bearing against the pack with the left hand as a brace, he holds the running rope taut and calls out "Go!" indicating he is ready to receive the slack from the "off" packer.

(4) The *off* packer, at the word "Go," takes hold of the running rope as near the hook as possible, and placing the left knee against the end of boot of the aparejo as a brace, he pulls all the slack possible by bending the body well over, as seen in fig. 26, and gives this slack to the "near" packer quickly, in such manner as if trying to hit the aparejo with both fists; do not let go of the rope. Now take a second and similar pull and call "Tie," indicating no more slack can be taken on the standing rope; then step quickly to the rear and throw the "end" rope forward of the pack (this rope now becomes the "front rope") and grasp the rear rope between the packs, ready to receive the slack from the near packer.

(5) The *near* packer, at the call "Tie," brings the right hand holding the slack down toward the aparejo in the rear of the standing rope; the left hand receives this rope and slack by bringing the hand under the standing rope, gripping the rope above the right hand, so as not to loosen the slack, and brings it forward. Now, with both hands, jam the rope upward, between the standing rope and pack; the running rope is thus held firmly, as if caught in a bight. In this operation pull the rope quickly toward the breast. (Fig. 27.)

Now bring the free portion of the running rope below the bight, around the front boot of aparejo with the left hand, and step to rear of aparejo and with the right hand grasp the rope in rear of the cincha and receive the slack from the left hand; now bring this rope up in the rear of the boot and place the left hand below the right, both hands bringing the rope up quickly to the upper corner of side pack, and hold the slack taut, the palm of the left hand compressed against the pack, the right hand indicating how much slack has to be



FIG. 21.



FIG. 22.



FIG. 23.

taken in by the "off" packer (fig. 28) who then receives it, hand over hand, quckly, and prepares to pull on the rope. To do so take hold of this rope, termed the "rear" rope, with both hands, and pull the rope taut (fig. 29); do not let go of this rope until you see the body of the "off" packer "setting" on the rope, then let go of the rope quickly; learn to turn the rope loose at the proper time; the difference will be noted. Now step forward of the load and face to the rear, and grasp the end of rope, and wait for slack from the "off" packer. (Fig. 30.)

(6) The *off* packer having taken in the slack from the "near" packer, hand over hand, takes a wrap of the rope around either hand, and leans the body forward, toward the animal's haunch, takes a forward step with the right foot and in line with the animal's body,

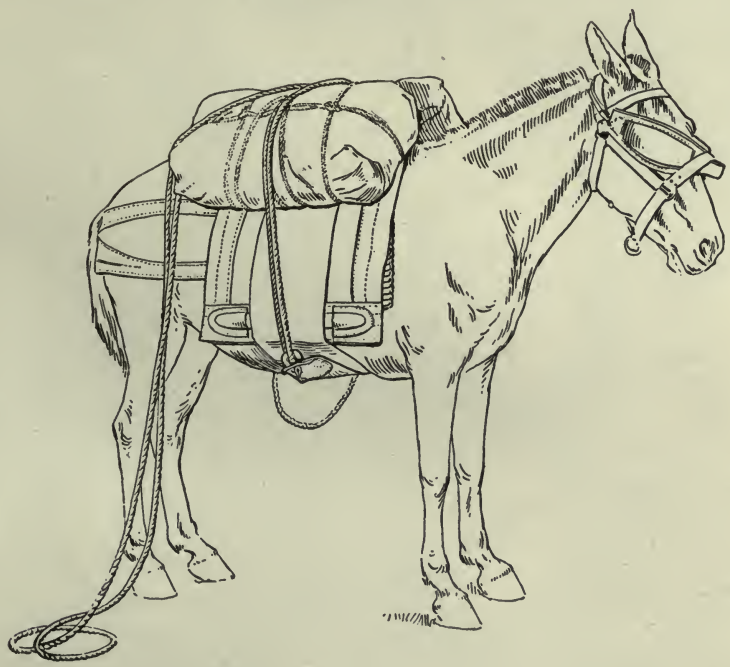

FIG. 24.

never outward, and sets back on the rope with all his weight. (Figs. 31–32.) He now holds the slack with the left hand, and with the right brings the free or running portion under and around the boot of the aparejo to the front; steps forward and faces toward rear; now grips the rope with the left hand below the right, and brings both hands quickly to the upper corner of pack, the left holding the rope compressed against the pack, the right indicating how much slack has to be taken by the "near" packer. (Figs. 33–34.) This is termed the "front" rope.

(7) The *near* packer having gripped the end of the rope (fig. 30) proceeds to take in slack, hand over hand, until he has about 6 or 8 feet; this portion, or end of rope is thrown over the center of the load to the "off" packer; he then continues to take in the remainder

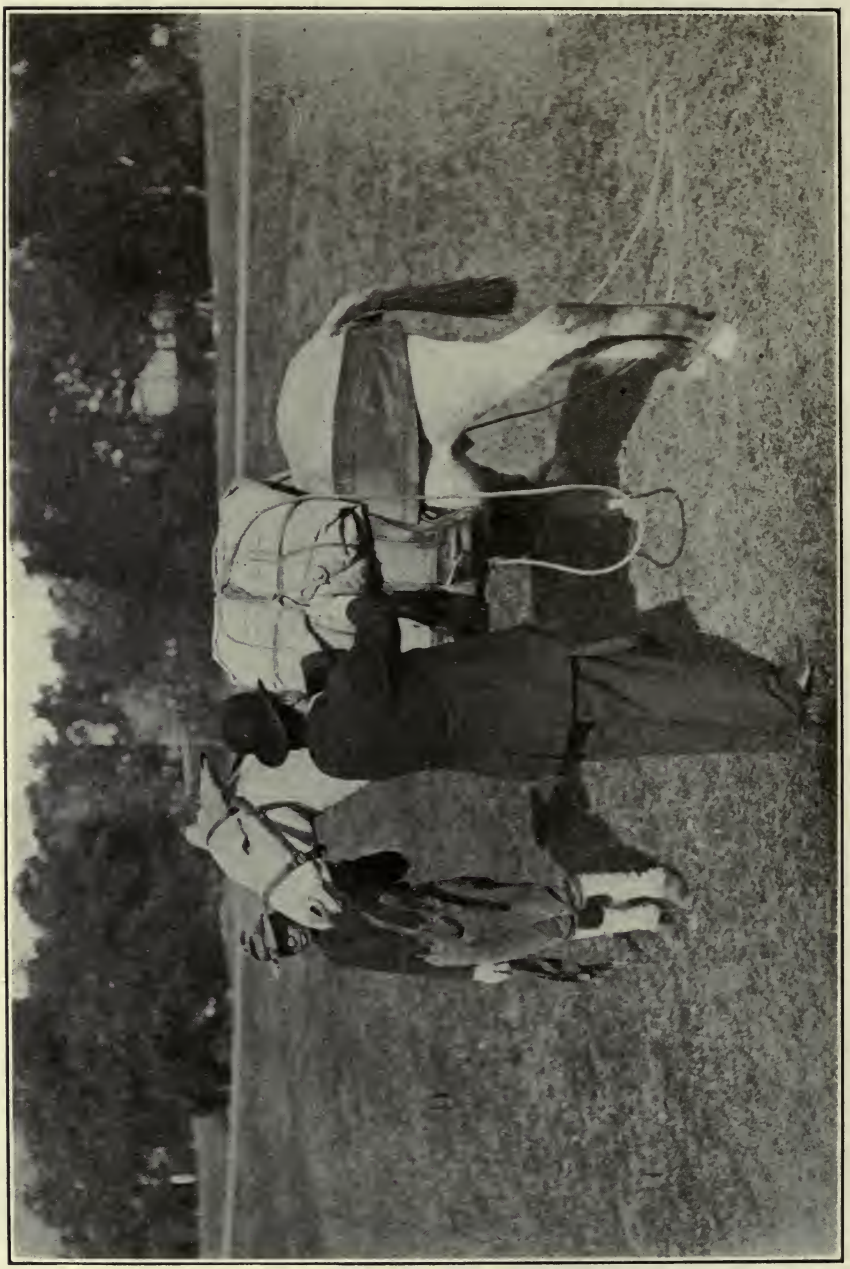

FIG. 25.

of the slack. Now, likewise, he takes a wrap of the rope around either hand and leans the body forward toward the load (fig. 35) and "sets" back on the rope (fig. 36), giving the slack in similar manner as described for the "off" packer; the "near" packer now holding the slack with the left hand brings the free or running portion with the right hand under and around the boot of the aparejo and partly toward the center of the load, and calls out, "Rope." (Fig. 37.)

(8) The *off* packer, having given the slack to the "near" packer, steps to the center of the load and grasps the end of the rope, and at the call "Rope," takes in all slack, hand over hand, coiling the rope in the operation, and holds coils in the right hand.

At the call, "Take slack" (fig. 38) from the "near" packer, he places the left hand palm down against center of pack, as a brace,



FIG. 26.

and receives the slack from the "near" packer. (Fig. 39.) He now grasps the standing portion of the rope above the coils and raises this portion high enough above the load to permit placing the coils on top of the load; in this action swing the coils from rear to front and bring the standing portion of the rope down on top of the coils, to hold them there, and secure the end of the rope; to do so take a wrap of the standing portion of the rope from right to left between the standing and running ropes and pack; holding the end of loop in both hands jam the double of the rope well up, so as to be caught in a bight, and take a similar turn between the standing and running ropes and jam this portion up likewise, and the load is tightened. (Figs. 40 and 41, showing completion of the hitch.)

NOTE.—The act of tightening, taking the standing and running ropes out of their line of direction, forms the "diamond" on top of

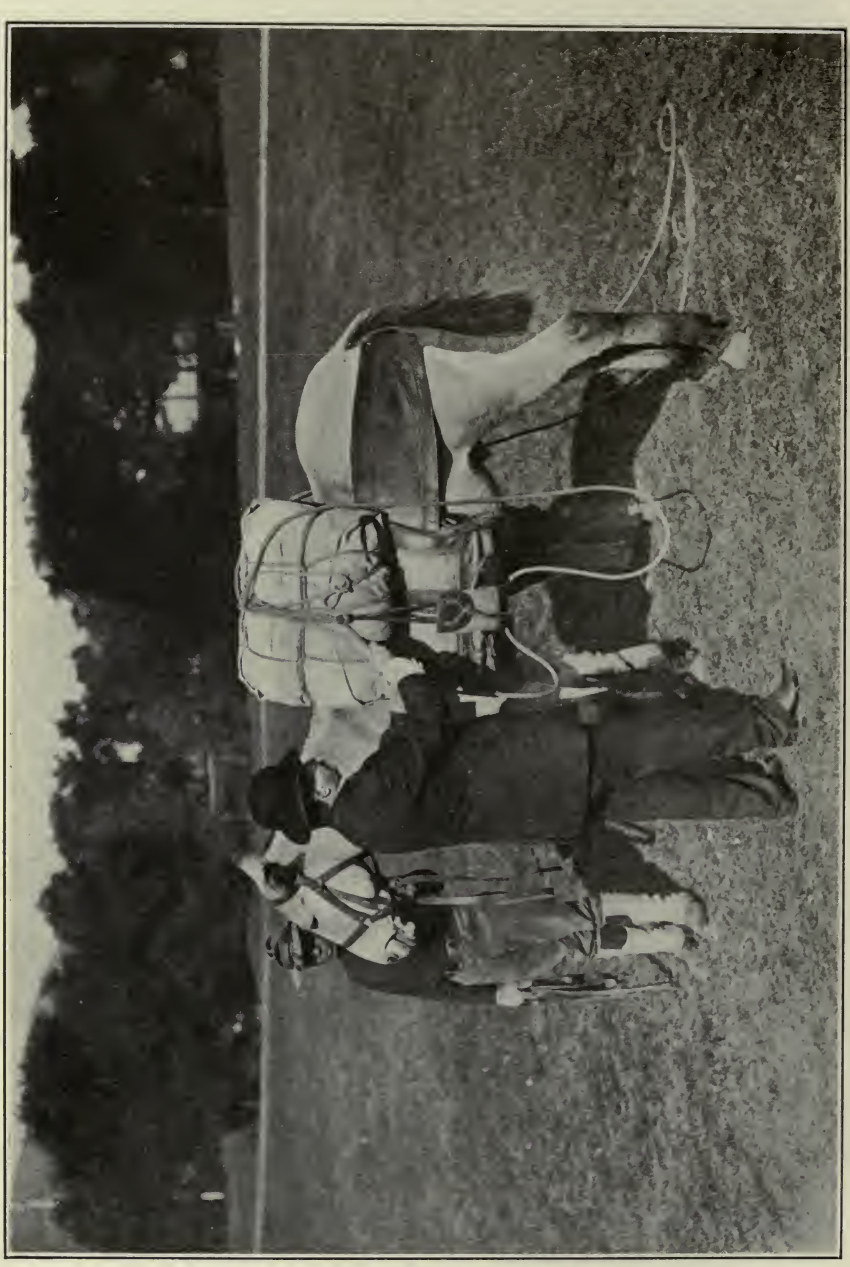

FIG. 27.



FIG. 28.

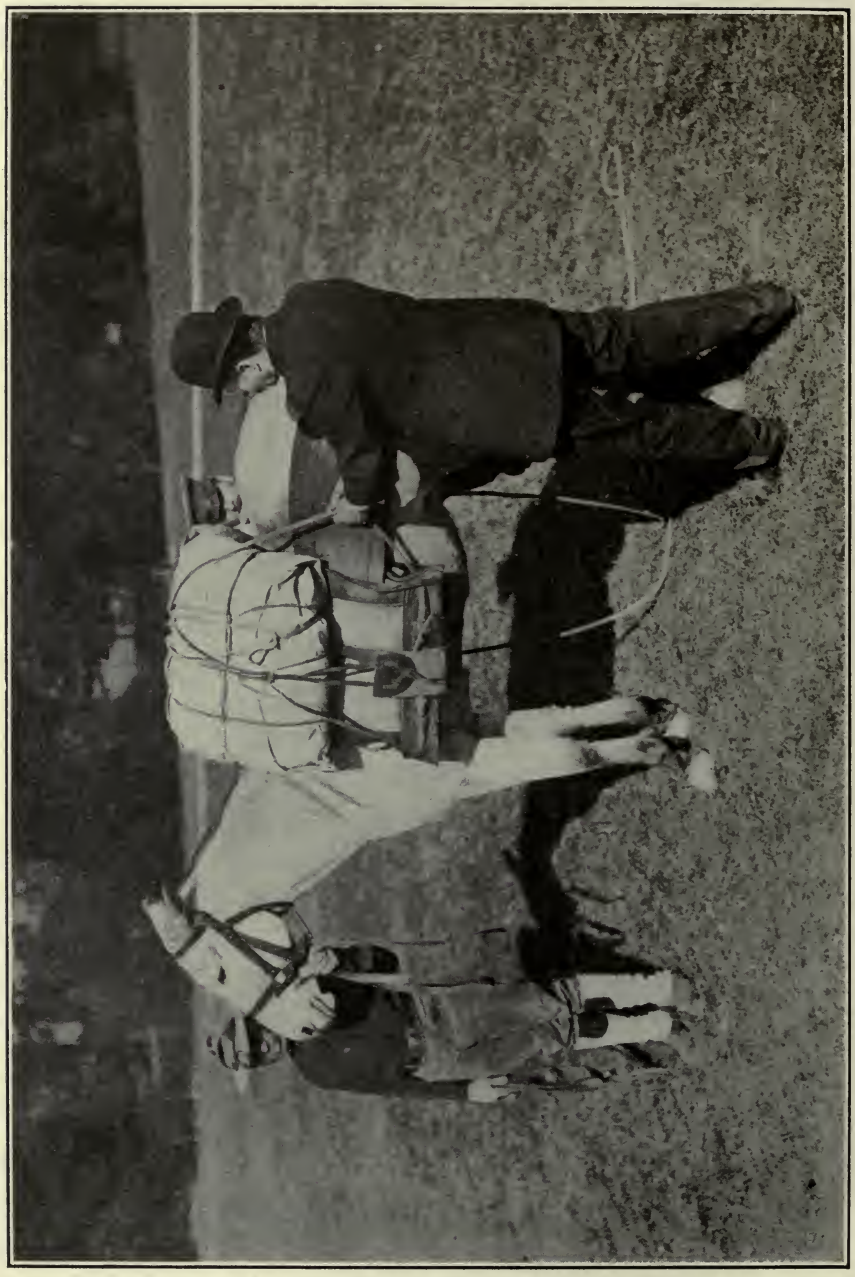

FIG. 29.



FIG. 30.

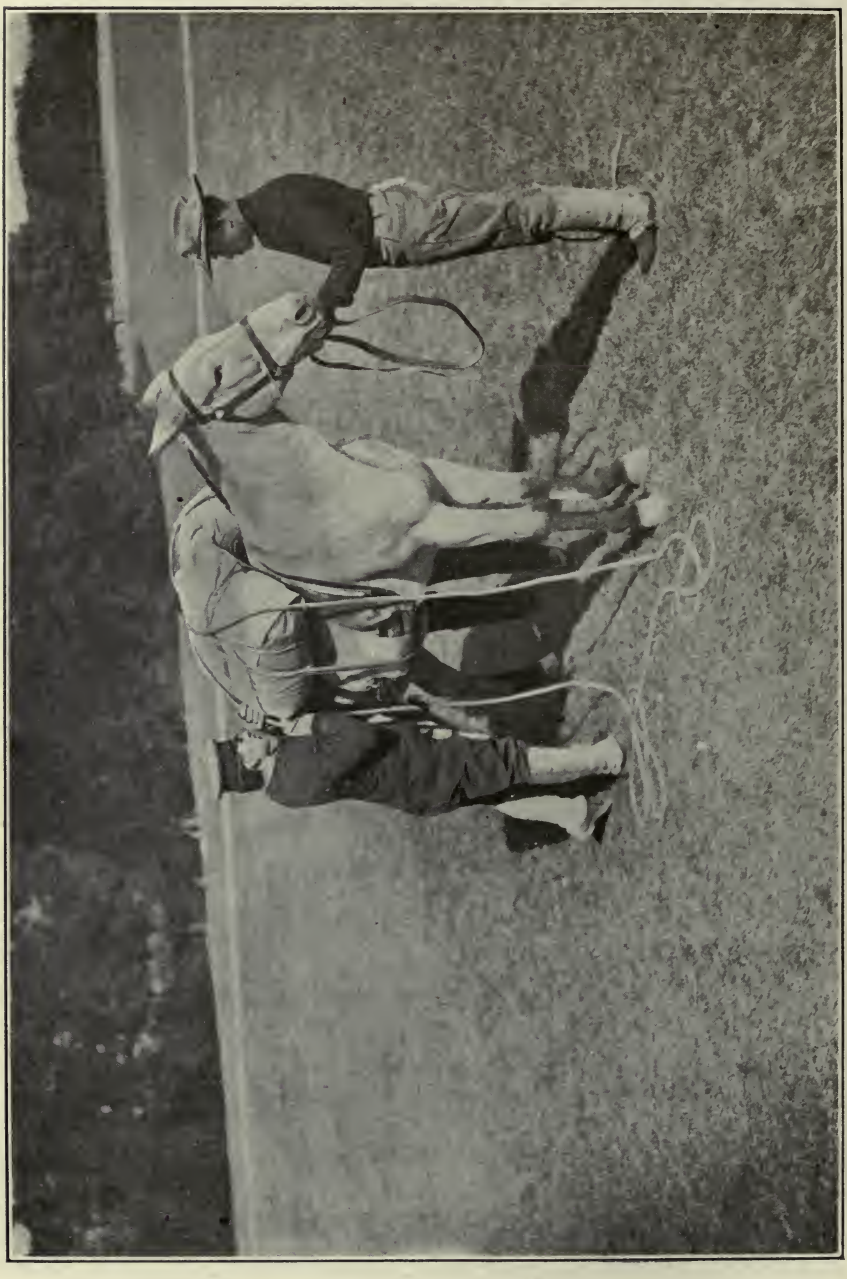

FIG. 31.

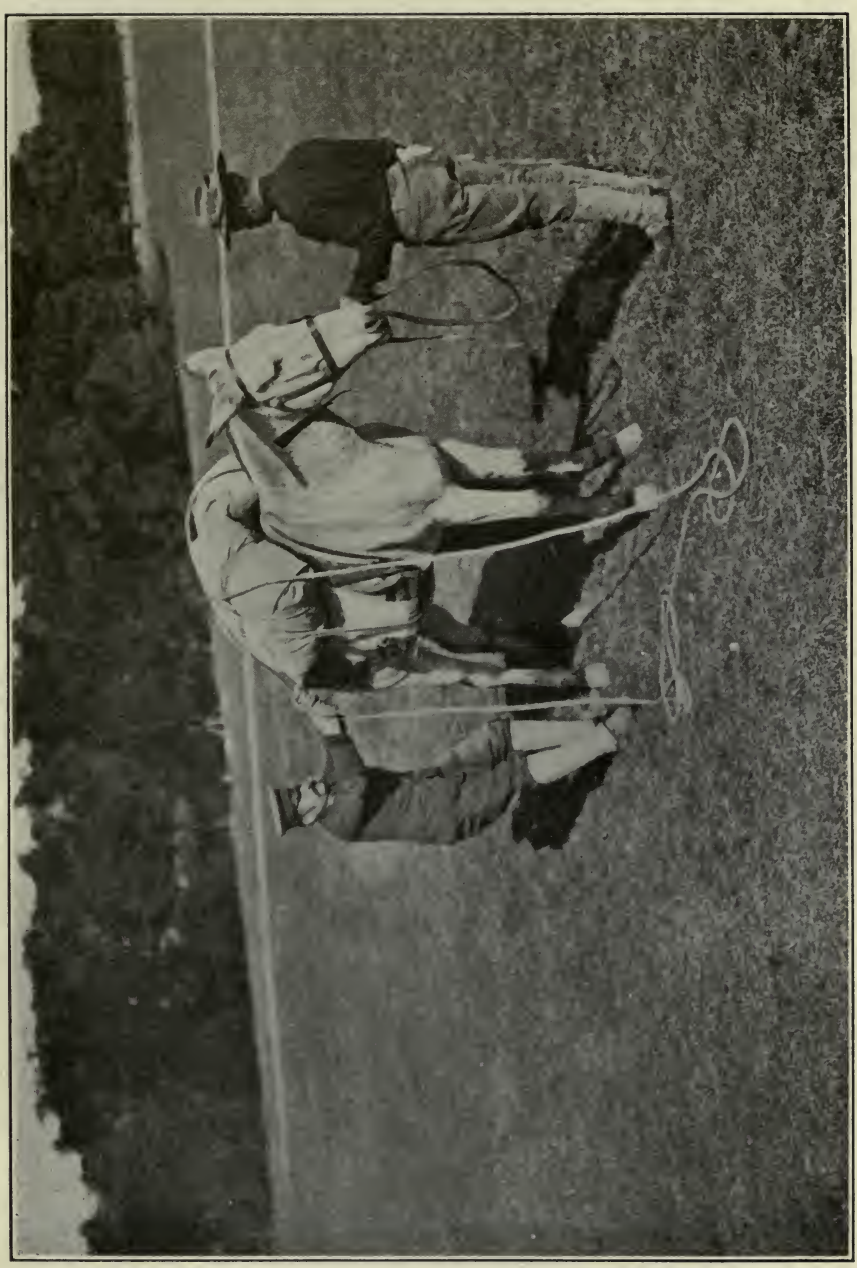

FIG. 32.

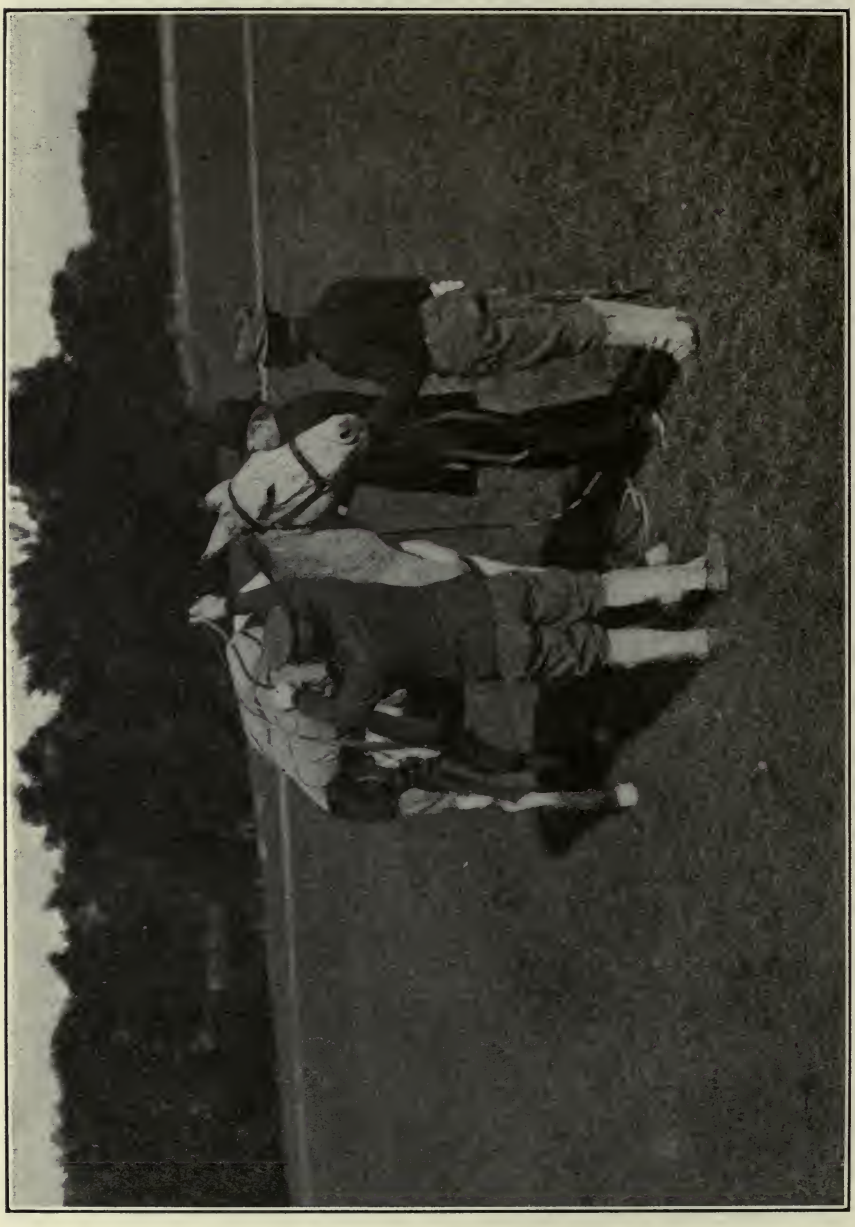

FIG. 33.

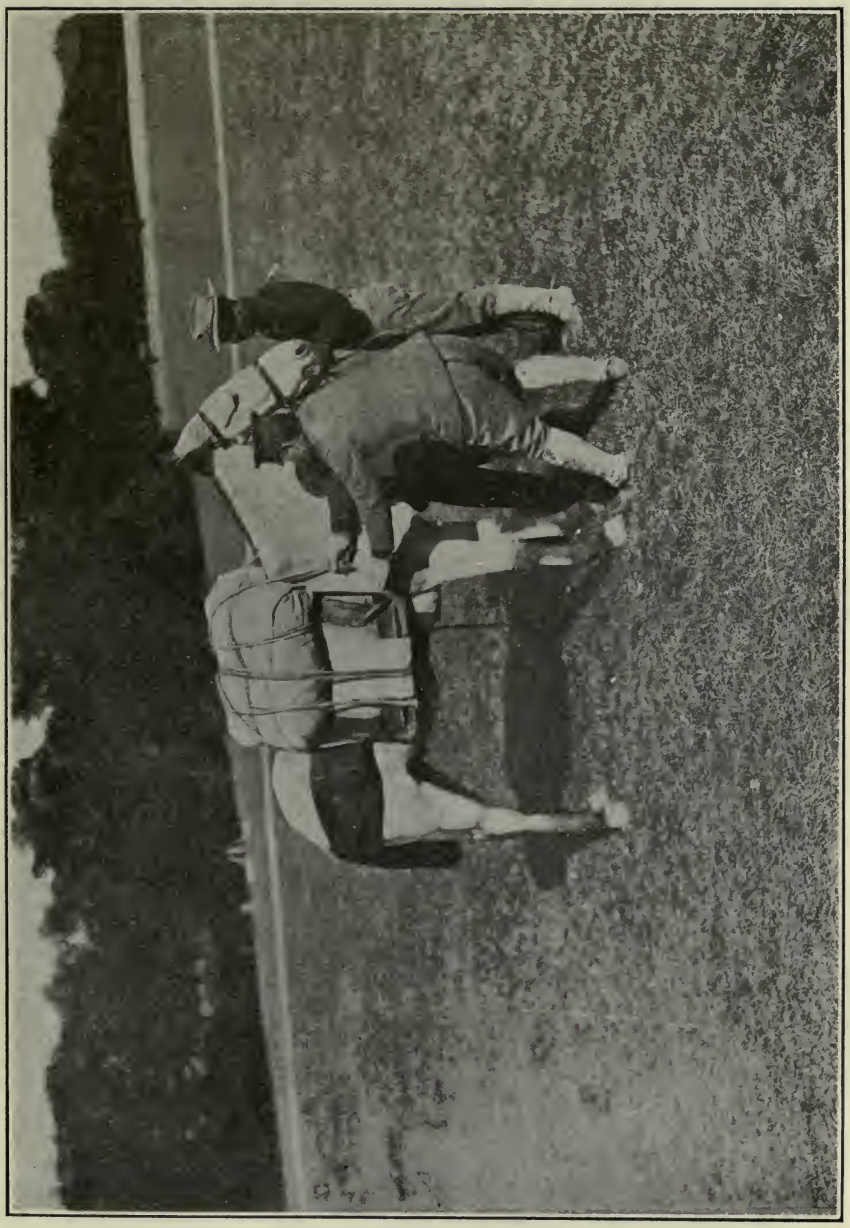

FIG. 34.

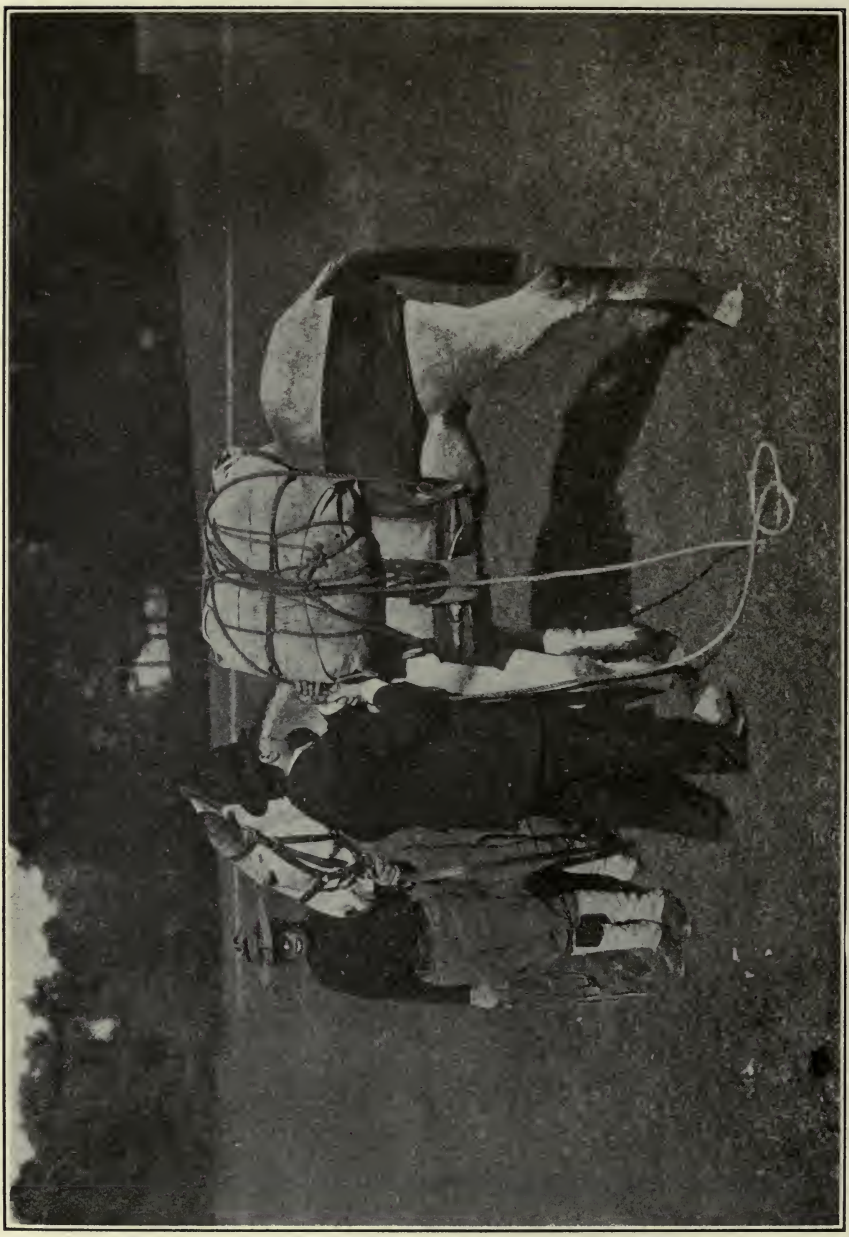

FIG. 35.



FIG. 36.



FIG. 37.



FIG. 33.

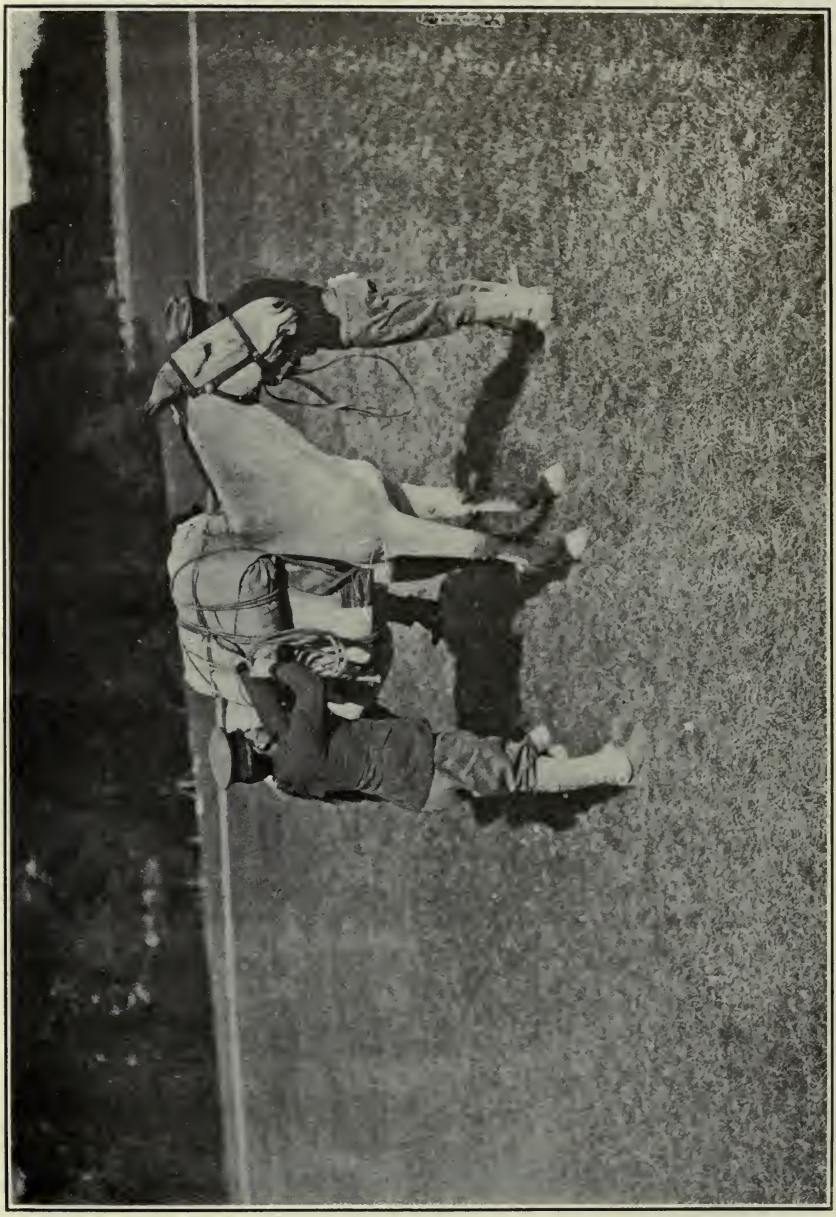

FIG. 39.

the load; hence the name given this form of hitch. In its formation a single knot is made, and when undoing the hitch the end, or top rope, when freed, is pulled or drawn from between the standing and running ropes; this leaves the lash rope free of knot.

In the formation of the "diamond" the rope has six designated names:

On the "near" side we have the standing, running, and marking ropes, and the front, rear, and top ropes.

On the "off" side we have the standing, running, front, rear, and top, or end ropes.

The standing rope is that portion encircling the mule and load to point of engagement on hook. (Figs. 40 and 41.)

The running rope, from hook going back over center of load to center of pack on the "near" side. (Fig. 40, to R, fig. 41.)

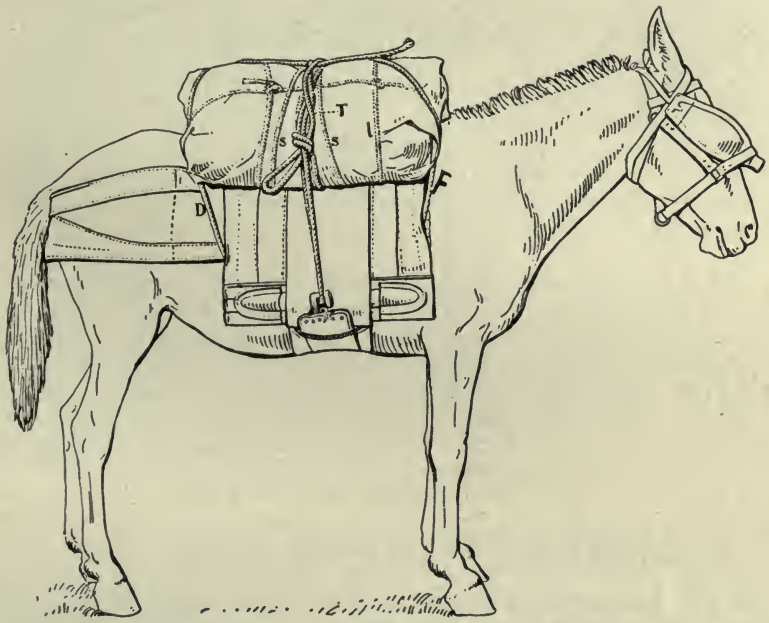

FIG. 40.

The marking rope, from the center of side pack on the "near" side, from point were jammed under the standing rope and front corner of boot of aparejo. (Fig. 41, R and M.)

The front rope passes over the front corners of the load; the rear rope, in similar manner, over the rear corners; in both cases, on each side, the rope passes under and around the boot. These ropes are sometimes referred to as the quarter ropes. (F and D, fig. 40, and D and F, fig. 41.)

The top rope, from the rear corner of the boot on the "near" side, running up toward and across the center of the load (fig. 41) to the center and side of the "off" pack, where the wrapping of rope indicates completion of the hitch. (Fig. 40.)

It may be added, there are various methods of finishing the hitch, as conditions of loading may suggest to the experienced packer.