

**FM 31-27**

**PACK ANIMALS IN SUPPORT OF  
SPECIAL OPERATIONS**

**INITIAL DRAFT**

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1

## PREFACE

2 This manual provides guidance for training selected personnel in the techniques of animal pack transport and for  
3 organizing and operating pack animal units. It tries to capture some of the expertise and techniques that have been  
4 lost in the Army over the years. The sections on care, feeding, and veterinary medicine compose a considerable  
5 portion of the manual; however, this material is not intended as a substitute for veterinary expertise nor will it  
6 make a veterinarian out of the reader. Personnel still must have a rudimentary knowledge of anatomy and  
7 physiology, common injuries and diseases (particularly of the feet), and feeding and watering to properly care for  
8 the animals and avoid abusing them from overloading or overworking.

9 Though many different types of animals can be used for pack transportation, this manual focuses on horses and  
10 mules. You cannot learn how to pack by reading about it; there is no substitute for having a horse or mule standing  
11 in front of you while you practice putting a pack saddle and load on him. However, the manual is useful for anyone  
12 going into an environment where he will have to learn these skills.

13 FM 31-27 is a guide for personnel being employed in a training or combat situation using pack animals. It is not a  
14 substitute for training conducted by personnel having hands-on experience with pack animals in the field. As with  
15 all manuals, simply reading this material will not make you an expert in the subject matter.

16 The proponent of this publication is the United States Army John F. Kennedy Special Warfare Center and School  
17 (USAJFKSWCS), Fort Bragg, NC. Reviewers and users of this manual should submit comments and recommended  
18 changes on DA Form 2028 to Commander, USAJFKSWCS, ATTN: AOJK-DT-SFD, Fort Bragg, NC 28307-5000.

19 Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

# CHAPTER 1

## OVERVIEW

1

2

3 The last pack transport unit in the United States Army was deactivated after the Korean War. Before then, pack  
4 animals were employed in every war fought by the United States (U.S.) Army. The Army used approximately  
5 350,000 horses and mules during World War I. Unconventional forces in Italy and in Burma used mules during  
6 World War II. Mules were also used in Korea.

7 Since the deactivation of the pack transport units, the Army has relied on air and ground mobility for transporting  
8 equipment. Today and throughout the spectrum of conflict, the Army Special Operations Forces (ARSOF) may  
9 find themselves involved in operations in unsophisticated environments. In many of these environments, the  
10 indigenous population uses pack animal transportation. Therefore, it may not be possible or practical to use air or  
11 ground mobility to move supplies and equipment to the desired locations.

12 The information in this manual is a collection of ideas and techniques from many different sources and individual  
13 experiences. Almost every animal packer has a technique that works for him. The techniques discussed in this  
14 manual about packing and operating with animals are general. As the reader gains experience, he may develop  
15 other techniques. Remember, however, to use the basic packing principles. Beyond that, the ingenuity of the packer  
16 is paramount.

17

### PURPOSE

18 This manual is a guide for select personnel assigned to train personnel and select animals used during the conduct  
19 of transport operations using pack animals. It is not meant to be a substitute for trained personnel that have hands-  
20 on experience.

21 The success of pack operations, under extreme weather and terrain conditions, will depend on the selection and  
22 training of personnel and animals. The proper and efficient use of available equipment, the sensible care of  
23 animals in the field, and the employment of acceptable movement techniques are essential to accomplish the  
24 mission. The limited time allowed for this type of training requires consistently high standards of planning,  
25 instruction, and supervision.

26

### MISSION

27 The mission of animal pack transport systems is to extend or replace other transport means in the support of  
28 special operations (SO) missions (tactical or strategic). Animal transport systems can greatly increase mission  
29 success when hostile elements and conditions require the movement of combat troops and equipment by foot. The  
30 animal's capabilities allow the unit to move quicker and with less personnel fatigue.

31

### CAPABILITIES

32 Pack animals can transport limited quantities of cargo and weapons over any terrain and under virtually any  
33 condition passable by an individual on foot. The pack detachment can traverse steep grades and heavily wooded  
34 areas without trail preparation and can maintain acceptable speeds under the most extreme conditions.

35 Over terrain that is not mountainous, carrying approximately 25 percent of their body weight, well-conditioned  
36 pack mules or horses may cover 20 or more miles per day. This capability continues indefinitely as long as the  
37 animals receive proper care and feed. In mountainous terrain, with no reduction in payload, the mule or horse can  
38 travel from 15 to 20 miles per day.

39

40

41

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- 1 The **legs** should be short, straight, and powerful. Avoid animals with cowhocks (knock-knees) and animals that are
- 2 toed-in (pigeon-toed) or toed-out. The knees should be straight, broad, and deep. The cannon bones should be
- 3 short, strong, and broad. The fetlocks also should be broad and deep and rounded in appearance. The pasterns
- 4 should be

1 short and strong and have a moderate slope. A long pastern has too great a slope and is weak, which causes the  
2 animal to cripple quickly.

3 The **feet** are a critical factor in the animal's ability to perform, stay physically sound, and endure the hardships of  
4 packing. Ideally, the horse should stand with its feet at a forty-five to fifty-degree angle to the ground. The size of  
5 the foot should be in proportion to the size of the animal. Small feet are often brittle and do not have the base to  
6 support a heavy load or absorb concussion. Large feet could cause the animal to be clumsy and awkward. Mules  
7 have a tendency to have smaller feet, but this fact does not present a problem. The sole should be slightly concave  
8 and the frog prominent, elastic, and tough. Again, when viewed from the front, an animal that is toed-out should  
9 be avoided.

10 The **girth** should be deep from the withers to the floor of the body, and the body should be wide and flat. This size  
11 indicates ample space for vital organs, such as the heart and lungs. The **barrel** should be large. A large barrel  
12 shows a good spread of the ribs that, in turn, give a good load-bearing surface on top.

13 The **back** should be short, strong, and well-muscled. A short back is better equipped to carry a load without  
14 sagging. Horses with one less vertebrae than others would be good selections. The back bone should be prominent.  
15 A pack animal with a rounded back and ill-defined backbone is difficult to pack so that the load rides properly.  
16 Chances are good the load will slip or roll and the unit will waste valuable time repacking the load during  
17 movement.

18 The **loin** should be of moderate length, well-muscled, and broad. A long loin will cause weakness at that point.

19 The **croup** should be low and of moderate width and slope. The **hindquarters** should be strong and well-developed  
20 to provide power to the animal.

21

22

23

24

### Figure 2-1. Animal conformation. Conformation Defects

25 In the selection of a pack animal the above criteria are ideal, but many serviceable pack animals have defects in  
26 their conformation and still perform well. However, it is better in the long run to avoid animals with many defects.  
27 Try to ensure that the larger animals carry the heaviest loads, and the gentle, experienced animals carry the fragile,  
28 easily breakable items. The smaller animals or animals with certain conformation defects should be tasked with  
29 carrying the light and not so fragile loads.

30

## HEALTH AND WELFARE

31 The health and welfare of the pack animal is the major concern of the pack animal handlers in garrison and in the  
32 field. Each individual is responsible for the welfare of the pack animals. Whole pack trains have been lost due to  
33 poor animal care.

34

### Stable Management

35 In an unconventional warfare (UW) scenario the pack animal unit will probably not have the luxury of a  
36 permanent or semi-permanent stable facility. However, most of the routines at the stables are applied in the field.

37 The unit commander has command responsibility for stable management and the training of his soldiers. However,  
38 subordinate leaders are directly responsible for stable management and the stable routine.

39 Stable management includes the supervision and maintenance of the stables and the other facilities. The  
40 subordinate leaders will ensure the grounds and buildings in the stable area are kept as clean and sanitary as  
41 available time and labor will allow and that the grounds are reasonably level and well drained. They will also  
42 ensure the animals are well-groomed, properly shod, and free of injuries and diseases. Since a large number of  
43 animals may be involved in a pack animal unit, subordinate leaders should keep records at the stables on all the  
44 assigned animals.

1

### **Stable Building**

2 The design and construction of a stable facility may be limited to the materials at hand. Regardless of the materials  
3 used, the stable should provide adequate shelter, good ventilation, and few maintenance requirements. The stable  
4 building should provide ready access to the corrals and storage for feed and packing equipment.

5

### **Stalls**

6 Stalls vary in size depending on the average size of the animals, amount of time the animals are expected to spend  
7 in the stall, and available space. A 12-foot by 12-foot stall allows freedom for a large horse or mule to maintain fair  
8 physical condition during long periods of idleness while confined to stables. Stalls of this size are normally used  
9 for recuperation, foaling of mares, and protection in extreme climates. A 10-foot by 10-foot stall is normally  
10 satisfactory when animals are in stables only for feeding and rest. To reduce waste in feeding hay and grain, the  
11 stalls should be equipped with hayracks and feedboxes. Stall walls must be free of sharp or rough projections and  
12 unfinished woodwork. A major concern when dealing with animal care is the construction and maintenance of stall  
13 floors. The floors should be level and have good drainage. It should also be resilient to help maintain a healthy  
14 condition of the animals' feet and legs. The floor should also be nonabsorptive for cleanliness and sanitation.  
15 Earthen floors composed of clay are satisfactory but require continual work to clean, level, and smooth. Rough-  
16 finished concrete provides the best type of floor because it is sanitary, is easy to clean, and requires little  
17 maintenance. However, a concrete floor having little resilience must be covered with a bedding of straw or hay for  
18 cushion. Wooden floors, unless impregnated, are not desirable since they are slippery and unsanitary. Regardless of  
19 the floor chosen, a good bed contributes to the comfort and efficiency of the animals. A clean, comfortable bed will  
20 induce the animal to lie down and get better rest. It provides a soft surface that will prevent bruising or abrasion of  
21 elbows, hocks, and other body parts. It also provides insulation for the body and a comfortable surface for the  
22 animal to stand.



1

**Storage**

2 Storage facilities are needed for the protection and security of feed and tack. The facilities should also be  
3 convenient to the stables and corral. Feed storage should provide protection from spoilage, rodents, and loose  
4 animals and should have feeding equipment. In addition, it should be arranged to minimize time and personnel  
5 necessary for feeding. A tack room should be planned for each stable and partitioned from the stall area. It should  
6 have facilities for inspection, cleaning, preserving, repair, and storage of all pack and riding saddles, bridles,  
7 halters, panniers, and accessories for the unit.

8

**Corrals**

9 The pack animal unit should provide corrals for the animals' free movement and exercise when they are not in use  
10 or in the stalls. Make sure the corrals are close and easily accessible to the stables, well drained, and provide good  
11 footing. Fill and level, as much as possible, any depressions and heavily traveled areas where water can collect. Set  
12 fences at a sufficient height and strength to ensure the safekeeping of the animals. Make sure the fence is free of  
13 sharp or rough projections. Provide water troughs or tanks to give animals free access to water and make sure they  
14 are large enough to allow the watering of several animals without congestion. Position hayracks and feedboxes at  
15 distances where one dominant animal will not receive more feed than another. Establish hitching posts or a picket  
16 line to groom and/or pack the animals. Again, make sure the footing at the picket line or hitching posts receives  
17 the same special attention as the heavily traveled areas. A foundation of stone with a covering of finely crushed  
18 stone or gravel could be laid. In wet climates, this area is located above the level ground. If there is no natural  
19 shelter from the sun and adverse weather, provide one for the animals' protection.

20

**Sanitation**

21 Sanitation at the stables and in the field is a continuous process for maintaining the health of both animals and  
22 personnel. Stables and corrals must be kept clean to reduce the breeding of flies, which is one of the most serious  
23 sanitation problems that lead to disease and infection. The most effective countermeasure for fly control is to  
24 remove manure and soiled bedding daily. You should always locate a compost pile away from the immediate  
25 vicinity of the stable area or operational base camp. You should brush out all feed boxes daily and scrub them  
26 monthly. Always drain and clean the water tanks each week. Only allow the animals belonging to the unit to drink  
27 from these tanks.

28 Also be sure to water any animals suffering from communicable disease from buckets; then thoroughly clean and  
29 disinfect the buckets.

30

**FEED AND WATER**

31 The health, condition, and effectiveness of a pack animal directly relate to the type and amount of food being  
32 consumed. The pack animal handler determines the amount and types of food by the amount and type of work to be  
33 performed. The working animal needs a diet containing more concentrates than the idle animal to supply the fuel  
34 for energy and the proteins and minerals for the replacement of tissue and maintenance of condition. Personnel in  
35 the pack animal unit need to have a basic knowledge of feed grains and roughage, their characteristics, and  
36 geographical availability. This information is also critical for operational planning.

37

**Feed Requirements**

38 The body requires food for growth, repair of body tissue, and energy for movement. It also needs food to maintain  
39 body temperature and energy for such vital body functions as circulation, respiration, and digestion. Protein from  
40 feeds such as linseed meal, oats, and bran provide for body growth and repair of tissue. Minerals from feeds such  
41 as grass, hay, bran, bone meal, and milk are needed for bones. Carbohydrates and fats from feed such as corn,  
42 wheat, rye, and oats produce heat and energy or are stored as fat and sugar as an energy food reserve. Bulk feeds  
43 such as hay, grass, bran, and oats are necessary for digestion. There is no single food that contains all the required  
44 nutrients; therefore, they are combined to obtain the desired nutritional value. Oats are the best grain feed for  
45 stabled animals. For animals on pasture, natural grasses come closest to providing all required nutrients. The food  
46 value of feed is measured in terms of the amount and proportions of digestible nutrients it supplies.

1 A ration is the feed allowed one animal for twenty-four hours, usually fed in two portions, morning and evening.  
 2 The components of a ration depend upon the class and condition of the animals, the work being done, the variety of  
 3 available foods, the kind of shelter provided, the climate, and the season. Feed must be selected and combined,  
 4 proportionately, to form a balanced ration that consists of proteins, carbohydrates, fats, minerals, and vitamins.  
 5 Pack animals cannot thrive on concentrated foods alone. Bulk is absolutely essential if the digestive tract is to  
 6 expand and digestion is to be unimpaired. Excessive amounts of proteins or fats and carbohydrates decrease  
 7 digestibility of the whole ration. Quantities of feed in one ration vary depending on the amount of idle time the  
 8 animals have, work being performed, and availability of the feed. Insufficient feed, particularly bulky feed, causes  
 9 loss of conditioning and general weakness and predisposes an animal to disease. More food than the body needs is  
 10 wasteful and harmful. It overtaxes the digestive system and may cause either diarrhea, due to irritation, or colic,  
 11 due to constipation.

12

**Types of Rations**

13 There are three basic types of rations that can be used: the garrison ration, the field ration, and the emergency  
 14 ration. All three can be altered in quantities and substance depending on conditioning and training taking place,  
 15 type and health of the animals, season, and combat situation. Table 2-1 shows a recommended allowance for  
 16 garrison and field rations.

17 **Garrison Ration.** It is used at permanent or semipermanent operational bases where the pack animals are fairly  
 18 idle. It contains a standard feed allowance of approximately 10 pounds of grain (8 for mules), 14 pounds of hay,  
 19 and 5 pounds of bedding. Again, this ration can be increased slightly depending on the animal's condition or the  
 20 training taking place.

21 **Field Ration.** The unit uses this ration while it is deployed so the pack animals can maintain condition and  
 22 strength during heavy work. The field ration contains an allowance of about 12 pounds of grain (10 for mules), 14  
 23 pounds of hay, and no bedding. Such quantities and combinations of feed could cause a logistic problem in a  
 24 combat situation and may be altered. If the situation permits, consider pre-position or caching the feed. Another  
 25 way to prevent having to carry all the feed is to consider aerial delivery.

		Garrison Rations		
		Grain	Hay	Straw
Horses	Small	7 lb	14 lb	5 lb
	Light	10 lb	14 lb	5 lb
	Heavy	12.5 lb	15 lb	5 lb
Mules		8 lb	14 lb	5 lb
		Field Rations		
		Grain	Hay	Straw
Horses	Small	9 lb	14 lb	None
	Light	12 lb	14 lb	None
	Heavy	14 lb	16 lb	None
Mules		10 lb	14 lb	None

26

**Table 2-1. Recommended ration allowances.**

27 *Notes: 1. Bran may be substituted in amounts not to exceed three pounds for a like amount of grain. One-half*  
 28 *pound of linseed meal may be substituted for one pound of grain.*

29 *2. The substitution of barley, rice, copra meal or any other local product can be made for the grain ration.*

30 *3. The substitution of native grasses, bamboo shoots, or banana stalks can be made for the hay ration.*

- 1 4. *Fifteen pounds of corn fodder or grain sorghum is considered the equivalent of ten pounds of hay.*

1 **Emergency Ration.** The unit uses this temporary ration for a short time when the combat situation or environment  
2 prohibits the use of a field ration. An emergency ration is a modification of a field ration for reasons such as  
3 logistic problems or the lack of forage in the operational area. Remember that this ration can vary greatly  
4 depending on the situation. Small horses are classed as those usually found in overseas areas. Light horses are  
5 those weighing less than 1,150 pounds. Heavy horses are those weighing more than 1,150 pounds.

6

### Feed Components

7 Types of grains and hay or combinations of available grains and hay will depend on the geographic location of the  
8 unit. It is important, however, to come as close as possible to meeting all the nutritional requirements of the pack  
9 animals. Some of the grains, hay, and other items that may constitute a ration are described below.

10 **Oats** are the safest and most commonly used of all grains for the pack animal. Usually all other grains are  
11 combined with oats or regarded as substitutes. Oats may be safely fed in quantities up to 10 pounds per day but no  
12 more than 6 pounds when the animals are idle. Oats may be fed whole or crushed; however, crushing ensures more  
13 thorough chewing and digestion. Oats can be steamed or boiled for ill animals but new oats should not be fed until  
14 a month after thrashing.

15 **Corn** is best combined with oats and hay for feeding during the colder months since it has a tendency to produce  
16 heat and fat. Corn is best fed on the cob, but the animals can be fed shelled corn if it is mixed with oats or bran.  
17 When feeding ear corn, 6 to 12 ears are recommended depending on the amount of work being performed and the  
18 individual animal. If substituting corn for oats, make the change gradually. Take care because corn is considered a  
19 "hot" feed. That means it contains greater than 16 percent protein. If the change is made too quickly or the animal  
20 is fed too much, it could lead to colic or founder (lameness). Substitute about two pounds of corn for an equal  
21 quantity of oats weekly.

22 **Barley** is used extensively in Asia, Southeast Asia, and parts of Europe. It is considered a good grain and may be  
23 safely substituted for oats and fed in the same quantities. The change from oats to barley should be made gradually  
24 over an extended period, substituting two pounds of barley for an equal amount of oats weekly. Barley is very hard  
25 and should be crushed or soaked in water for two to three hours before feeding, but it may be fed whole. Barley is a  
26 "hot" feed and the same care taken with corn must be taken with barley.

27 **Rye** is not regarded as a very good feed for horses and mules. If other feeds are scarce, it may be mixed with other  
28 feed such as oats or bran when necessary. Rye is very hard and should be rolled or crushed before feeding.

29 **Wheat** alone is not a safe feed for horses. It should be rolled and combined with a bulky grain or mixed with chaff  
30 or hay before feeding. One or two pounds should be given at first and the amount gradually increased to a  
31 maximum of six pounds per day.

32 **Bran** is the seed husk of grains such as wheat, rye, and oats, separated from the flour by sifting. It is an excellent  
33 food for the pack animal. Bran, having a mild laxative effect, is most useful as a supplement to a ration consisting  
34 largely of grains. It helps in building bone and muscle, has no tendency to fatten, and adds to the general tone and  
35 condition of animals. To supply the desired laxative and tonic effect, add necessary bulk, and stimulate more  
36 thorough chewing, feed about two pounds of dry bran mixed with oats or other grain every day.

37 **Rice**, that is, rough rice, when rolled, crushed, or coarsely ground, may be fed in quantities up to one-half the grain  
38 ration. In an emergency it may be fed in quantities up to eight pounds daily.

39 **Grain sorghum** has a general food value of slightly less than that of corn. Feed the pack animal the same amount  
40 of grain sorghum as you would feed corn and under the same circumstances. Grain sorghum is less fattening than  
41 corn and has a higher protein content.

42 **Salt** is essential to the health and well-being of all animals. The pack animal's need for salt is greatly influenced by  
43 the amount and type of work he is performing since a considerable amount is excreted in his sweat. A supply of  
44 salt, adequate to replace that lost through sweating, is an important factor in preventing heat exhaustion during hot  
45 weather. Salt should be supplied at 8/10 of an ounce per day either by salt block or by mixing it with the grain. If

1 salt blocks can be used, they should be placed where the animals have free access to them. The availability of a salt  
2 block eliminates the requirement to add salt to the feed.

3 **Hay** is the basic element of the ration that provides the bulk necessary for the proper performance of the digestive  
4 system. The pack animal should not be deprived of hay or something with similar bulk, such as straw, for any  
5 considerable length of time. Animals will suffer more on a ration of grain than on one of hay alone. Should the  
6 supply of hay normally required for the daily rations be diminished, the animals should be grazed or fed such  
7 roughage as can be gathered or produced locally. Oat straw is one of the best substitutes for hay if the oat heads are  
8 still on it. Otherwise, it is not a good substitute. Any straw, not spoiled, may be used, but barley and rye straw is  
9 not recommended. Do NOT feed wet hay to the animals because it can cause compaction in the intestines and may  
10 lead to colic. Do NOT feed moldy hay to horses and mules; cows can eat it without suffering ill effects, but horses  
11 and mules cannot. Not having bulky feed, give the animals green or dried weeds or leaves as substitute roughage.  
12 All hays, except for the legumes, have nearly equal feeding values. Some of the more common hays are alfalfa,  
13 timothy, prairie, and grain.

14 **Alfalfa** is a protein-rich roughage of high nutritive value that more closely approximates that of grains than the  
15 common roughage. Alfalfa is an excellent source of calcium and vitamins. Being high in protein, alfalfa combines  
16 well with corn to create a laxative effect. When changing to a ration containing alfalfa, do it gradually; give about  
17 two or three pounds daily. It should compose not more than one-half of the hay allowance. Because of its high  
18 protein content, alfalfa is not desirable for hot weather use.

19 **Timothy** is usually considered the standard hay, although it is not particularly rich in digestible nutrients. Timothy  
20 mixed with clover gives a higher nutritive value and a better supply and balance of minerals and vitamins.  
21 However, the clover content should not exceed 50 percent. This mixture is common in areas where timothy is  
22 available, as timothy and clover are frequently seeded together.

23 **Prairie** hay, or wild hay, is produced from the natural grass growing on prairie land. Upland prairie hay, its  
24 feeding value being slightly higher than timothy, makes an excellent hay when properly cured. Midland prairie  
25 hay, which is produced from coarser wild grasses growing on low land, is of lower feeding value and is not  
26 considered desirable.

27 **Grain** hay is made from oats, wheat, and barley, cut before maturity, and cured in the same manner as other hay. It  
28 has a nutrient value about equal to that of timothy but is richer in protein. Care must be taken when feeding grain  
29 hay because it may have high amounts of oats still in it.

30

### Grazing

31 Grazing alone can maintain idle animals satisfactorily. It provides good feed and moreover provides exercise for  
32 the animals. As with any change in feed components, grazing periods should increase gradually over the first few  
33 days to condition the animal's digestive system. For pack animals in the field, grazing is an important source of  
34 roughage and should be used at every opportunity to reduce the consumption of hay, which may be difficult to  
35 obtain or be of questionable quality. It also reduces the load that must be carried by the unit. Grazing on wet or  
36 frosted alfalfa or clover should be avoided to prevent gas colic. Except in an emergency, Johnson grass and grain  
37 sorghum should not be grazed.

38

### Pellet Feed

39 This type of feed has several advantages over conventional hay or grain rations. Storage requirements are  
40 decreased, it is easily deliverable by air, and nutritious by-products can be included. Total feed intake is usually  
41 increased when pellets are fed. One disadvantage is that the cost is higher than conventional feeding. Another  
42 disadvantage is the tendency of the animals to begin wood chewing or tail biting, but this problem is avoided if the  
43 animals are fed roughage in conjunction with the pellets. The contents of a pelleted feed should be selected  
44 according to the type of roughage being fed. Alfalfa, for example, provides more protein and calcium than grasses  
45 such as timothy and orchard. Consequently, the protein and calcium content of the pellet should be lower.

1 **Water**

2 Drinking water as a feed component is of utmost importance. The nutrients of the feed must be in a solution before  
3 they can be absorbed. During work, sweating and other physiological functions greatly deplete the water content of  
4 the body's tissues. To compensate for this loss, the body draws from the digestive tract. A deficiency of water in the  
5 digestive tract not only affects digestion but may affect the general health of the animal by causing such problems  
6 as colic and debility. An animal can survive for a considerable time on water alone but succumbs in a few days if  
7 deprived of water.

8 **FEEDING IN GARRISON**

9 The times of feeding and watering while in the operational base or rear area should be fixed and regular. Feeding  
10 and watering, both as to time and amount, are based on the training, conditioning, and work being performed.

11 **Watering the Animals**

12 It is important to offer the animals water and give them plenty of time to drink before feeding time. Normally, a  
13 pack animal requires about eight gallons of water per day. However, the temperature and amount of work being  
14 performed will determine water requirements. The animals should be watered three times per day under normal  
15 conditions and four times per day when operating in an extremely warm climate. Under ideal conditions, water  
16 should be available to the animals at all times when they are not being used. Feed should not be distributed while  
17 the animals are being watered because they will not water properly when they have feed available. If the animal  
18 drinks immediately after feeding, the food in the stomach only partially mixes with the gastric juices, causing  
19 digestion to be incomplete. The flow of water through the stomach then washes a considerable portion of the  
20 stomach contents into the bowels. A loss of nourishment and indigestion or colic may result. Water may be given  
21 approximately one hour after feeding.

22 **Quantity and Frequency of Feeding**

23 The stomach of the horse and mule is small and is unable to function properly while holding large quantities of  
24 food. Once the stomach is two-thirds full, the feed will pass through the stomach at the rate it is taken into the  
25 mouth. Therefore, the stomach functions properly when it is two-thirds full. If the animal is fed too much at one  
26 time, the stomach may become excessively distended and feed will be wasted by not being properly digested. A feed  
27 of three to four pounds of grain represents the approximate amount an average animal should be fed at a single  
28 meal. This feeding may be followed by a long and slow consumption of hay. Under these conditions the gradual  
29 passage of food into the intestines then takes place under favorable conditions. If the total amount of grain is  
30 increased, it is better to increase the number of feeds rather than to increase the size of the ration at each meal.

31 **Working After Feeding**

32 Working an animal hard after a full feed interferes with its ability to work and with its ability to digest the feed  
33 properly. The animal's ability to work is hampered by difficulty in breathing, which is caused by the swelling of  
34 the stomach and bowels against the diaphragm and lungs. Digestion is also accompanied by an increased flow of  
35 blood and secretions and increased muscular activity in the bowels. Hard work diverts blood to other parts of the  
36 body, tires the intestinal muscles, and reduces secretions needed to aid digestion. As a result, the animal suffers a  
37 loss of nourishment from the feed, may develop serious disorders of the digestive tract, and may die. The animals  
38 may be worked safely one hour after feeding.

39 **Feeding After Working**

40 The digestive organs of a tired animal are just as fatigued as the rest of the body. Therefore, a tired animal should  
41 not be fed a full ration. Most of the blood supply is still in the muscles, the muscles of the digestive tract are tired,  
42 and the glands used to secrete digestive fluids are not ready to function properly. The animal must be cooled and  
43 rested before feeding. Give the animal small amounts of water at frequent intervals and permit him to eat long hay.  
44 After about 30 minutes of rest, give him a small portion of grain followed by the balance, a little at a time, after an  
45 hour or more. Failure to take these precautions frequently results in colic, laminitis (lameness caused by swelling of

1 the feet), or both. The method of feeding just mentioned is time consuming. If it is not possible to use that method,  
2 feed the animals once after waiting one to two hours after work.

3

### **Feeding Procedures**

4 Feeding a small amount of hay before feeding grain stimulates an increased flow of saliva and gastric juices, takes  
5 the edge off the appetite, and quiets the nervous animal. In the morning, it is not necessary to feed hay first because  
6 the animal has probably been eating hay all night. An ideal way to feed hay is to keep it before the animal  
7 continuously by replenishing the supply frequently with small quantities. Feeding chaff with the grain adds bulk  
8 and forces the animal to eat more slowly, ensuring more thorough mastication.

9

### **FEEDING IN THE FIELD**

10 Feeding pack animals away from garrison in a field or combat environment presents problems that are not present  
11 in garrison. The greatest problem is setting a regular schedule of feeding times. The hours animals are worked in  
12 the field or under combat conditions are seldom the same every day. Therefore, to adhere to the principles outlined  
13 above, the animals must be fed smaller rations at more frequent intervals. It is very important to ensure every  
14 animal is fed a full ration every day to maintain the strength required to work in the field.

15 Due to logistic constraints, there may not be enough hay available to ensure the animal receives the required  
16 roughage. In this case, the animal must be allowed to graze at every opportunity to obtain sufficient roughage.  
17 Grazing should be allowed while at a bivouac location and at halts while on the march. A halt of an hour or more  
18 to feed grain should be planned if the duration of the movement will exceed five hours. Important points to  
19 consider when feeding in the field are covered below.

20

### **Watering on the March**

21 Watering on the march should be done whenever possible, especially on hot days. When watering a string of  
22 animals on the move, such as at a stream crossing, allow the entire string to get in the water before letting any of  
23 the animals drink. Otherwise, the lead animals will drink and then try to move down the trail before the rest of the  
24 animals in the string have had a chance to drink. Watch to ensure all animals have had the opportunity to drink  
25 before moving the string. Angle the string upstream so the animals ahead do not foul the water. Give the animals  
26 ample opportunity to drink their fill and not be led away the first time they raise their heads. After watering, keep  
27 the animals at a walk for 10 to 15 minutes before increasing the gait or coming to a long halt. This action will  
28 prevent digestive disturbances.

29

### **Feeding Halts**

30 Try to plan the place for a feeding halt two or three miles past a watering point. Give the animals a little hay after  
31 arriving at the feeding point and tying them to the night line. This procedure will help relax the animals and start  
32 the secretion of the gastric fluids.

33

### **Feeding at Bivouac**

34 When it is necessary to feed and water at a bivouac location, wait at least 45 minutes after arrival to water the  
35 animals. Remove the bits if a full watering will be allowed. When watering at the bivouac location, an individual  
36 should lead the animals to the water on foot. A person should not lead more than two animals at a time. When they  
37 are drinking, he should stand between the animals so they do not crowd each other. As stated before, the animals  
38 should be given ample time to drink and should not be led away from the water the first time they raise their heads.  
39 The animals should go to the water and leave the water together. Watch that the animals do not start pawing the  
40 water or lie down in it after being watered, as they often do. These actions will stir sediment on the bottom and  
41 make the water unfit to drink by other animals.

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**Water Shortages**

When water is scarce, its consumption will have to be regulated. If the bits are removed, animals can drink from a very shallow container. A small quantity will let an animal keep moving if you give the water by the swallow instead of allowing him to take one long draft.

**Feeding Hay**

When the animals are on a night line, break the hay from the bales and distribute it along the night line. Feed the hay in small quantities and replenish it frequently. This procedure is especially important in damp climates or while it is raining. If the rain is expected to be continuous over a long period of time, it is best not to feed hay at all. Feeding damp hay will cause serious colic in the animal, and moldy hay should never be given. As mentioned before, cattle can eat moldy hay without problems, but horses and mules cannot. Wait until the rain is finished. Break the bales of hay apart and distribute only as needed. Personnel should ensure the animals do not work the hay beneath them where they cannot get to it.

**Feeding Grain**

When feeding grain in the field, feed the animals from a feedbag and ensure the feedbags fit properly. If they are too loose, the animals will toss their heads trying to get to the feed and grain will be spilled and wasted. Watch the animals while they are feeding from a feedbag, and never allow them access to water until they have finished eating and the feedbags are removed. They could get the feedbag filled with water while attempting to drink and drown. To conserve feed, spread any feed left in the feedbags on a cloth to dry. The feed can then be used for the next feed. Grain should not be spread on the ground for the animals to eat. When the animals eat it, they also ingest dirt, which can lead to colic. Any grain spilled on the ground in front of the animals should be swept.

**CARE OF FORAGE**

The care of forage is extremely important to the health of the herd. Feeding damp or moldy hay can cause colic and could disable a large portion of the herd at once. Inspect the forage at the time of delivery to ensure the quality of it. In garrison, shelters are available to keep the forage dry. In the field, make every attempt to keep it dry. When the feed is packed on animals for transportation, cover it with a manta. This precaution will protect the feed from the elements and keep the animals from getting into it during the movement. During temporary storage, raise the forage off the ground by timbers (or whatever else is available) and cover it to keep it from getting wet and keep loose or stray animals from getting into it.



**CHAPTER 3**

**ANIMAL CARE AND TRAINING**

The proper care and training of pack animals is essential to the health of the animals and their performance in the field. Without proper care, the animal's health and the unit's ability to complete its mission will suffer. Without proper training, the unit cannot rely upon the animal to behave in a manner that ensures mission accomplishment.

**GROOMING**

Grooming is essential to the general health, condition, and appearance of animals. It also provides an excellent time to inspect them for injuries. When grooming before movement, check the animals for injuries. Also, check the condition of past injuries, if any, at this time. When grooming after movement, check the animals for injuries sustained on the trail and for any evidence the saddle or harness may have chafed the animal. These precautions permit treatment of any problems before they get to the point of incapacitating the animal. The value of grooming depends on how thorough the handler does it. The animal handler obtains efficient grooming when he takes pride in the appearance of his animals.

**When to Groom**

The animal handler should groom every animal thoroughly at least once each day. Always groom an animal before leaving the stable area for work or exercise. Before saddling the animal, be sure the area where the saddle pad and cinch ride are free of dirt and foreign objects. Failure to clean these areas will result in sores and could cause the animal to be unusable. On return from work or exercise, remove, clean, and put away any equipment. Cool a heated, wet, or sweating animal before grooming it. Give it a brisk rubbing with a cloth to partially dry the coat, then blanket the animal (if a blanket is not available, leave the saddle pad on) and walk it until it is cool. Check for injuries that may have occurred during movement.

**Equipment**

Each individual, responsible for the care of animals, should have a grooming kit. The basic kit consists of a currycomb, horse or body brush, hoof pick, and a grooming cloth (Figure 3-1).

<b>Currycomb</b>	A circular metal device with sawtooth-like edges used to remove caked mud, to loosen matted or dried skin and dirt in the hair, and to clean the body brush while grooming. Never use it on the legs below the knees or hocks and never use it about the head.
<b>Horse or Body Brush</b>	The main tool used in grooming. When used properly, the bristles of the body brush penetrate through the hair of the coat and remove dirt and flaked skin from the hide as well as from the hair. Various body brushes are available. Generally, it is better to use a stiffer bristle to penetrate the hair on the coat better.
<b>Hoof Pick</b>	A small metal pick used to clean rocks and packed dirt from the hooves.
<b>Grooming Cloth</b>	A cloth used to clean the body orifices and to give a final polish to the coat. The handler can make a grooming cloth, about two feet square, from old toweling or any other type of soft cloth.

**Figure 3-1. Grooming kit.**

**Grooming Sequence**

A prescribed sequence of grooming will enable the animal handler to groom effectively and thoroughly. The following paragraphs explain the recommended sequence.

1 Check the animal for any signs of lameness as you walk it to the grooming area. If any exist, thoroughly clean the  
2 hoof of the affected leg with the hoof pick and look for rocks or other debris causing the problem. Each hoof does  
3 not need cleaning every day in working animals. One school of thought is that the soft dirt and debris packed in the  
4 hoof gives the animal extra cushion to walk on in rough terrain. Whether cleaned daily or not, the handler should  
5 check the animals' feet for thrush, torn frog, loose or missing shoes, and cracks. Report defects at once to the  
6 medic or veterinarian.

7 Take the currycomb in the right hand and the brush in the left. Go over the left side of the animal with the  
8 currycomb beginning at the neck. Continue down to the breast, withers, shoulders, foreleg and knee; then smoothly  
9 transition to the back, side, belly, croup, and hind leg to the hock. Strike the currycomb frequently against the heel  
10 or side of the brush to free the accumulated dirt and dried skin. Ensure the currycomb follows the natural lay of the  
11 hair.

12 Brush the entire left side of the animal in the same order as above except brush the legs down to the hoofs. After a  
13 few strokes, clean the brush with the currycomb. In using the brush, stand well away from the animal, keeping  
14 your arm stiff, and throw the weight of your body behind the brush. A twist of the wrist at the end of each stroke  
15 will flick the dirt away from the hair. Ensure the brush follows the natural lay of the hair. This use of the brush is  
16 not necessarily a separate activity from currying; you can do both at the same time with a brush stroke following  
17 each currycomb stroke.

18 Pass to the right side of the animal, change hands with the brush and currycomb, and groom the right side in the  
19 same order as above.

20 Brush head, mane, and tail. In cleaning the mane and tail, begin brushing at the ends of the hair and gradually to  
21 the roots, separating the locks with your fingers to remove dried skin and dirt. Wipe eyes, nostrils, and lips and rub  
22 the head, ears, and muzzle with the grooming cloth. Clean the dock (fleshy part of the tail) and give a final polish  
23 to the coat.

24 ***NOTE: As a precaution against the spread of skin diseases, wash grooming equipment and drying cloths with***  
25 ***soap and water once a week.***

#### 26 **Animal Inspection**

27 Inspect the animals, as indicated above, while grooming them. Good grooming offers the opportunity for close  
28 examination of the animal and the discovery of injuries or defects that otherwise might pass unnoticed. Correcting  
29 or treating these defects or injuries greatly reduces the number of non-effective animals in a unit. Along with  
30 wounds or other injuries present, there are others that are not immediately visible to the naked eye. For example,  
31 you can check for sore kidneys by placing your hand on the animal's back at the withers. Apply pressure with the  
32 thumb and fingers on either side of the spine as you slide your hand along his back, toward the tail. If the animal  
33 flinches, as you get to the area just to the rear of where the saddle rides, it is a sign that his kidneys are sore. This  
34 might result from poor saddle placement or improper riding position.

#### 35 **Grooming Sick Animals**

36 Do not groom animals that are sick, weak, or depressed. They should be hand-rubbed at least once a day. Wipe  
37 their eyes and nostrils out with a damp sponge or soft cloth and clean their feet. Groom animals with minor  
38 ailments in the usual manner. Do not clean animals with tetanus at all.

#### 39 **FARRIER SCIENCE**

40 While not farriers, individuals must be able to replace, at least, a loose or missing shoe when they are not available.  
41 The usefulness of a pack animal depends on the health and condition of its feet. The feet of a normal animal, due to  
42 their structure, require very little care or protection while on free pasture or even under light working conditions. At  
43 moderate work levels on good footing, an animal may require no more than cleaning and periodic rasping to trim and  
44 level its feet. The hind feet need only moderate care since they receive less shock. The front feet carry 60 to 65  
45 percent of the load. As the workload increases or the terrain becomes more difficult, the animal's feet require

- 1 additional care and protection. Shoeing protects the feet from excessive wear and enhances balance, support, and
- 2 traction.

**Basic Shoeing**

Hoof growth, shoe wear, and the work required of the animal governs the frequency of shoeing. On the average, shoes may remain on the animal without change or adjustment for one to two months, though three to four months wear is occasionally possible. A farrier does the routine refitting. However, all handlers should have a basic understanding of the shoeing process, and several in each unit can replace or refit a lost or outgrown shoe.

**Farrier Tools**

A farrier’s kit should contain pincers, a pritchel, clenched cutter, hoof knife, hoof nipper, hoof rasp, blacksmith and driving hammers, clincher, and fencing pliers (Figure 3-2).

<b>Pincers</b>	Used to remove the shoe from the hoof, cut off excess length of clinches, or remove improperly driven nails.
<b>Pritchel</b>	Used to enlarge the nail holes on shoes or to assist in extracting re-usable nails from shoes.
<b>Clench Cutter</b>	Used to cut or straighten the nail clench before removing the shoe. The handler uses the blade end for that purpose. He can use the other end as a pritchel.
<b>Hoof Knife</b>	Used for cutting excess horn from the sole of the hoof and for trimming the frog, if necessary. It is available in right- and left-handed models.
<b>Hoof Nipper</b>	Used to remove the excess growth of wall from the hoof when preparing to replace or refit a shoe.
<b>Hoof Rasp</b>	Used to remove excess hoof wall and to level the bottom surface of the hoof. The rough rasp is a hoof rasp that has become dulled. The handler can use it to remove the burr under the clinches and to smooth the clench after the shoe has been replaced. He can also use the rough rasp to file away the clinches when removing a shoe.
<b>Blacksmith Hammer</b>	Used to shape the shoes to the animal’s feet.
<b>Driving Hammer</b>	Used for driving the nails that secure the shoe to the hoof and for forming the clinches.
<b>Clincher</b>	Useful in finishing the clinches, especially when working on young or lame horses that object to having their feet struck with the hammer.
<b>Fencing Pliers</b>	Have several uses in the farrier kit. The handler can use them as a hammer or for cutting nails and many other functions in caring for animals’ feet. He can also use them to repair saddles and harnesses.

**Figure 3-2. Farrier tools.**

**Raising and Holding the Foot**

It is important to know the proper way to raise and hold an animal’s foot before doing any farrier work so that you can control the animal and have both hands free to work. Working with the front and hind legs is slightly different.

**Front Foot.** To raise a front foot, face the rear and place the hand nearest the animal on its withers and talk to it. Run your hand down the animal’s shoulder and leg to the tendon in the back of the leg just above the hoof. Grasp the tendon between your thumb and forefinger and squeeze slightly.

1 Allow time for the animal to lift his foot, then slip your hand around and lower on the leg until you are cradling  
2 the hoof in the palm of your hand. Move closer to the animal and pass his foot behind your knee nearest the animal  
3 and into your other hand, which has been passed between your legs to receive it. To free both your hands for work,  
4 press your legs together just above the knees.

5 Do not raise the animal's foot too high or too far away from his body. Stand with a pigeon-toed stance, bend your  
6 legs, and keep your back straight. This posture will free you to work with both hands. While you are working on  
7 the animal's leg, you should be very aware of things around you so that you can predict the intentions of the  
8 animal. Unless suddenly frightened, an animal is quite predictable about wanting his feet on the ground. When an  
9 animal is getting a little tired and wants the front leg down, he will test your grasp of his leg with a few jerks. If he  
10 is going to hop on his other foot to get away, he will invariably move forward slightly with both hind feet in  
11 preparation for this move.

12 The farrier should not let an animal take his leg away every time he wants it. Be considerate of the animal, but do  
13 not let the animal be the boss. The animal will soon get the idea that he can set his foot down as he sees fit, which  
14 can be dangerous.

15 **Hind Foot.** To raise a hind foot, face the rear, place your closer hand on the animal's withers and stroke it across  
16 the back to the hip, then down the hip and leg to the fetlock. Grasp the fetlock with your fingers. Draw the leg  
17 toward you. The animal will shift his weight and pick up his foot.

18 With one fluid motion, slide into position by moving toward the raised leg and put the leg in your lap. Your leg  
19 (the one nearest the animal) presses against the inside surface of the fetlock joint, your outer leg holds the other  
20 side of the fetlock. The animal's cannon bone presses against your ribs, with your upper arm, while the tibia rests  
21 upon your hip.

22 An animal will indicate when he wants his hind leg down. He will "cock" his leg by drawing it forward and  
23 upward toward his stomach, as if to "cowkick." If he does not cock his leg, he cannot kick with any force.

#### 24 **Shoe Removal**

25 To replace a shoe that has not come off the animal, you must follow a specific sequence to correctly remove the old  
26 or damaged shoe.

27 Look at the hoof approximately 1/2 to 5/8 of an inch from the shoe. You should see where the nails holding the  
28 shoe have come out of the hoof and are bent over or clinched. Using the clinch cutter and driving hammer, cut or  
29 straighten the clinches of the nails holding the shoe in place. Place the blade end of the clinch cutter under the nail  
30 point and tap the other end with the driving hammer. You can also use the rough rasp to accomplish the same  
31 thing by filing down the clinches.

32 Pull the shoe by wedging the cutting edges of the pincers between the shoe and hoof at the heel and then exert a  
33 quick thrust toward the toe. Repeat the procedure, alternating from one side of the shoe to the other, progressing  
34 toward the toe until the shoe is removed. Once you remove the shoe, check to see if all the nails came out with the  
35 shoe. If they did not, check the hoof to see if any nails remain. Remove any remaining nails with the pincers.

#### 36 **Hoof Preparation**

37 Using the hoof pick (found in the grooming kit), thoroughly clean dirt and debris from the hoof. Then pare away  
38 the dead horn over the white line with the hoof knife. Do not touch the frog unless you cannot insert a hoof pick  
39 between the bars of the frog. In such a case, narrow the frog slightly, but try not to involve the surface touching the  
40 ground. Be careful not to remove too much of the frog. Cutting the frog too deeply could result in excessive  
41 bleeding and disability of the animal for a long time. Level the foot with the rasp. Use long, smooth strokes from  
42 heel to toe. Be careful not to use too much rasp pressure when passing over the heel. You can always take off a  
43 little more heel later, but you cannot replace what has been removed. Do not expose live horn except over the white  
44 line and the outer border of the sole; the animal needs a covering of dead horn to protect the sensitive sole against  
45 bruising. Be sure to leave the bars intact as cutting away these structures can cause contraction of the heels and  
46 quarters. Sight across the hoof to see that the surface is flat.

### Shoe Replacement

- 1
- 2 Fit the shoe to the hoof by holding it so that you can see the white line through the nail holes. See that the shoe lays
- 3 flat on the hoof surface without rocking. Eliminate any wobble between the shoe and hoof by rasping the high spot
- 4 on the hoof. You may have to bend or shape the shoe as needed since it may have become deformed if it was worn
- 5 loose for a time. Do not worry about the excess hoof wall in front of the toe of the shoe. You will rasp the excess
- 6 away later in the shoeing process.
- 7 Secure the shoe to the hoof with nails and the driving hammer. You should bevel the horseshoe nails near the point
- 8 so that they will turn out of the hoof when pounded into it. The other side of the nail is flat. Always place the flat
- 9 side of the nail so that it faces the outer edge of the hoof. You can be sure the nail is facing the right way by
- 10 looking at its head: there is checkering on one side of the nail head. The checkering should always face the inside
- 11 of the hoof. Grasp the nail between your thumb and forefinger and make sure the flat side of the nail faces the outer
- 12 surface of the hoof. Place the point of the first nail through the third nail hole on one side of the shoe, pointing
- 13 parallel to the horn fibers of the hoof. Tap the nail lightly several times to start it into the hoof wall.
- 14 To force the point of the nail through the outer surface of the wall at the desired spot, continue to apply light blows
- 15 until the nail is driven approximately two-thirds of the required distance. You should then apply one sharp heavy
- 16 blow on the head of the nail to force the point through the wall. The bevel on the point of the nail is effective only
- 17 when driven rapidly through the horn. If the animal twitches or jerks away at any time during the nailing, pull the
- 18 nail and check for moisture or blood on it. The nail should exit approximately 3/4 of an inch above the ground
- 19 surface of the foot to sufficiently hold the shoe. If there are old nail holes in the wall, the new nails should emerge
- 20 at least 3/8 of an inch from the old holes. This length puts the new nails in hoof fibers strong enough to properly
- 21 hold the nail. After the point emerges and you drive the nail head solidly into the crease of the shoe, immediately
- 22 remove the point of the nail. Do this quickly to avoid serious injury to you should the animal decide to pull his leg
- 23 away suddenly. To remove the point of the nail, point the claws of the hammer toward the toe of the hoof. Place the
- 24 claws onto the nail point as deep as possible and close to the hoof wall, bend the nail straight out from the wall,
- 25 and rotate the hammer. This procedure will “wring” off the point and excess length of the nail. Repeat the process
- 26 with the same hole on the opposite side of the shoe.
- 27 After you drive in two nails, check the shoe to ensure it still fits properly. You can adjust the fit by tapping lightly
- 28 with the hammer to move it into place. Then put the remaining nails in the shoe. You may find it easier to “start”
- 29 the first nail on each side of the shoe before driving either of them all of the way. “Set” the nails by striking the
- 30 heads sharply with the driving hammer. Make sure you hold a solid metal object (such as the flat side of the
- 31 pincers) firmly against the end of the nail that protrudes through the hoof when you strike. Some farriers think that
- 32 the order in which you set the clinches is very important. The recommended sequence is to set the two nails nearest
- 33 the toe on the opposite side, then the quarter and heel nail on the first side, followed by the remaining heel nail.
- 34 Cut off the nail points with the pincers. Leave enough length for a proper clinch. The clinch should be
- 35 approximately 1/8 of an inch long. A clinch that is too long can cause the wall to break should the shoe become
- 36 caught on something and pulled off. The wall fibers of the hoof will break when the nail emerges. Remove the
- 37 resulting burr under the seated clinch with the file side of the rough rasp. Be careful to file away only the burr. Do
- 38 not file a deep groove around the hoof; make it just large enough to contain the clinch. Use the clincher to bend the
- 39 clinches down into the groove.
- 40 Once again, take the pincers and the hammer to finish forming the clinch. Hold the pincer jaws against the head of
- 41 the nail and strike the end of the nail to seat it even with the wall surface. You should bend the nail abruptly at the
- 42 hoof wall. Ensure the hammer travels parallel and as close to the hoof wall as possible. You can use the clincher
- 43 for this step if one is available. The clinches are now finished. Using the file side of the rough rasp, smooth the
- 44 nails leaving no sharp edges on the wall of the hoof. Rasp and shape the hoof to the shape of the shoe. Most of this
- 45 rasping will take place in the area of the toe and anterior quarter. Be careful not to rasp too much and rasp away
- 46 the clinches.

**Farrrier's Objective**

- 1
- 2 The shoeing process will become more clear when you have seen it done once. Remember, the intent of this section
- 3 is only to enable you to replace a loose or missing shoe. If possible, you should fit each animal with an extra front

1 and hind shoe. These shoes, their nails, extra nails, and farrier tools should be part of the standard equipment  
2 packed whenever you take the animals out. If a shoe becomes loose on the trail, remove it if possible, to avoid its  
3 loss or injury to the animal. It would be ideal to replace lost or loosened shoes immediately, in garrison or on the  
4 trail. However, there will be times in the field when it is impossible to replace a shoe before two or more days have  
5 elapsed. This delay is typical and may have little or no adverse results. If this situation occurs, reduce the load of  
6 the pack animal or have a rider spend more time walking than riding his mount if it is a riding animal.

## 7 **TRAINING**

8 A pack animal detachment will not always be able to work with animals that are trained and conditioned to pack.  
9 Even if the animals are trained to pack, they may need retraining or conditioning. In such cases, you need to know  
10 some of the basics of training and conditioning animals. The purpose of this section is to give you enough  
11 information to evaluate the level of their training and to train and condition them as necessary for pack operations.

### 12 **Trainers**

13 The attitude of personnel training pack animals is extremely important. A person assigned to train animals must  
14 have a better than average knowledge of animals. He must also have patience, tact, firmness, and a liking and  
15 aptitude for animal management. A person who is afraid of animals or who will become frustrated easily with them  
16 will not do well. Above all, the trainer must not take out his frustrations on the animal by beating, kicking, or  
17 using excessive restraint on the animal. A good animal trainer combines an intelligent respect for animals with a  
18 lack of fear.

19 An ideal animal trainer will be—

- 20 • Systematic.
- 21 • Patient.
- 22 • Tactful and resourceful.
- 23 • Moderate.
- 24 • Observant.
- 25 • Exacting.
- 26 • Logical.
- 27 • Tenacious.
- 28 • Consistent.

### 29 **Requirements**

30 Previous experience and current abilities will determine the training needs of animals. Along with their physical  
31 conditioning, trainers must evaluate the animals on their level of proficiency in leading; packing; riding; picketing;  
32 standing; gaiting; swimming; balance; and conditioning to the sights, sounds, and smells of battle. Untrained  
33 animals never used for pack purposes will require a complete training and conditioning program.

### 34 **Exercise and Conditioning**

35 An animal requires good conditioning to perform the work demanded of it without injury to its body and muscular  
36 organs. You can acquire and maintain good conditioning through a progressive program of proper exercise and  
37 feeding. Objectives of the program are endurance, stamina, a good state of flesh, and resistance to disease. You can  
38 attain these objectives only by proper feeding and long periods of conditioning work at the slower gaits, mostly the  
39 walk. You must condition both pack and riding animals to carry the weights required in field operations.

40 Exercise must be regular, graduated, and always within the capabilities of the animal. Working tired or unfit  
41 animals can cause accidents. If an animal is idle for a considerable time, you must repeat its process of  
42 conditioning. The minimum period of exercise necessary to maintain an animal in working condition is two hours



- 1 daily. Animals need not be maintained in peak condition for field duty at all times. However, they should remain in
- 2 such condition that a

1 relatively short period of carefully scheduled work will put them in fit condition for anticipated duty. The kind and  
2 amount of exercise given to animals depend on the type of work they are to perform, their current condition, and  
3 the number of individuals available to exercise them. Although the most satisfactory exercise is gained by  
4 assigning one or two animals to an individual, pack units (with limited manpower) will normally have to adopt  
5 other methods. Begin any period of exercise with 10 to 15 minutes of walking to ensure good circulation,  
6 particularly in the feet. Instead of hard surface roads, try to select dirt roads for exercise because they are easier on  
7 the animals' feet and legs. Also, work the animals on trails or cross-country to maintain their fit condition. If you  
8 are exercising two animals, try to always ride one out and the other in and lead each alternately on his right and  
9 left. This habit will get the animals used to both being led and ridden. End each exercise period with a 10-minute  
10 walk to return the animals to the stables dry and breathing normally. The walk is the prime conditioning gait.  
11 Walking develops muscle, while trotting improves balance, and galloping develops wind. If you use either of the  
12 faster gaits in excess, the animal will lose rather than gain condition. Determine the length of trot periods by the  
13 condition of the animals but in no case should you exceed seven minutes. Vary the routes for exercise from day to  
14 day so that the animals will not recognize the route and try to hurry back to the stables. Also use different routes to  
15 relieve monotony. Try to set up the training and conditioning program according to the amount of time available  
16 and the level of proficiency of the animals and handlers.

### 17 **Program Development**

18 At the beginning of training, animals may be in poor physical condition and unaccustomed to hard work. To  
19 properly condition animals, yet avoid injury, ensure operations are long in duration but mild in character.  
20 According to the training principles mentioned above, each animal should receive advanced training that includes  
21 gentling, leading, riding, standing, packing, gaing, swimming, and seasoning to battle conditions. Use actual  
22 field movements, progressive in length, throughout the training period to build up endurance. Conduct a part of  
23 such field movements and other phases of training at night to prepare the animals for night operations. Pay close  
24 attention to the animals during night training to determine if any are night blind. Personnel responsible for  
25 training animals should know the use of restraining devices for controlling animals. Such devices include the  
26 twitch, cross tie, and blinds. Exercise great care, however, in the use of such devices. It is advisable to select the  
27 mildest and least dangerous method of restraint necessary to achieve the desired results. Remember, kindness,  
28 perseverance, and tact will often accomplish the desired purpose without the need for restraint.

29 **Restraint of Animals.** Many ingenious devices have been developed over the years for restraining animals. Some  
30 have proven useful and humane and have helped to quiet and train animals. Others, while they temporarily quiet  
31 and subdue the animal, make its attitude worse than it was originally. Once you use these methods on an animal, it  
32 will get to the point where it is neither gentle nor likely to carry a load. It will start showing many bad habits, such  
33 as bucking off the pack load. Remember, use restraints only when needed and use the least amount of restraint  
34 needed.

35 **Blinding.** This method is the easiest way to restrain an animal. Make sure you tie the animal securely to a tree or  
36 post. Then take a piece of cloth (a gunny sack, a jacket) or anything else that you can place over its eyes and tie it  
37 around the back of the animal's head. When blinded, an animal will seldom try to move because he will not be able  
38 to see.

39 **NOTE:** *Under no circumstances should you move an animal, no matter how slightly, while it is blinded.*

40 **Twitches.** Animal handlers use twitches because they are the handiest and most common method of restraint. As it  
41 shuts off circulation in the lip, never use it continuously for an extended time and never with greater force than is  
42 necessary. Make a twitch by running a small piece of rope or rawhide through a hole in the end of a rounded piece  
43 of wood two- to five-feet long, such as a pick handle, and tying it in a short loop. Pass the loop of the twitch over  
44 the upper lip, which you seize by your hand and draw it forward, taking care to turn the edges of the lip in to  
45 prevent injury to the mucous membranes. Then tighten the loop by twisting the stick until you obtain sufficient  
46 pressure. Light changes in pressure with increases against resistance and decreases as the reward for obedience will  
47 help keep the animal's mind off the reason for the restraint and reduce the need for severity. These changes also

- 1 help in training him to be more controllable. You should seldom use the twitch as a restraint while saddling or
- 2 packing animals. Use the twitch mostly when restraining for medical treatment or shoeing.

1 **Cross Tie.** Trainers often use the cross tie as a mild form of restraint. It consists of securing the animal's head in a  
2 normal raised position by two tie ropes extending from the ring in the halter to opposite sides of the stall or  
3 between two trees. When properly adjusted, you may use the cross tie to your advantage while grooming, saddling,  
4 or doing any work around the animal. It also prevents an animal from chewing a wound and from lying down  
5 when you need him standing.

6 **Other Restraints.** You can use additional types of restraints when treating an animal whose condition is such that  
7 complete immobilization of the part to be treated is required. These are used only under normal conditions. Giving  
8 tranquilizers makes the more severe restraints unnecessary and reduces the danger to the animal from abuse at the  
9 hands of the ignorant or inexperienced. Other restraints include the—

- 10 • Side stick.
- 11 • Muzzle.
- 12 • Knee strap.
- 13 • Casting rope.
- 14 • Side line.
- 15 • Running "W."

16 **Calming an Animal.** Fear is one of the animal's strongest instincts. If allowed to remain a dominant instinct, you  
17 cannot train the animal satisfactorily to do the work demanded of him. The goal of the trainer throughout the  
18 training period should be to gain and maintain the confidence of the animal. Horses and mules have a remarkable  
19 memory and tend to remember the unpleasant experiences longer than the pleasant ones. Retraining thus becomes  
20 more difficult than initial training, especially with a young, impressionable animal. Rewards for accomplishment  
21 are extremely valuable in the gentling process. Patting the neck, rubbing the head, and hand-feeding are good aids  
22 in gaining the confidence of the animal. The unwarranted use of whips, switches, or other devices to inflict pain or  
23 restraint should not be allowed in training. A willing, confident animal will work to the extent of his physical  
24 ability while the scared, reluctant animal will expend less productive energy than his trainer.

25 **Catching an Animal.** The most convenient method of catching loose stock is by just walking up to the animal  
26 either in a corral or in the field. However, first, you must have gained his trust. Only through love and kindness to  
27 the animal will you gain his trust and respect for your presence at his neck. Once you start to catch a loose animal,  
28 do not give up just because he walks off or spooks. Do not leave him to go to another animal. If you are not firm,  
29 you will soon have an animal that is impossible to catch without either roping or cornering him in a corral. You  
30 will have taught him to avoid you by letting him go at the first sign of resistance. Maintain eye-to-eye contact while  
31 you are trying to catch a loose animal. The animal often communicates his intentions through his eyes. Also, watch  
32 the animal's ears. If they point backwards or cock to one side, you do not have the animal's complete attention and  
33 you must have it to catch him. He must respect you above all animals in the immediate area. The head of an animal  
34 being caught is not always the first thing a person should touch. Often the middle of the neck or the back area is  
35 the best area. Rubbing the animal about the withers and back will enable you to step in close to him and then hook  
36 your arm over his neck. Some animals will try to pull away from you at this point. If he pulls away from you more  
37 than once, slip the halter rope over his neck when you start to scratch or fondle him. You will then have a loop to  
38 hold him. When he starts to move away, stop him firmly. Immediately reward the animal for his obedience with a  
39 few reassuring pats and caresses. Do not knock him around for responding to the halter rope around his neck. If  
40 you do, the next time you want to catch this animal, you may not be able to get near him. Last, but not least, a little  
41 grain in a bucket or feed bag will usually let you catch most animals that are used to being grained. If they get used  
42 to being grained immediately after being caught, their anticipation of the grain will make them very easy to catch.  
43 Having an apple or carrot to give them after catching them is another way to ensure their cooperation, but be sure  
44 to always give it to them. Never tease them with a treat just to coax them into getting close enough to catch, then  
45 not give it to them. As mentioned before, horses and mules, especially mules, have good memories and will not  
46 forget such an insult.

1 **Breaking to Picket.** Picket breaking is an important thing to teach animals to ensure against halter pulling. If you  
2 picket break an animal before attempting to saddle or pack him, the impression of secure fastening will never leave  
3 him. He will feel that any strain put on the halter or halter shank is useless. Trainers have used the following  
4 method for picket breaking successfully for many years. It saves time and labor, since the animal does most of the  
5 work, and seldom has to be repeated. Catch the animal and put a strong halter with a large halter ring around his  
6 neck. Get a good, strong, soft rope, one inch or more in diameter. Run one end through the halter ring and tie a  
7 fairly snug bowline around his neck. Tie the other end securely to the middle of a smoothly trimmed log  
8 approximately 12 inches in diameter and approximately 20 feet long. Place the log in the middle of a smooth, open  
9 piece of ground where the animal will not be able to become entangled with anything except the above-mentioned  
10 equipment. If no logs are available, use something like a large truck or tractor tire. The animal may pull, tug, and  
11 jerk on the log and try everything he can think of to get away from the log but without success and without harm to  
12 himself. Soon the animal will learn that it cannot go anywhere and that a halter and rope mean escape is  
13 impossible.

14 **Training to Stand.** You should teach an animal to stand still when the lead rope is hanging. Trainers call this  
15 kind of restraint a "ground hitch." Breaking to a ground hitch will prevent an animal from straying or running  
16 away if he comes loose from the pack string. One way to train an animal to stand with the lead rope hanging down  
17 is to run the lead rope through a ring attached to a spike in the ground. Place a set of hobbles on the animal and  
18 run the lead rope through the ring and then tie it to the hobbles. When the animal tries to move, he will not be  
19 able. He soon learns he should stand still when the lead rope is hanging.

20 **Leading.** You must teach all animals to lead. First teach them to lead next to a dismounted packer. Then teach  
21 them to lead alongside well-broken animals. Leading should be at the walk, as daily exercise, until the new  
22 animals lead quietly and have improved sufficiently in condition to allow them to start their instruction under  
23 saddle.

24 **Riding.** You should break all animals to riding and ride with regularity during training before initial work under  
25 the pack. Since the mouths of young or untrained animals are tender, you should not use bits during the initial  
26 riding periods. Attach the reins to the halter or use a hackamore.

27 **Packing.** After the animal has been ridden for about 10 days, you can mount a pack saddle on him. For the first  
28 few days, do not load the pack saddle. Ensure the animal is thoroughly familiar with the method of saddling and  
29 unsaddling. Also make sure he stands quietly while packers are working before you place any load on the saddle.

30 Training under load should be progressive. Initial loads should be light, single-side loads such as sacks of oats. Do  
31 not attempt to condition the animal for top loads until he is completely conditioned for full side loads. When the  
32 animal is comfortable with this weight, add top loads to the side loads. Gradually increase the load from day to day  
33 until the animal is carrying his full payload of from 200 to 250 pounds. After you train the animal to stand, train  
34 him to stand while being saddled and packed. If at first he does not stand quietly, you may need to use the blind.  
35 As mentioned before, the blind is an exceptional aid and you should only use it when the animal clearly indicates  
36 the need. Never move an animal a single step while blinded.

37 **Gaiting.** Animals individually led by dismounted drivers maintain a rate of march of from 3 1/2 to 4 miles per  
38 hour and seldom move at a gait faster than a walk. Those led by mounted drivers may be required to take any gait  
39 demanded by the situation. The walk and amble are the most satisfactory gaits for mules. The animals can  
40 maintain the walk for long periods at 4 miles per hour (a natural gait for the animal) and tend to disturb the load  
41 less than any other gait. The amble is an acquired gait, easily acquired by the mule, that increases the rate of march  
42 to slightly over 5 miles per hour. This gait is also easy on the load and hitches and, due to the increased rate of  
43 march, is favored over the walk on fairly level going. Trainers teach the amble to pack mules by increasing the rate  
44 of march gradually during the training period. In hurrying to keep up to the column, mules will first break into the  
45 amble for a few steps. These periods at the amble will gradually increase until they become confirmed in this gait.

46 **Swimming.** Trainers must teach pack animals to swim boldly and freely. Although they are naturally good  
47 swimmers, some animals are initially afraid of the water and will resist entering it. When they do go into the  
48 water, such animals fight their environment and swim very poorly. Introduce the animals to the water quietly, coax

- 1 them to wade through shallow water at first, and then lead them into increasing depths gradually until they must
- 2 swim.

1 Known good swimmers should accompany the green swimmers during this phase of training to give confidence to  
2 the novices.

3 **Battle Indoctrination.** Trainers should try to mentally condition their pack animals to as many of the sights,  
4 sounds, and smells of combat as possible. Once the animals become accustomed to these sensations, you can feel  
5 assured about their docility and good conduct in the field. Trainers must conduct this mental conditioning or battle  
6 indoctrination, so that animals will not associate the sight, sounds, or smells with harm or pain to themselves.  
7 Following are some tips:

8 • Conduct a portion of the training in marching, packing, and unpacking close to motor parks. The animal  
9 will then be subjected to the—

10 ⇒ Sounds of motors being started and warmed up.

11 ⇒ Pounding of metal on metal and an occasional backfire.

12 ⇒ Smells of exhaust fumes and raw fuel.

13 ⇒ Sight of many types of vehicles, both moving and at rest.

14 • Lead the animals as close to active firing ranges as safety will allow, near rail yards and crossings, and in  
15 areas near operating airfields. These areas get them used to loud, sharp sounds and the sight of flying  
16 aircraft. Another way to accustom the animal to gunfire is to crack a bullwhip near it.

17 • Place cans containing pebbles, boxes of tin cans, or other noisy cargo on the loads so that creaks, rattles,  
18 and unusual noises generated on the load will not “spook” the animal.

19 • Subject the animals to such odors as iodine, ether, smoke, gasoline, disintegrating flesh, and rotting  
20 vegetation.

21 **Training for Balance.** Units normally use pack animals when crossing over terrain that is impassable by any type  
22 of motor vehicle. Traversing such ground requires a well-developed sense of balance. The mule naturally has a fine  
23 sense of balance. However, saddle and load will interfere with his natural balance unless he has some training  
24 under load over difficult terrain and learns to adjust to the actions of this dead weight on his back. Train the  
25 animal on terrain that is as similar as possible to the terrain in the operational area. Make him cross extremely  
26 narrow bridges, fallen trees, and ditches. Work him on steep, narrow trails, corduroy roads, over swamps and  
27 boggy areas, and along rocky slopes where you must select safe footing among loose stones. Trainers should use  
28 judgment in handling pack animals on difficult terrain, and they should avoid interfering with their natural  
29 balance. The mule, if left to himself, usually shows better judgment than the average handler. Therefore, let the  
30 mule pick his way through the very difficult terrain.





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## CHAPTER 4

### ANIMAL HEALTH MANAGEMENT

Evaluation of the general state of any animal's health is an ongoing process accomplished through daily observation of behavior and routine examination of specific areas of the animal's anatomy. A rudimentary understanding of anatomy and physiology, a few simple examination techniques, and a familiarity with the behavioral patterns of the healthy animal form the foundation of veterinary science. Aided by materials contained in the basic first-aid kit, handlers can treat pack animals suffering from minor injury or disease.

#### ANIMAL BEHAVIOR

Animals exhibit behavior indicative of emotion and well-being. They express anger, fear, and boredom with characteristic mannerisms. So, too, do they express pain and disability. Regardless of the individual personality traits developed by each animal, general behavioral patterns are common to the species and are useful as tools to evaluate physical status.

#### Healthy Animal Behavior

The behavior a well animal exhibits is the benchmark. The handler must become familiar with its behavior patterns and be alert to changes in emotional or physical well-being. The healthy animal looks and acts well, reflecting mannerisms associated with humans. Emotions run the full spectrum from sadness to happiness. Behavior patterns become especially apparent when animals are observed in groups.

An animal shows its **happiness** by an initial dropping of the head, followed by lifting the muzzle in a circular manner. The upper lip may curl displaying the teeth in a classic "horse smile." Prancing and lifting the tail usually accompanies this behavior. The well animal, pleased with its activities, may also prance with its ears pointed forward, nostrils flared, tail up, and neck arched with head pointed down.

Intense absorption: nose, eyes, and ears all intently focused on the item or surroundings indicates **curiosity**. Even the stance brings the body into line. The animal will sway its head to better see an object directly to the front.

Circling, pawing or stamping, head shaking, and sideward dancing characterizes **frustration**. As frustration continues, the animal's activity results in sweating and unruliness. This behavior also typifies nervousness.

#### Sick Animal Behavior

The sick animal, whether its illness is emotional or physical in nature, exhibits behavior indicative of its condition. An unhappy animal that is otherwise healthy will bring illness on itself. Conversely, a sick animal will exhibit mannerisms that aid in early awareness of injury and disease.

Signs of intense interest characterize **fright**. The animal will shift its head from side-to-side, allowing better vision. It holds its head high and makes audible sniffing sounds. Dancing and shying, often in a circular motion, shivering and tail swishing accompany increasing nervousness. Its ears will be mobile, seeking the source of threat when it is unapparent. As anxiety increases, profuse sweating occurs. The animal will attempt to flee and, if restrained, may buck and kick. Under extreme conditions, its eyes will roll showing the whites. Ultimately, the animal becomes terror-stricken. At this point it will scream and, if loose, will attempt to run through any obstruction until it collapses in shock.

A more common problem is **boredom**. Unchecked, it leads to behavioral problems that will remain a part of its personality. Chewing on wood such as stall doors (cribbing), drawing air into its stomach (wind sucking), and rocking side-to-side (weaving) are common traits adopted by a bored animal.

A horse demonstrates **irritation** by laying back its ears, swishing or lashing its tail, often exaggerated on one side. The animal will tense its front or hindquarters and lift a hoof in preparation for kicking. It will glare threateningly and bite or kick with surprising swiftness and ferocity.

1 **Pain** elicits reaction according to location (internal or external) and severity. With mild pain (fly bites, chafing, or  
2 early arthritis) and hoof pain (such as a pebble caught in the shoe), the animal will shrug, shiver, or kick in an  
3 effort to dislodge or soothe the area. It may flick its tail and nip at the afflicted area as a means of removing the  
4 irritant. Overall activity is fairly continuous, be it biting and bumping against an object or head tossing in  
5 distraction. Head shaking and ear twitching may also represent a head injury or uncomfortable bit.

6 An **internal injury** may exist when the animal shows signs of generalized listlessness, melancholia, increased  
7 distraction, and flagging (pointing the head) towards the affected side. The animal may lay its ears back and nip or  
8 rub its side. It lifts its hind legs alternately and hunches its abdomen in attempts to relieve the discomfort.  
9 Vocalizations such as groans are common. If pain continues, such as colic pain, the groaning deepens and the  
10 animal will bite itself on the side and roll on the ground, worsening the condition.

11 Shifting its weight to the unaffected side and limping or refusing to move indicates **leg pain**. The animal will also  
12 “point” or extend the affected leg to try to relax it. The head will bob or swing to the side in an effort to bring the  
13 afflicted side forward.

14 Signs of **illness** may include a dulling of the coat, decrease in appetite, or such obvious symptoms as discharges  
15 from the eyes or nose, running sores, or diarrhea. The animal will carry its head down and show a blankness in its  
16 eyes. The legs tend to splay outward while standing and the ears point outward in a splayed fashion also. Progres-  
17 sive illness leads to increased severity in symptoms. Leg splaying, head drooping, eye and coat dullness, fever,  
18 shivering, sweating, swaying, and staggering are all manifested to varying degrees.

#### 19 **Overall Behavior Patterns**

20 Through examination of healthy animals and familiarity with their behavior in natural surroundings, handlers gain  
21 early recognition of the sick or injured animal. Neglecting small changes in behavior, coupled with ignorance of  
22 common maladies, may result in delay of movement or loss of an animal. Although each species demonstrates  
23 specific, unique patterns, all animals of this type display similar behavior patterns.

#### 24 **PHYSICAL EXAMINATION**

25 The physical examination of an animal proceeds in the same overall manner as any physical exam. Certain  
26 precautions and allowances for the animal’s natural fears and curiosity must be exercised. The examiner should  
27 enlist help in controlling the animal and constantly remain alert for signs of bolting, biting, and kicking. He should  
28 never assume a position between an animal and a fixed object. By leaning or shying sideways or forward, the  
29 animal can pin and injure the examiner or helper.

30 Examine the animal when it is quiet and rested. Excitement and heavy exertion will drastically alter the animal’s  
31 temperature, respiration, and pulse. When the physical examination is combined with routine grooming, the  
32 animal will receive it with more cooperation. Also, during every rest period and bivouac, examine every animal  
33 briefly for common maladies.

34 Follow an orderly sequence during each examination to preclude overlooking any area. Ask the handler to  
35 comment on the animal’s feeding habits, bowel and bladder habits, general demeanor, and any cough or  
36 discharges. The handler should be aware of these areas. Record results of physical examinations on chart form,  
37 including immunizations, and maintain an extract version with the animal for future reference.

#### 38 **Equipment**

39 A general examination may be performed without the use of any medical equipment; however, when available, use  
40 the following items:

- 41 • Stop watch.
- 42 • Veterinary rectal thermometer.
- 43 • Petroleum jelly or substitute.
- 44 • Stethoscope.

- 1 • Penlight or ophthalmoscope.
- 2 • Equine dental float (file).
- 3 • Rubber gloves.
- 4 • Several pieces of cloth or gauze.
- 5 • Twitch or hobbles for uncooperative animals.

#### 6 **Routine**

7 Begin the examination with an overall look at the animal, noting general demeanor, carriage, and gait. When  
8 unfamiliar with the particular animal, ask the handler about changes in diet and elimination. Also, ask about  
9 problems encountered during previous examinations, such as biting or kicking, medical conditions, and injuries.  
10 Then examine specific areas of the animal. Many examiners refer to the head, ears, eyes, nose, and throat as  
11 HEENT.

12 **Head.** Look for signs of chafe from the halter such as lesions and areas of hair loss. Note how the animal carries its  
13 head and if it shakes or rubs it. Encephalitis or concussion and distemper (lockjaw) are detectable by loss of  
14 coordination and confusion.

15 **Ears.** Examine the ears gently because the ears are sensitive. Look for halter chafe, lesions (external and internal),  
16 and discharge. Note how the animal carries its ears and watch to see if it shakes its head or rubs its ears. Ear mites,  
17 ear flies, and ticks are the main problems encountered.

18 **Eyes.** Perform the eye examination in two parts. First, do an overall examination of the eye, its orbit, and the lids  
19 with available light. Check for lesions, foreign matter, and discharges. Note the color of the conjunctiva (clear  
20 membrane that goes over the white of the eye) and the “third eye lid,” a whitish membrane that closes to cleanse  
21 the eye of particles. Communicable eye infections, biting flies, and gnats pose the main problems. Occasionally,  
22 lesions (tumors) will grow on the inner eyelid, requiring surgery. When an animal exhibits “photosensitivity” by  
23 squinting or partially closing an eye, it may be suffering from conjunctivitis or other problems, such as  
24 snow-blindness. Next, using a light source such as a flashlight, ophthalmoscope, or candle and working in shade,  
25 examine the cornea. Shining the light from an angle, look for opacities and surface irregularities. Shining the light  
26 from the front, observe the quality and clarity of the reflected image in the eye. There is a fairly high incidence of  
27 cataracts, especially among older animals.

28 **Nose.** The nostrils are sensitive and may be moist or dry, according to the environment. Nasal discharge presents a  
29 draining moistness, which increases in profusion when the animal’s head is down as in grazing. It is usually  
30 accompanied by noise, such as snorting or sneezing, and licking or rubbing to clean the lip and nostrils. Sores are  
31 minimal unless inflicted by branches or the lead rope. Animals recovering from pneumonia, strangles, or milder  
32 respiratory infections may develop sinus infections. These infections are characterized by drainage, which  
33 increases when the head is down. Tap lightly with a knuckle on the bone just below each eye. Pain will be elicited  
34 in an animal with infection.

35 **Throat.** This examination includes the mouth, lips, gums, teeth, and tongue. The lips may contain splinters or  
36 pieces of burrs. Check for areas of abrasion around the mouth where the coat is rubbed away. Such abrasions may  
37 indicate an ill-fitting halter or bit. Deformities, such as cleft lip or palate, should be noted during the animal  
38 conformation check. Examine the teeth for uneven wear, which occurs naturally but is also a common sign of  
39 cribbing (gnawing). Normal wear causes uneven, sharp slopes of the molars, whereas cribbing causes uneven wear  
40 on the incisors. Check the inner edges of the lower molars (lingual) and the tongue. When the molars become  
41 sharp, the tongue is often ulcerated by contact. Examine the outer edges (buccal) of the upper teeth. Sharp edges  
42 here will ulcerate the inner cheek. In either case, use a tooth float (rasp) to smooth the sharp surfaces. Speckling or  
43 spotting of the tongue and redness are signs of infection or nephritis (an inflammation of the kidneys). Other  
44 lesions of the tongue or cheeks are generally tumorous in nature.

- 1 **Neck and Mane.** Examine the neck and mane for lesions and signs of chafe from contact with tack items. Ticks
- 2 and

1 mites are frequent in this area because the animal has difficulty dislodging them. Lymph glands are located in this  
2 region and become enlarged from inflammation. Inflammation is somewhat difficult to detect in the glands except  
3 in the case of strangles. Take the pulse using the artery that runs along either side of the throat. The pulse will vary  
4 with a rate of 36 to 40 beats a minute being normal at rest and a rate of 80 to 100 beats a minute being normal after  
5 exertion, especially at higher elevations. Blood samples can be taken easily from the veins in the neck and the large  
6 muscles supporting each side of the neck are good injection sites.

7 **Chest and Shoulders.** Examine the chest and shoulders primarily for lesions caused by foliage and saddle rigging.  
8 Note the carriage, which is the distribution of the weight on the forelegs. Step back and record the respirations by  
9 observing the rise and fall of the chest from the side. The animal must be rested and acclimatized. Normal rates  
10 will vary according to species and altitude. The normal rate of respiration at sea level is 8 to 16 breaths a minute.  
11 After exertion, a rate of 30 to 40 breaths a minute is normal. An animal that coughs or has noisy or staggered  
12 breathing requires an examination of the chest (lung fields) with a stethoscope. Listen for gurgling, grating or  
13 rustling, or an absence of sound.

14 **Flanks and Abdomen.** The flanks and abdomen receive the heaviest amount of wear from the saddle and the  
15 associated rigging and loads. Thoroughly examine for signs of chafe and loss of hair. A lesion in this area will  
16 rapidly become worse and possibly become infected without early management. Cysts and boils will require  
17 lancing and antibiotic dressings. Relief from further irritation is essential. Do not put an ulcerated area back under  
18 blanket or harness until it is fully healed and showing hair regrowth. An animal exhibits internal pain, such as  
19 colic, the same way a human does with drawing-up and obvious attention to the afflicted region. Be sure you know  
20 the animal's recent history of appetite and thirst. Loss of appetite is a sure sign of disorder or malady. When colic  
21 is suspected, use a stethoscope to examine the abdominal region (if colic is present, there will be an absence of  
22 normal stomach noises) and supplement with a rectal exam.

23 **Forelegs and Hooves.** Examine the forelegs and hooves by lifting the lower leg rearward. Support the leg in one  
24 hand and examine the leg from sole upward. Pay particular attention to the entire hoof and each joint of the leg. To  
25 examine the hoof, you may need a hoof pick or similar device to clean the sole prior to examination. Become  
26 familiar with the section on specific injuries common to the legs and hooves found later in this chapter. Also, study  
27 the chapter on conformation to increase awareness of specific hoof and bone deformities.

28 **Hind Legs.** The hind legs are best examined from slightly to the side, never directly to the rear. Lift the leg  
29 rearward and examine the hoof. Return the hoof to the ground and examine the leg from the bottom up. Pulling the  
30 tail down and to the side will encourage the animal to stand with both hooves firmly on the ground. Injuries and  
31 conformation problems are less common than on the forelegs.

32 **Temperature.** While holding the tail down and to the side, take a rectal temperature ensuring the thermometer is  
33 well-inserted and remains in place for three minutes. Normal temperature for an equine is 99 to 101 degrees  
34 Fahrenheit (100 to 101.5 degrees for a mule).

### 35 Overall Objectives

36 Grooming is an essential part of animal care. The daily grooming period is the ideal time to perform a routine  
37 examination, excluding temperature, pulse and respiration. These are checked only when illness is suspected. Early  
38 detection and correction of problems, such as chafe, is essential in the prevention of more serious disorders and  
39 possible loss of the animal. Never overestimate the durability of the animal. A mule is more durable than a horse.  
40 However, all animals are vulnerable to a wide variety of problems caused by both the environment and infection  
41 passed from animal to animal. Despite great size and strength, these animals are among the most susceptible to  
42 injury and disease. Constant vigilance must be exercised to maintain health and effectiveness of animals during  
43 sustained operations.

### 44 FIRST AID SUPPLIES

45 A basic first aid set should be carried specifically for use on the animals because standard bandages are too small  
46 for most purposes. Place supplies in a weatherproof container in sufficient quantity to care for 10 percent of the  
47 animals. As with all critical items, duplication is suggested.

1 Figure 4-1 lists the minimum supplies and equipment needed for treatment of a wounded animal. They include  
 2 dressing changes since bandaging supplies (tape, cotton, gauze) will be expended rapidly and will require  
 3 restocking or supplementing.

ITEM	QUANTITY	ITEM	QUANTITY
Absorbine Thrush Remedy	1 pt btl	Elastic Bandage (4" x 4.5 yds)	10 rolls
Absorbine Vet Liniment	1 pt btl	Gauze Pad 4" x 4" (nonsterile)	1 pkg of 100
Betadine Solution	1 pt btl	Vetrap (4" x 5 yds)	6 rolls
Betadine Surgical Scrub	1 pt btl	Gloves, Latex, surgical (med)	4 pr
Bigeloil	1 pt btl	Gloves, Rubber (med)	1 pr
Blu-Kote	2 ea, 4 oz pump btl	Penlight, examination	2 ea
Clear Eyes	1 ea, 3.5 oz btl	Razor, safety w/blades	1 ea
Corona Ointment	1 ea, 14 oz btl	Stethoscope	1 ea
Fungisan	1 ea, 12 oz btl	Thermometer, Vet max registering	1 ea w/case
Isopropyl Alcohol	2 ea, 1 pt btl	Bandage, scissors (5.5")	1 pr
Lubricating Jelly (KY)	1 ea, 8 oz tube	Blade, scalpel (#2800)	6 ea
Phisoderm	1 ea, 5 oz btl	Clamp, surgical (#97-436)	2 pr
Pine Tar	1 qt can	Dressing Forceps (5")	1 ea
Cotton, Roll	1 ea, 1 lb roll	Handle, Scalpel	1 ea
Cotton/Wood Swabs	250 ea	Scissors, Surgical (#PA55-364)	2 pr
Conforming Gauze Bandage (3" x 4.1 yds)	12 rolls	Tissue Forceps, Aillis (#16-6)	1 ea
Conforming Gauze Bandage (4" x 4.1 yds)	12 rolls	Adhesive Tape, Surgical (2" x 10 yds)	2 rolls

4 **Figure 4-1. Supplies and equipment needed to treat a wounded animal.**

5 The examiner should include and apply heavyweight sutures with the same considerations as in humans. More  
 6 sophisticated procedures require additional supplies. In most instances, the same equipment carried for treatment  
 7 of humans is applicable to treatment of animals. Antibiotics and steroidal anti-inflammatory medicines are a  
 8 notable exception. With these agents, it is either sensitivity to the drug or altered prescribing principles that pose  
 9 the exception. A veterinarian, prior to inclusion in the kit, must approve all medications. Because replenishment of  
 10 veterinary supplies may be difficult, you should include possible substitute or expedient materials, resupplies, and  
 11 caches in mission planning.

12 **FIRST AID TREATMENT**

13 In the administration of first aid, most principles of care directly parallel treatment of humans; the major difference  
 14 being in anatomical structure. Ethics will play a lesser role in treatment in the field. The decision to attempt radical  
 15 procedures to save an animal or just destroy one that could have been saved under normal circumstances will more  
 16 likely be made. Otherwise, the time involved for an animal to recover from lameness or the debilitation that occurs  
 17 as a result of a serious injury could hamper the unit's ability to accomplish its mission.

18 **Open Wounds**

19 Bleeding, infection, and tissue loss are the main concerns in wounds resulting from external trauma. Give  
 20 particular attention to any open wound on the hoof or hind leg. These wounds pose the highest threat of  
 21 contamination and subsequent infection from bacteria contained in feces. Horses and mules are very susceptible to  
 22 tetanus. Supplement treatment of open wounds, especially punctures, with a tetanus booster.

### Lacerations

These wounds, caused by a tearing of the skin, usually result in slight to moderate bleeding. The vessels contract and limit the flow of blood to the affected area. Inspect the injury to determine the severity, depth of penetration, and degree of damage to underlying structures. Clean with soap and water to remove all foreign material. When the wound is small and the edges will remain closed, apply an antibiotic ointment and cover with a clean dressing. Close larger wounds, and those where the edges gape open, with suture or butterfly bandages. Apply antibiotic and a clean dressing. Keep the area dry and change the dressing daily.

### Incisions

Incised wounds tend to bleed freely. The first priority is to STOP THE BLEEDING. Direct pressure, pressure dressings, tourniquets, and ligation are all used with the same indications and precautions as on humans. Circulation to the lower leg is mainly superficial. Consequently, use a tourniquet only when absolutely necessary and release it every 15 minutes. Ligation should be accomplished as soon as practical to restore circulation to the limb. When the wound is dirty, place a constricting band above it to reduce bleeding and quickly, but thoroughly, clean the wound before closing it with a dressing. Use sutures to close large or gaping incisions. When available, give a tetanus booster.

### Puncture Wounds

Puncture wounds are either low or high velocity. The causative agent may remain in the wound or be withdrawn. In all cases, the first step is to STOP THE BLEEDING. Evaluate the severity of the wound and continue to control the bleeding. Low velocity wounds impact only on the actual tissue penetrated and tend to bleed freely. High velocity wounds impact on the actual tissue penetrated and impart a shock wave into surrounding tissue. This concussion tends to cause contraction of ruptured vessels, temporarily reducing the immediate blood loss. Packing the wound with gauze will aid in stopping blood loss when done in conjunction with standard pressure dressings. Impaled objects can also aid in stopping blood loss and may be left in place for a short period after being trimmed off flush and supported with a dressing. However, if the object impedes joint function, it must be removed. Do not put a topical antibiotic into a puncture wound; such an action causes systemic absorption of a topical medicine. Clean and dress the wound. Administer a tetanus booster, if available, especially in cases where punctures could allow direct access of pathogens into the bloodstream.

The procedure for applying routine dressings is as follows:

- Inspect the wound and take appropriate measures to stop the bleeding.
- Cleanse the wound and surrounding area with clean, warm water and a nonirritating antibacterial soap. It is usually advisable to shave the area surrounding the wound during cleansing.
- Apply a sulfonamide or other antibiotic topically.
- Cover the wound with gauze.
- Cover the gauze dressing with cotton padding.
- Wrap the area with roll gauze and secure with tape.

Remember that animals will tear off the dressing if it is loosely applied. There are roll tapes specifically intended for use with animals. This tape (vet wrap) sticks only to itself, diminishing the trauma of dressing changes. Also, beware of overtightening the dressing, creating a tourniquet.

### Closed Wounds

Closed wounds result from external mechanisms such as overuse, hyperextension (straightening past the normal locking point of the joint), or hyperflexion (bending beyond the normal range of motion). Injuries include bruising, stretching, or tearing of connective tissue; joint dislocation; bursal inflammation or rupture; cartilage damage; and various degrees of bone fracture. Symptoms of these injuries are swelling, stiffness, and a partial or complete loss of function.

1 Major second- and third-degree burns and displaced and open fractures require specialized, lengthy treatment and  
2 recuperation. Destroying the animal becomes a matter of operational necessity when conducting a mission.

### 3 **Allergic Reactions**

4 Allergy or anaphylaxis (severe allergic reaction) stems from a variety of causes. Most common are bites, stings,  
5 and skin absorption. Less common, but more serious, are reactions caused by substances eaten by the animal and  
6 entering the bloodstream.

7 **Bites and Stings.** Allergic reactions to insect bites and stings result in small blistered areas (wheals) or generalized  
8 swelling (edema). The extent of swelling is dependent on the number of bites or the toxicity of the venom injected.  
9 A single fly bite will result in a wheal; whereas multiple bee stings will result in generalized swelling. Snakebites  
10 and scorpion stings produce similar reactions. Treatment is symptomatic. Apply ice to the affected area to reduce  
11 swelling and slow the spread of venom. Give antihistamines to reduce the reaction, especially when respiration is  
12 impaired. Generally, large animals tolerate venom better than humans. However, antihistamines increase the effect  
13 of snake venom and **must not** be administered. Give tetanus antitoxin and broad-spectrum antibiotics to counteract  
14 bacterial infection associated with snakebites. Emergency tracheotomy has been successfully employed in cases of  
15 respiratory distress. Constricting bands will slow dissemination while increasing local necrosis and circulatory  
16 obstruction. Anticonvulsants are indicated during the first two hours. After that, treat for shock.

17 **Urticaria (Hives).** Stinging nettle, poison ivy, and chemical irritants result in blistering or rash formation. These  
18 rashes progress rapidly from localized to generalized when an animal becomes sensitized from repeated or heavy  
19 exposure to the irritant. Cold soaks and antihistamines will reduce the reaction, especially when respiratory distress  
20 develops. Ingestion of a large amount of protein will produce a similar effect. Gorging on food concentrates,  
21 spoiled hay, and a variety of other ingested substances will result in an allergic reaction (anaphylaxis). To treat the  
22 symptoms, pass a tube to remove the stomach contents and give laxatives, antihistamines, and anticonvulsants.  
23 Restricting the diet during recuperation will suffice in most cases.

### 24 **Burns**

25 Except for burns over a large area or those affecting respiration, a comparable wound in humans is more  
26 debilitating. The animal's coat offers a higher degree of protection and its skin is less sensitive. Therefore, an  
27 animal will display fewer symptoms and recover more rapidly.

28 **First-degree Burns.** These burns are characterized by reddening of the skin. Vesicle (blister) formation is  
29 uncommon. Localized tenderness will necessitate refitting of tack or shifting loads until the animal tolerates  
30 pressure on the afflicted area. No other treatment is necessary.

31 **Second-degree Burns.** Tissue damage from these burns is limited to superficial layers of the skin. Vesicle  
32 formation occurs resulting in the peeling away of dead skin after the fluid has drained and the blister dried. Pain  
33 lasting several hours after initial injury subsides to localized tenderness. Treatment of the burn consists of  
34 trimming the coat over the afflicted area and examining the wound. Apply an appropriate topical medication (such  
35 as silvidene ointment). Cover the area for three days with a clean, dry dressing to prevent vesicle rupture.  
36 Additional padding is required under harness straps when the animal must be harnessed. Drain all vesicles on the  
37 fourth day and allow drying for five days. Continue to protect the wound during this time to prevent infection.  
38 Trim away the dried skin on the tenth day after initial injury. Place padding under tack until healing is completed.

39 **Third-degree Burns.** These burns are characterized by charring of the flesh and coat. Severe tissue damage  
40 extending into underlying layers occurs. Moderate to severe pain, dehydration, and shock are symptoms.  
41 Treatment, when small areas are involved, is generally successful. However, severe burns covering a large  
42 percentage of the animal require clinical attention or destruction. Treat as second-degree burns. Encourage fluid  
43 intake, adequate rest, and diet. Topical burn preparations will lessen pain; however, novocaine (lidocaine) nerve  
44 blocks may be required for the first days. Observe for signs of dehydration, infection, and shock.



## Lameness

This general term describes many types of injury and conformation faults. Basically, lameness is caused by pain in one or more legs. Conformation faults, arthritis, and a variety of joint and tendon malfunctions result in lameness, but no first aid treatment is possible. Consequently, lameness, resulting from injury only, will be covered in this section.

Examine the animal in motion to isolate the limb(s) involved. The animal will step quickly off a painful leg and swing towards its good side. Observe for stiffened joints, reduced range of motion, nodding, limping, or swaying gait. Examine suspect limbs from the sole upwards and always look for a hoof injury first. Do the examination in three parts: inspect the sole, tap the hoof, and flex the individual joints watching for evidence of pain. Walk the animal after each examination. If the gait is affected, focus on the last area examined. This procedure is time-consuming but is the only practical method for field use.

**Hoof Lameness.** The hoof is vulnerable to a variety of injuries and infection. An unshod, untrimmed hoof will develop cracks. Injuries from overtrimming and improper nailing occur during routine trimming and shoeing. An animal can develop corns if it goes too long without reshoeing. While moving, impact forces cause stress on the bones, suspensory ligaments, and tendons. Rocks and a multitude of sharp objects bruise and pierce the sole or lodge under the shoe. These are injuries for the farrier and/or the veterinarian's care. Exceptions are thrush and cracked heels.

Routine care of the hoof consists of regular trimming and shoeing. During halts, inspect the sole and remove any objects that have lodged there, especially in rocky terrain. Painting the wall (outside) of the hoof with hoof oil will reduce cracking.

**Thrush** is a fungus or bacteria infecting the frog. It is characterized by a dark, foul-smelling discharge from between the frog and the sole. Most common among stabled animals, it is caused by standing in unsanitary conditions. Treatment consists of thorough cleansing supplemented by application of iodine to the infected area around the frog only.

**Cracked heel** is actually a skin condition affecting the pastern above the heel of the hoof. Caused by continued incomplete drying of this area, it is seen in animals pastured in wet or muddy fields. The skin develops dry scaling, which degenerates into cracking, as in athlete's foot. Treatment consists of cleansing and thorough drying. Apply an ointment or petroleum jelly. The problem is a result of dryness and chafing. Never treat with an agent that will cause further drying of the area.

**Lower Leg Lameness.** Injury to the lower leg is a result of either stress, caused by a misstep or prolonged travel on a hard surface, or trauma from hoof strikes inflicted by other animals or self-inflicted. Isolated occurrences result in temporary lameness. Repeated or prolonged injury generally results in formation of calluses or calcium deposits in the area. Treatment of isolated occurrences is successful when time for adequate rest is allowed. Formation of calluses and calcium deposits require care by a veterinarian and protracted periods of rest.

**Synovitis.** When, as the result of an inflammation, synovial fluid collects around a joint or tendon, the condition is termed synovitis. Synovial fluid is produced as a lubricant for joint motion. Inflammation will cause an overproduction of this fluid, which is then trapped in and around the joint. Reabsorption occurs naturally over time in most cases, provided inflammation is reduced. Needle aspiration and cortisone injections are stop-gap measures and may result in the eventual destruction of the joint. With early diagnosis and prompt treatment, these conditions need not result in lameness. Treatment consists of rest, ice packs, and/or cold soaks and reduction of load or variations in surface traveled. Most of these conditions will leave a permanent deformity in the form of enlarged joint capsules.

**Sprains.** Sprains of the flexor tendons or suspensory ligament occur during running or jumping but may be seen when tripping occurs on a wedged hoof. Sprain describes a stretching, tearing, or complete rupture of the affected tendon(s) or ligament. Symptoms consist of lameness, which is often severe, and pain and swelling over the injured region. Inflammation will generate warmth, detectable to the touch. In severe cases (rupture of the tendon), loss of support occurs in the joint during weight bearing. Length of recovery depends on the extent of the stretch or tear.

1 Treatment consists of complete rest, ice packs (twice daily), or cold soaks, supplemented by supportive wrapping or  
2 casting of the leg. Recovery from a moderate tear or complete rupture requires surgical repair. Needle aspiration  
3 and cortisone injections have promoted healing in some cases.

#### 4 **PARASITIC INFESTATION**

5 Parasites are classified according to location of residence: external (ectoparasites) or internal (endoparasites). Of  
6 the two, internal parasites are more debilitating, though it is external parasites that carry the most infectious  
7 disease and present the greatest nuisance.

8 There are large numbers of different parasites. Of these, some affect only a specific host. Others afflict any warm-  
9 blooded animal, including man.

#### 10 **Ectoparasites**

11 These external parasites that reside on or just under the surface of the skin by burrowing include insects such as  
12 flies, fleas, lice, mosquitoes, mites, and ticks. The area around the eyes, ears, neck, and anus are the most common  
13 sites of infestation because they are areas of secretion and the skin in these regions offers the easiest penetration.

14 Symptoms depend on the type of parasite involved, ranging from rashes and blistered areas to patches of hair loss  
15 (alopecia). Animals displaying excessive itching, hair loss, or rough, thickened skin should be suspected of hosting  
16 parasites. Closer examination will reveal blisters or burrows, dried blood, or the insect itself.

17 Treat for parasites by applying topical insecticides. This treatment works best on those parasites that remain on the  
18 host, such as mites. It is less effective on flying insects because the brief feeding period reduces total dosage  
19 absorbed. Insect repellents provide relief from these pests and are the only practical solution in a field environment.

#### 20 **Endoparasites**

21 Internal parasites generally live within the intestinal tract. They remain there throughout their life cycle or migrate  
22 out the anus as larva to spend their adult cycle outside the host. Less common are the endoparasites that live in  
23 other internal organs or surrounding muscle tissue. Regardless of residence, the mouth is the most frequent point of  
24 entry.

25 Symptoms are subtle, except for the dramatic appearance of the parasite exiting the anus or contained in manure  
26 deposited on the ground. Evidence of unexplained weight loss, chronic tiredness, or dullness of coat is frequently  
27 the result of parasites. These anemia-like symptoms result from the loss of nutrients to the parasite, especially a  
28 large colony of parasites. Untreated, these colonies debilitate the host, often causing blockages and colic.

29 Treatment of internal parasites is more successful than treatment of external parasites because a more consistent  
30 dosage of antiparasitic is absorbed by the invading parasites. Preventive administration of antiparasitics is a  
31 common practice and is the most convenient method.

#### 32 **DISEASES**

33 Zoonoses are diseases that usually only affect animals but can be transferred from animals to humans under natural  
34 conditions. Anthrax (cattle fever) and rabies are excellent examples. People working with animals are at  
35 particularly high risk for zoonotic diseases.

36 Currently, there are immunizations for most major infectious diseases affecting horses, mules, and similar animals.  
37 The key to disease management is to follow a schedule of routine inoculation and parasite control. Additionally,  
38 proper sanitation and hygiene must be maintained.

39 Quarantine new and ill animals to prevent the spread of disease among the healthy animals. Frequently, animals  
40 will develop flu-like symptoms after being transported or stressed by changes in environment. Disease pathogens  
41 congregate in food, bedding, and tack. Therefore, ensure that these items remain clean and are not transferred from  
42 animal to animal without some form of disinfection.

### **Distemper**

The common name for this disease is strangles. This infectious disease occurs in dogs, cats, horses, and several other animals. The causative agent is the bacteria *Streptococcus equine*, a strep bacteria similar to that causing strep throat in man.

Occurrence is most frequent among young animals but will occur in any equine not previously exposed or immunized. Infectious period is four weeks. Incubation period is three to six days, with flu-like symptoms. A fever with temperatures of 106 degrees Fahrenheit and inflammation of the lymph tracts and mucosa occur. A nasal discharge follows rapidly and is quite heavy. As inflammation of the lymph nodes in the neck continues, abscesses form. The animal will also have a foul smell about it. These are classic symptoms of the disease. The lymph tracts, which run the length of the neck bilaterally, become so swollen that they appear rope-like under the skin. Central nervous system (CNS) damage occurs in some cases. However, pneumonia is the greatest cause of mortality. Mortality may approach 100 percent among animals previously unexposed. Hence the great need for vaccination and isolation of new horses, especially any having nasal discharge, from the herd.

Treatment is largely symptomatic. It is very important to get the temperature down. *Streptococcus* responds very well to a variety of penicillins and sulfonamides, but their use inhibits natural immune response and prolongs the period of abscessed lymph nodes. Using hot packs to bring the abscess to maturity is more appropriate. Next, incise and drain (I&D) these mature abscesses using proper techniques to prevent the invasion of other pathogens into the lymphatics. Preventive administration of antibiotics to animals having direct contact with the infected one is recommended, especially when the immunization history of the healthy animal is unknown.

### **Tetanus**

An acute infectious disease, tetanus is caused by introduction of contaminated soil into tissue and the bloodstream and affects the central nervous system (CNS). This anaerobic neurotoxin is normally inactive and lives in a spore state. Usually introduced through a wound, the disease causes tissue decay, which provides the anaerobic environment required for reproduction. After reproduction, the bacteria rupture, which results in the release of the neurotoxin, migrates along the nerves to the spinal cord.

Symptoms of tetanus, either ascending (motor nerve to spinal cord) or descending (lymphatic to CNS), consist of a characteristic muscle spasm after even mild stimulation and localized stiffness increases to generalized rigidity. Especially prone to spasms are the muscles in the jaw and neck, giving rise to the common name of lockjaw. Symptomatic progression leads to rigidity of the ears, spine, and legs. The stance widens (sawhorse) and the nostrils dilate. Closing (prolapse) of the third eyelid, profuse sweating, continued excitation spasm, rapid respiration, cardiac irritability, and arrhythmia are present in the latter stages.

Treatment is begun by preventive immunization of all animals, followed by routine booster injection (tetanus toxoid). After an animal is wounded, it should receive good wound care, consisting of thorough cleansing and disinfecting of the wound site, followed by a tetanus booster. In animals that have contracted the disease, treatment consists of drainage and disinfection of the wound, removal of all dead tissue, and injection of tetanus toxoid and tetanus antitoxin (1,500-3,000 IU). Treatment with sedatives, barbiturates, and increased dosages of antitoxin (300,000 IU @ 12 hrs) has succeeded in moderately severe cases. Supplement treatment by keeping the animal in a darkened, quiet stall. Avoid any incidence of startling the animal. Elevate food and water since the animal has difficulty lowering its head. Recovery periods average two to six weeks.

### **Equine Infectious Anemia (EIA)**

Commonly known as swamp fever, EIA is a viral disease very common among horses worldwide. Transmission occurs from blood-to-blood interaction such as in the use of contaminated syringes or scalpels. It can reach epidemic proportions when transmitted by blood-sucking flies.

The disease is characterized by flu-like, low-grade fevers, yellowing of the gums, depression of appetite and demeanor, weight loss, and obvious signs of anemia during microscopic blood examination. Continued weight loss, enlarged spleen, swelling of the infected area, debilitation, and death follow if the disease is untreated. Diagnosis

1 through the use of a serological test (Coggins test) is done in the clinical environment. This test shows the presence  
2 of antibodies in the blood of an infected animal. Vaccines exist although their effectiveness is questionable.  
3 Quarantine of any suspect or new animal and symptomatic treatment is the only therapy. Control of vectors, by use  
4 of insect repellents and insecticides, plus proper sterilization of medical instruments will minimize the impact of  
5 this disease on the herd.

### 6 **Colic**

7 Although not a disease, colic causes debilitation and occurs in sufficient incidence to require more definitive  
8 explanation. Colic is a distention of the bowel resulting from excessive gas production (flatulent colic), impaction  
9 of feces or bowel obstruction from colonies of intestinal parasites (obstructive colic), twisted intestine (torsional  
10 colic), or gorging or overfeeding (spasmodic colic). Colic may also result from circulatory problems due to the  
11 inactivity of bowel segments.

12 Regardless of the type of colic and its cause, the animal exhibits a sudden loss of appetite, depression, and frank  
13 attention to the abdominal region (refer to Internal Injury, page 4-2). Bowel sounds frequently diminish or alter.  
14 Rectal examination may locate the obstructed region. Marked distention of the flanks may be present, especially in  
15 young animals or in severe stages.

16 Treatment is largely symptomatic. Keep the animal on its feet to reduce the chance of complications. Pass a bloat  
17 tube (nasogastric) to relieve gastric distention. Administer mineral oil (two to four liters) by stomach tube to  
18 disperse impactions. You may supplement the mineral oil by administering an osmotic laxative (magnesium  
19 sulfate) or an irritant (neostigmine). Analgesics, to prevent self-injury, may be indicated (meperidine 0.5-1 mg/lb  
20 [1-2 mg/kg] IM, phenylbutazone 1-2 mg/lb [2-4 mg/kg] IV or similar drugs). Decompression through the use of a  
21 large-bore needle (trocharization) inserted into the upper flank is effective in relief of severe distention. Prevention,  
22 through proper diet, dental care, and parasite control, is the most effective method of dealing with colic.

### 23 **IMMUNIZATION SCHEDULE**

24 The following paragraphs list several diseases that plague animals and a suggested immunization schedule.

- 25 • Encephalomyelitis, Eastern and Western strains: For all horses of all ages, two injections each spring or  
26 summer, seven to fourteen days apart.
- 27 • Distemper (Strangles): Three weekly injections initially, followed by an annual booster, until the horse is  
28 five years old. Incidents of anaphylaxis (injection reaction) have occurred, to include hoof sloughing.
- 29 • Equine Influenza: Two injections initially (one year old), four to eight weeks apart, followed by a booster  
30 each successive year.
- 31 • Venezuelan Equine Encephalomyelitis (VEE): One injection (yearly) during spring or summer.
- 32 • Tetanus (Lockjaw): Two injections the first year, four to eight weeks apart, followed by a booster each  
33 successive year.

### 34 **MEDICAL SUPPLY LIST**

35 In addition to the supplies contained in the veterinary first aid kit, Figure 4-2, page 4-12, lists the items that are  
36 consolidated into a single kit for use in more definitive care.

1

<b>Kit, minor surgical</b>	<b>NSN 6545-00-957-7650</b>
<b>Float, dental, vet</b>	<b>NSN 6515-00-938-4301</b>
<b>Needle, hypodermic, 14 gal, 1/2 in</b>	<b>NSN 6515-00-938-4411</b>
<b>Needle, hypodermic, 15 gal, 3 in</b>	<b>NSN 6516-00-938-4378</b>
<b>Needle, hypodermic, 15 gal, 3 3/4 in</b>	<b>NSN 6515-00-938-4377</b>
<b>Set, IV injection, vet</b>	<b>NSN 6515-00-938-4678</b>
<b>Pump, injection and suction, vet</b>	<b>NSN 6515-00-938-4718</b>
<b>Suture, nonabsorbable, surgical size</b>	<b>NSN 6515-00-938-4722</b>
<b>Suture, nonabsorbable, surgical size</b>	<b>NSN 6515-01-035-5601</b>
<b>Twitch, chain</b>	<b>NSN 3770-00-191-8055</b>
<b>Clipper, hair</b>	<b>NSN 3770-00-804-4700</b>
<b>Stethoscope, bell/diaphragm</b>	<b>NSN 6515-01-304-1027</b>
<b>Thermometer, maximum registering, vet</b>	<b>NSN 6515-00-812-7000</b>
<b>Tube, nasogastric, vet</b>	<b>NSN 6515-01-153-5387</b>
<b>Gloves, examination, vet</b>	<b>NSN 8415-01-359-7935</b>
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2

**Figure 4-2. Consolidated list of items used for definitive care.**

3

**EUTHANASIA**

4

The term “euthanasia” refers to the ending of a life, in a humane manner, to relieve suffering from illness or injury. While caring for animals during combat conditions, you may find that serious illness or injury will necessitate the destruction of an animal that is beyond the scope of available medical treatment. Euthanasia under field conditions is frequently a rather brutal affair, without the poisonous gases and injectable venoms used in the clinic. Despite this lack of “civilized” methods of destruction, every effort should be taken to effect euthanasia as rapid and painlessly as possible. In addition, any personnel near the animal must exercise caution to avoid injury to themselves should the animal be grievously wounded but not immediately killed. The thrashing of these powerful animals will result in injury to bystanders and could create panic among other animals stationed nearby. Keep other animals as far away from the site as possible.

13

A variety of methods are available for field euthanasia. Of these, most are impractical because they require a very advanced degree of anatomical expertise or require dosages of common drugs in amounts larger than would logically be available. Consequently, simple mechanical methods of destruction are all that will be available to the average soldier.

17

**Small Arms Fire**

18

The most preferable method of expedient destruction is to shoot the animal in the base of the skull. A bullet fired at a point centered on and slightly above the eyes or from the side slightly above and behind the root of the ear is also acceptable. Because of the penetration needed to enter the skull, a rifle is more effective than a pistol for this purpose. Another area that will result in death but will produce only grievous injury if improperly aimed is the heart. This area is located low in the chest, just under the rear portion of the foreleg.

23

**Hemorrhage**

24

Bleeding the animal out by severing the large blood vessels located in the neck has been suggested as a silent method for use when detection is likely. Although effective, this method is less humane than shooting. Expect the

25

1 animal to react violently during the initial one to two minutes of hemorrhage and take the necessary precautions to  
 2 avoid injury to others. Along this line, it is entirely feasible to place a large bore needle, such as an IV catheter, in  
 3 the veins located in the animal's neck (jugular) and bleed the animal out in this manner. Although this method  
 4 will be considerably slower than a large incision of these veins, it will be virtually painless.

5 Equines, despite their immense size and strength, are fairly fragile animals. Nearly any injury resulting in a  
 6 fracture of the legs will necessitate destruction of the animal. If the animal was otherwise healthy, the meat of the  
 7 animal may be used as food. Avoid eating animals who were ill or infested with internal parasites. Examination of  
 8 the liver and the external surfaces of the intestines will offer evidence of parasitic colonies.

9 When a veterinarian is available to the unit, obtain supply and instruction in the use of commercially available  
 10 drugs that produce euthanasia in a rapid, humane, and silent manner.

11 **PHARMACOLOGICAL LISTING**

12 Figure 4-3 lists antibiotics, antiparasitics, and antifungals along with their recommended drugs, dosages, and  
 13 routes used to treat pack animals.

<b>Antibiotics</b>	
<b>Penicillin</b>	Sodium pcn G, IV, IM 10,000-20,000 IU/kg, q6 hr Potassium pcn G, PO 25,000 IU/kg, q6 hr Procaine pcn G, IM, subq 10,000-30,000 IU/kg, q12-24 hr Benzathine pcn G, IM 10,000-40,000 IU/kg, q48-72 hr Ampicillin IV, IM, subq 5-10 mg/kg, q8-12 hr, oral 10-25 mg/kg, q6-12 hr Amoxicillin, IM 4-7 mg/kg, q12-24 hr
<b>Cephalosporin</b>	Cefazolin IV, IM 20-25 mg/kg, q6-8 hr
<b>Aminoglycosides</b>	Gentamicin, IM, subq 1-2 mg/kg, q8 hr Kanamycin, IM, subq 4-5 mg/kg, q8 hr
<b>Tetracycline</b>	Oxytetracycline, IV 5 mg/kg, q12-24 hr
<b>Sulfonamides</b>	Sulfathiazole, PO (initial) 66 mg/kg (maintenance) 66 mg/kg, q8 hr Sulfadiazine, PO (initial) 50 mg/kg (maintenance) 50 mg/kg, q12 hr
<b>Antiparasitics</b>	
<b>Anthelmintic</b>	Thiabendazole PO 44 mg/kg, q24 hr or 22 mg/kg, q12 hr
<b>Antifungals</b>	
<b>Iodine</b>	Topical
<b>Copper Sulfate</b>	Topical
<b>Tolnaftate</b>	Topical

14 **Figure 4-3. Pharmacological listing.**

## CHAPTER 5

### PACKING EQUIPMENT

This chapter explains some of the most commonly used packing equipment, how it should be maintained, and how it should be fitted to the animal. There are variations in equipment. However, the principles for using it remain the same.

#### PACK SADDLES

The two types of pack saddles discussed in this chapter are the sawbuck or crosstree and the Decker saddles. They are both very adaptable to different types of loads and, therefore, are the best type to use in carrying cargo of different weights and sizes. The Decker saddles can carry side loads, top loads, or a combination of the two. Both saddles can accommodate standard packing hitches with a minimum requirement for tying and threading lash ropes to secure a load. They can be quickly and easily packed and unpacked. Both saddles also require a harness.

#### Sawbuck Saddle

The sawbuck saddle is one of the oldest types of pack saddles still in use throughout the world. It is the simplest and most easily constructed. The sawbuck saddle consists of two side bars connected at the front and rear by crosspieces (bucks) forming an "X" over the spine. The two side bars are called "humane bars" if they are curved to fit the shape of the animal's body. The humane bars allow the saddle to fit the animal better and make carrying the load more comfortable to the animal. Most sawbuck saddles produced today have humane bars. Cargo is carried on the saddle in panniers, hung from the bucks, or carried by hitches and slings.

#### Decker Saddle

The Decker saddle is made basically the same way as the sawbuck. The difference is that it has metal hoops instead of crossbucks holding the humane bars together. Some packers prefer the Decker to the sawbuck saddle because the humane bars on the Decker can be adjusted by bending the metal hoops to fit the animal better. The animal carries cargo in nearly the same manner as on the sawbuck. The difference with the Decker is that the panniers are hung over the hoops instead of the crossbucks. Sometimes Decker saddles have "ears" welded to the hoops to keep the panniers from slipping off or to run the sling rope around when using one. The ears are pieces of metal stock approximately 2 inches long and 1/2 inch in diameter and are welded to the hoops near the top on either side. Panniers with adjustable straps are sometimes secured to the Decker by running the strap under the hoops and then fastening the buckle.

#### Saddle Harness

A variety of different straps form the harness. It holds and stabilizes the saddle to the animal. The main components of the harness are the cinches, breast collar, breeching, and crupper. The packer secures all of the straps either directly to the saddle or to the rigging.

**Rigging.** The rigging is a leather strap that wraps around the crossbucks on the sawbuck and around the hoops on a Decker. Secure it to the humane bars with screws and allow the ends to hang below the bars. Attach the rigging rings to the ends of the straps. Then secure the latigos, which are used to secure the cinches, and the connecting straps, which help hold the breeching and breast collar in place, to the rigging rings.

**Cinches.** Cinches are the part of the harness that hold the saddle to the animal and provide stability to the saddle once it is packed. Most pack saddles have two cinches, one in front and one in the rear. They fit around the belly, or barrel, of the animal. Secure the cinches to the rigging rings by the latigos.

**Breast Collar.** The breast collar provides stability to the saddle while the animal is traveling uphill. It keeps the saddle from moving rearward over the animal's kidneys and rump. The breast collar is usually made of leather or

1 cotton duck material and is approximately 4 inches wide. Two connecting straps from the front of the humane bars  
2 secure the breast strap.

3 **Breeching.** The breeching fits around the animal's hips and keeps the saddle from moving forward over its withers  
4 while traveling downhill. The breeching is made of leather or cotton duck material and is approximately four  
5 inches wide. It is held in place by connecting straps, back straps, quarter straps and hip straps. The connecting  
6 straps run from the rigging rings to the ends of the breeching. The back straps run from the rear of the humane  
7 bars to a metal ring (called a spider) that rests on the animal's rump. The hip straps run from the metal ring to the  
8 breeching.

9 **Crupper.** The crupper is a leather strap that runs under the animal's tail and attaches to the metal ring. It keeps  
10 the saddle from slipping forward. Cruppers serve the same purpose as the breeching but are not widely used. You  
11 can use them in place of, or with, the breeching.

## 12 **HALTER AND PACKING EQUIPMENT**

13 A halter is a control device that fits around an animal's head and must be placed on the animal prior to packing it.  
14 By controlling its head, a person can control the animal. The halter is used mainly for leading rather than riding an  
15 animal. Without one it would be next to impossible to maintain control of an animal for any length of time. Halters  
16 are simple devices constructed generally of nylon webbing or rope. Another essential item for controlling an  
17 animal is the lead line or lead rope. A lead line is a piece of rope usually 3/4 inch in diameter, made of pliable  
18 material, usually cotton or nylon, and approximately 10 feet long. The line attaches to the halter under the chin of  
19 the animal. It can either be permanently spliced into the lead line ring or attached by means of a snap.

20 To place a halter on an animal, hold the halter with the lead line ring down, the closed end to the front of the  
21 animal's nose, and the open end to the rear of the animal's head. Slip the closed end over the nose, bring the  
22 running end of the open end over the back of the animal's head behind his ears, and attach it.

23 It helps to keep one foot on the running end of the lead line to prevent the animal from pulling the halter away as  
24 you are putting it on him.

### 25 **Saddle Pad**

26 The saddle pad provides the only protection between the loaded saddle and the animal's hide. Pack pads are  
27 usually thicker than riding pads because a pack animal carries "dead" weight. A riding animal carries "live"  
28 weight, which means that a rider will shift his weight as the animal traverses different types of terrain. A pack load  
29 is "dead weight," which means it will not move with the animal. It is important that the saddle pad be made of a  
30 material that will stay soft and not compress and get hard during use.

31 Some packers use what is called a cheater pad on animals that have high withers. These small pads are usually  
32 made of tail and mane hair sewn between two pieces of canvas. The cheaters can be placed between two regular  
33 pack pads in the wither area to raise the front of the pack saddle off the withers and yet have the saddle set evenly  
34 on the pack animal's back.

### 35 **Saddle Cover**

36 The saddle cover, sometimes called a half breed, is used when it is necessary to protect the animal's flanks from  
37 the load or the saddle rigging. It is commonly made of two pieces of canvas sewn together with slots cut in it so  
38 that it will fit over the crossbucks or hoops. The cover can have padding sewn into it or it can have stuffing slits so  
39 that the user can fill it with as much padding as is necessary for the load. Half breeds usually have sideboards made  
40 of wood, two to four inches wide, attached near the bottom to provide further protection to the animal's flanks. The  
41 half breed can be placed over the saddle once it is on the animal, or it can be placed over the humane bars and  
42 under the rigging.

### 43 **Manta**

44 A manta is the cover, usually made of canvas, that you place over the entire load after securing the load to the pack  
45 saddle. It protects the load from trees, bushes, rocks, or anything else the animal may brush against while it is



1 moving. The manta also provides a degree of protection for the load from rain and snow. The size is generally 8  
2 feet by 10 feet. However, you can use any size that will protect the load.

3 **Lash Rope and Cinch**

4 The lash rope and cinch secure the load and mantee to the animal by means of different types of packing hitches.  
5 The lash rope is usually 45 to 50 feet long, 1/2 to 5/8 inch in diameter, and made of manila or nylon. The lash  
6 cinch is usually made of heavy cotton duck material with a ring at one end and a hook at the other. The lash rope is  
7 spliced to the cinch at the end with the ring.

8 **Sling Rope**

9 The sling rope fastens to the front crossbuck on a sawbuck saddle or the front hoop on a Decker. It secures loads  
10 that will not fit in panniers or secures panniers that do not have straps. They are secured by means of different  
11 types of packing slings. A sling rope is usually 30 feet long, 1/4 to 3/8 inch in diameter, and made of hemp, nylon,  
12 or polyester.

13 **Panniers**

14 Panniers are cargo containers that hang from the crossbucks on a sawbuck saddle or the metal hoops on a Decker  
15 saddle. Some panniers do not have straps to hold them to the saddle. If they don't have straps, you can use the  
16 sling rope to hold the panniers in place. The dimensions of most commercially made panniers are approximately  
17 26 inches long, 19 inches high, and 12 inches deep. They are made of many different types of materials. Some of  
18 the most popular are canvas, hard plastic, plywood covered with fiberglass, or a wood frame covered with cowhide.

19 **CARE OF EQUIPMENT**

20 The packer has the primary responsibility for the care and preservation of pack saddlery. You should perform the  
21 routine cleaning, preservation, and daily inspection for the following equipment to ensure mission readiness:

22 Check saddles daily to ensure there are no cracked, broken, or loose parts. Also check the crossbucks (or hoops),  
23 humane bars, rigging, and latigos. Tighten any loose items and repair or replace cracked or broken parts. Clean  
24 any mud or other debris from the saddles that may have collected during the day's movement.

25 Check all parts of the harness for signs of wear, breaks, cleanliness, and serviceability (Figure 5-1).

<b>Cinches</b>	Check cinches for any broken strands. Check the cinch rings for any signs of cracking or metal fatigue. Repair or replace any damaged pieces.
<b>Breast Collar</b>	Check the breast collar and connecting straps for any signs of wear or debris collected during the day's movement. Check the fastening devices to ensure serviceability. Repair or replace items as necessary.
<b>Breeching</b>	Check the breeching and all associated straps for cleanliness and serviceability. Pay close attention to all fastening devices. Repair or replace items as necessary.
<b>Crupper</b>	Check the crupper (if used) for cleanliness and serviceability.

26 **Figure 5-1. Parts of the harness.**

27 Brush or shake out the saddle pads after you remove them from the animal. Check them thoroughly for any foreign  
28 objects that can come in contact with the animal's hide. Lay the saddle pads where they can air out and dry.

29 Treat the saddle cover in the same manner as you treat the saddle pad. In addition, check the wooden bars for  
30 serviceability. Check the padding to see if some should be added or taken out.

31 Check the manta for rips, holes, and general serviceability.

32 Check the lash and sling rope for signs of wear. Replace or repair them immediately if there are signs of excessive  
33 wear. Breaking a lash or sling rope on the trail is a sure way to cause a wreck. Try to keep the ropes as dry as

- 1 possible, especially if the rope is made of hemp. Wet weather causes hemp ropes to become hard to manage. Wet
- 2 hemp ropes will dry and stretch out leaving the pack loose or uneven. Don't throw the ropes on the wet ground
- 3 while packing or unpacking an animal. Hang them on a tree limb or lay them on a tarp or any dry surface until you
- 4 are ready to use them.

1 Check the lash cinch often for signs of the material fraying. Badly frayed material can tear on the trail and cause a  
2 load to come loose. Frayed material can also rub on the animal's belly and cause a sore. Check the cinch ring for  
3 signs of wear and metal fatigue. Replace or repair items as necessary.

4 Clean panniers and check them for overall serviceability. Most important, check the straps and fasteners on the  
5 straps that hold them to the saddle.

6 Keep all leather items clean and free of grit and dirt. In cleaning off mud or excessive dirt, use a grooming brush  
7 or a blunt piece of wood. Use a sponge, lukewarm water, and saddle soap. After cleaning, apply neat's-foot oil to  
8 the leather for both protection and appearance. Clean all metal parts as well.

9 Keep equipment made from canvas and duck material free of dirt and mildew. A frequent brushing will remove  
10 dirt. The best remedy for mildew is air and sunlight.

### 11 **FITTING AND ADJUSTING THE SADDLE**

12 You should not place too much stress on the proper positioning of the saddle and correct cinch adjustment.  
13 Improper adjustment may cause injury to the animal or may affect the time and distance the animal can carry its  
14 load. Before placing anything on the animal's back, it is important to be sure that the animal feels comfortable  
15 about it. Many will get skittish if they are unfamiliar with the equipment. A good way to get the animal  
16 accustomed to the equipment is to hold it in front of the animal and let him see it and smell it. You should saddle  
17 the animal with the packer standing on the left (on-side) of the animal. When making adjustments to the saddle or  
18 harness, you will have to move to the right (off-side) of the animal. You should always move around the rear of the  
19 animal when moving from one side to the other while saddling. To do this, get close to the animal and maintain  
20 contact with it by keeping a hand on its rump. If the animal should kick while you are moving around it, receiving  
21 a kick from a short distance is much better than from a long distance after the full force of the kick has been  
22 generated.

#### 23 **Grooming**

24 You must always try to groom the pack animal before saddling it. Remove any debris from the animal that may  
25 cause saddle sores while grooming it. Also check for any sores from the previous movement or sores that may have  
26 occurred during the night. Treat the sores as necessary or ask the medic or vet for assistance. If there is any  
27 question as to the ability of the animal to carry a load, ask the medic or vet to make a determination. You do not  
28 want to make any sores already present worse.

#### 29 **Pad Placement**

30 Check the saddle pad thoroughly for any foreign objects before placing it on the animal. Place the saddle pad  
31 square on the animal's back forward of where you want it to rest and then slide it rearward into position. Sliding  
32 the pad rearward will make the hair lay naturally and prevent sores. The forward portion of the pad should be over  
33 the withers with its forward edge about a hand's breadth in front of the rear edge of the shoulder blade.

34 You may need more than one pack pad or cheater pad depending on the shape of the animal's back. The best way  
35 to determine how many pads you need is to set the packsaddle on the animal and then check the clearance between  
36 the saddle and the animal's withers. Allow for the saddle settling down on the pads after the animal is loaded. If  
37 there is any chance of the saddle forks coming in contact with the top of the wither, put another pack pad under the  
38 saddle. Be careful not to get too much padding on the withers so that the pack saddle is pinching the withers from  
39 the pads being too thick. The purpose of putting extra padding on a high withered animal is to raise the pack  
40 saddle off the tops of the withers. If the pads you are using are the same thickness throughout you haven't gained  
41 much. The pad must be thicker over the withers and thinner towards the rear of the animal. A cheater pad sits on  
42 the withers only and that is why it is usually the best thing to use for a high-withered animal.

#### 43 **Saddle Placement**

44 Place the saddle square on the pack pads allowing 2 to 4 inches of padding to be exposed in the front and rear of  
45 the saddle. The forward edge of the saddle will be approximately 2 to 3 inches to the rear of the shoulder blades. It

- 1 is important to ensure there is adequate saddle pad forward of the saddle to protect the animal's back from the
- 2 leading edge of the saddle.

1 Fasten the cinches, the front one first, making sure there are no twists in the off-side latigos or the cinches  
2 themselves. The front cinch should be a hand's breadth to the rear of the front leg.

3 Tighten the cinches just enough to hold the saddle in place until you have the breast collar and breeching adjusted.  
4 At this time you should also attach the breeching and breast collar. The instructions for adjustment follow.

#### 5 **Breast Collar**

6 The breast collar should ride just at the animal's shoulder and go around the breast below the animal's neck. It  
7 should not be tight; its only function is to keep the saddle from slipping back. Adjust the breast collar so that it is  
8 snug when a front leg is fully extended. Ensure the two connecting straps are adjusted to the same length so that  
9 the breast collar rides evenly.

#### 10 **Breeching**

11 Once the saddle is in place and cinched lightly, you must adjust the breeching. You should perform the following  
12 steps to adjust the breeching:

13 Place the spider on the animal's rump and adjust the back straps so that it is approximately 6 to 8 inches forward  
14 of the base of the tail. Ensure that both straps are the same length so the ring will stay centered. Adjust the hip  
15 straps so the breeching rides approximately halfway between the base of the tail and the bottom of the  
16 hindquarters. Adjust the straps on both sides to the same length to ensure the breeching rides level.

17 Attach the crupper if used. Lift the animal's tail and slide the crupper under it. Always be very careful when  
18 working around the animal's hind end. Some will want to try to kick. The best thing to do is stay very close to the  
19 animal with your side touching the animal's flank. The animal will telegraph any intention to kick by tightening  
20 its muscles. Also watch the animal's ears. If it intends to kick, it will lay its ears back. As you lift its tail to slide  
21 the crupper under it, talk to the animal reassuringly. It will help calm the animal. The crupper should be snug  
22 against the base of the tail but not tight. Ensure both connecting straps on the crupper are the same length so the  
23 crupper will ride evenly.

24 Adjust the connecting straps. A good rule of thumb to follow for adjusting the connecting straps is to make sure  
25 that, when the animal is walking and one hind leg reaches its rearmost position in the stride, the breech strap is  
26 firmly against the animal's rump. The breeching should not be so tight as to hinder the animal's natural gait.  
27 However, if it is too loose it is useless.

28 Connect the quarter straps to the front cinch ring. You should adjust them snugly to keep the front cinch from  
29 moving forward while the animal is moving. After the initial adjustment of the breeching is made you must pull  
30 the animal's tail out from under the breeching. See the method for crupper adjustment above for the best method to  
31 do this.

32 The breeching is now adjusted approximately to where it should be. Walk the animal around to check how the  
33 breeching is riding on the animal and make adjustments as necessary.

34 When traveling down long steep slopes, it may be necessary to tighten the back and connecting straps some to keep  
35 the saddle from slipping over the withers and shoulders.

#### 36 **Cinching**

37 Proper cinching is essential because the pack saddle covers so great an area of moving surface. Excessive binding  
38 of the front cinch may injure the back and sides, interfere with breathing, or cause cinch sores. You should use the  
39 front cinch to secure the saddle in place and make sure it is tighter than the rear cinch. The rear cinch keeps the  
40 saddle from rocking from front to rear as the animal is walking. Therefore, it does not need to be as tight as the  
41 front cinch. Since the hind legs are the propelling members, the hindquarters move both from side-to-side and up-  
42 and-down. You should make sure these movements are not restricted by cinch pressure. There must be no  
43 interference with the animal's locomotion. Only experience can teach you how to determine the exact amount of  
44 cinch pressure needed. A safe rule to follow is to give the front cinch sufficient pressure to hold the saddle in place.  
45 Usually one finger should pass easily between the front cinch and the animal's chest.

1 You should tighten the rear cinch enough to limit the rocking motions of the saddle and to help prevent the saddle  
2 from slipping forward. Make sure the rear cinch is not so tight that the whole hand cannot be slipped under it. In  
3 testing cinch pressure, you should be able to insert a finger from the rear to the front so that, when it is withdrawn,  
4 the hair does not ruffle. Ruffled hair may cause sores. Excessive binding of the rear cinch will cause a pack animal  
5 to tire quickly. It is very important to center the cinch on the animal's belly. The cinch rings on either side of the  
6 cinch should be the same distance from the rigging when the cinch is pulled tight. An uneven cinch could cause  
7 cinch sores or cause the saddle to slip. You should secure the latigos on both sides of the saddle with a quick  
8 release knot. This knot is important because it will allow the load to be released quickly from an animal if it falls  
9 onto its side or upside down. With other knots it is necessary to cut the load away from the animal. Having to cut  
10 the load may cause injury to the animal and will ruin the latigos or cinches on the saddle.

11 To fasten the cinch on the animal, run the latigo through the cinch ring (the end of the latigo is run through the  
12 cinch ring so that it comes through the ring towards the packer) and back up through the rigging ring (the end of  
13 the latigo is run through the rigging ring so that it goes through the ring towards the animal). If the latigos are  
14 long, or the animal has a small barrel, you may have to wrap them more than once to take up the excess length of  
15 the latigo. The knot used is a "half-Windsor." To form this knot, bring the running end of the latigo around the  
16 portion of the latigo running through the rigging ring, up through the rear of the rigging ring, and down through  
17 the loop just formed. Form the quick release by passing the running end of the latigo up through the knot just  
18 formed.

#### 19 **Final Adjustments**

20 When the saddle is in the right position on the animal and the breast collar, breeching, and cinches are snug, it is  
21 time to "untrack" the animal prior to packing it. Many times an animal will force air into its lungs and belly when  
22 it realizes that it is going to be saddled. It does this to make the saddle fit more comfortably. Once the animal starts  
23 moving, it will expel the air and the saddle will fit more loosely. If the animal is packed without untracking it, the  
24 saddle could slip shortly after movement begins and the whole load will have to be repacked. To untrack an  
25 animal, take it from the place it was saddled and walk it around for approximately 30 seconds. Tie it up and  
26 tighten the cinches again if needed. The animal is now ready to be packed.

#### 27 **Marking Saddles**

28 After the saddle is fitted to the pack animal, it should be marked with the animal's name or number and used with  
29 the same animal throughout the movement. The same saddle pads and, if needed, cheater pads should be kept with  
30 the animal so the saddle will fit the same every time. This will save time refitting the pack saddles every time the  
31 unit prepares to move.

#### 32 **UNSADDLING THE ANIMAL**

33 The animal is unsaddled in the opposite sequence that it is saddled. By following this sequence the saddle will be  
34 stored in a manner that will make saddling the animal quick and easy the next time it is needed. Since the breast  
35 strap, breeching, and cinches were adjusted properly when the animal was saddled, you can keep the proper  
36 adjustment if you only loosen the quarter straps, cinches, and breast collar (on-side strap and the strap going to the  
37 hobble ring).

38 Follow these procedures to properly unsaddle an animal:

39 Unfasten the breast collar strap from the front hobble ring on the front cinch. Unfasten the breast collar strap from  
40 the on-side connection. Take the breast collar strap from around the neck of the animal. Run the on-side breast  
41 collar strap under the bucks from the rear to the front leaving the buckle visible at the rear of the saddle. Lay the  
42 excess strap on the animal's neck. Fold the excess breast collar into the center of the saddle between the bucks.

43 Unfasten the quarter straps and hook them onto the rear rigging rings. Unfasten the rear cinch. Put the running  
44 end of the latigo through the rigging ring twice. Bring the running end around the latigo, up through the rear of  
45 the rigging ring and down through the loop just formed. Repeat the procedure for the front cinch.

- 1 Slide the saddle rearward to loosen the breeching. If a crupper is used, unfasten the on-side strap and lift the
- 2 animal's tail to remove it. Lift the breeching over the rump and place the spider and crupper, if used, between the

1 bucks. Lay the breeching across the saddle between the bucks. Fold the excess straps into the center of the saddle  
 2 between the bucks. Fold the cinches into the center of the saddle on top of the breeching.

3 Take in the portion of the breast strap that runs under the bucks and loop it around the breeching and cinches  
 4 folded into the center of the saddle. Ensure the strap runs diagonally across the saddle so the strap will tighten as  
 5 much as possible. Secure the strap with the buckle.

6 **NOTE: If the animal is unruly, it may be necessary to just get the saddle off of the animal and stow the rigging**  
 7 **later.**

8 The saddle is now ready to be put on the animal the next time it is needed. Place it wherever it is to be stored.

9 Remove the saddle pads from the animal. Shake them out or brush them. Place the pads over the saddle with the  
 10 side that was against the animal facing out so they will dry. If a sling rope is used, wrap it around the bucks in a  
 11 figure 8 manner.

12 If the lash rope is not going to be used for a night line, the proper way to roll it is as follows. Hold the lash cinch by  
 13 the cinch ring and coil the rope. Grasp the lash cinch by the hook and wrap it around the coiled rope once and  
 14 place the hook through the cinch ring. Hang it by the hook for storage.

15 **SADDLING WITH A FITTED SADDLE**

16 Saddling an animal with a saddle that has been fitted to it is much less time-consuming than saddling and having  
 17 to adjust the breeching.

18 Figure 5-2 lists the steps for saddling with a fitted saddle.

1. Properly groom the animal.
2. Place the saddle pad on the animal.
3. Place the saddle on the animal approximately 6 inches to the rear of its position.
4. Loosen the strap holding the cinches and rigging together between the bucks.
5. Let the cinches fall to the off-side of the animal.
6. Pull the breeching from the stowed position and fit it around the rump of the animal.
7. Slide the saddle forward to its proper position.
8. Attach the front cinch loosely.
9. Attach the rear cinch.
10. Attach the quarter straps to the front cinch ring.
11. Attach the crupper, if used.
12. Attach the breast collar.
13. Tighten the front cinch.
14. Since the saddle has already been adjusted to the animal, it should fit properly without further adjustment. Check the fit of the saddle and all the rigging, however, to make sure it does fit properly.

19 **Figure 5-2. Procedure for saddling with a fitted saddle.**



## CHAPTER 6

### HORSEMANSHIP

The following information on horsemanship is to guide unfamiliar personnel. In many cases, authorities vary on how to perform many functions of good horsemanship, even when presented with the same task. Tactical, environmental, social, and other factors influence how animals are used in a combat environment.

The descriptions of equipment and techniques are based on the American-Western style of riding. This style of riding is most familiar to U.S. soldiers and the most easily adaptable to sustained combat operations.

The emphasis on American-Western style is one of functionality and stability, but as in any style of riding, success is dependent on rider performance. As in most cases, any basic flaws in technique can most likely magnify during combat operations.

A pack animal unit will have to improvise equipment or adapt to indigenous equipment in many cases. A basic knowledge of animals, equipment design and function, and tactics should be sufficient for a detachment to perform their mission given any set of circumstances.

It should be noted that reading this chapter is in no way any substitute for experience.

#### EQUIPMENT

The following equipment descriptions and instructions for use come from the American-Western style of equipment. In the horse industry, these items are known as tack. Variations of these items are commonplace but the principles of their design and use remain constant.

#### Bridle and Reins

The rider uses the bridle to control the animal when he rides. The bridle consists of various lengths of leather or nylon that you can adjust to fit the animal. Its basic components include the following:

The **bit** rests against the back of an animal's mouth and controls the animal by transferring pressure from the reins to the animal's mouth.

The rider uses the **reins** or steering lines to command the animal. They are generally leather, approximately 72 to 84 inches long, and can be either split reins (not joined at the ends) or joined at the end. They are attached to the bit at the side rings.

The **curb chain or strap** gives the animal pressure on the bottom of the jawbone when the reins are pulled and assists in stopping the animal.

**Cheek straps** run the length of the bridle. Their purpose is to join the bit and the headpiece.

The **headpiece** runs behind the ears and gives long axis anchor to the bridle.

The **browband** runs across the forehead and holds the headpiece in place.

The **throatlash** runs from the junction of the headpiece and the browband on each side and under the animal's throat. It serves to further anchor the headpiece.

The **noseband** fits around the animal's nose several inches behind the mouth. It serves to keep the animal from opening its mouth too wide and to provide stability for the bridle.

*NOTE: There are many types of bridles. The components identified are not necessarily present on all bridles. Figure 6-1, page 6-2, explains how to put the bridle on the animal.*

- 1 1. Stand on the on-side of the animal, untie the animal and remove the halter. Place the reins behind the
- 2 animal's head and drape them over its neck or your arm.
- 3 2. Unbuckle the throatlash.
- 4 3. Hold the headpiece in the right hand.
- 5 4. Hold the bit in the left hand with the thumb pointed up the axis of the animal's head.
- 6 5. Place the right hand on the animal's head between the ears to keep it down.
- 7 6. With the left hand, open the animal's mouth at the corner by putting your thumb between its canine and
- 8 back teeth (the taste of your thumb will cause the animal to open its mouth). Then slide the bit in by
- 9 pulling with the headpiece in right hand.
- 10 7. Slide headpiece behind the ears and place the browband on the forehead.
- 11 8. Buckle the throatband loosely.
- 12 9. The bit should be adjusted so that the back of the animal's mouth is drawn up into a slight "smile."
- 13 10. Pull loose any restricted mane that is caught under the bridle straps.

14 **Figure 6-1. Steps for putting the bridle on the animal.**

15 **Saddle Pad**

16 Riding pads are generally the same as the pads used on packing animals. The average size is 30 x 30 inches. For  
17 information on the use and care of saddle pads see Chapter 5.

18 **Cheater Pads**

19 Cheater pads can be used on riding animals as on packing animals. See Chapter 5 for use of cheater pads.

20 **Saddle**

21 The modern Western saddle is a direct descendant of the deep-seat saddle brought to the Americas by the Spanish  
22 Conquistadors in the sixteenth century. Among the characteristics common to Western saddles are the deep seat,  
23 saddle horn, long stirrups, and high cantle. It also comes with a complement of tie-down straps to secure personal  
24 equipment to the saddle.

25 Western saddles are constructed of wood or synthetics for the tree (frame) and stirrups and covered in leather. If  
26 the manufacturer has placed padding in the bars of the saddle, a saddle pad still must be used.

27 The typical Western saddle will have one cinch to secure the saddle to the animal and may or may not have a flank  
28 cinch. Figure 6-2, page 6-3, explains the steps for saddling the animal.

29 **Rider's Equipment**

30 The problem encountered with equipping a U.S. soldier for mounted operations is that no consideration has been  
31 given to the requirements for this type of operation in quite some time.

32 Many items that are critical for dismounted use are critical to use while mounted as well, but may not perform  
33 suitably in both situations. Boots are a prime example. Boots suited for dismounted operations may be detrimental  
34 to mounted operations. The very nature of combat operations demands interoperability. This section will address  
35 such difficulties. It will be the responsibility of the commander who assigns a unit to perform mounted operations  
36 to properly equip those units.

1. Ensure the animal is properly groomed.
  2. Place the saddle pad on the animal.
  3. Ensure the saddle is properly “rolled” for placement on the animal. Being rolled means that the cinch, off-sides stirrup, and any tie-down straps are pulled over the seat of the saddle.
  4. Grasp the saddle by the front center under the horn and the rear center.
- Note: If the animal is skittish, or if it doesn't know the handler, allow it to see and smell the saddle at this time. Make sure the animal is never surprised.*
5. From the on-side SET the saddle on the animal's back. The front edge of the saddle should be 1 to 2 inches from front edge of the pad and above the rear of the withers. Grasp the front edge of the pad and lift it up into the tree to allow a space for air to circulate under the pad.
  6. Pull down the cinch and connect. Initially, snug the cinch tight enough to secure it to the animal.
  7. Connect the flank (rear) cinch, if one is present. It should just rest against the animal's flank and be secured snugly. Connect it to the front cinch in the center with the connecting strap.
  8. Lower the stirrups into place. Never drop them against the animal's side.
  9. Ensure that no saddle strings or any other objects are between the saddle and the animal.
  10. Walk the animal around for a short distance and then adjust the cinches again. The main cinch should be tight enough that three fingers can be slid underneath it without much effort.
  11. After riding or waiting for a time, recheck the cinches. Exertion or excitement may cause the animal's girth size to change.

**Figure 6-2. Procedure for placing saddle on the animal.**

**Boots.** Their leather construction, pull-on design, high one-piece uppers, smooth sole, pointed toes, and high heels characterize boots normally associated with American-Western style riding (often referred to as Cowboy boots). Boots normally associated with dismounted operations have treated multipiece leather uppers, a lace-up design, lug soles, broad toes, short heels, and are generally shorter than riding boots. Soles that provide traction and footing on the ground can be dangerous when trying to dismount a horse. Lug soles tend to catch on stirrups. Boots with buckles or those with hooks used for speed lacing are not good because the buckles or hooks can become caught on the saddle. Boots designed for riding are totally unsuitable for carrying loads over any irregular terrain while walking or for walking any appreciable distance. Riding boots are more difficult to fit and break in as well. Standard military boots, in most cases, will not accept spurs. Standard riding boots will not accept mountaineering equipment (for example, crampons, snowshoes, skis). Modifying stirrups is not advisable or simple to accomplish. The more suitable approach would be to use military boots with the minimum amount of lug required and shaving down the edges of the soles to prevent the stirrups from becoming wedged in to the lug. Also, use the widest stirrup available. When using military boots, exercise care when removing the foot from the stirrup and pay particular attention to how a low heel will affect the rider's ability to maintain the correct seat.

**Spurs.** Spurs are removable metal devices that attach to the heel of a rider's boots and assist in the use of his legs as riding aids. There are hundreds of variations of spurs but two basic designs. The classic or cavalry type is a short one-piece spur. The Western style is the star or wheel shape that rotates on a pin. Spurs are not essential for riding but can be useful in controlling an animal. Experience, tactical considerations, the animal's training and availability of spurs will influence the choice of using them or not. Inexperienced riders may tend to use spurs improperly, which can cause more problems than are corrected. Inexperienced animals may not understand what the rider is asking of them when spurs are applied. When using spurs, never poke an animal with their point(s). Their purpose is to enable the horse to better feel the commands of the rider's legs. When applying spurs to the animal's flanks, use the side of the spur and roll it upward. A military user must remember that spurs may not be usable with his boots and will impair him when dismounted.

1 **Chaps.** Chaps are leather leggings worn to protect the legs while riding. Chaps are not required for riding but do  
2 provide considerable protection against the tendency to chafe the legs raw from the friction between the legs and  
3 the stirrup leathers. They also protect the leg against foliage, limbs and other such items the rider can be brushed  
4 against while riding. Chaps come in two basic designs: The first are shotgun chaps, which are narrow and zip up  
5 the side. The second are open or bat-wing chaps that connect by ties at the side. The shotgun type, if not too tight,  
6 provides the best compromise between tactical use considerations and horse-related work. Shotgun chaps are  
7 quieter and will not snag as easily when the rider dismounts. When doing farrier-type work, bat-wings are  
8 preferred if a farrier's apron is unavailable.

9 **Uniform.** Other than the items already addressed, the requirements for a suitable uniform are the same as for  
10 conventional dismounted operations. Consider some of the following points:

- 11 • You MUST wear leather gloves when leading pack animals.
- 12 • Wear a hat to protect the head from low limbs. It should not restrict hearing or vision (particularly  
13 peripheral). A chinstrap is beneficial because riding at speed, wind and obstructions will cause it to be lost  
14 and recovery from horseback is impossible. A good choice is the jungle hat or a watch cap.
- 15 • Carry nothing in your rear trouser pockets.

16 NOTE: Items such as load-carrying equipment (LCE) will be addressed in a later section.

17 **Necessary Bag.** A necessary bag is a small kit carried by a rider to make field repairs to tack or other equipment. It  
18 is normally carried in a saddlebag. Typical contents of a necessary bag are listed below. There is no specific item  
19 list.

- 20 • Leather punch or sharp awl.
- 21 • Assorted leather or sailmaker's needles.
- 22 • Bees wax.
- 23 • Waxed sailmaker's thread.
- 24 • Sewing palm.
- 25 • Rivets (for leather).
- 26 • Leather boot laces.
- 27 • Small bits and pieces of leather.

28 **Saddlebags.** Saddlebags are of particular importance to the military rider. There are many different styles of  
29 saddlebags. Construction is usually of nylon, canvas or leather. For military uses, heavy nylon is preferable because  
30 it is rot resistant, abrasion resistant and easily repaired. Saddlebags are attached to the rear of the saddle and tied  
31 down with the saddle strings located to the rear of the cantle. Locally fabricated models can be designed to work  
32 with issued LCE, perhaps attaching to the rider's back. Typical dimensions of saddlebags are 11 inches wide x 11  
33 inches long x 5 inches thick. When used, as with pack loads, saddlebags must be balanced and sharp contents  
34 packed away from the animal.

## 35 RIDING TECHNIQUES

36 As stated previously, this manual discusses the American-Western style of riding. Riding basics for combat  
37 applications are no different from those for pleasure riding. What makes a difference is the skill level required of  
38 the rider. Combat conditions force the mounted soldier to be a master of the basic skills of riding if he is expected  
39 to accomplish his mission. Riders must conduct actual training and practice on a regular basis for the skills of a  
40 mounted soldier to remain of high enough caliber to conduct combat operations.

### Preparing to Mount

Once a rider's animal has been prepared to ride, (for example, it is properly groomed and all tack is on and properly adjusted) the rider must ensure that he is ready to ride. All equipment he wishes to carry must already be in place on the animal and/or himself.

### Mounting

Untie the animal from its hitch and hold both reins in the left hand before mounting. From the on-side, stand just in front of the saddle, face to the animal's rear, and turn the stirrup around so you can place your left foot into it. With your left foot in the stirrup, place your right hand on the saddle horn, left hand on top of the animal's neck. Swing the right leg over the animal's back. Place the right foot in the stirrup when seated.

NOTE: Only when seated properly in the saddle can the stirrup length be judged to be proper or not. If proper, the knee will have a slight bend in it (approximately 20 degrees) and the rider should just be able to see the tip of the toe over the knee. Another way to tell if you are seated properly is to stand in the stirrups. There should be enough room to place two fingers between the saddle and your crotch. Ensure that the stirrup adjustment hardware is secure after adjustments are made.

### Proper Seat and Aids

The proper seat, or how the rider positions himself in the saddle, is very important to proper riding. The animal will become confused with the commands the rider gives and will not have the proper stability he needs to traverse difficult terrain if the rider does not sit correctly.

The position of the rider in the saddle and the way he uses that position is referred to as the "aids." Mastering the aids is the single most important function of riding in control. (This is assuming, of course, that the animal has been properly trained.) When in the saddle, the position of the rider's body should be as follows:

**Legs.** The legs are used to create and control the forward motion of the animal and to assist in steering. When at the normal position, the legs should lie against the animal's side with the heel resting just behind the girth. The feet are placed in the stirrup with the rider's weight resting on the balls of the feet. This position remains the same unless the rider must give the animal a kick. The variance comes from the pressure delivered to the side of the animal by squeezing the leg muscles. To increase forward motion, squeeze more in equal amounts to both sides. When turning, keep the inside leg at the girth, and the outside leg back. When halting, apply light pressure with both legs. When applying any aid, cease the pressure when the animal responds.

**Weight.** The primary objective of how the rider distributes his weight is to remain in contact with the animal and feel its movements so he can move with the animal. The majority of the rider's weight will be in the stirrups, thus the saying "standing tall in the saddle." The spine should be straight but not stiff. The remaining weight should be distributed evenly in the seat. If the rider is about to change pace he should press down in the seat with his pelvis momentarily, without leaning forward, to warn the animal. When riding uphill, the rider must lean forward slightly and when riding downhill lean slightly to the rear. In either case, the rider must not exaggerate the movement and keep the weight in the seat. These adjustments are made to assist the animal when it must change its center of gravity.

**Hands.** The primary function of the hands as an aid is to control the reins. Western-Style riding (and horses trained Western-Style) respond to the technique known as "neck-reining." This allows the reins to be controlled with only one hand. The reins are held in the dominant hand slightly above the saddle horn. The reins should be held with slight pressure; just enough to maintain light contact with the animal's mouth and low on the neck. To turn the animal, the rider simply moves the rein hand in the direction he wishes to turn. Do not over-rein. Just give sufficient pressure so that the animal will understand what is expected. Some experts insist that the animal responds to the pressure created by the reins on the neck while others maintain that it is merely a combination of the movements that makes the animal react. In any case, all aids (legs, weight, and hands) must be applied simultaneously and with only enough pressure to achieve the desired effect.

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**Paces**

As with anything, a rider must “learn to walk before he runs.” When training a new rider, it must be done in a controlled environment such as a corral. Start with the easiest pace first and progress only when a rider is comfortable with the level at which he is working.

**Starting.** The rider should make light contact with the horse’s side by squeezing his legs. The rider must maintain the proper seat and balance. The rider must not allow his weight or rein hand to come too far forward, as is often the tendency. Keep the shoulders square to the animal always. A rider may hold the saddle horn if he needs to steady himself at first but should NEVER use the reins for any purpose other than controlling his mount.

**Walk.** Unless the animal has been started in a violent manner, he should assume a walk when given the command to start out. Maintain all aids as described above when riding at the walk. Also, be on the lookout for anything that may be affecting the animal such as a piece of saddle string under the pad. The rider must remember to “stand” in the stirrups, keeping approximately 2/3 of his weight on the balls of his feet.

**Halt.** To halt the horse, close the lower legs against the animal’s side and lightly tighten, not pull, the reins. When the animal responds release the pressure but not the control. It will take a rider a little time to determine how responsive any given animal is to this or any other command.

**Jog and Lope.** The jog and lope paces are two different paces, but are closely related. The aids are the same as for any pace except that the rider’s weight shifts slightly forward. In the jog the horse will bounce quite a bit and the rider must learn to move with the animal. To initiate the jog from a walk, repeat the steps used to start the animal from a halt into a walk. The lope is a more relaxing riding pace for the rider. The animal will tend to bounce less and it is easier for the rider to maintain the proper balance. The lope is slightly faster than the jog and is initiated from the jog.

**Gallop.** The gallop is the fastest pace of a ridden animal and the most dangerous. It is very easy for a rider to lose control of an animal at the gallop if the animal becomes overexcited, which is often the case when an animal is ordered to gallop. When at the gallop, maintain control with the aids as previously described. The rider must transfer his weight from the seat to the stirrups and the knees. Contact should be maintained on the reins.

**Rein Back.** The rein back is used to make the animal move straight back. It should not be used over any distance. It is always performed from the halt. To perform the rein back use an “elastic” and staggered pull on the reins and the rider positions his weight slightly forward of center.

**LEADING A PACK STRING**

One of the principle advantages of using animals in the era of modern combat is that mounted elements can move large quantities of material in areas not suitable for conventional transport. When using pack animals, it is often preferable to lead them from horseback to take advantage of the animal’s superior speed. Leading pack animals from horseback is not difficult but you must observe the following rules:

**Never** tie a pack string to the lead (ridden) animal. If an accident occurs or the pack string becomes frightened, you are in certain danger if you cannot release the string. This point also applies to leading a single animal. You should hold the lead line in one hand. You can form a bight over the saddle horn if you wish, but be sure that the lead line can be jettisoned immediately, if required.

You should **never** move a pack string faster than the animals in it can comfortably navigate obstacles or difficult terrain. Keep in mind, the pack animals are carrying dead weight and, often, heavy loads. It is often preferable to give the string more slack when traversing an obstacle so they can pick their way.

You must **always** wear protective gloves while leading.

It is preferable to have **two riders** per pack string. One reason, riders can relieve the other of leading the string periodically. What is more important, one rider can observe the pack string and assist in correcting any problems that may arise such as a shifted load. One rider will lead the string and the other will follow. If a rider is alone and

1 does not have someone to watch the string for him, he can ride in a “Figure 8” so that he can get a good look at the  
2 string.

3 **Always be wary at halts!** The majority of accidents occur at halts when the animals have the freedom to mill  
4 about and can become entangled.

5 **Never** allow a lead line to run under the tail of any animal, pack or ridden.

6 If negotiating dense terrain (timber or rocks) and the pack animals choose a different route than the lead animal, it  
7 is better to **drop** the lead line and **recatch** the string than it is to become tangled in an obstacle with the string.

8 **Never** allow the string to get in front of the rider because if the string should become startled the rider could get  
9 caught up in them.

10 The normal distance between the lead pack animal and the rider’s animal varies according to terrain and the  
11 animals’ training and experience. A rule of thumb is the lead pack animal’s nose should be **even** with the back of  
12 the rider’s **flank** while traveling over easy terrain.

### 13 **COMBAT CONSIDERATIONS**

14 There are too many types of missions and units that could be assigned to mounted duty to allow this manual to  
15 encompass all aspects of military riding. Weapons, climatic conditions, and table of organization and equipment  
16 (TOE) equipment will vary too greatly for this chapter to provide specific SOPs and doctrine capable of covering  
17 all applications. This document will try to assist the user in formulating his procedures with general guidance.

#### 18 **Weapons**

19 Individual weapons are as important to the mounted soldier, regardless of his duty, as they are to the dismounted  
20 soldier. They must be ready to be brought into action at all times. Achieving this state of readiness from horseback  
21 poses certain difficulties. A soldier normally will carry his weapon in his hands when in a high state of readiness.  
22 While mounted, a soldier’s hands are often occupied. Also, there is the problem of keeping the weapon free of the  
23 animal and the equipment surrounding the rider. For a rider there is also the ever-present danger of being  
24 separated from his animal. So a primary weapon cannot be kept attached to an animal.

25 **Side Arms.** There is a very real requirement for **all** mounted personnel to be issued a side arm. The preferred  
26 method of carry is the shoulder holster. The holster serves two functions. One, the weapon will be out of the way of  
27 tack and lines always making it instantly accessible. Two, the weapon will always be with the soldier. Due to the  
28 large number of duties that mounted soldiers must perform with their hands (to include tactical movement) a side  
29 arm, because of its ever-present availability, becomes a necessity.

30 **Personal Weapons.** While the use of animals provides a commander a valuable asset for getting individuals and  
31 equipment to a battle, fighting from horseback is not considered a primary function of mounted soldiers today.  
32 However, anytime a unit is in a hostile environment it must be ready to fight at anytime. For a mounted unit this  
33 includes while on the move. As stated, side arms are a requirement for mounted soldiers but they are insufficient as  
34 a primary weapon.

35 The standard weapons of the U.S. military (M16A2, M60 MG, M249 SAW and M203) have a serious defect in  
36 their size for mounted operations. It is difficult to handle the reins of a horse and a lead line while holding a large  
37 rifle. These weapons also demand a certain degree of accuracy that is next to impossible to achieve from horseback.  
38 To compromise between effective firepower and effective size, carbines are recommended. U.S. M16 variants such  
39 as the CAR-15 are acceptable or, if operations were conducted in a UW environment, an AK folding stock variant  
40 would be acceptable. The ability of a submachine gun to lay a heavy base of fire from an unstable position makes it  
41 a valuable choice. A selective fire weapon with a folding stock, extended for accuracy when required, is the ideal  
42 choice. A very good choice of immediate suppression weapon for the mounted unit is the US M79 Grenade  
43 Launcher. It is much shorter and lighter than the M203 and can be maneuvered with one hand. Its compact size  
44 will allow it to be placed in a scabbard and still be quickly brought to bear. Several M79s dispersed through a  
45 moving unit would greatly improve that unit’s chance of surviving an ambush.

1 Another consideration would be the adoption of shotguns as standard weapons for mounted troops conducting  
2 operations in dense terrain. Their unequaled killing ability at close range and less severe accuracy requirement  
3 would make them a good choice as a weapon for mounted troops. The M249 Squad Automatic Weapon would be a  
4 superior choice for a general fire support weapon than a M60 due to its size. The box magazine of the M249 is  
5 recommended because a belt of ammunition is too unwieldy around animals. The main problem with any of the  
6 weapons described is still how their size relates to how they can be carried effectively and still be brought into  
7 action when needed. As discussed before, the selection of carbine style or folding stock weapons goes a long way in  
8 helping this. However, further mention must be made how these weapons should be carried. As mentioned before,  
9 a scabbard can be used but only when enemy contact is highly unlikely, such as traveling in a secure area. **A cross-**  
10 **chest carry with a top mounted sling is the best choice.** Great care must be made that weapons **DO NOT**  
11 endanger the rider or his mount by becoming entangled in reins and lead lines or by hitting the animal.

### 12 **Additional Weapon Considerations**

13 The nature of modern battle dictates that mounted units carry more types of weaponry than the cavalry of old.  
14 Antiarmor weapons, air-defense weapons, and sniper weapons are just a few that must be considered. Again the  
15 mission, enemy, terrain, troops, time available, and civilians (METT-TC) factors determine what weapons will be  
16 carried and in what fashion. This manual discusses only a few typical weapons and generic considerations of each.

17 **Antiarmor Weapons.** U.S. antiarmor weaponry of any effect is generally too cumbersome to be carried on  
18 horseback. The possible exception is the M72 Light Antitank Weapon (LAW). You can use the LAW in many  
19 different roles but is sufficient against main armor vehicles in only selected manners. You can conveniently attach  
20 one or two LAWs to the rear of a saddle, behind the seat, and rig it to be quickly released for action. Backblast  
21 must be considered if fired around animals. The larger antiarmor weapons (M47 Dragon and TOW) are, in all  
22 respects, too heavy and large to be mounted with a rider but can be mounted on a pack animal. Keep in mind,  
23 though, that they cannot be brought quickly to bear if needed.

24 **Air Defense Weapons.** The only air-defense weapons suitable for mounted operations are the man-portable  
25 generation of weapons (for example, the Stinger or SA-7 GRAIL). These will be too unwieldy to be carried for any  
26 distance on a ridden animal but can be packed easily on a pack animal with consideration given to speedy access.  
27 They should be placed within the pack animal strings where the qualified users are as well.

28 **Sniper Weapons.** Sniper weapons are not fired from a mounted position and generally not from a hasty position.  
29 They, usually, will not have to be brought quickly to bear. The sensitivity of their sighting mechanisms demands  
30 that they be protected when around animals.

### 31 **Personal Equipment**

32 Standard U.S. personal equipment will serve a mounted soldier well when certain considerations are given. In most  
33 cases, an assault vest is preferable to the “web gear” style because it fits closer to the body. You can carry all items  
34 higher and out of the way of lines and reins. A standard ALICE pack is too large and heavy for the mounted  
35 soldier to carry. However, it adapts easily to being packed on an animal. You can place it on packsaddles just like  
36 panniers. You should carry all essential and sensitive items in your LCE. Using saddlebags and a small “day-pack”  
37 style rucksack can greatly enhance your ability to survive if your ALICE pack gets lost.

38 A mounted soldier carries the essential items with him. These include, but are not limited to, the following:

- 39 • Knife.
- 40 • First aid kit.
- 41 • Flashlight.
- 42 • Water.
- 43 • Rope.
- 44 • Necessary bag.



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- 1           Personal hygiene kit.
- 2           • Required first aid supplies.
- 3           • Compass.

**Additional Equipment**

5 Modern combat operations depend on communications. If a soldier is designated to carry unit radio equipment, it  
6 must be carried with him. Every effort is made by a commander to provide a mounted unit the smallest and lightest  
7 communications available for this reason.

8 **NEVER CARRY SENSITIVE AND CLASSIFIED COMMUNICATIONS ITEMS ON A PACK ANIMAL.**

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## CHAPTER 7

### TECHNIQUES AND PROCEDURES

It is easier to demonstrate how to pack an animal than it is to try to explain how to do it. The **ONLY** way to learn this skill is by attending a school on packing or spending time with a knowledgeable person who can show you how it is done. Once you have learned the basics of packing, you may be able to improve on the many knots, hitches, and slings used, or even come up with some of your own. This chapter combines the previous chapters' information, then covers some techniques and lessons learned that will assist you as you continue to practice your skill. Of course, try new and different techniques if they seem reasonable and if they do not work you can always go back to the basics.

#### TYING AND USING KNOTS

There are a variety of knots useful in packing; this section introduces a few and is by no means inclusive. There are several knots most frequently used and you may perhaps know, or learn, of others equally useful. As you become more familiar with horses and packing, you may even come up with some of your own invention. There is no one perfect way to throw a hitch or tie a sling; use what is comfortable for you and the horse and what works for the load you have to pack.

You cannot learn to tie a knot just by reading about it. As with packing and horse handling, the only way to learn this skill is by doing it. Figure 7-1, page 7-2, explains several commonly used knots. The recommended method is to get a length of rope and practice tying the various knots until you develop proficiency.

#### WRAPPING CARGO WITH A MANTA

A manta is a tarp that is either lashed over the top of the load secured on a pack saddle or used to wrap up cargo that is to be placed or slung on a pack saddle. This cargo could be duffel bags, kit bags, sacks of grain, or hay for the animals. Large duffel and sleeping bags that are to be slung on a pack load should be wrapped regardless of what type of material they are made. If you sling them next to a pack animal without wrapping them, they will pick up the sweat and oil off the animal. Besides soiling the articles, they will end up smelling like a sweaty packhorse.

If you can wrap a Christmas present, you can manta up any item you want to put on a pack animal. Remember that the side next to the animal will have to be flat and smooth. As in wrapping the Christmas present, take pride in the appearance of the finished package. One-quarter inch rope is usually used to tie the manta load together. The following steps explain how to manta a bale of hay:

- Center the bale on the tarp diagonally.
- Wrap one side around the bale. Fold the other side so it reaches only to the center of the bale.
- Fold the ends inward.
- Make a loop around the bale, then pull tight.
- Make three half hitches around the bale, or two if it's a small load.
- Tie off with a sliding clove hitch.

The load can be slung using a basket or barrel sling. You can also use short ropes to loop the load to the bucks, then tie off with a lash rope and box hitch.

1

Hitch Knot or Slip Knot	Used to tie a horse to the hitching rail. <i>NOTE: This knot will slip and tighten up; NEVER tie this or any other slip knot around an animal's neck; it could possibly choke the animal before the knot could be released.</i>
Round Turn With Two Half Hitches	Used with two half hitches to tie the end of a rope around an object such as a post, tree, or part of the packsaddle.
Bowline	Used in various ways and is one of the best knots for forming a single loop that will not tighten or slip under strain. The <b>ONLY</b> knot that should ever be tied around an animal's neck. Forms a loop that may be of any length desired. (When tying a horse to a tree or a picket pin, use the bowline since it will not tighten.) The loop remains loose and will not wind up if the animal walks in a circle around the tree or picket pin.
Clove Hitch	Used to fasten a rope to a pole, post, or similar object. Can be tied at the end of a rope or at any point along the length of a rope.
Timber Hitch	Used for moving heavy timbers or poles. The more tension applied, the tighter the hitch becomes. Will not slip, but will loosen easily when released.
Sheepshank	Used to shorten a rope without cutting it. Also used to take the strain off a weak spot in a rope. It is a temporary knot unless the eyes are fastened to the standing part on each end of the knot.
Square Knot	Used to join the ends of two ropes of equal diameter so they will not slip. It tightens under strain but can be untied by grasping the ends of the bights and pulling the knot apart.
Double Sheet Bend	Used to tie together the ends of ropes of equal or unequal diameter, to tie wet ropes, or to tie a rope to an eye. Also used to tie the ends of several ropes to one rope. Will not slip or draw tight under heavy loads.
Butterfly Knot	Used to form a fixed loop or loops in place along the length of a rope without using the ends of the rope. Can be used to attach the middleman on a climbing party, tighten installed ropes, and make tie points on a picket line.
Cat's Paw	Used to form a loop along the length of a rope without using the ends of the rope. It can be used to tighten installed ropes and to make tie points on a picket line.
Dutchman and Double Dutchman	Used to take the place of a pulley. The pulley knot can also be used to make tie points on a picket line.
Quick-Ties and Quick-Release Ties	Used when you need a knot that is quick to tie and quick to untie.

2

**Figure 7-1. Commonly used knots.**

3

**BUILDING LOADS**

4

Whether you are packing one animal or 20, it takes a plan of attack. In reality, a pack animal is packed in your mind before the actual pack is ever loaded on the animal. Planning is the most important part of packing. You should decide which animal will carry which load best, which will be your lead pack, and which can be trusted to stand while the others are loaded without trying to lie down or roll.

8

A very good method to follow in planning your pack loads is to lay out several tarps or mantas on the ground to keep the items clean and dry. If you have several personnel whose gear is being loaded in the packs, have them put it all on the tarps. Explain that once you start to lay out the packs, they cannot take anything out or add to the pile of gear without asking you first. Any item taken out of a duffel bag you have already hefted for weight will throw you

12

1 off by the weight of that item. This amount could be just enough weight variation to either sore the pack animal or  
2 slip the pack on the trail.

3 When preparing to pack, load the equipment each man is responsible for onto one animal as nearly as possible, and  
4 if more than one animal is needed, keep them together in the string. This practice makes things simple at  
5 overnight halts and when the final destination is reached, so one man does not have to go through the panniers of  
6 several different animals searching for what he needs.

7 One of the many secrets of packing, possibly the most important, is to keep the weight down at the bottom of the  
8 pack. This gives the packer a good solid foundation on which to build the rest of the load. A good load for most  
9 horses or mules is 160 to 170 pounds. However, if you have some small animals in the pack string, this amount  
10 could be too much for them. We are speaking of 1100- to 1200-pound packhorses and 800- to 1000-pound mules.  
11 In extreme circumstances, you can load an animal with up to 25 limits his speed and endurance. The horse gear  
12 (shoes, nails, hobbles, bells, picket chains, ropes) usually will fit in one set of panniers (two panniers). Remember  
13 this set of panniers well, as it will be the first item needed when you unpack at your destination. Try to keep all  
14 your camp tools such as shovel, ax, saw, currycomb, and brush on this pack load; it will save you a lot of time  
15 when you arrive at your camp for the night. You will know exactly where all your tools are and on which pack  
16 animal.

17 When loading the bottom of box panniers, you want everything to fit as snugly as possible to keep from rattling. A  
18 pile of gunnysacks close at hand is good for chinking up any rattles. Distribute the items through several sets of  
19 panniers, if necessary. Two layers of heavy items in a pannier are a big bottom load. If you have plenty of pack  
20 animals and box panniers, one layer of heavy items in several boxes will be better than trying to get it all on one  
21 pannier. Pack lighter items on top to keep the weight mostly in the bottom of the pannier.

22 Canvas panniers come in all sizes, shapes, and forms. Their general use in packing is to load them with bulky  
23 items that will not fit the box panniers. The loading method as mentioned before is the same: keep the weight  
24 down at the bottom. Just because a canvas pannier sometimes looks like a big sack, do not make the serious  
25 mistake of loading it like a grocery bag. There is nothing between the load in the canvas pannier and the pack  
26 animal but a thin layer of canvas. Load the canvas pannier so it is smooth and flat on the side next to the pack  
27 animal. If there are a lot of odd-shaped sleeping bags and duffel bags, here is a good place to put them. This  
28 method is also the best way to pack the grain for the animals. Having numbers on all the panniers is a great help in  
29 keeping them in sets of two. Whether there are numbers on the panniers or not, keep the sets together when you  
30 have finished loading.

31 When you have all the supplies, horse gear, grain, and other things packed in the panniers and any sling loads  
32 wrapped, you are ready to finish your pack loads with personal gear of the party. Select two items of equal weight  
33 and put one in each pannier, all the time keeping in mind what each pannier weighs. Next, you may need a top  
34 pack. Select two duffel bags or sleeping bags of equal weight and place these on each pannier. Now is a good time  
35 to recheck the weight of your panniers to make sure they are still equal. Have a scale you can suspend from a tree  
36 limb to weigh the panniers; a difference of only a few pounds between them can make all the difference once you  
37 start down the trail. If you feel that both panniers together weigh under approximately 150 pounds, find a third  
38 sleeping bag or duffel bag for a center load. Lay this third item across both panniers showing it as the center load,  
39 place a manta and lash rope over the entire pile, and allow no one to disturb it until you are ready to load it on a  
40 pack animal.

41 After you have gone through the pile of things to be packed, there will, without a doubt, be several items that look  
42 like they just will not fit any of the loads you have laid out. If they are small and light enough to make another  
43 pack load, you can often find a place for them as you pack out the other loads. You will have to keep these items in  
44 mind while loading the other panniers or you will end up with one or two things left out.

#### 45 **SADDLING**

46 Saddling was covered in detail in Chapter 5 but here are some techniques and lessons learned that will stand you in  
47 good stead. There are quite a few different types of packsaddles, and each has to be rigged differently to get the

- 1 pack on it. These saddles may have any number of different riggings and may or may not have quarter straps.
- 2 Whatever the type, all saddles must properly fit the pack animal.

1 The padding between the pack animal and the saddle is a very important piece of pack gear. Pack pads as a rule are  
2 larger and thicker than regular riding pads, and for good reason. Once you pack the animal and the load rests on  
3 these pads, they will stay there until the animal is unpacked. Pack pads are made of many materials, the best being  
4 one that will stay soft and not pack down. The most commonly used pads have a fiber or hollow hair filling  
5 between two layers of light canvas.

6 Whatever type of pad you are using, check it thoroughly for any foreign objects before placing it on the animal.  
7 Sweat will build up but can be scratched off with the currycomb. Wet pads will gall or sore a pack animal. Lay the  
8 saddle pads out where they can air out and dry when possible. Always try to place the pack pads square on the  
9 packhorse leaving at least 2 inches in front and in back of the packsaddle. Depending on the shape of the pack  
10 animal's back, you may need more than one pack pad. The best way to gauge is to set the packsaddle on the  
11 animal, then check the clearance between the saddle and the animal's withers; there should be enough space for  
12 two fingers.

13 Allow for the saddle settling down on the pads after the animal is loaded. If there is any chance of the saddle forks  
14 coming in contact with the top of the withers, put another pack pad under the saddle. Also make sure you do not  
15 put too much padding on the withers and cause the packsaddle to pinch from being too thick. Most good pack pads  
16 are thin down the center of the pads. Your aim in a high-withered animal is to raise the packsaddle off the tops of  
17 the withers. Some packers use what is called a cheater, a small pad usually made of a batch of tail and mane hair  
18 sewn between canvas liners. You can place these cheaters between two regular pack pads in the wither area to raise  
19 the front of the packsaddle off the withers and yet have the saddle sitting evenly on the pack animal's back.

20 Now is the time to again check the pack animals to see if the saddles on them are rigged for the type load the  
21 animals will be carrying. If you have one or two sling loads, you know you will need that many sling ropes on the  
22 saddles and have them tied off ready to use in saddling the pack animal. Recheck the pack pads to make sure they  
23 are loose over the withers of the animal and that the packsaddle sits in the middle of the pads.

24 During all the loading of the panniers and other gear, DO NOT lead the pack animal around to pick up parts of the  
25 load. It is a very serious mistake. Once you begin loading an animal, wait until the pack load is lashed down before  
26 ever moving him, or you will be picking up parts of your load from the ground where it slipped off.

27 If you are going to move the pack animal from where he was saddled to where the pack load is sitting, pull the  
28 cinches up snug before you lead him to the pack load, then finish tightening the cinches just before loading. This  
29 technique is called "untracking" the animal. If pack animals that have been saddled and standing with a loose  
30 cinch have the cinches tightened and are then loaded without moving around first, they could experience some  
31 discomfort from being pinched or having a fold in their skin caught under the cinch. This pain will often cause  
32 them to throw the whole load off. When you pull up the cinch on a pack animal, untrack him before you put the  
33 pack load on him; moving around a bit allows the cinch to settle into place and the animal will be more  
34 comfortable. This practice also applies when the packing is completed. You should be continually checking the  
35 animals and how the loads are riding anyway, but especially watch the animal as he takes the first few steps after  
36 being packed; if the load looks like its shifting, make whatever adjustments are necessary.

37 Whenever possible, get some help in loading the panniers onto the animals because when packing alone you will  
38 have to keep moving from side to side. While you are moving to the opposite side, the load on one side is pulling  
39 the packsaddle over and pinching the animal's withers. With a heavy load, this could cause the animal enough  
40 discomfort to buck off the load or at least turn the packsaddle.

41 Some panniers have ropes or straps that you can adjust to set the height the panniers will sit on the pack animal,  
42 while others are slung with the sling rope. Regardless of the method you use, the panniers must be even in height  
43 on the pack animal. A pannier low on one side pulls the saddle in that direction and either causes a sore on the  
44 animal or slips the entire pack. After loading the panniers on the animal, step to the rear and check that they are  
45 evenly placed.

46 With any center load, such as a duffel bag, make sure the opening is to the front of the animal. The motion of the  
47 animal usually shifts things around, and with the opening to the front, you can see if any items are working their

1 way out of the bag while on the trail. Regardless of what is center packed, make sure that after the load is lashed  
2 down it will not rub the animal.

3 The manta or pannier tarp is next. Pull the manta down evenly on both sides of the boxes and tuck in the ends  
4 around the panniers. Keep checking to make sure the pigtail on the packsaddle is clear and out where you can tie  
5 into it. A good solid pack will look sloppy if you do not take the time to use the manta neatly and tie it up right. Be  
6 as proud of a good-looking pack as you would be of a well-wrapped Christmas present.

### 7 **SLINGS AND HITCHES**

8 The packer uses the “sling” to initially attach the load (panniers, manta hay) to the saddle. Once you do that, throw  
9 a manta across it and use a “hitch” to secure the entire load to the horse. You then tie the sling to the saddle and  
10 the hitch to the horse.

11 The basic purpose of a hitch is to secure the entire load to the packsaddle and horse as a balanced unit and still not  
12 have to use 100 feet of rope. You have to throw these hitches so they can be taken off the load with little effort.

13 The different means of tying a load down on a pack animal are not as confusing as they might sound. You will  
14 hear and read about such things as a one-man diamond, half diamond, full diamond, double diamond, squaw hitch,  
15 box hitch, and many other means of tying. You do not have to learn them all, but if you learn one or two of the  
16 most commonly used hitches, you can tie down almost any load you encounter.

17 When we say “throw a hitch,” we mean just that. You throw the loops and coils of your hitch on the pack in such a  
18 way that when you give the hitch its last pull, all the ropes pull tight. When you release the hitch to unpack the  
19 animal, you don’t have to spend time unwinding or untying knots in the lash rope.

20 Most new lash ropes are approximately 40 to 50 feet long. They come in many diameters and are made of several  
21 materials. In most cases lash ropes are approximately 5/8 inch in diameter and either of manila or nylon material.  
22 Polyester rope makes the best lash ropes because wet weather makes grass or hemp ropes very difficult to handle.

23 If you pack an animal with wet slings or lash ropes made of hemp, you may not go very far up the trail before the  
24 slings and hitches start to dry and stretch out. This stretching will make your pack loose or uneven and could cause  
25 a considerable delay in reaching your destination. In camp, or wherever you find yourself, keep any hemp lash and  
26 sling ropes dry if at all possible. Don’t throw them on the wet ground while packing an animal. Hang them on a  
27 tree limb or lay them on a tarp or some dry place until you are ready to use them.

28 The lash cinch (on the end of the lash rope) needs checking often for signs of fatigue in the cinch materials. It has  
29 a ring in one end and a hook in the other end to simplify the makings of a hitch. The lash cinch is really, in most  
30 hitches, the beginning and the end of a hitch. The packer throws the lash cinch across a loaded pack animal and  
31 very often the person on the off-side forgets to duck or watch for it to come over. It does not take many knots on the  
32 head to learn respect for this piece of pack gear.

33 Whatever hitch you use on the pack load it must hold the ends, sides, and bottom of the panniers, besides holding  
34 the top pack. If you balance the pack on the animal properly, the lash rope can hold the pack down and together.  
35 You cannot balance a pack with the lash rope. After you pack everything inside so it won’t rattle or break and the  
36 wrapping is on, you are ready for the fancy bow. You want something that looks good yet holds the wrapping and  
37 box together. You have other loads to wrap, so it has to be tied up fast and simple and yet hold tight.

38 Handling a lash rope while throwing a hitch can be dangerous if you become tangled in the rope and the animal  
39 spooks or starts bucking. Make sure you don’t have coils around your feet or arms, as it could cause you to get  
40 dragged or seriously injured. The safest way to handle this situation is to keep the tail, or excess, rope thrown out  
41 straight away from you while throwing the hitch.

42 Whatever hitch you choose to use, always check the pigtail on the pack saddle to make sure it is still clear and  
43 ready for use. Again, check the entire load front and rear to see if it is sitting straight. If it looks like the entire  
44 pack load has shifted to one side, lift up on the low sides and see if it will rock back straight. If it doesn’t, now is  
45 the time to completely repack the entire load. This rechecking will save you time on the trail repacking where you



- 1 may not have help or a place to tie up. It can also prevent “sores” (rubbing a raw place on his back or side) from
- 2 developing on the animal. Check any loose rope or manta ends sticking out and tuck them in.

1 The following are several methods of securing cargo. The first two are slings; they are used to attach the load to the  
2 saddle. The next two are hitches; they are used to secure the entire load to the horse. If you tie the sling on a  
3 sawbuck saddle, you can tie the same sling onto a Decker saddle by running the ropes through the loops at the top  
4 of the saddle rather than behind the bucks. With a little imagination and ingenuity, you can adapt any of the slings  
5 and hitches to whatever type saddle and load is on hand.

### 6 **Barrel Sling**

7 If the saddle does not already have a sling rope attached to it, tie one onto the sawbuck saddle by using a clove  
8 hitch in the center of the rope and onto the Decker using two bowlines. Make sure the sling rope is around 50 feet  
9 long, though this may vary according to the size of the cargo.

10 Starting on the right side of the animal, make a large loop at the forward end of the saddle, pass the rope behind  
11 the bucks to the rear, then make another large loop at the rear of the saddle. Bring the rope back behind the rear  
12 buck, then down to the sling ring.

### 13 **CAUTION**

14 After running the ropes under the forks of a sawbuck saddle, check the clearance between the ropes and the withers  
15 to make sure the ropes will not rub the animal's back raw.

16 Repeat this procedure on the left side of the animal.

17 Slip the cargo through the loops, then tighten up by running the end around the section of rope behind the bucks,  
18 pulling tight, and then tying off onto the sling ring.

### 19 **Crowfoot Sling**

20 As with the barrel sling, start by tying a sling rope onto the saddle. Draw the rope around the cargo, through the  
21 back hoop, down between the cargo and the animal, then back out and up the center of the outside of the load.

22 Pull one loop through the horizontal portion of the rope, then pull another loop through that one. Pull the first loop  
23 tight, then expand the second to fit around the bottom of the cargo. Allow enough slack so the bottom of the loop  
24 can pass through the cinch ring. Thread the end of the rope through this loop.

25 Pull the sling tight, then pull another loop through the horizontal section, and secure it with two half hitches.

### 26 **Box Hitch**

27 The packer begins the hitch by standing on the left side of the animal and throwing the cinch over its back,  
28 catching it and pulling it under the belly. Note that the hitch does not tie off anywhere on the saddle.

### 29 **The One-Man Diamond**

30 The diamond is useful for soft loads and the one-man diamond is easiest to tie. Again, note that this hitch does not  
31 tie off anywhere on the saddle.

32 This section is not meant to totally encompass slings and hitches; just enough of the basics to suffice for the most  
33 commonly encountered situations. As stated before, you cannot learn this skill by reading about it; you must find  
34 someone knowledgeable on the subject and have him demonstrate how it is done.

### 35 **THE PACK STRING**

36 Now that you have first class, well-balanced packs on the pack animals, you need to make up the pack string. It  
37 helps to know your animals in selecting which one you will use for a lead pack. Should you select an animal that  
38 will not lead up on a slack rope, you will spend your time dragging this animal along behind you all day. Many  
39 pack outfits using mules have a horse they call the Bell Mare. You can put a bell on this particular horse and lead  
40 just the one animal and the rest will usually follow. Using horses as pack animals is another situation. Horses and  
41 mules form a habit, just as a team does, as to what position in the string they should be. If you know this position  
42 when tying a string together, you will have a well-organized pack train going up the trail. Often one of your pack  
43 animals

1 will have a very fragile load that needs special attention on the trail. You may find that this is the animal you want  
2 as lead, so keep this in mind when loading out the packs.

3 An important safety rule to remember whenever you are afoot around pack animals tied together is to always be in  
4 the clear. Many things can happen, even with the most gentle pack stock. Two animals with box panniers can  
5 definitely put the squeeze to you if you get between them. It does not have to be the pack animal you are working  
6 on that causes the trouble. It can be any one of the animals in the pack string. If one jumps or bucks, the whole  
7 string, being tied together, has got to go along. If you are in the middle of several loaded pack animals, try to keep  
8 them standing apart and in a line. Do not get in the middle of them when they are bunched up.

9 Never get off your saddle horse into a crowd of spooked and bucking pack animals. You had best try to keep them  
10 circling or headed straight out until they settle down. You do not stand a chance afoot until you have them where  
11 you can get a hold on the head of whichever animal is causing the problem. You may feel helpless sitting on your  
12 saddle horse, watching all that gear being thrown off and trampled, but just remember that you could very easily be  
13 the one that is getting trampled or kicked.

14 Tying the pack string together takes just a little common horse sense. You want to give the animals all the room  
15 possible between them and yet not have so much lead rope that they can get a leg over the rope when their heads  
16 are down. A good gauge for the length of rope is to use the hoof of the pack animal you are tying off to. If the  
17 animal you are tying off is standing approximately nose to rump to the other animal and the lead rope is down  
18 about to the hoof on the lead pack animal, this length is just about right.

19 You can tie the pigtail on a packsaddle in several ways. One opinion is to run it through the rear forks of the  
20 packsaddle and down to the front rigging rings. Installing a pigtail this way pulls only on the cinch and not on the  
21 packsaddle. A nylon or polyester piece of 3/8-inch rope braided at the rings makes a very substantial pigtail.

22 Often it is a good idea to have a "breakaway" in the end of the pigtail where you will be tying the lead ropes of the  
23 pack string. You can make the breakaway with light 1/4-inch hemp rope. Should there be an emergency where the  
24 pack animal needs to break loose, it can usually break this light rope.

25 When leading a string of pack animals, you want to be all eyes. The first mile on the trail is the most important.  
26 This short distance helps you find out if the packs are tight and well-balanced and if you missed some rattles in the  
27 panniers. You will want to look back over the pack string about as much as you look ahead. When you come to a  
28 turn in the trail, get a side view of the packs. Often you can see something coming loose that can easily be fixed,  
29 but if left unattended could cause a pack to slip or something to be lost on the trail.

30 One of the most common mistakes a green packer makes is not giving the pack string time. When you cross a  
31 ditch, rock, or downed trees in the trail, your saddle horse most likely will just step over or around it and keep right  
32 on going. Possibly the next pack animal (the lead) will keep up easily enough, but the second pack animal will  
33 have to really hurry to get across the obstacle. When it comes to the third animal, he will either have to jump or  
34 pull back and so on down the line. When you cross or go around any obstacle on the trail, slow up until all your  
35 pack animals have gotten around or over it.

36 If you have steep country to climb in, give the pack string a lot of time to stop and get their breath. Pick a good spot  
37 where they are all standing square on the trail. You cannot use your saddle horse as a gauge for when to stop to  
38 breathe the pack string. The saddle horse may be carrying a 200-pound load, but that load is in balance with him  
39 while he is climbing. The pack animal has dead weight and needs more air to pack his load up the hill.

40 On long trips and especially when climbing, periodic rest stops will be necessary but do not overdo them. Stopping  
41 for long periods on the trail can cause more packs to needlessly slip. If you have to stop for lunch or whatever, take  
42 the pack string apart and tie each animal to a tree. If at all possible, keep the pack string in motion. The pack load  
43 is continuous on the animals and the quicker it can be taken off, the better for the animals.

44 When you come to a stream or any fresh water, let the animals drink. Do not just ride in and stop, make sure there  
45 is room for them all to drink at once if possible. When they are done drinking, make sure one of them does not  
46 have a

1 foot over the lead ropes as you start out. Whenever you stop on the trail for even a short time, always be sure the  
2 pack animals are ready to go before moving out. Often one will be spread out relieving himself and is in no  
3 position to step out.

4 One of the most irritating things in leading a pack string is to have a pack animal in the string that is always going  
5 around a tree the opposite way the rest of the string is going. Often you can shorten the lead rope and correct this.  
6 If that does not work you may have to lead him. This behavior is usually a sign of a green pack animal and quite  
7 often disappears as the animal learns what is expected of him. Others just do not ever seem to learn. If you have  
8 one of these in your string, remember him well and leave him behind on the next trip.

### 9 **CAMPSITES**

10 Should you have several animals in your outfit and not picket all of them, you might find it almost impossible to  
11 keep the loose animals in the area if there is insufficient grass. Unless you spend the entire night watching them,  
12 they might wander off in search of good pasture and be gone in the morning. Grass and water go together. An  
13 animal without water will act much the same as one with insufficient grass. A spring of good, sweet, cold water is  
14 by far the best, but make sure these springs run water far enough **BELOW** the camp for your stock. Another  
15 problem is that there is in most all pack or saddle stock the tendency to want to return to the last camp, or worse  
16 yet, go home. This urge is even more evident in them if you should be heading towards home after a few days out  
17 on a mission.

### 18 **Setting Up Camp**

19 If you remember which items are in which pack you will know which load goes where in the camp area. It will  
20 save a lot of time and labor to be able to lead each pack animal to wherever his load goes. As soon as you get the  
21 pack off the animal, loosen the cinches on the packsaddle.

22 Keeping the saddles and pads off the ground even in dry weather is a sign of good organization. It only takes a  
23 minute to lash a pole between two trees to put the saddles and pads on. A tree limb makes a good hanger for lash  
24 ropes and halters. When unsaddling an animal, always keep the pad and saddle together. If the saddle is marked  
25 for which horse it fits, you won't have to refit the pad next time you saddle up. If the weather is clear, let the pads  
26 air out and dry before covering them with the mantas off the pack loads that evening. While you are unsaddling the  
27 animals you will need the brush and currycomb. Ruff up the hair on the backs of the animals and check for any  
28 tenderness or sores. If you do have a sore-backed animal, take care of it before turning him out.

29 When setting up for the night, many of the items of pack gear will serve a dual purpose. Box panniers turn into  
30 tables and stools, lash ropes turn into night lines and corrals, mantas turn into ground tarps and covers, and so on.

### 31 **The Night Line**

32 The night line is a section of rope strung between two or more trees, with tie points for the horses. The knot used  
33 for these tie points (sometimes called the night-line knot) can be either the pulley knot used for a single or double  
34 dutchman, a butterfly knot, or a cat's paw. Use the night line as a place to tie the horses during the night.

35 The night line can often be temporarily put up when first arriving in camp. It will serve as an ideal place to tie up  
36 the pack string while laying out the camp area. Often, your lariats will serve for the first night line until you have a  
37 lash rope off the packs. By tying up to a line when you first arrive at camp, you often save damaging equipment  
38 and gear on a pack. Tying keeps the pack animal from getting under low limbs or trying to rub the pack off against  
39 the tree he is tied to. A very frequent mistake is tying an animal to a small dead tree. Quite often just a light pull on  
40 the dead tree in the right direction will cause it to fall, possibly injuring the animal or spooking him and others into  
41 running off. In selecting the area for a night line, pick a spot that is level and has some shelter for the animals.  
42 Shade during the daytime will usually offer some shelter in a rainstorm.

43 To put up the night line, start with the lash cinch and go around an average-sized tree approximately 3 1/2 feet off  
44 the ground. Hook the lash cinch into the rope. If possible, run the line so another tree is approximately in the  
45 center of the line. Tie a night-line knot approximately every 2 feet until you come to the first tree. Go around this  
46 tree and

1 tie night-line knots until you get approximately 2 feet from the tree to which you intend to tie off. Use the last knot  
 2 to set up a dutchman, then go around the tree and pull the whole line as tight as possible. Some other  
 3 considerations include—

- 4 • When tying to a night line, stagger the animals tied to it: one on one side and then one on the other side.
- 5 • The night line can also make a good line to dry saddle pads on when not being used for the animals.

### 6 **Picketing**

7 Picketing is tying an animal up by a line attached to either a stake or a heavy log. It allows the animal a certain  
 8 freedom of movement to walk around and get to grass and perhaps water but does not afford him the opportunity to  
 9 wander off.

10 You can picket an animal in several ways. Animal handlers normally use either a halter and picket line or a hobble  
 11 and picket line off one front leg. Depending on the animal's experience with the picket line, picketing by a leg is  
 12 the safest. An animal picketed with a halter will sometimes hook a shoe in the halter while scratching his ear with  
 13 a hind leg. If the picketed animal hooks the shoe of his hind leg in the picket halter he usually falls down. If not  
 14 found soon after falling, he may just die in this position.

15 The anchor end of the picket line can be either a good dry stake driven into solid ground or a drag log. In selecting  
 16 picket stakes, make sure they are stout and not brittle. When placing the stakes, make sure there is plenty of room  
 17 between the stakes so two picket lines cannot cross. The drag log, when used, should be heavy enough so the  
 18 animal picketed to it cannot move it, yet light enough so, if need be, it can be pulled to another picket area using a  
 19 saddle animal and a line off the saddle horn.

20 In tying off a picket line to the stake, use a small bowline knot. Make sure it is down at ground level on the stake.  
 21 This level will let the line turn around the stake and still not turn the stake and loosen it in the ground. An animal  
 22 that pulls a stake and runs loose with the line is a danger to himself and the mission. Should the animal get into  
 23 the timber and hang up the stake and line, it could cause a day's delay looking for him. Should the animal not be  
 24 found, it most likely will die a slow death of thirst and starvation.

25 Several things have to be considered when picketing by any method. The first would be how much feed is in the  
 26 picket area and is there any obstacle in the ring that the picket line can foul on, thus shortening the ring area. The  
 27 best area is usually on a good, grassy creek bank where the animal can get both feed and water off the same picket  
 28 line.

29 When selecting which animals will go on the picket line, pick out any new animals to the outfit and any of them  
 30 you know to be the leaders. Also consider any renegades or loners who hole up by themselves when running loose.  
 31 Maybe you have a mare that has a weaner colt at home. She for certain needs to go on a picket or on the night line.  
 32 After she has had time to fill up on grass, she just **might** decide to go home.

### 33 **The Night Horse**

34 If you have some of your stock running loose during the night, a night horse is a must. The night horse is one you  
 35 keep picketed near where you sleep for use in emergencies during the night and for running down loose stock in  
 36 the morning.

37 The night horse does not come in any particular color, size, or shape. He could easily be the most inefficient  
 38 looking animal in the outfit. What counts is what is between his ears. Many an animal used as a pack animal when  
 39 on the trail, though not considered a riding horse, might make a good night horse. The only way to come up with a  
 40 top night horse is to try them all at different times. A good night horse has to have several good points. They are  
 41 listed here, though not necessarily in order of importance:

- 42 • While on a picket, you must be able to trust the animal to graze and fill up during the night and not just  
 43 run in circles and whinny at the other loose animals all night.

44 •

1 He must handle well while running loose animals. He may be one of the best reining animals in the whole  
2 outfit, but when you run loose animals with him he may develop a lot of bad habits such as trying to buck  
3 you off. Worse yet, after you start the loose animals running, he may just stampede out of control with you  
4 which is a very dangerous situation.

- 5 • He should be easy to approach after dark and able to be ridden bareback. Quite often, should the loose  
6 animals start to leave during the night, it is possible to turn them very easily if you are right there at the  
7 time. If the animal cannot be ridden bareback, the time it takes to saddle up might make it too late to  
8 easily turn the loose animals.

9 Many night horses develop the habit of watching where the loose animals go at night. Their hearing is far superior  
10 to humans. Often, while wrangling with a good night horse, he will want to head in a direction you may believe is  
11 wrong. This friction can be a mistake on your part should you not trust him to help lead you to the loose animals.  
12 Quite often a night horse will want rein so he can smell the ground. Here again, his sense of smell is far better than  
13 yours and he is using it to help locate the other animals, but do not leave everything to the horse. You most  
14 certainly will want to be reading tracks along with using the night horse's senses. Between the two of you it is  
15 usually possible to locate the loose animals in short order.

16 The night horse is often required to do quite a bit of running in bringing in the loose stock. This is bound to heat  
17 up the animal. Under such conditions, cooling out the hot animal is a must. The most common mistake is for the  
18 wrangler to tie up the hot and lathered animal and head for the cook fire for coffee. In civilian pack outfits, many a  
19 supposedly experienced wrangler has been discharged for this one grave mistake. The best way to cool out a hot  
20 and lathered animal is to first unsaddle the animal. Using a currycomb and brush, ruff up the hair over the back  
21 area. If you have some gunnysacks available, rub him down. Above all, DO NOT grain the animal or allow him  
22 any water until he is dry and cooled out. It could very possibly kill the animal or at the least cause a bellyache or  
23 colic. Walking the animal will also keep him from stiffening up. If the animal was good enough to keep on the  
24 night horse picket, he deserves the best of care when his job is done.

25 Where in the camp area do you keep a night horse? The answer to this is on the best grass and water and as close  
26 as possible to the area you intend to sleep. A faint nicker from where the night horse is picketed may just be the  
27 first sign you get that the other animals are moving out. The old mountain men may have slept with their rifles, but  
28 you had best sleep with your bridle if you are the one responsible for the night horse.

### 29 **TRANSPORTING SICK AND WOUNDED PERSONNEL**

30 Every situation varies according to what equipment you have with you when confronted with an emergency. Look  
31 over the horses for what equipment is on them that can be used in your situation. There are many parts of saddles  
32 and gear strapped on them that can be pressed into service for other than what they were intended. This section is  
33 not meant to be an all-inclusive review of emergency procedures in the field. It is merely a brief look at things to  
34 consider and how you can make expedient use of what you have with you. By using your imagination and common  
35 sense and being observant of what you have to work with, you can devise almost any type splint, bandage, sling,  
36 stretcher, or rig slings for transportation with equipment not necessarily intended for that purpose but which is at  
37 hand.

38 Bear in mind that your use of any part of the equipment may hinder future plans to ride out for help or transport  
39 the victim. Most of the items of equipment mentioned can be unbuckled or unsnapped rather than cut. If you must  
40 cut off a strap, cut it close to a ring, buckle, or snap. This tip will possibly save you hours of needless repair later.

### 41 **Movement**

42 In most cases of back, neck, or any spinal injury, it is best not to transfer the victim any great distance using  
43 horses. There is a lot to take into consideration, such as do you have the victim on an emergency backboard? How  
44 far to the nearest medical help? In most cases where the victim will need to be transported only a short distance, a  
45 hand-held stretcher or travois pulled by a member of the team will be faster than rigging a horse for transportation.  
46 This way largely depends on how much help you have available. There are several things you must **NOT** do when  
47 transporting a victim with horses:

1

•

1 Anyone who has seen a wounded man draped across a saddle head down in motion pictures or TV had  
2 best try riding a horse this way before using this method to transport a sick or wounded person. The  
3 experiment will speak for itself.

- 4 • If the victim is inclined to pass out or is unsteady, do not let him ride by himself. Find out if the horse will  
5 ride double by sliding behind the saddle yourself, without the victim. If the horse will ride double, ride  
6 behind the victim and hold him in the saddle.
- 7 • With a seriously sick or wounded victim, do not, in your haste to get to help, trot or run the horse the  
8 victim is on. A slow, easy walk will get the victim to assistance in better condition.
- 9 • Do not at any time leave a horse unattended with a victim strapped or tied to the saddle. Maintain control  
10 of the horse's head at all times.

### 11 **Travois**

12 One of the simplest and fastest means of transporting a victim who cannot ride is a travois drawn behind one  
13 horse. This method requires getting a gentle horse used to pulling the travois before putting the victim on one for  
14 transportation. You can construct a stretcher with two long poles running through the stirrups on two riding  
15 saddles that are cinched on horses. Again, it takes the horses a little while to get used to this rigging. If you are  
16 alone with the victim and he is conscious, place the victim's head towards the horse and have him hold the reins. If  
17 this is not possible, tie the bridle reins to the poles, one on each side. This type emergency stretcher is good for  
18 rough country or long distance transportation. Most horses will tolerate the stretcher between them when they have  
19 a little time to become accustomed to the stretcher.

20 You can also stretch a large tarp or tent between two saddle horses that are side by side if you have a wide trail to  
21 travel. To rig your horses for this type stretcher, it is wise to tie the horses' tails together to keep them from turning  
22 apart at the rear. A small pole tied between the bridle bits will keep them together at the head end. Pull the tarp or  
23 tent completely over the saddle and tie to the outside of the saddle. Two small poles, either run through or laced to  
24 the tarp, will make a stretcher in a very short time. In most cases it is best to have the victim's head to the rear.  
25 Surprising as it may seem, this type stretcher rides very comfortably.

### 26 **Stretchers**

27 You can use gunnysacks, canvas panniers, raincoats or saddle slickers, pannier tarps, saddle pads and blankets to  
28 make a stretcher. In most pack outfits there are some gunnysacks used either to chink up a pannier or possibly to  
29 carry grain. By cutting two holes in the bottom corners of the sack and inserting two good poles, you have a first-  
30 class wilderness stretcher. Largely depending on what packhorses are present at the time, there is usually a set of  
31 deep canvas panniers. These canvas panniers have several emergency uses. You can make a stretcher with them, as  
32 with the gunnysacks. Another very important use is for lowering or raising an unconscious victim over such  
33 obstacles as a cliff or deep cut. You can cut two holes the size of the victim's legs in the bottom corners. Then slip  
34 the victim's legs through these two holes and pull up around his chest. Test the knots used in tying a rope to the  
35 pannier with your weight before trusting them on the injured victim. Raincoats, heavier coats, jackets, and saddle  
36 slickers also make a short distance stretcher by buttoning them up the front. Zippers are the best and most reliable.  
37 Two poles run through the inside of the garment and out the armholes make an emergency stretcher. Pannier tarps  
38 and large double saddle pads make an emergency stretcher as shown in the American Red Cross Manual.

### 39 **Splints**

40 You can use stirrup straps and fenders, pack pads, pannier tarps, pieces of wood, box panniers, and the bars out of  
41 packsaddles to make splints. There are many items of equipment and often items loaded on a packhorse that make  
42 an emergency splint. You can make a backboard by taking wood box panniers apart and either lashing or using the  
43 old nails in the box to nail or lash the flat boards to two small dry poles. The bars out of a packsaddle using the flat  
44 surface can also make a serviceable splint in a situation where other natural materials are not available. The stirrup  
45 straps and fenders out of a riding saddle are by far the best and simplest to obtain. You can unlace or unbuckle  
46 them and pull them out of the saddle without damaging the equipment. The stirrup straps and fenders from a



- 1 riding saddle are already formed to the legs, and by using both straps and fenders you can completely immobilize
- 2 the legs of a

1 victim. These work well also for the arms by using just one stirrup strap. Using several small poles lashed flat and  
2 then padded with pack pads can make a backboard. You can open a rifle scabbard either down the seam or lay it  
3 flat to make a splint.

4 **Straps for Lashing to Backboards**

5 Latigos, lash cinches, saddle cinches, breast collars, brichens, and bridle reins can all be pressed into service.  
6 There are many large heavy straps and cinches on a pack outfit or riding saddle. You can take off almost all of  
7 these very simply and make them serviceable for the bindings of splints or backboards. As mentioned before, you  
8 can take off most all of these items without cutting them and thus damaging the equipment unnecessarily.

9 **Small Straps to Bind Bandages and Splints**

10 Bridle reins, halter ropes, sling and lash ropes, saddle stirrups, and many of the straps on a pack saddle are useful  
11 as ties to hold things in place. There are many such straps on packsaddles and riding saddles. Bridle reins, for  
12 example, make a good long strap and in an emergency that requires your continuous using of the bridle, you can  
13 get by in most instances with one bridle rein. Almost all of the ropes, such as halter ropes and lash and sling ropes,  
14 can be unwound and one strand taken out while still leaving the rope serviceable. If small tight bindings are  
15 required, do not overlook tail and mane hair from the horses you have with you. Do not make the mistake of using  
16 yours or the victim's clothing to bind wounds and leave either of your bodies unprotected when there are so many  
17 other items available on your equipment. If you should consider leaving the victim and riding for assistance, your  
18 saddle pads laid on the ground under the victim would help in keeping him warm and dry. Often there are two  
19 pads on a horse and in an emergency you could possibly get by with just one.

20 **Direct Pressure in Severe Bleeding**

21 Severe bleeding is always an emergency. If you should find yourself faced with this situation and not have readily  
22 available dressings to stop the flow of blood, a very good item on your horse is the sheepskin lining on the  
23 underside of a saddle. A small pad of this sheepskin with a clean dressing between it and the wound will in most  
24 instances pass for many layers of other dressing. If you should have what is called a cool-back saddle pad, it also  
25 makes a good emergency compress for severe bleeding.

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## CHAPTER 8

### ORGANIZATION AND MOVEMENT

Certain combinations of adverse weather, thick vegetation, and harsh terrain deny the use of wheeled or tracked vehicles in either a combat or logistics role. Mountainous terrain often restricts operations to those conducted by foot infantry. Heavily wooded areas, especially when associated with steep grades, have the same effect. In lowlands, swamps, jungle-like vegetation, and certain types of cultivation may restrict the use of vehicles. Weather, in combination with unfavorable terrain, may also deny or greatly restrict the use of aircraft in a combat or logistics role. In such situations, the commander that can move his troops, weapons, supplies, and equipment with the greatest speed and facility has a distinct advantage. Properly organizing, training, and equipping a combat pack animal detachment can give a commander this advantage.

#### ORGANIZATION

The pack animal detachment is usually the smallest fighting element. It can be a section, squad, or team of 10 to 20 individuals. The number of animals required to support these elements depends upon both the TO&E and mission requirements.

The commander may task organize the detachment squads or sections according to needs and requirements. For example, an 81-mm mortar section would not need as many individuals and animals to transport the system as a 107-mm mortar section. The mission will also have an impact on the size of the section; a raid with an 81-mm section will use fewer animals than sustained operations would employ using the same weapons system. The squad or section requirements may vary from as few as five animals to as many as ten to twelve.

Other factors bearing on the organization of a pack detachment are load weight and the size of the items to be carried. The greater the total weight of the load, the more animals you will need to carry it. If the items are large, even though they may be lightweight, it will take more animals.

#### DUTIES AND RESPONSIBILITIES

A pack animal detachment has unique duties and responsibilities. Most of these are leadership-related and some are skills common to all.

The **train commander** is the commissioned officer or senior noncommissioned officer assigned responsibility for the pack train. He oversees the training, operation, and administration of the unit.

The **packmaster** should be the platoon or team sergeant and the most knowledgeable about packing. He provides for the presence, care, and maintenance of all pack equipment and the animals in the unit. He rides the entire column to check all loads and to observe the condition of the individuals and animals. His specific duties include—

- Training personnel in the proper methods of packing to include saddling, adjusting equipment, balancing loads and tying of standard hitches.
- Training personnel in the proper care of animals and maintenance of pack equipment.
- Ensuring maximum unit effectiveness through daily inspection of pack animals for injury.
- Supervising packing, conduct of the march, maintenance of animals and equipment, and discipline of the soldiers.
- Inspecting loads and making sure the animals on the march are not injured by shifting loads or saddles, ensuring prompt correction of deficiencies.
- Inspecting and directing prompt repair of pack saddlery.

1 The **cargadores**, usually squad or section leaders, assist the packmaster in all his duties and are qualified to  
2 perform the duties of the packmaster in his absence. In addition, cargadores must be able to make all repairs  
3 normally made by the unit saddler. Their specific duties are to—

- 4 • Assign a load to each pack animal, ensuring the loads are balanced.
- 5 • Assign pack equipment, loads, and animals to the packers.
- 6 • Maintain order and discipline among the packers and ensure quiet and gentle treatment of the animals.
- 7 • Select areas for cargo piles and rig line in bivouac.
- 8 • Ensure proper care of pack equipment.
- 9 • Keep a memorandum of all cargo and equipment under his care, marking and tagging it if necessary.

10 The **packers** must train and care for both pack and riding animals. In the field, their duties include the  
11 maintenance, adjustment, and use of pack and riding saddlery and associated equipment. In addition, they prepare  
12 the cargo for packing and sling and lash loads using a variety of hitches. All detachment personnel should be  
13 packer qualified.

#### 14 **MOVEMENT PROCEDURES**

15 The pack detachment should begin movement soon after the pack animals are loaded. Packers mount their riding  
16 animals. Two detailed riders move ahead of the train to contain any animals that are out of control. The  
17 detachment moves out in the march order directed by the commander in pack strings of no more than five animals.  
18 One rider leads each string and another follows it. You should always lead the strings from the on-side of the pack  
19 animals (the string will be on the rider's off-side). Normally the detachment moves in file with the riders keeping  
20 the pack strings closed up to ensure communication between strings and to maintain column integrity. Keep in  
21 mind, however, that terrain and probability of enemy contact from ground or air dictates the distance between  
22 strings or squads. When moving during hours of limited visibility, you should keep the column close to facilitate  
23 control. Troops riding on the flanks and rear of the strings make frequent counts of the animals to ensure against  
24 strays. Make halts as necessary to inspect and adjust loads and saddles. The commander, packmaster, and  
25 cargadores make frequent inspections of the detachment en route, whether moving during daylight or at night.

#### 26 **Stream Crossing at Fords**

27 Pack units will frequently come across streams or bodies of water where no bridges exist. Although horses and  
28 mules can ford fairly deep water and are generally good swimmers, the crossing of even fordable water requires  
29 care and good judgment. Unit training must include accepted methods and techniques of stream crossing. Units  
30 should conduct ford reconnaissance before attempting to cross with a loaded pack unit. The load makes the animal  
31 somewhat top-heavy. Try to cross streams with the animals moving against the current (upstream). The loads in  
32 combination with swift current, water deep enough to bear against the animal's body, and poor footing may cause  
33 the animal to lose its balance, fall and drown. Under such circumstances, you should unload the animals and either  
34 lead or herd them across the stream. You can ferry loads across in the same manner as described in the following  
35 paragraph.

#### 36 **Crossing Unfordable Water**

37 It is impractical to swim animals with loads and pack saddles. Though the animal might be physically capable of  
38 swimming under the load, it upsets the animal's natural balance. When the pack unit must cross unfordable water  
39 with nothing but its organic equipment, be sure to unload the pack animals as close to the water's edge as possible.  
40 Loosen the breeching and secure it on top of the saddle. Also secure any loose latigo ends. You may or may not  
41 need to unsaddle the riding animals. Selected personnel swimming their riding animals, herd or lead the pack  
42 animals to the far shore and secure them while others prepare a one-rope bridge and hauling system. You should  
43 pull the equipment load by load to the far shore. If the crossing is too wide for a one-rope bridge, you can build  
44 poncho rafts to ferry the equipment.

1 Operating the pack animal detachment with individually led animals is considered uneconomical in terms of  
2 personnel. However, there are certain circumstances under which other factors are more important. Members of the  
3 weapons crews lead the animals that are assigned to combat units for the transport of heavy weapons and  
4 accompanying ammunition. Animals used in proximity to known hostile action areas are usually led individually  
5 to take advantage of all available cover and concealment. Evacuating casualties to aid-stations by animal transport  
6 also requires this method of operation to ensure the easiest ride for the casualty as well as to take maximum  
7 advantage of existing cover and concealment. Although training time for this operation may be reduced, the  
8 following elements of training and operation need to be remembered:

- 9 • Train personnel to pack both lashed and hanger loads. Although the animal will normally proceed at a  
10 walk, with the rate of march seldom exceeding 3 1/2 miles per hour, make sure the loads are balanced and  
11 securely tied.
- 12 • Ensure the pack driver (person leading the animal) only exerts sufficient control over the led animal to  
13 maintain his position on the trail or in the column. He should not interfere with the animal's freedom of  
14 movement or balance. A clumsy driver can cause a loaded animal to fall.
- 15 • Train the driver to lead the animals from the on-side. He should guide the animal with his right hand  
16 grasping the lead rope with the remainder of the lead rope in the left hand. He should give the animal  
17 enough slack so that there is room enough for the animal to walk without stepping on him. If there is  
18 noise, danger, or confusion on the off-side, the driver may reverse his position to offer some protection to  
19 the animal and quiet it.
- 20 • Train personnel to regulate the speed of the animal by the gentle, but effective, use of the lead rope. In  
21 column, always maintain the prescribed interval to prevent accordion action and undue fatigue in the rear  
22 elements.
- 23 • Teach the driver to counter the tendency of the animal to trot down slopes or jump over obstacles so he  
24 can maintain the normal rate of march and prevent displacement of the load.
- 25 • When leading an animal up steep slopes or over very rugged terrain, make sure the driver precedes the  
26 animal with about 3 feet of loose lead rope so that the animal may pick his footing. If the terrain is very  
27 rough or steep and he falls behind, it may be best to drop the lead rope and let the animal go. He can then  
28 catch the animal after the obstacle is passed.

#### CAUTION

30 **UNDER NO CIRCUMSTANCES WILL PERSONNEL HOLD THE SADDLE BREECHING OR THE**  
31 **ANIMAL'S TAIL TO ASSIST THEM IN CLIMBING.**

#### BIVOUAC

33 The pack animal unit should select its camps based on the results of both map and ground reconnaissance, if  
34 feasible. The selection depends on the requirements for the safety, health, and comfort of individuals and animals  
35 and the operational plans of the unit. In hostile environments, concealment from air or ground observation and as  
36 much cover as possible are essential. The first consideration is always security, but unless you are packing with you  
37 all the feed the pack and saddle animals will need, the next concern should be grass and water for the stock. It is a  
38 grave mistake to sacrifice grass, water, wood, and shelter for anything but security considerations. In selecting the  
39 grass, make sure it is grass that the stock will feed on all night. Just because a meadow looks green does not mean  
40 it has plenty of grass in it; ride out and look. Often in high alpine meadows, most of the vegetation consists of  
41 flowers and weeds that a horse will not eat. Should you be unfortunate enough to camp in such a meadow, your  
42 stock will be weakened from lack of grass the next day on the trail. It is very irritating to ride or be leading an  
43 animal that insists on trying to graze as you go down the trail. After security, your next concern should always be  
44 the care of the animals. Reconnaissance personnel should next look for the best footing for animals available in the

- 1 area. Picket lines, night lines or, in more secure and extended situations, temporary corrals, should offer level
- 2 standing and good

1 drainage with little possibility of flooding in sudden rains. Make sure the selected area is large enough to provide  
2 adequate dispersion and is free from briars, debris, and poisonous plants. An area convenient to the route of march  
3 offers additional operational advantages.

4 Upon arrival in camp, the pack train conducts the following procedures:

- 5 • The detachment or train commander, accompanied by selected personnel, precedes the train into camp  
6 and selects areas for the rigging line, night line, and the cargo so that the animals and equipment will be  
7 arranged systematically and readily available night or day.
- 8 • Select personnel designate the cooking and sleeping areas, keeping in mind that they will always be  
9 located upstream from the animals.
- 10 • Upon arrival of the train, all personnel except for the “wranglers” dismount, secure their riding animals,  
11 unload the cargo and “slack off” cinches. Personnel unpack all animals before the first is unsaddled. They  
12 coil the lash and sling ropes. The wranglers remain mounted and ready to stop any animals that try to bolt  
13 from the camp.
- 14 • Personnel secure the animals as they are unloaded.
- 15 • When all loads are removed, the train commander gives the command to unsaddle.
- 16 • If conditions are favorable, handlers turn the animals out to graze or picket so they may roll and relax. If  
17 not, the animals stay on the night line while personnel clean the equipment and improve the site.
- 18 • Forty-five minutes after arrival, handlers feed the animals. One hour later, they water them. Personnel  
19 then prepare their equipment for the next day’s movement.

20





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## CHAPTER 9

### TACTICAL CONSIDERATIONS

1  
2  
3 A pack animal detachment during movement, regardless of its combat mission once it reaches its destination, is for  
4 all intent and purposes a logistical transportation element. This fact alone severely limits the detachment's tactical  
5 capabilities. Even though the detachment may be considered a highly mobile unit, the presence of pack animals  
6 precludes the capability of maneuver.

7 The mission of the detachment while moving is the safeguard and delivery of the cargo to its destination, not to  
8 stand and fight. This point is not to say that all is lost tactically while moving, it just means that compensation has  
9 to be made for the lack of maneuver and concentrated fires.

### SECURITY

10  
11 The pack detachment configured for movement forms into pack strings and usually in column formation. This  
12 alignment presents a long, linear target for the enemy. The troops are dispersed, making it difficult to bring  
13 concentrated, effective fire to bear upon enemy contact. The diligent use of scouts and outriders for flank security,  
14 along with extreme caution, are needed to a greater extent than for dismounted troops to make up for maneuver  
15 limitations.

16 Two factors figure in not using overwatch formations. First is terrain. The primary reason for using pack animals  
17 is difficult terrain. That necessitates using column formations. Second, the act of bounding requires one element to  
18 remain static. Animals that are loaded, strung together, and not moving are an accident waiting to happen.

19 **Crossing at Linear Danger Areas (roads, trails, streams).** When the scouts reach a danger area, they conduct a  
20 thorough reconnaissance for the best possible crossing point and attempt to reach the far side. Once they establish  
21 far-side security, the scout leader returns to the column to lead it to the crossing point. Once the column arrives at  
22 the crossing point, the lead personnel take up far-side security and free the scouts to continue their mission.

23 **Crossing Open or Large Danger Areas.** Commanders consider large open areas as dangerous and their use must  
24 be negotiated accordingly. The scouts should provide as much information about the area to the commander as  
25 possible. With this information, the commander decides how best to negotiate the obstacle. Bypassing the area is by  
26 far the best method but not always practical. However, in arriving at a decision about movement, the leader must  
27 always consider the METT-TC.

28 Whether during long or short halts, lead personnel establish and maintain security using the same procedures as a  
29 dismounted combat unit. The difference is the terrain to be defended and whether the animals will be in or out of  
30 the perimeter.

- 31
- 32 • Animals kept on a night line within the perimeter may offer a reduction to security personnel but unique  
33 problems can arise if the position is attacked. Casualties may arise from animals becoming frightened and  
breaking loose or stampeding.
  - 34 • Animals kept on picket lines outside of the perimeter require listening posts or observation posts placed at a  
35 greater distance. During an attack on the detachment these animals are susceptible to both enemy and friendly  
36 fire. The chances are good that a large percentage of the animals will either flee or be wounded.

### COVER AND CONCEALMENT

37  
38 The pack detachment must continuously consider concealment options during movement. Admittedly, it is next to  
39 impossible to conceal the evidence (animal waste, vegetation, devastation, and tracks) that a pack unit has moved  
40 through an area. However, you can take the following precautions to avoid being observed while on the move.

- 41
- Avoid skylining.

- 1 •

1 Stay well within the tree line (if any).

- 2 • Contour the terrain.
- 3 • Camouflage the loads.
- 4 • Avoid open areas, if possible, or cross them quickly.

5 During extended halts (when loads are unsaddled), use the proper camouflage. Cover for the animals, while  
6 desirable, may not be possible or practical. Remember to consider animal noise, both vocal and movement. Also  
7 address the odors associated with animals. There are no clear-cut solutions to the problems of concealment. Use a  
8 common-sense approach.

- 9 • Use as much natural cover and foliage as possible.
- 10 • Use camouflage nets.
- 11 • Apply proper field sanitation techniques, to include keeping animal waste policed.
- 12 • Control animal noise as much as possible. If the animals' vocal cords have not been cut, keep the animals  
13 quiet by maintaining a relaxed atmosphere.

#### 14 ACTIONS ON CONTACT

15 As previously mentioned, a pack detachment organized for movement is not a maneuver unit and therefore must  
16 act accordingly when contact is made.

17 When **ambushed**, those elements caught in the kill zone escape in any feasible direction as fast as possible.  
18 Forward elements, not in the kill zone, move in the direction of march as fast as possible. Those in the rear should  
19 move in the direction away from the kill zone, quickly but cautiously. All elements should make every effort to link  
20 up at a preplanned rally point. Elements not under direct fire should make all attempts to maintain, control, and  
21 safeguard the animals.

22 Actions under **indirect fire** are handled in much the same way as an ambush. It may not be necessary to move to a  
23 rally point. The unit may stay out of harm's way until the barrage has been lifted and then continue in the direction  
24 of march. The commander states the actions for these events and incorporates them in the unit's SOP before  
25 movement.

26 The key to surviving an **air attack** is dispersion and continuous movement. The pack detachment always accounts  
27 for personnel, weapons, and equipment *after* it moves to the designated rally point, establishes security, and re-  
28 establishes the chain of command.

29 **COMMON SENSE, PREPARATION, AND GOOD PLANNING ARE THE KEYS TO SURVIVING**  
30 **AS A PACK DETACHMENT IN A HOSTILE ENVIRONMENT.**



## GLOSSARY

### SECTION I: ABBREVIATIONS AND ACRONYMS

ARSOF	Army Special Operations Forces
CNS	central nervous system
EIA	equine infectious anemia
I&D	incise and drain
LAW	light antitank weapon
LCE	load-carrying equipment
METT-TC	mission, enemy, terrain, troops, time available, and civilians
SO	special operations
TOE	table of organization and equipment
U.S.	United States
USAJFKSWCS	United States Army John F. Kennedy Special Warfare Center and School
UW	unconventional warfare
VEE	Venezuelan Equine Encephalomyelitis

### SECTION II: DEFINITIONS

**ethanasia**—The act or practice of killing or permitting the death of hopelessly sick or injured individuals (persons or animals) in a relatively painless way for reasons of mercy.

**farrier**—A person who shoes horses.

**general support**—Support that is given to the supported force as a whole and not to any particular subdivision thereof. (FM 101-5-1)

**manta**—A piece of canvas, from 6' x 6' up to 10' x 12', used to throw over the load as a cover to protect it. Gear will stay drier if you waterproof the manta.

**operational continuum**—The general states of peace, conflict, and war within which various types of military operations are conducted.

**operations other than war**—Military activities during peace and conflict that do not necessarily involve armed clashes between two organized forces.

**pannier**—A large container or basket often carried on the back of an animal.

**travois**—A simple vehicle drawn behind one horse that consists of two trailing poles serving as shafts and bearing a platform or net for the load or person.

**withers**—The ridge between the shoulder bones of a horse.



## REFERENCES

**SOURCES USED:** The following publications were used to compile information for the publication.

### Field Manuals

- 21-76            *Survival*, June 1992.  
 25-5            *Training for Mobilization and War*, January 1985.  
 41-10           *Civil Affairs Operations*, January 1993.  
 55-15           *Transportation Reference Data*, October 1997.  
 100-1           *The Army*, June 1994.  
 100-20          *Military Operations in Low Intensity Conflict*, December 1990.

**DOCUMENTS NEEDED:** These publications must be available to the intended users of the publications.

### Army Regulation

- 40-905           *Veterinary Health Services*, August 1994.

**RECOMMENDED READINGS:** These readings contain relevant supplemental information.

### Books

- Animal Management*, London: His Majesty's Stationary Office, 1923.  
*Animal Management*, London: His Majesty's Stationary Office, 1933.  
*Manual of Horsemanship, Equitation and Animal Transport*, London: His Majesty's Stationary Office, 1937.  
 Brellis, Dean, and Peers, William R., *Behind the Burma Road*, Atlantic-Little, Brown and Company, 1963.  
*Cavalry Combat*, The Cavalry School, U.S. Army, Norristown: Telegraph Press, 1937.  
 Daly, H.W., *Manual of Pack Transportation*, 1917.  
*Encyclopedia Americana*, No. 17, Chicago: Encyclopedia Americana, Inc., 1963.  
*Encyclopedia Britannica*, No.22 and No. 8, New York: Encyclopedia Britannica, Inc., 1963.  
 LTC Green, *The Guerrilla and How to Fight Him*, New York, Frederick and Praeger, Inc., 1962.  
*History for 1943 Veterinary Service in North Africa and Mediterranean Theater of Operations*, USAMEDS Historical Unit, Office of Surgeon General, Washington, D.C.  
 Osanka, Franklin March, Editor, *Modern Guerrilla Warfare*, New York: The Macmillan Company, 1962.  
 Parrino, Michael F., *Pack Transport and Pack Artillery*, New York: The Queensland Publishing Company, New York, New York, 1956.  
 Randolph, John, *Marsmen in Burma*, Houston: Gulf Publishing Company, 1946.  
*United States Army in World War II, China-Burma-India Theater Stilwell's Command Problems*, Office of the Chief of Military History, Department of the Army, Washington, D.C., 1956.  
*U.S. Fifth Army History*, 07 Oct-15 Nov, Part II, AVolturno to the Winter Line.

**Periodicals**

*Army*, "Where the Troops Are," LTC Rathburn, Frank F., March 1964: 39.

*Army*, "A Bray for the Army Mule," CPT Gaspard, Gearge L, USA, March 1964: 70.

*The Marine Corps Gazette*, "Guerilla Warfare in China," Griffith, James B., June 1951: 20.

*The New York Times*, "Mules in India," New York, New York, 07 June 1964.

*The Army Times*, "No Plans for those Mules, Long Ear Type," 25 March 1964: 3.

**Programs of Instruction**

*Animal Management Transportation*, USAJFKSWCS, Fort Bragg, N.C., May 1964.

*Employment of Pack Animals*, Basic School, Marine Corps School, Quantico, VA., November 1961.

*Officers Animal Transport Course*, HQ RASC Training Centre, Malaysia, April 1963.

*Drivers Horse Transport*, HQ RASC Training Centre, Malaysia, January 1964.