

## Maintenance of Ropes and Leather Animal Handling Equipment

Our topics for this week are:

- How to stabilize the ends of ropes
- Cleaning and storing ropes
- Factors affecting leather quality and care
- Safety in handling ropes

### EQUIPMENT MAINTENANCE

#### Stabilizing the Ends of Ropes

The ends of ropes will fray or unravel if not fixated. An *stopper knot*, such as an overhand, figure 8, or blood knot (a multiple wrapped overhand knot) can prevent unraveling and create a knob at the end of a rope. A stopper knot can be valuable to reduce the chance of the rope being pulled and running through a handler's grip. However, an end knot can be an impediment to tying other knots or hitches.

Unraveling the end of a twisted rope a short distance allows the strands to be interwoven back (back spliced) on the rope end to form a *crown knot*. A crown knot doubles the diameter of the rope but does not create an obstructive "knob" to the same degree as an overhand or figure 8 knot.

To create smooth ends on a twisted rope, rope ends may be whipped, dipped, back spliced, or melted (if synthetic). Wrapping a section of rope with electricians' or duct tape, then cutting through the tape and rope together with a sharp knife, prevents the ends from unraveling until a more permanent means of fixating the ends is applied. The ends of twisted ropes can be wrapped (*whipped*) with string hiding the ends of the string underneath the wrapping. Natural fiber string should be used to whip natural fiber ropes and synthetic string used to whip synthetic ropes.

Nylon and polypropylene twisted, plaited, or braided ropes can be burned on the end to melt the fibers together by open-flame or hot-irons or hot-plates. If not melted evenly and carefully, rough or sharp strands may develop and be dangerous to the handler's hands.

Some twisted ropes are prevented from unraveling by bending a band or ring of metal, a ferrule, around the end. Ferruled ropes should not be used for animal restraint due to risks to the animal or handler from the metal developing sharp edges. Dipping rope ends into lacquers and similar liquids that dry into a hard encasement also produces a surface that can be hazardous. Dipped end ropes should also not be used for animal restraint.

#### Storing Ropes

Ropes not in use should be stored properly. Softer, twisted ropes are coiled, the coil is collapsed and tied. This is called *hanking* a rope. Hanked ropes prevent tangling when releasing the coil.

Lariats are stiff and need to maintain their curve. These are coiled and stored as circular coils, not hanked. Ropes with strands twisted to the right (Z-twisted) need to be coiled in a clockwise direction. Valuable lariats are stored in rope cans.

Ropes cannot be sanitized, but they should be rinsed thoroughly after use, dried with a towel, and stretched out to dry before being hanked or coiled.

When hung up for storage, ropes and leather restraints should never be hung over a thin peg or nail which causes a sharp bend and weakens the fibers. When hanging hanked ropes, the rope should be hung over a tack knob, a 2 to 4 inch diameter hanger.

### **Leather Quality and Care**

Leather is tanned animal skin. Most leather in the U.S. comes from cattle hide. Thick, strong leather for safe tack comes from select steers, not heifers, and is vegetable tanned.

Tanning makes leather more durable, pliable, and resistant to wear and rot. The most common methods of tanning are vegetable tanning and chrome tanning. Vegetable tanning produces leather that is non-corrosive to metal, non-irritating to the skin, can be carved or molded, and is strong, if thick. Vegetable tanning is used for saddle and other tack construction. The Hermann Oak Leather Company, founded in 1881, in St. Louis, Missouri is the leading vegetable tanned leather manufacturer in the U.S. Hermann Oak Leather Co. tans only steer hides.

Chrome tanning is less time-consuming and less expensive than vegetable tanning and more commonly used. It produces leather that is soft, pliable, and strong when thin. It is often used for making leather clothes. Most chrome tanning is now done in Mexico and Argentina.

Well-tanned quality leather can last generations if treated properly. It should not be constantly stretched, repeatedly soaked with water, nor allowed to dry out. Leather can be shaped by wetting it to create the desired shape, but must be dried slowly with gentle ventilation. It should not be heated during the drying process.

Leather should be moisturized 1 to 4 times per year with oil, usually a variable combination of lanolin or neatsfoot oil, mink oil, cedar oil, beeswax, and a petroleum-based solvent, and then beeswax is added to the surface. This lubricates the internal fibers and inhibits drying and becoming brittle. The frequency should be more often if exposed to moisture, drying, or dust.

Leather should be cleaned with a damp cloth as often as needed based on its use. Abrasion can wear the external surface of leather and small particles of grit ground into the leather can abrade internal fibers.

Leather should never be stored in a plastic bag where it would likely mold. Exposure to extreme heat and very low or high humidity should be avoided. Exposure to air and gentle ventilation reduces the risk of mildew. Leather should not needlessly be exposed to sunlight. It should be stored in shade or indoors when not in use.

### **Cleaning Ropes**

Animal handling ropes cannot be sanitized, but with basic cleanliness, the same rope may be used on multiple healthy appearing animals with little risk of transmitting disease. Keeping ropes clean can not only reduce the risk of transmitting disease but can also remove sand and other abrasives or chemicals that can break down the fibers of rope.

Urine, manure, and saliva should be rinsed from natural fiber ropes with just water. The uncoiled damp rope should be laid over hay bales or tied between two objects to dry on all sides of the rope before recoiling or hanking. Synthetic fiber ropes can be washed with water and a mild soap, and then thoroughly rinsed. Synthetic fiber ropes should be air dried uncoiled as with

natural fiber ropes before they are coiled for storage.

## **EQUIPMENT SAFETY**

Any time ropes are used to handle or restrain large animals, the handler should never allow a rope attached to the animal to become wound around the his hand, arm, or leg. When tying an animal by a halter, if the tail of the lead rope is long enough to be a hazard, a ***daisy chain*** (chain sinnet, monkey braid) can be tied to shorten the length of the lead rope. Daisy chains are formed with a series of loops and bights.

All handling equipment should be reinspected for weaknesses that might cause breakage before each use. When using a hitch, the object tied to should be strong enough to withstand an animal pulling against it with all its force. Lead snaps are often die-cast, created in molds that permit air to be entrapped in the metal, often zinc, and make it weak. Steel or iron snaps are more reliable.

A sharp knife should always be carried by animal handlers who use ropes to free entangled animals, an assistant, or the handler. In addition, quick release hitches can be pulled tight enough by a horse that the hitch cannot be untied. The knife should be retrievable by one hand and either a fixed blade in a scabbard or an assisted opening folding knife with a cord that extends from the handler's pocket for quick retrieval, in case one of the handler's arms is entrapped by a rope. The blade should have a partially serrated edge for cutting thick ropes.

Now, let's recap the key points to remember from today's episode:

- **Animal handling ropes should be kept clean and properly coiled or hanked**
- **Leather handling equipment should be vegetable tanned, kept clean, and routinely oiled with an animal-origin oil**
- **The weakest point in good quality leather equipment is often metal snaps and buckles**

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is available at [www.betteranimalhandling.com](http://www.betteranimalhandling.com)

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.