

from the book *Buckskin: The Ancient Art of Braintanning*
by Steven Edholm and Tamara Wilder
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SOME OTHER USES OF THE DEER: SINEW, GLUE, TALLOW, HOOVES, & HOCKSKINS

Buckskin is just one of a bewildering array of practical items that the deer's body can offer. There are a truly staggering number of specific uses for deer parts, which range from everyday and specialized tools to personal adornment and art. There was a time not long ago when animals provided many essential materials of everyday life for everybody. Following are discussions of a few uses for deer parts which are not widely put to use anymore.

SINEW

Sinews, or tendons, are fibrous bands and cords which connect muscles to bones and allow the energy exerted by muscles to effect movement. To do this work, they must be very strong.

When dried and then shredded, sinew has many uses. When wet, sinew fiber is very malleable and can be wrapped around objects to which it will mould completely, making a very intimate fit. Upon drying, the sinew shrinks and takes on a horny, rawhide-like character. The strength, moldability, and character of the dried material makes sinew very valuable to the basic technologist.

When dried and shredded into its individual fibers, sinew can be plied into a very strong string. It has often been used for making bowstrings and can also be used to make a fine sewing thread. There are other uses for sinew which be described here. We will, however, describe the making of sinew thread, since it has a use in the context of this book: for sewing up holes in buckskin.

WHY PRIMITIVE TECHNOLOGY?

Some of us like to keep up on the old ways of doing things, not just because we're nostalgic (although most of us are), but because there is some practical value in knowing the history of technology; hunter/gatherer technology is the base line for human/technological development. We see the benefits of studying basic technologies as follows:

- An increased awareness of where our modern tools and products came from and where they're taking us.
- An increased appreciation for, and mistrust of, modern technology.
- An increased awareness of how technology has shaped our evolution and still shapes our lives from cradle to grave.
- A sense of the possibilities for self-reliance, as well as the importance of reliance on others.
- Increased possibilities for survival, in the case that the current economic and trade structures should cease or become inaccessible.
- An increased appreciation of, and feeling for, who plants, animals, and minerals really are, especially on a gross physical level.
- Practical application in modern life: such things as gluing articles back together or making a specialized tool out of natural materials, chosen for some specific functional trait which you know because you've dealt with that material before.
- A better sense of how the world works.
- An increased awareness of your own mortality as well as the preciousness and/or cheapness of life.
- And it's fun.

We find it interesting that many people think of pre-metal technology and living skills as inaccessible and mysterious. There has, somehow, been a kind of ancient mystique attached to a lot of this stuff. It's not uncommon for people to express great surprise that we can actually make say a stone tool or a fire by friction. These are basic (basic doesn't mean easy) skills that your ancestors used to survive. If they did it, so can you.

Sinew thread is best made from the tendons which lie on the back of the deer and are most commonly known as *backstrap sinews*. They are located on top of a piece of meat called the backstrap or sirloin. If you check your own back, you will feel two long muscles, one running up either side of your spine. These are sirloins, and each one has a flat band of sinew on its outside surface.



Removing backstrap sinew with a dull tool,

You cannot see the backstrap sinew on a skinned deer until you cut away the meat and membrane under which it is hiding. Make a shallow slit the full length of the spine and just barely to one side of it. This cut should allow you to peel back a thin layer of meat and tissue, exposing the tendon. It looks like a band of wet, shiny, bluish, whitish threads, lying on top of the meat. If it is simply filleted off, much meat will have to be scraped from the tendon and wasted. Well, you could scrape it off and eat it, but a much better method is to remove the tendon by working it off of the muscle with a dull knife, back of a knife, or other dull edge. Use your dull tool to slide right under the full width of the tendon and, then, to pull and scrape it free of the meat. The idea is to leave as little meat on the tendon as

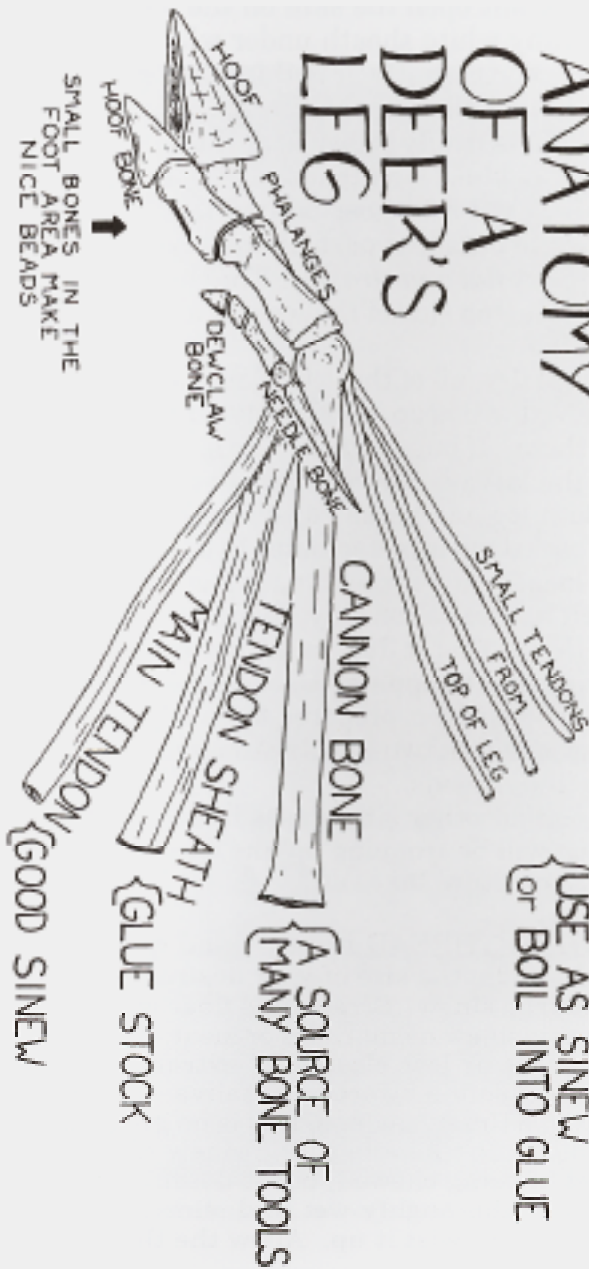
possible. Scrape the tendons free of the meat all the way to the butt, until you can go no further. Then, go the other way, up to the shoulder. When you get well up into the shoulder, the tendon will pull out cleanly. The butt end must then be cut off, since it is more solidly attached. Scrape the tendon free of meat and lay it out flat to dry (safely away from roaming pets: yours and others'.)



Cleaning backstrap sinew by scraping.

The other very useful tendons are in the lower legs: one large one in each leg, as well as several smaller ones if you care to extract them too. The tendons in the back legs are larger and longer than those in the front. These lower legs can often be acquired from butchers or hunters for free. There is no meat in this part of the deer, just a lot of potential hardware for the primitive technologist. Here is a partial list of possibly useful or decorative items that can be made from this small section of the deer's anatomy: fish hooks, awls, string, glue, rattles, beads, thong, rawhide, projectile points, various other bone tools, and marrow oil for oiling wood, leather, and bone.

ANATOMY OF A DEER'S LEG



THERE ARE MANY USEFUL ITEMS IN THE LOWER LEGS OF DEER.

THIS IS A FRONT LEG, BUT THE REAR LEGS ARE MOSTLY THE SAME—EXCEPT THAT THEY LACK THE NEEDLE BONE, ARE SOMEWHAT LONGER, AND HAVE LONGER, FATTER TENDONS.

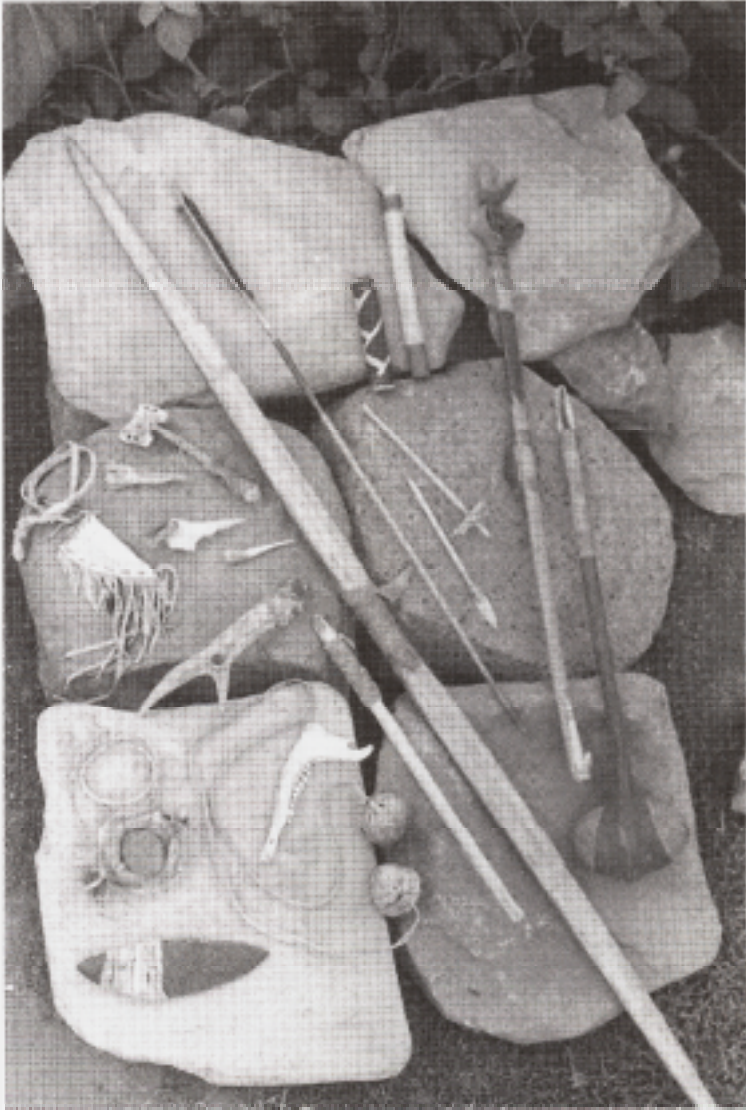
The largest tendon is located on the back of the leg. To extract it, slit open the skin on the backside of the leg to expose the shiny white sheath under which the sinew lies. Slice this sheath open (gently, it is thin), and pull out the tendon. It will pull free at the top end (if the leg is already cut off of the animal) but is firmly attached at the foot end and must be cut free. At the foot end, the tendon splits into a Y. Leg sinew will not easily shred into fiber beyond this point; so, we don't usually bother to pursue it past where it begins to split. Lay the sinew out to **dry flat and straight. The** sheath and small tendons which lie on the top side of the leg can all be dried, to be used in making glue.

Once dry, all of these tendon and sheath things which you've removed will keep indefinitely, unless they become wet or pests get them. If bugs attack your sinew, freeze the dry tendons to kill the larvae. Strong sunlight can also deter them.

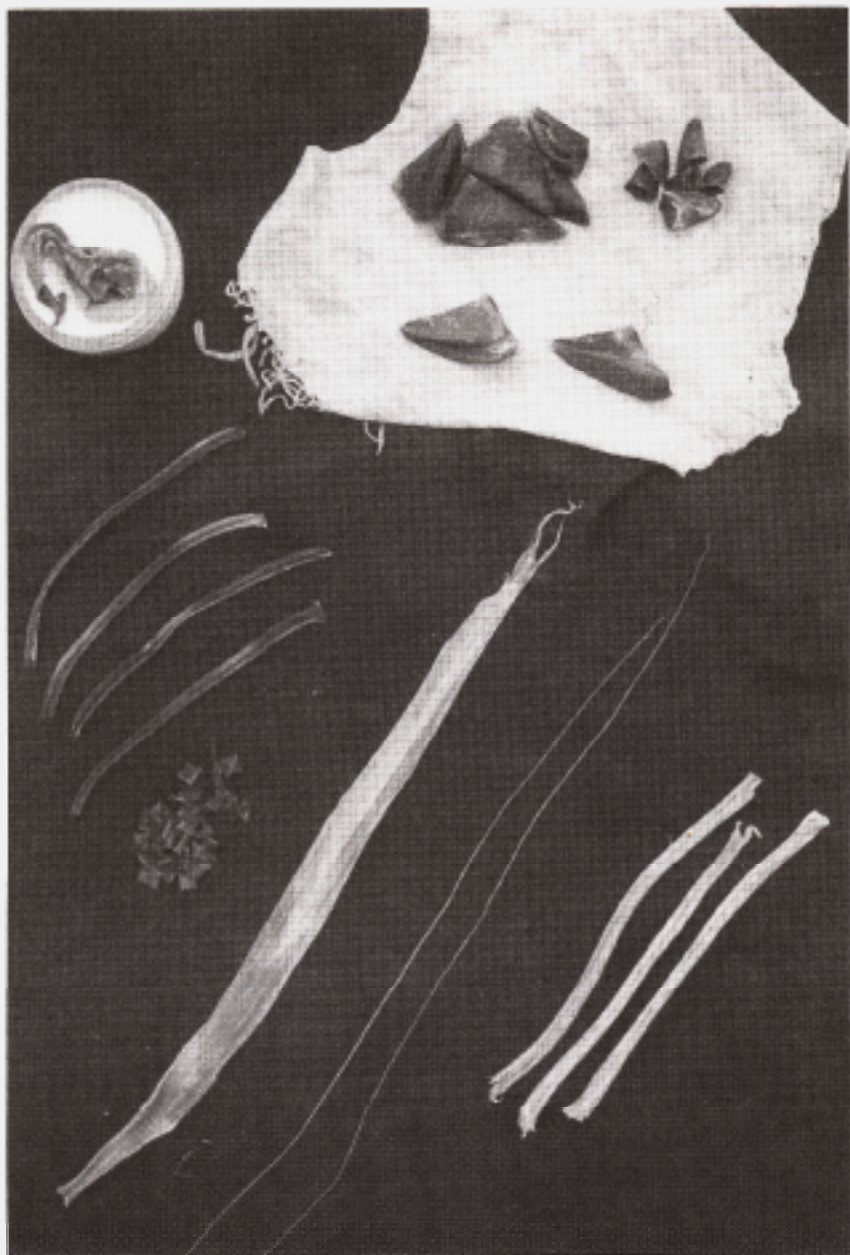
Both leg and backstrap sinew have the same potential uses, but backstrap is better suited to most of them because its threads are longer, more cohesive, and easier to process. Backstrap is much harder to come by, though, and so, it is best reserved for the things that it does **much** better than leg sinew: namely, for sewing and wrapping. Use leg sinew for bowbacking and cordage. Leg sinew is prepared for use by lightly pounding the dried sinew between two smooth stones and, then, splitting it by hand into fine threads.

Look for other sinew uses in books on primitive technology, which will be cropping up like daisies as the primitive technology subculture takes off.

SEWING THREAD is easily and quickly made. Strip/split a fiber bundle the size of your desired thread from a dry strip of backstrap sinew. Scrape this fiber with a thumbnail to remove any non-sinew membranes or meat. When you are satisfied that it is more or less cleaned of extraneous tissue, put it in your mouth to soften by action of saliva. (If the sinew has been dealt with in a timely fashion, this is no grosser than eating jerky. If you just can't handle it, the sinew can be soaked in water, instead of being chewed, but it doesn't work as well.) When the sinew is thoroughly wet and slimy, roll it on your leg in one direction to twist it up. Allow the thread to dry twisted before using it.



A variety of tools, toys, and weapons, all of which use some deer part(s) or product(s).



Deer products. (clockwise from top left) rendered deer tallow, hooves and dewclaws, dried leg sinew, sinew threads, strip of dried backstrap sinew, and hide glue squares and strips.

MAKING ANIMAL GLUE

Glue made from certain types of animal protein is quite strong and, until very recently (before the advent of the chemical/convenience age), was the standard for most gluing purposes. When well made, it is remarkably strong, with a wide variety of applications: mostly as a glue, sizing, or varnish. The major downfall of animal glue is that it is water soluble. No big deal, you just don't get the glued item wet. One more downfall of animal glue is that it takes a little planning to use, as it cannot be stored in a wet ready-to-use state, unless adulterated with preservative solutions.

Animal glue can be used as a base liquor for paints (and/or to seal paints), to reinforce and augment sinew wrappings, to glue sinew on the backs of bows, and to glue together wood, leather, bark, and paper. There is no specific call for animal glue in this book, but it is very useful; so, making some might be a project which you would like to undertake. It's also a very intriguing process. Why, we'd just as soon make hide glue as go fishin'!

The easiest and most practical glue materials that you will acquire as a tanner are scraps of skin and smaller scraps of sinew, with their attendant sheaths. Other materials used are: fish skin, antler, and miscellaneous animal membranes, which are not meat, fat, bone, cartilage, or horn proper (horn, i.e. cow or goat horn, is different than antler). Glue can be made from bones, but the extraction of glue from bones is a complex process beyond the interest of the home producer. Aside from being difficult to make, bone glue is inferior to good hide glue.

All of the glue materials mentioned above are collagen based: the same stuff that forms the fiber network of leather.

As mentioned above, under Sinew, the tendon sheaths and the smaller tendons in the lower legs can be saved for glue. We never use the larger tendons as they serve many other useful purposes. Sinews should be removed while fresh and dried soon after. Don't leave the sinew in the legs for any extended period of time, simply because you have to go to work or do some other less-important-than-animal-parts type of activity. The skin from

the lower legs (hockskins) can also be used to make good glue. (Remove the scent glands from rear hockskins.)

The glue yielding materials, whatever they may be, should not have been previously frozen.

Scraps of skin should be in decent condition, not rotten or grease-burned. Fat, meat, and membrane should be fleshed off.

The glue yielding material should be dried at some point before the process begins.

Before glue making proceeds, soak the material and wash it well in numerous changes of water to remove any dirt, blood, or salt. If not washed out, all of this stuff will contaminate your glue.

In making glue, the glue yielding material undergoes a series of changes:

- Drying the glue yielding raw material.
- Boiling. (Extracts the glue stuff from the material by dissolving it into the water.)
- Drying the resulting gelatin.
- Reconstituting, to make up the glue.

BOILING

Put the cleaned, fleshed, and washed glue stock into a pan and just cover it with water. Set the stuff to cook, but do not allow it to boil hard. Instead, bring it to a very low simmer. Simmer the glue stock for hours: we usually simmer the stock for about a full day, but this will vary depending on the glue stock and the amount of heat applied. Leave the lid off of the pot for the last two to four hours to evaporate excess water.

After a "long time", pour a teaspoon or so of the liquid into an eggshell half, or some other such small container, and set this aside to cool at room temperature. When this test sample, upon cooling thoroughly, will yield a fairly solid gelatin that can be removed mostly in one piece, the glue solution is ready to be poured; if not, continue to cook the glue stock.

When the glue is thought to be done, strain it out through a semiporous cloth into clean flat pans. Fill the pans with about one quarter inch of the gelatin. Cover the remaining glue stock with water for a second extraction and return to the heat.

DRYING THE GELATIN

Set the pans of gelatin aside to cool. Allow them to set for ten to twenty hours in a warm place, preferably with strong air circulation. *When it is dried to the proper consistency, you should be able to lift the glue from the pan in one piece.*

If this isn't the case after twenty hours or so, then the glue solution was not concentrated enough when it was poured. That's okay, next time you'll be all the wiser, and the situation can be remedied. To dry the gelatin a little more, set the pans in an oven set to low heat: a hundred and fifty degrees or so. Leave the oven door propped open. When it is obvious that the gelatin is significantly more evaporated than it was before (Don't you just love these vague, formless quantitative statements?), re-cool the pans of gelatin until the glue can be picked up in one piece.

When the glue attains a handleable consistency, lay it on a board and cut it into strips or squares. Some of each will prove to be very useful. Also, cut some into very tiny pieces that will dissolve quickly when you need a little bit of glue in a hurry, or are just in a hurry for glue.

These strips and pieces are laid out on cloth or a basket and allowed to dry. DO NOT EXPOSE THEM TO ANY SIGNIFICANT AMOUNT OF HEAT! The undried gelatin is both *water soluble* and *heat reactive*. If it should get too warm in its gelatin state, it will run, melt, and seep onto and into whatever it is on. Slightly warm air is good, but air circulation is more important.

Now that the gelatin has been cut, it has more surface area and should dry quickly. When it is completely dry, it will keep indefinitely.

RECONSTITUTING

To make up glue for use, the dry pieces are dissolved in water. Well made glue does not dissolve in cold water but will only swell and take on a certain amount of liquid. It is recommended to allow the glue to absorb as much cold water as it can before heating, and thereby dissolving, it. Full absorption will take more or less time depending on the sizes of the pieces of glue. If the water is kept warm, the glue will swell much faster. If you're in a hurry, you can sort of cook the stuff until it dissolves; however, you risk compromising the quality of the glue, which

will sit on the bottom of the pan where the most heat is. Perfectly prepared glue is not a necessity for sizing, painting over sinew, and other uses which do not require a glue of great strength. For uses which require a stronger glue, it is best to prepare it with care.

How concentrated should the glue be made? Oh great, another difficult to quantify concept! It should not be thick for most purposes. As a sizing on leather, it should be very dilute... watery. As an adhesive, or to form a good glaze on sinew or over paint, it should be somewhat thicker.

The glue should be used hot. If it cools off, it will become jelly-like; in which state, it has very little adhesive power.

Do not leave prepared, wet glue to mould and rot, as decomposition decreases its adhesive power greatly; besides, it smells really bad.

If the glue is re-dried, it can be saved for later reconstituting, but repetitive dissolving and drying is supposed to weaken the glue.

We now refer to Dawidowsky and Brannt from the book ***Glue, Gelatine, Animal Charcoal, Phosphorus, Cements, Pastes, and Mucilages***:

*"All glue, as received from the factory, requires the addition of water before it will melt properly, and every addition of water (while the glue is fresh made) will, up to a certain **point**, increase its adhesiveness and elasticity. ...For glue to be properly effective, it requires **to** penetrate the pores of the wood, and the more a body of glue penetrates the wood the more substantial the joint will remain. ...Never heat made glue in a pot that is subjected to the direct heat of the fire or a lamp. All such methods of heating glue cannot be condemned in terms too strong. ...Glue both surfaces of your work... Never glue upon hot wood, as it will absorb all the water in the glue too suddenly, and leave only a very little residue, with no adhesiveness in it whatever."*

If you make and use some animal glue, you will be engaging in an activity that was a daily norm of human history/prehistory for a very long time. This glue has helped our ancestors construct weapons and tools to live by for untold eons. Pretty cool, huh?

DEERTALLOW

Deer tallow (fat) can be a very useful item which the brain-tanner often has opportunity to acquire. It is not uncommon to receive skins that have large chunks of fat left on them, and many hunters will allow you to remove fat from the carcass, since it is usually wasted anyhow. We often refer to it as deer wax, since its solidifying temperature is very high: making it particularly useful for some purposes, but also meaning that it is not particularly palatable.

RENDERING FAT

Animal fat must be *rendered*, by cooking, to stave off the possibility of rotting or rancidity. Rendering is not difficult, and the following method can be applied to any animal fat. It is always better to use fresh, clean fat. "Clean" means that it should be as free as possible of blood, dirt, and meat. Using clean fat is not so important for fat lamps and other non-culinary uses but will still make a more pleasant smelling oil. Dice the fat into small pieces and put them in a clean dry pot. Heat at a low temperature, but high enough that the fat does actually start melting. As it cooks, the fat will become liquid and leave behind gristly looking little things called "cracklin's". When the cracklin's look more or less as though they contain no more oil, strain the fat through a cloth, squeezing out as much as you can from any solids left. Allow the liquid fat to cool. If much fat is rendered, pour some in *dry* clean jars, filled close to the top, and seal while hot. Store these jars in a cool dark place until needed and the fat will keep well.

USING FAT

There are many utilitarian uses to which fat can be put. The use of rendered deer tallow in the processes of this book will be limited to oiling bone tools to prevent them from cracking. In the case of fresh bone, fat seals the surface and prevents the bone from drying too quickly, which would cause it to crack. In the case of already seasoned bone, an occasional coating of fat replaces moisture and oils in the bone which are lost as the bone ages.

Heavier grain leathers can benefit from an occasional application of tallow to keep them from drying and cracking. Deer tallow makes a particularly good boot oil. Rub the boots well, and then heat them by the fire to drive the grease in.

Deer tallow also makes a passable wood oil, most especially on green wood to prevent it from checking (cracking) as it dries. For dry, seasoned wood, a lighter oil might be preferred, but if the piece is oiled and then heated enough to render the tallow liquid, the fat will absorb into the wood and make as good a non-drying oil as any. It can also be used lightly on seasoned antler, horn, and bone.

Soap can be made from fat by adding lye. In days of old, the lye was dripped from wood ashes. Lye can now be purchased in stores. (A word of warning: strong lye is thermogenous, which means that it produces heat and will easily burn skin.)

Lye soap is very good for washing buckskin, because it conditions the leather while cleaning it. It can, in fact, be used in hide dressing instead of, or in addition to, brains. There are books on soap making which are probably available through your local library (see Bibliography).

Fat lamps are another use to which deer tallow, or any other fat for that matter, can be put. The type we have used was learned indirectly from Mors Kochanski and is a modified version of the Eskimo kudlick. Its basic design is outlined in the accompanying diagram. The lamp can be made from stone (soapstone is traditional in the North), ceramic, or a shallow tin can with the lid being left attached and pushed down to form the ramp. Sardine cans work well, as do tuna and shallow cat food cans. The lamp should be shallow: since the fat level is never allowed to fall much below the wick, any fat below a quarter of an inch or so is just filler.

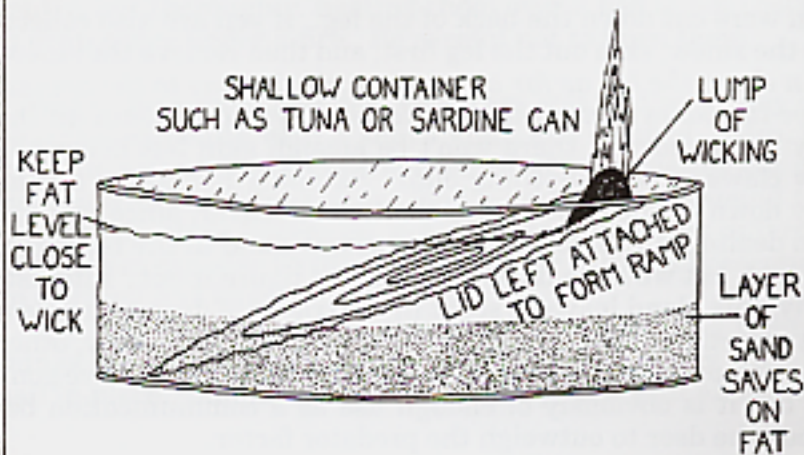
The wick is made of fluffy fibrous material, like fluff from milkweed seed pods or cattail seed heads. The wicking is first rubbed up in the hands and, then, dipped in the tallow. Place the wick on the ramp, so that the bottom of it is just touching the pool of fat. The quantity of material in the wick dictates how much light the lamp will give off. Replace or add to the wick as needed. These lamps give off a lot of light if a large

quantity of wicking is used and are much like having a little camp fire. They can, in fact, be used to cook over, but if you think open fires get your pans sooty, watch out! They also come in handy for numerous aboriginal type projects like melting a bit of pitch and charcoal glue, reheating some hide glue, or oiling things with the ever-present pool of fat. We would caution you on the use of fat lamps indoors for extended lengths of time, unless you want to be your own guinea pig in a “how bad it really is to breath the soot of burning fat for years on end” experiment. Other people have already done this experiment, and the conclusion is that it’s not good for you.

Candles may also be made from deer tallow, alone or mixed with beeswax. We’ve made pure tallow candles by the dipping process and it worked well. Do not allow the finished candles to become too hot, or they will melt. This limitation rules out their use in very warm climates and, also, means that you can never light them. Just kidding.

Deer fat is especially well suited for fat lamps and candles, because it hardens quickly and has less tendency to melt than any other fat, which is nice during transportation or if the lamp is knocked over while not in use.

FAT LAMP



HOCKSKINS

Hock skins are the skins from the lower legs of the deer. They can serve a variety of purposes and are easy to acquire, since they're normally thrown out with the rest of the lower leg. This part of a deer's skin is very thin; yet, very tightly textured and strong. Some people will leave the hockskins on a buckskin, all the way down to the dewclaws, but we have not been able to wet-scrape this section: the grain sticks tenaciously past the knee cap.

Raw hock skins, with the hair on, can be stitched around tool handles and left there to dry. The lay of the short, multicolored hair forms some very nice patterns, making these more than just rawhide. A light coating of hide glue between the skin and the object being covered will make a more durable product.

Our main use for them has been in making hock skin bags, which are made of several hock skins: skinned down past the dew claws and dried to rawhide. Buckskin is used for the parts of the bag which need to be flexible, and buckskin thong is used for sewing. We haven't ever even fleshed them but, instead, just dry them flat, nailed to a board. These bags can also be made by sewing fresh hock skins and stuffing the finished container with sand while it dries.

When skinning out hock skins for bags, we prefer to skin down the front of the leg, which leaves the dew claws close together on the skin: instead of widely separated, as they would be if the skin were cut down the back of the leg. If you are also collecting the sinew, skin out the leg first, and then remove the sinew. ***Skin down the leg as far as you can, all the way to the hooves; leave the bones inside the dew claws.*** If you don't skin all the way to the hooves, there won't be enough skin left below the dew claws to sew anything onto. Skinning hockskins all the way down to the hooves is a creative endeavor, since you are also dealing with two toes and a spongy gland in the bottom of the foot, but we have faith that you will figure it out. Interestingly, this gland leaves a scent in the tracks of deer, which you can sometimes smell shortly after their passing. Surely, other deer and predators can smell it long after the animals have gone by, but it is obviously of enough use as a communication between the deer to outweigh the predator factor.

HOOVES

The hooves of deer make nice ornaments and rattles. Those of other animals, such as llama, pig, and goat, are used similarly around the world.

Hooves are sheaths composed of a material similar to that of fingernails, hair, and claws. They grow over a hoof shaped bone at the end of the foot and can be removed from that bone as a hollow casing. *It is very important that they be removed while fresh, not dried out*, preferably within forty eight hours, or sooner, after the animal is killed.

If you are going to remove the sinew and hockskins, do it before removing the hooves.

Immerse the feet in boiling hot water. The water needn't actually be boiling, and it is probably better that it is not, but it should be very hot. After about a minute, remove a leg and, using either your hands or pliers, try pulling a hoof off. Use a bending/twisting/pulling kind of movement. If it doesn't work, put the leg back and try another one.

Once they start popping off, work quickly. If the hooves sit in the hot water too long, they will begin to tear instead of coming off cleanly, or the joint will separate, leaving the bone in the hoof. Also, remove the *dew claws* which are the small ones above the hooves.

If the legs are very fresh, the hooves can be removed after gently, but thoroughly, heating them over a bed of hot coals or in deep ashes under a fire. Be careful not to burn them.

While the hooves and dew claws are soft and wet, they can be trimmed neatly with a sharp knife and cleaned. Also, the frog, the soft underpart of the hoof, can be completely cut out. Hooves with the frogs cut out lend a very different sound to a rattle than whole hooves do, not a better sound, just different. The hooves can also be cut into shapes for using as decorations on clothing and bags.

One way to put holes in the hooves for attaching them to things is to drive in a nail and allow the hoof to dry with the nail in place. Similarly, the hole can be poked with an awl and

a twig placed in the hole to prevent it from closing during drying. While it's wet, scrub the hoof to clean it.

As an alternative to cleaning and trimming the hooves right away, they may be dried out and later reconstituted in warm water to be finished as above. The holes can also be drilled in dry hooves. A light coating of deer tallow will improve the finished product.