

PRODUCING, MARKETING AND TANNING
HIDES ON THE FARM
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Signatures have been redacted for privacy

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Introduction

The most important raw materials used by the Tanning Industries are the hides and skins produced by the Farmers and Ranchmen, either sold as hides and skins from the animals they have slaughtered or sold indirectly with the cattle to the large packing and killing plants.

This Industry not only affects the farmer as a consumer of his products but he in return is one of the heaviest buyers of the finished leather goods.

Leather used on the farm and ranch usually gets the hardest wear along with the poorest care, which makes their useful life prematurely short. If all the numerous leather articles, used on the farm, were properly taken care of they would last a great deal longer, thus reducing the consumption of leather and ultimately reducing the price. It is estimated that the average farm harness never last longer than ten years and it has been proven that with proper care they would last twenty or twenty five years.

Therefore if every piece of leather belting, harness or saddle, shoe, boot, etc., was made to produce its full wear it would result in an enormous saving of the vast amount of leather now consumed in this Country. This extravagance is not limited to the farms and ranches alone, for the annual waste in shoe leather from improper care is about 250 million dollars.

The most antagonizing part of the Leather Industry is the amount the farmers receive for the hides and skins they produce on the farm, which he buys back as finished leather at exorbitant prices. This situation has caused much discussion and hard feelings among the farmers and has led to investigations for remedying the prevailing condition in the Country Hide Market.

There are two main classes of hides and skins quoted on the market, namely, Packer hides and skins which comprise about 70% of the raw material, secondly, the Country hides and skins, from farmers, ranchmen, butchers and small slaughter houses, that furnish the remaining 30% to the tanneries.

For the last ten years and more especially during and after the War, the spread between the Packer and Country hides and skins has been too great. Country hides and skins selling, delivered at the tanneries, for considerable less than the Packer's hides and skins. The underlying causes for this condition are as follows; first, the Packers take the hides and skins from a great number of animals, the "take off" being done by expert laymen who are paid for their skill in producing hides free from scores, cuts, flesh and fat. There is no such thing as a perfect hide and no two hides are alike, but they are removed in these plants and handled as near ideal as possible. Secondly, the pattern of these hides are such that the tanneries can realize the maximum amount of leather, with as little waste as can be expected.

The hides and skins are at once cooled, graded and put down in salt cure, so that there is no loss or deterioration from putrefaction and hair slipping.

Each tannery usually makes a specialized kind of leather and therefore requires uniformly graded hides and skins. This the Packers realize and so cater to the demands and needs of each tannery.

Contrasting this system with the present system of skinning, curing and marketing hides from farms and ranches. First of all the hides and skins are removed by inexperienced skinners, the cattle are often dragged on the ground which removes the hair and grain. The hides have numerous scores, holes, large amounts of fat and flesh adhering and the pattern is usually such that there is a great amount of waste. Secondly, the hides and skins are not properly cured and stored, putrefaction sets in and the hair slips, which ruins the hide for the production of high grade leather. Also the hides and skins usually lay around until some country buyer happens along, and then are sold for what ever he will offer. These hides then pass through numerous middlemen and dealers, who exact their toll before they reach the open market, where they demand a very low price.

From this method of marketing it is easily seen why the country buyers can not offer higher prices for the few miscellaneous hides and skins that he finds accumulated on the average livestock farm.

Although this condition can be greatly improved, by knowledge and experience, these country hides and skins will never and can never be expected to bring, on the market, as much as the Packers hides, for the individual farmer operates in a small way and must market more or less indirectly as compared with the direct marketing methods practiced by the Packers.

It is therefore up to every farmer and ranchmen, to take it upon himself, to produce better hides and skins, not only from those taken from animals slaughtered at home, but also on the cattle he sends to market or to the corn belt feed lots. For the quality of leather that the tanneries put out is dependent on the quality and quantity of hides the animals produce, all of which traces back to the men that raise and care for the animals. These men make the leather, the tannery only preserves it so it will resist bacteria, wear, and water, at the same time making them soft and pliable.

Thus if his hides and skins are full of holes, scores, infestations from grubs and ticks, if they have large brands and wire scars, it means a lowering of the Country's production and keeps the price of finished leather up. Inferior hides cost as much to tan as good ones and besides these hides with defects can not always be detected until after they have gone through the tanning process. This forces the tanners to set a higher price on the sound leather to make up for the wasted parts.

The above mentioned causes for poor leather results

in a great economic loss annually and can be mostly overcome by proper care and management in raising the livestock along with the proper methods of skinning, curing and marketing after they are slaughtered. The price therefore paid for hides and skins is relative to the quantity and quality of the leather they will produce, the highest price being paid for those that will produce leather for belting, harnesses, furniture, carriages and automobiles.

The farmers are now realizing that the prices paid for their hides and skins are due to improper methods on their part and so have turned to their Agricultural Institutions for instructions on skinning, curing and marketing and also for practical methods for tanning hides, skins and furs at home.

The experimental stage in the handling of hides and skins has passed, for the packing plants have worked it down to a scientific basis. Much of the material on this subject has been compiled from this source along with experiments carried on by various investigators.

So far the tanning of leather on the farm has not become a significant factor in the consumption of country hides and skins, due to the lack of practical methods by which the average farmer, under farm conditions, can turn out a satisfactory product. Hides and skins have been used for garments as far back as records go on civilization but the methods employed were too painstaking and required more time and energy than can be economically afforded by farmers of this age.

The process of preserving or tanning the hides and skins is very simple as compared with the amount of work necessary to make these articles soft and pliable. The tanneries shave the hides, which gives lightness and pliability, a process which only expert men, with years of experience, can credibly do.

With these problems in mind and with the work thus far done at the Iowa State College, by the Meat Laboratory, the author has endeavored^{ed} to find, by testing and combining the best parts in many formulas, to produce a few of practical adaptation to these conditions.

Although it is possible with proper formulas to produce, after much experience, many kinds of leather articles needed on the farm, it does not seem advisable for the farmers to try and make articles such as belting, harnesses, and shoe leather which demand the highest quality to withstand the wear and tear brought upon them. But such articles made from hides and skins as , rugs, robes, mats, blankets, cushions, and trimmings from furs for clothing can be satisfactorily produced with the applications of the recommended formulas found in this thesis.

In working up this problem on tanning it soon became evident that proper methods of skinning, curing and marketing were so intimately connected and responsible for the quality and quantity of leather produced, and especially affected the price received for the hides and skins sold, that they should both be covered in this work.

The first part therefore deals with the removing of the hides and skins, the curing and proper marketing methods, followed by the experimental work on tanning.

Causes of Imperfect Hides and Skins

The methods of marking the cattle on the range are such that the owner and public can easily recognize them when they are grazing on unfenced ranges. These brands alone cause a loss of a great amount of the best leather in the hides. These brands are usually placed on the rumps or sides so they can be easily seen from horseback. In many cases these brands are extremely large and on both sides, which results in very little saleable leather left from such hides.

If this system was changed to one of branding on the neck or shoulders with small irons, it would increase the output of leather tremendously.

Ranges, pastures, feedlots and corrals fenced with barbed wire causes many imperfections from long scratches which even after healing produce weak spots in the leather. The hides from Western cattle produce the most adaptable leather for belting but wire defects will disqualify them for this use.

Injures to the hides from grubs and ticks may ruin as much leather as the above mentioned defects, for the infestations are not localized like it is with branded cattle, so that in badly infested animals the whole back is lost for high grade leather.

Cattle should be dehorned as it saves the hides from many injuries that show up after the hides are tanned,

In loading and handling cattle they should not be prodded with sharp sticks, beaten, crowded into cars, or hurried through doors or gates.

These few things will more than repay the farmers in the end, for it will result in higher prices for Country hides and skins, increasing the Country's output and a lowering of the price on leather goods.

Skimming, Salting and Curing

The following discussion is given with the object of enabling the producers of country hides and skins to improve the quality of their products by practicing better methods of skinning, and curing along with more careful and profitable marketing.

Management before Killing and Skinning

Besides the animals slaughtered on the farm, the hides can be removed from those that die of old age or are killed by accident. Animals that have died from contagious diseases should be buried or cremated as hides from these animals will be likely to spread the disease. As soon as an animal dies or is killed it should be skinned, especially in hot weather. If the carcass is allowed to remain with the hide on putrefaction sets in and causes rapid deterioration.

In case a dead animal must be moved before skinning

it should not be dragged on the ground but removed on a stone boat or some other easy means of conveyence. Dragging ruins the hide, usually on the sides and rump and removes the hair.

Only a few simple tools are needed for killing and skinning on the farm, they being a knocking axe, a 6 inch skinning knife, a steel for keeping a good edge, a block and tackle for hanging the animal up and a three foot broom stick sharpened at both ends to prop the animal on its back.

The cleanest place is the most suitable for killing. In the summer a well sodded spot under a larger tree with a good limb to hang the block and tackle from is best. A building with a cement floor and a drain, which can be easily flushed with water is ideal for all kinds of weather. In either case the hide should not be allowed to get bloody or filthy.

The animal should be haltered and all manure and dirt removed. Previous to killing the animal should not be bruised by beating or allowed to fall from the stunning on sharp obstacles, as these damage the hide.

In many cases the animal selected is running with the other cattle in the pasture and is too wild to halter. A little salt, sprinkled under the desired tree, will usually bring the animal in position so it can be shot.

Killing

The animal first should be fastened securely with a rope around its neck or with a halter and have its head

it should not be dragged on the ground but removed on a stone boat or some other means of conveyance. Dragging ruins the hide usually on the sides and rump, besides removing the hair.

Only a few simple tools are needed for killing and skinning on the farm, they being a knocking axe, a 6 inch skinning knife, a steel for keeping a good edge, a block and tackle for hanging the animal up, and a three foot broom stick sharpened at both ends to prop the animal on its back.

The cleanest place is the most suitable for killing. In the summer select a well sodded spot under a larger tree suitable to hang the carcass. A building with a cement floor and a drain, which can be easily flushed with water is ideal for all kinds of weather. In either case the hide should not be allowed to get bloody.

The animal should be haltered and all dirt and manure removed. Previous to killing the animal should not be bruised, whipped or allowed to drop from the stunning on any sharp articles, as these will damage the hide.

If the animal is out on pasture with the herd and is too wild to halter, a little salt at the regular salting place, preferably under a desirable tree, should be sprinkled. The animal may then be shot instead of stunned.

Killing

With animals that can be haltered, the head should be securely fastened down close to the ground or floor, making sure that escape is impossible. Stun completely with a good blow of the axe on the forehead at the intersections of two imaginary lines drawn from the base of each horn to the opposite eye.

Sticking

As soon as the animal is down, stand in front of the neck with your back toward the animal, placing one heel just in front of the fore legs, and the other in front of the head, at the tongue root. This puts you in a safe position so that the animal can not interfere by kicking. A skinning knife is used to open the throat, starting at the breast bone and cutting along the line of the windpipe toward the head. Then insert the knife with the back of the blade toward the breast bone, cut straight in on both sides of the windpipe about four or five inches deep. This will cut both the arteries and veins which fork near the point of the breast bone. Do not allow the point of the knife to enter the chest cavity, as the blood from the sticking will flow into the cavity and make a bloody stain.

Skinning

Begin the skinning operation by starting with the

head. Cut across from the base of the right horn to the left, and then cut downward from there to the nostrils, passing across the left eye. Then skin out the head, the cuts made in this fashion will allow the head to lie flat when spread out in the cure. In figures 1 and 2 the path of the knife in this operation is shown clearly by the dotted lines.

In removing the hide from the head leave all the flesh on the head, especially the cheek meat which usually adheres to the hide. Leave the ears on the hide, but split them lengthwise twice so they will lay flat. Remove the head by severing it at the atlas joint which is the first joint between the head and neck.

The animal should now be rolled on his back and supported with the broom stick by placing one end against the side of the chest and the other securely in the ground.

The next step is to skin out the legs. Hold the hoof in the left hand and cut off the dewclaws, then cut around the top of the hoof head, severing the cords. Open the hide on the back side of the leg from the hoof to the knee joint and the skin out the shank. The shank should be dropped at the straight joint which is located on the cannon bone about an inch or so above the place where the knee joint begins to enlarge. This can be easily found after the first experience.

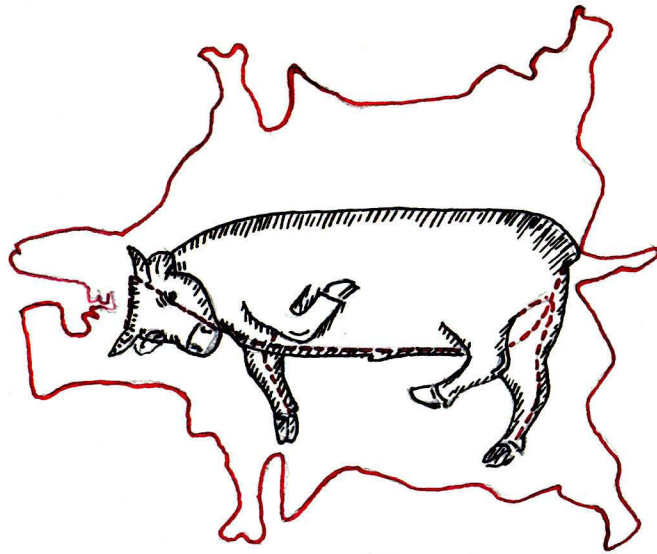


Fig. 1

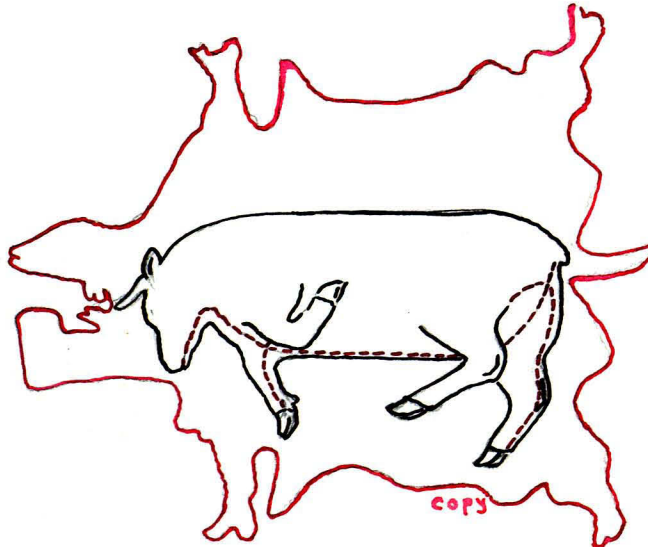


Fig. 2

Do this with the other fore shank and the hind legs are skinned out in a similar manner, the legs being removed at the straight joint just below the hock. In older cattle after starting the joint it is necessary to apply considerable pressure by pressing downward and away from the animal to remove the legs.

Rip the hide down the belly from the sticking cut

to the tail or rectum, making the cut straight and neat, being free from ragged edges.

Siding down or skinning the sides is the hardest job to do and should be done with care, as there is a thin layer of muscle which is very hard to keep on the carcass. One of the main faults with the Country hides is the presence of this flesh on the hide.

In siding start opposite the brace and begin skinning the near side. Skin from the belly forward and backward to the tail. Always have the knife sharp, holding it loosely and flat against the hide, using the free hand to pull the loose hide upward and outward. In skinning choke the knife by having the hand well down the handle and with the thumb on the back of the blade. Keep the edge of the knife cutting toward the hide using long easy downward strokes. Short choppy strokes are liable to cause many scores and holes and lessens the speed in skinning.

Skin the hide nearly off to the backbone, leaving it adhered at both the thighs and shoulders. In continuing out the cuts made in skinning the legs, it is very important that it should be done right as this governs the pattern of the hide. There is little excuse for poor patterns, while proper skinning without holes, scores and adhering flesh requires some experience and practice.

In Figures 1 and 2 the ripping open cuts are shown clearly by dotted lines, while the outlines show the re-

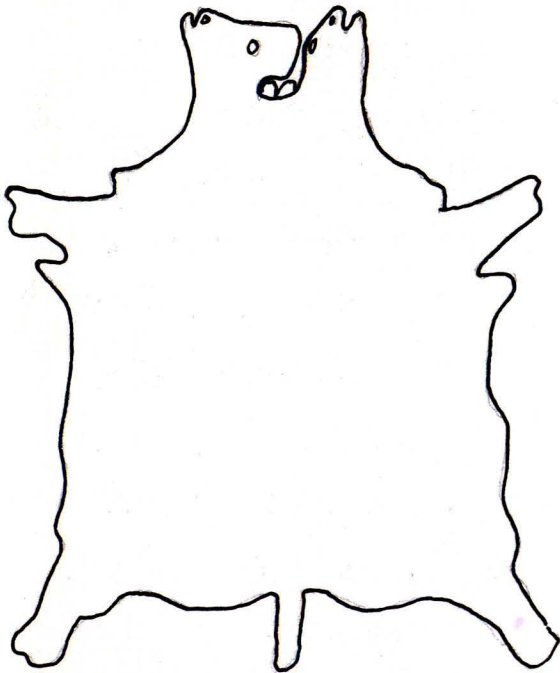


Fig. 3

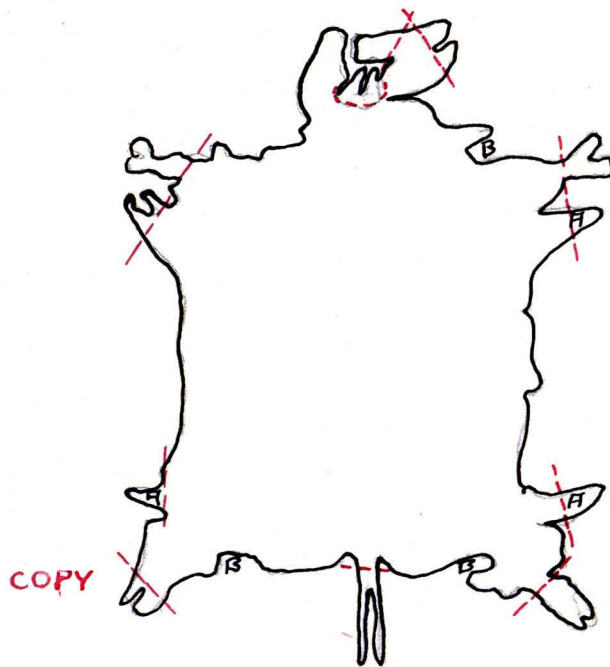


Fig. 4

sulting correct pattern when laid flat. In figures 3 and 4 the difference between a good and poor pattern is shown clearly. The ragged irregular edges, wasteful head pattern, split tail and shanks are shown in Fig. 4 but are all absent in Fig. 3.

In the poor pattern the dotted lines show the amount of waste by trimming. The protruding portions marked "A" should be in the places marked "B" to make a good pattern.

While the animal is still down skin over the rump and then insert the doubletree in the hind legs. Hoist the animal up half way so the shoulders are resting on the ground. Skin down under the tail and remove the tail bone by pulling

the hide off. Remove the hide from around the rump and round, beating or snapping the hide off, using the knife as little as possible. This is the most valuable section of the hide and should be free from scores and cuts.

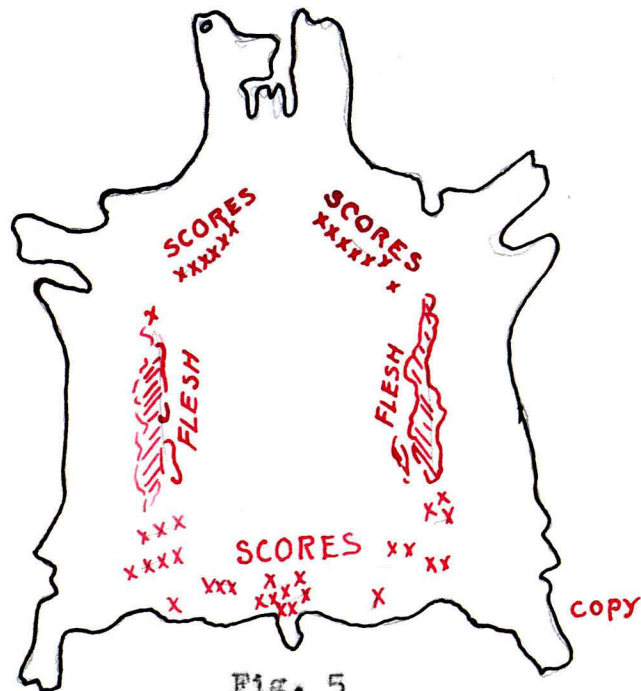


Fig. 5

It adheres very tightly to this part but when removed the rest of the back will come off of its own weight. When the hide is removed to the shoulders the animal is raised to full hoist and the hide removed from the neck. In Fig. 5 the location of scores, cuts and flesh that is usually present on Country hides is shown. For good results extra care should be given these places

Skinning Horses

Horses are skinned in practically the same manner as cattle. The hides are graded almost entirely on the condition of the butts from which the high priced leather is made. Therefore this part should have the most attention and should be free from dragged spots, holes, cuts and scores. Tails and mains are removed from the hides and sold seperately.

The following tabulation summarizes the most serious defects of the Country hides and gives suggestions for remedying them(22)

Defects	Remedies
Head skinned out bag fashion or all in one piece	Cut across head at base of horns and down left side of face
Cheek meat left on the hide	Avoided by careful skinning
Hide from legs irregular in shape	Cut hide off hoof, rip up back of leg to knee joint, skin out both sides
Poor pattern	Start from ripping open cut down the belly well forward at the brisket and cut slantingly back to the back of knuckle joint of the foreleg
Scores and holes around the rump and butt	Sharp knife used carefully and sparingly. Removing mostly by beating and pulling
Failure to remove tail bone	Rip down underside of tail to tip and remove entire bone
Scores and holes on sides due to short choppy strokes	Sharp knife used with long sweeping strokes. Knife flat against the hide. Hide kept tight as removed.
Ears not split	Split ears lengthwise twice

Killing and Skinning Sheep

A dry clean place should be selected for the killing and skinning, a large box will do very well to do the work on. The tools necessary are few, most of the skinning being done with the fist. A sharp butcher and skinning knife, a pail of warm water, couple of clean cloths and a piece of strong twine. The water and cloths are necessary for keeping the hands clean in fisting off the pelt. A dirty carcass is very unattractive and lowers its value.

Sticking

Lay the sheep on its left side on the box with its head overhanging the edge. Grasp the muzzle with the left hand, place the left knee against the back of the neck and the right knee is firmly placed on the foreflank to keep the sheep in place.

Draw the head back against the left knee to stretch the neck. Stick the knife through the neck at the place where the jaw bone joins the neck. The back of the knife passing as near to the backbone as possible, and going completely through the neck, cutting the arteries. Allow the sheep to bleed out thoroughly into an old pail.

Skinning

As soon as the sheep has bled out lay it on its back on some clean boards or clean floor. If a low box is handy,

it will make less bending over if the sheep is laid on it.

Stand at the side of the sheep facing the head and grasp the fore foot firmly between your knees. With the left hand lift the skin, over the knee, and cut a strip from there to the fetlock or ankle joint. Loosen the pelt on each side of the bone especially around the knee joint. This is important for when you come to fist off the pelt and this part is not loosened it will not come off without using the knife.

Now hold the knife nearly flat with the pelt, and with the point, open the skin down to a point about 6 inches in front of the brisket. Do this with the other fore leg, being careful not to cut the fell, which is the thin white membrane that protects the carcass after the animal is skinned.

Turn around and grasp the hind foot in the same manner as with the fore legs. Start at the hock and cut out a strip back to the hoof, removing the foot at the ankle joint. Open the pelt from the hock to the rectum.

Lay away the knife, wash and dry the hands in the warm water. Grasp the triangular strip of pelt in front of the brisket and fist it loose up to the brisket. Fist the pelt loose on each side of the brisket, toward the rectum, going as far back as the flank on the right side, on the left it is only necessary to fist a little beyond the brisket.

Now grasp the triangular strip in both hands and with one foot on the neck of the sheep pull the pelt carefully off the brisket. If the flesh starts to come, use a knife and finish pulling until the pelt is clear from the brisket.

Lift the triangular piece at the rectum and fist up under both flanks, meeting the loosened part on the right side. With the knife slit under the cords in the hind legs, and put the twine through the slits and tie the shanks securely together. Hang the carcass up on a hook.

Open the pelt down the belly and start at the middle and fist up over the flank and hind legs, leaving the pelt attached at the dock or tail. Start again at the middle and fist down over the shoulders and remove from the legs on both sides. If a lamb, remove the foot at the break joint. With older sheep this joint is ossified and the foot is removed at the fetlock joint. Loosen the pelt from the dock and fist down the back. Skin the pelt off the neck and remove the head at the atlas joint. Skin out the head in the same fashion as done in skinning cattle.

Salting and Curing

All the efforts expended in careful skinning will be wasted if the hides and skins are not preserved in a sound condition as soon as removed. In the winter they may be left several days with out salting but should not be allowed to freeze. In the spring, summer and fall they should

be salted promptly as putrifaction will soon set in.

Cattle and Horse Hides

As soon as the hides are removed they should be stretched out on a clean flat place and any flesh and fat that can be scraped off should be removed. All ragged edges should be cut off and the ears split twice lengthwise. Before salting allow the hides to cool for at least six hours in warm weather or overnight, in a cool dry place.

The most desirable place to store the hides while curing is in a cool dark place, as a cellar or barn floor that is free from drafts. The hides should be on a slight incline so they will drain off. The hides should always be flesh side up. After the hides have cooled, spread a thin coat of coarse salt over the entire hide, about three fourths of a pound, per pound of hide.

If there is more than one hide they may be stacked on each other always with the flesh side up, and with the heads at one end. Salting each one thoroughly. In piling hides, lay them on each other rather than drag them on, as the latter disturbs the salt on the hide below and causes improperly cured hides.

The hides are left in this condition until firm, a condition known as "salt hard" which takes about a week to 14 days in the cure. At this stage they may be bundled and shipped.

Sheepskins

Sheepskins should be left over night to cool as they require longer, due to the heat retained by the fleece. When cool, salt down at the rate of one half a pound of salt per pound of pelt.

In sheepskins you have two products the most valuable is the wool which does not keep well on the skin, therefore they should be marketed as soon as possible after they come out of the cure, which will not take more than a week.

Hides and skins may be kept from Fall to Spring, but never through the Summer months as the heat will soon deteriorate them. This helps to obtain a sufficient quantity of hides and skins together to market advantageously .

Preparing for Market

The hides and skins should be, if green salt cured, hung up for twelve hours to drain, and then all salt removed by sweeping and shaking.

Folding*

The steps generally followed in folding and bundling for shipment will be easily understood by studying the accompanying diagrams, figures 6 and 7, in which the hair side is designated by shading. As a rule hides are folded so that the hair side is out.

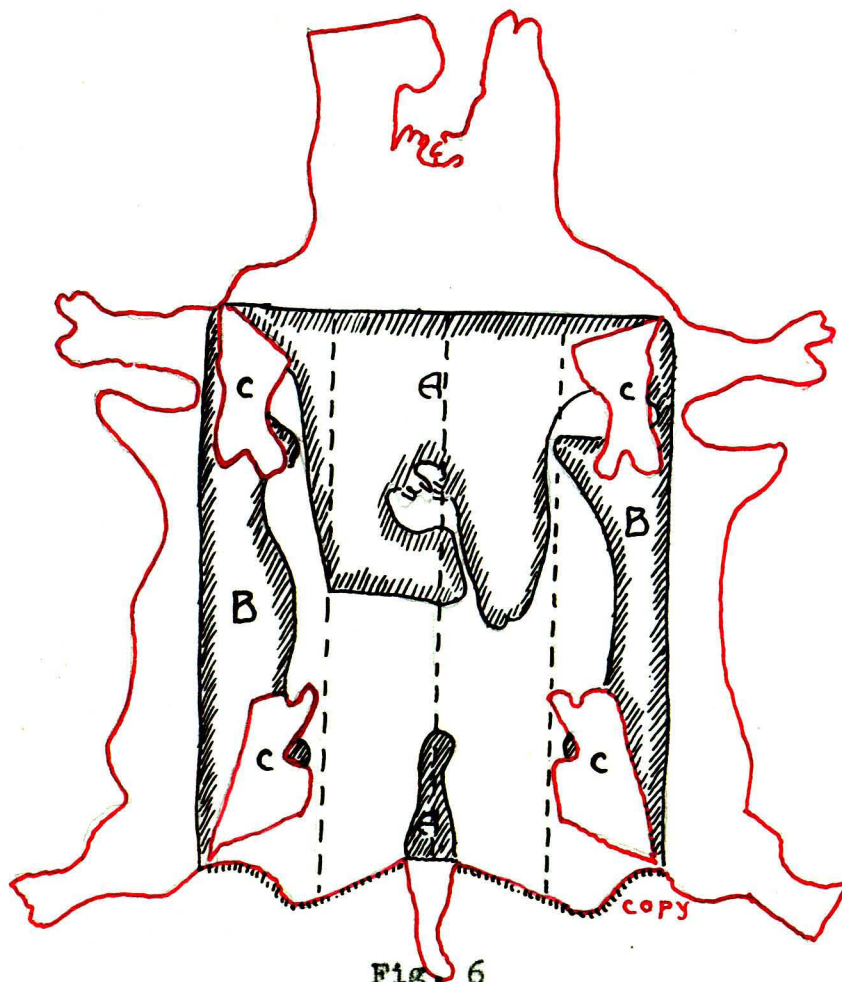


Fig. 6

How to Fold a Hide

1. Fold in the head and neck on the body of the hide, flesh surfaces together, and turn in the tail as in Fig. 6.

2. Make a narrow fold on each side by throwing the belly edges and the legs upon the body of the hide, flesh surfaces together, keeping the lines parallel, as shown by "B" in Fig. 6.

3. Fold the legs back on these laps, hair surfaces together, shown as "C".

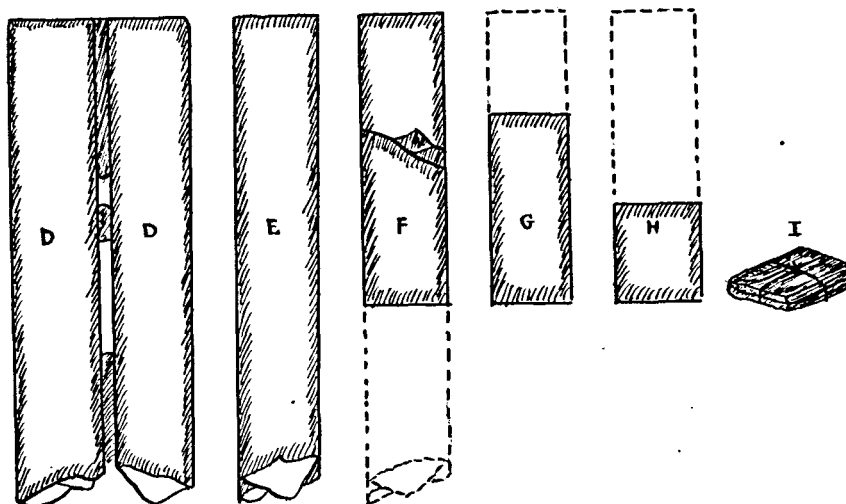
4. Bring the break of each fold near the middle line of the back, as shown by folds "D", in Fig. 7.

5. Complete the side folds by bringing the two breaks of the folds thus made together, with the middle of the back as the main fold, thus making one long bundle, shown by "E".

6. Throw the butt end of the folded hide forward about $\frac{4}{5}$ of the distance to the neck, as shown by "F".

7. Fold the forward portion of the bottom lap back on top of the first fold as in "G".

8. Bring the break of the rear fold even with that of the fold just made. This makes a neat, square bundle, ready to tie and ship. See "H".



Each bundle is tied with a strong cord about seven feet long. There is a regular hide rope for this purpose which is sold on the market, but a 1/4 inch piece of line will do very well. Tie the bundle both ways. Never use wire as the rust will damage the hides.

Sheepskins are bundled differently, as they are laid, fleece side down and folded along the line of the backbone, with the wool sides out. As many as five can be folded in a single bundle for shipment. Two pieces of stout rope are then wound around the bundle, one in front of the hind legs and the other behind the fore legs.

Tagging

Each bundle should be tagged with a strong label giving the name and address of both shipper and dealer. All writing should be in ink as pencil soon becomes ineligible.

Shipping

The hides should not be bundled up until ready to ship. After they are packed, do not allow them to remain in the sun, water, or drafts, or in contact with rusty metals. In hot weather they heat very quickly, therefore they should not be delayed in route.

Green hides must be boxed up for shipping as the express companies will not except them otherwise. Also these hides deteriorate quickly so it is not profitable to ship hides until they are "salt hard".

Classes, Grades and Selections
of
Country Hides and Skins

One of the main reasons why the farmer has not demanded more for his hides from local buyers, is the fact, that they are entirely unfamiliar with the specifications of the different market classes and grades of hides and skins. With this knowledge he would know what his hides were worth and would be able to demand prices in accordance to the quality of his product.

Following are the classifications and definitions applied to Country hides and skins.

HEAVY NATIVE STEERS are unbranded steer hides weighing 60 pounds or over and are graded No. 1 and No. 2.

LIGHT NATIVE STEERS are unbranded steer hides weighing 50 to 60 pounds and are graded No. 1 and No. 2.

HEAVY NATIVE COWS are heavy, unbranded cowhides weighing 60 pounds and up and are graded No. 1 and No. 2.

BUFFS are unbranded steer or cow or bull hides weighing from 45 to 60 pounds. They are graded No. 1 and No. 2. In some sections butt branded hides of these weights are included in No. 2 grade.

EXTREMES(extreme lights) are unbranded hides weighing from 25 to 45 pounds, and are graded as No. 1 and No. 2. Butt branded hides of these weights are included in No. 2.

HEAVY BULLS(also heavy native bulls) are heavy unbranded bull hides, weighing 60 pounds and up and they are graded as No. 1 and No. 2.

HEAVY BRANDED BULLS are side or butt branded bull hides weighing 60 pounds and up and are graded as No. 1 and No. 2.

BRANDED HIDES are side or butt branded hides or both. Usually they are range and Texas hides. They are sold flat for all weights from 25 pounds and up, and are graded as No. 1 and No. 2.

KIPSKINS are heavy calfskins weighing from 15 to 25 pounds except in the southeastern and western coast sections, where the weight range is from 15 to 30 pounds, they are graded as No. 1 and No. 2.

HEAVY CALF are calfskins weighing from 8 to 15 pounds. They are graded as No. 1 and No. 2.

LIGHT CALF are calfskins weighing from 7 to 8 pounds and are graded as No. 1 and No. 2.

DEACONS are skins from very young calves. As a rule they weigh less than 7 pounds.

The War Industries Board in 1918 issued the following data in connection with its regulation of trade in hides and skins.*

The following applies to the selection of all Country hides and skins which are sold on the basis that they are free from ticks and brands. (Ticky and branded hides are not classed as No. 2 hides where the maximum prices already allowed

for the same) The price of No. 2 hides is one cent per pound under the No. 1 price.

Description of No. 2 Hides

1. Any cut over 6 inches in from the edge.
2. Over 5 bad scores (cuts not extending through hide)
3. Butt brands.
4. Five grubs.
5. One grain slip.
6. One rubbed area where the grain is gone.
7. One dragged area where the grain is gone.
8. One sore area where the grain is gone.

All No. 1 hides must be, not only of good pattern and trim, but must be free from any of the above mentioned faults.

Marketing Hides and Skins

Even with improvement of Country hides and skins and the knowledge of the grades and classes, the farmer can not expect to realize as much as the packer for hides similar in quality. The packers sell direct to the tanners, in large quantities and all graded, thus demanding the top prices.

As a rule each tannery specializes in certain kinds of leather and therefore demands uniformity in their supply of raw material, for which reason the country producers must sell to some central collecting and classifying agency.

With the extremely scattered sources of Country hides and skins the best and most logical market is the large hide dealers who sell direct to the tanners. This is one step removed from the direct method but it is far superior to the present system of selling to the local collector, who passes the hides and skins through many hands before reaching the large dealer or grading agency. Figure 8 shows three diagrams, one of the present system, contrasted with the packers system and the best system for the farmer to use.

The direct method of selling to large hide dealers has not progressed very rapidly because many farmers do not trust sending their hides and skins to these firms in the cities. They would rather take the ready cash from the local dealers, who usually are the general store, junk collectors, peddlers and traveling hide buyers.

The expense of the traveling buyers is about 3 cents per pound of hide they buy, so with the elimination of this expense it would result in a saving of about \$1.80 on each 60 pound hide,

Therefore if the farmer is going to realize more for his products he must believe in the large dealers, skin and cure his hides properly and so ship them that they will not deteriorate when in route. It means more work than the old slip shod method of handling, but the extra time will be well repayed.

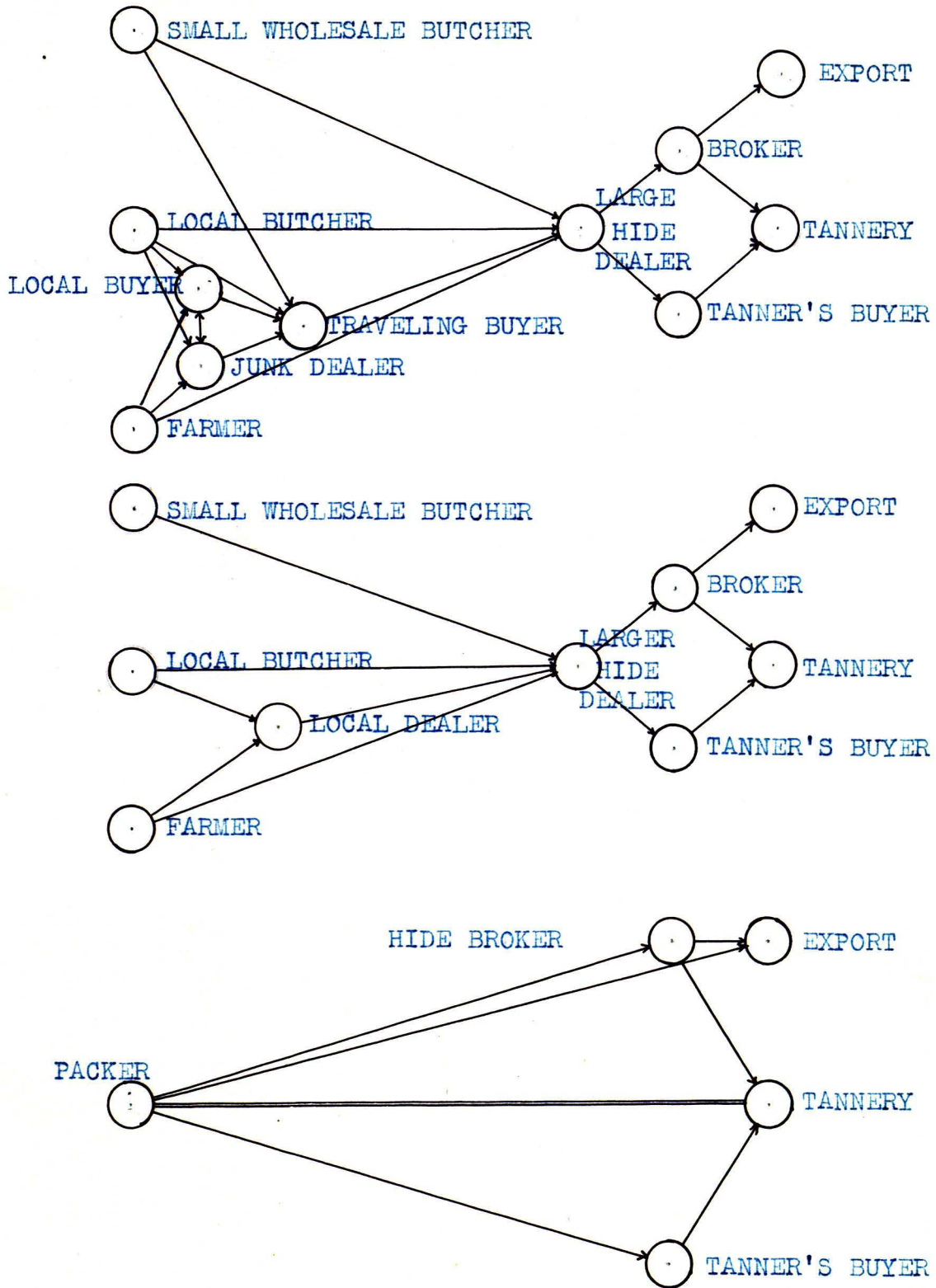


Fig. 8

Market Prices

The market quotations are prices payed for large quantities of selected and graded hides and skins. Also the largest dealers receive the highest prices, for they can grade the hides and skins more thoroughly. Thus it would seem better to deal with these large producers as they would be able to pay a higher price than the small dealers.

Also that the price quoted on the market are for hides that have undergone a 12 to 20 per cent shrinkage. All these factors should be realized when the check comes back, and it is not up to market quotations as figured out on the farm.

Summary

1. Before the animal is killed remove as much dirt and manure as possible and do not allow the hide to become bloody.
2. Make the cut in sticking, in cattle, lengthwise and not crosswise. Lay sheep on a box when sticking, allow the blood to drain into a pail.
3. In skinning use the knife as little as possible, produce a good pattern and have the hide free from flesh and cuts.
4. With sheep be sure and leave the fell on the carcass.

Salting and Curing

1. After the hide or skin is removed, stretch it out flat, and allow to cool in a shady place 5 or 6 hours.
2. Salt the hide after it has cooled, using about a pound of salt per pound of hide and half a pound per pound of pelt. Use only clean salt.
3. Keep the hide or pelt from freezing.

Shipping and Marketing

1. Before shipping remove all salt.
2. Bundle properly, using strong enough cord. Label the bundle so that the address can not be torn off.
3. Ship as soon as bundled, never leave the bundle in the sun, rain, or against metal objects.
4. Ship to the largest and most profitable agency, avoiding middle men.

Practical Home Tanning Formulas

Introduction

During the last few years many requests have come from the farmers for methods of tanning hides and skins. This action on the part of the farmers is a result of the depression they have suffered from the low prices paid for their hides and skins. For a while after the War this condition became so bad that the prices paid for them would not cover the cost of the salt used in curing, yet the prices for finished leather steadily rose.

The Bureau of Chemistry in charge of Tanning at Washington D. C. and the Iowa State College have taken steps in an experimental way, with the view of finding practical tanning formulas that can be easily practiced on the farm.

The result from this experiment can only be compared with the comparatively small amount of data thus far compiled from experiments, most of which was done by H. A. Sandhouse and his results written for his Masters Degree at the Iowa State College in 1922.

The tanning of leather on the farm by inexperienced men with inadequate facilities can only be carried on successfully in a very small way. This is very evident after a visit to a tannery, wher a prodominence of powerful machines and skilled men are employed as compared with farm

Conditions. The production of leather for harness, shoes, or belting can not be satisfactorily produced even after much experience without these machines. Robes are made pliable and light by a process only achieved by skillful workmen after many years of experience.

It is therefore very evident that only light hides and skins can be made soft and pliable with the equipment found on the farm. The only method the farmer has of working down the thickness, is with sandpaper and pumice stone which is a long and tiresome job.

From an economical standpoint and under normal conditions it would seem more practical for the farmers to spend their efforts in producing better hides, curing them properly and marketing them advantageously, instead of running the risk involved in trying to tan them.

There are many tanneries that will take the hides and for nominal prices tan them into any kind of leather desired, robes or fur coats. This method insures a first class article and the farmer has not risked the chance of failure or wasted his time which can be profitably be used in agricultural pursuits.

The work thus far carried on has shown that a satisfactory product can be made from light hides as rugs small mats and robes; and from sheep pelts, mats, seat cushions, clothing, slippers, etc., Also all the skins from fur bearing animals killed around the farm can be tanned and used for hats, gloves and clothing.

Objects of Tanning

The primary object for tanning is to make the article resistant to bacterial action, slightly sensitive to water and to withstand the wear. Along with this the article should be soft and pliable to render it useful. There are many different ways of tanning, but not all applicable to the methods used on the farm.

Kinds of Tanning

There are three main groups under which all tanning methods can be classified, the Indian or Oil tanning, Vegetable or Bark tanning and the Chrome or Alum tanning.

Oil Tanning

Skins can be tanned with oils as seal, whale or fish oil. The skins are fleshed and trimmed. Then the flesh side is thoroughly rubbed with one of the above oils, then folded up and placed in a wooden tub. The oil is worked in by a man treading on them with his feet, after which they are left several hours, then the process is repeated.

When the skins will take no more oil, they are piled in a warm room and left until tanned, after which they are rinsed in a weak alkaline solution for the purpose of removing undecomposed oil and grease and then dried.

Indian Tanning

The Indians have for ages dressed skins into leather and this leather is renowned for its toughness and durability. The skin is fleshed and then soaked in water to swell it, besides freeing it from blood and dirt. The hides are then grained by laying them on a beam and working with a sharp knife, removing the hair and grain which makes the Indian dressed hides of the highest quality. They are then ready for the tanning which is done with the brains of the animals they kill. The brains are prepared by putting them in a bag of loosely woven cloth and boiled for an hour in one gallon of soft water. The water is then cooled and the brains rubbed beneath this water until they are forced through the cloth. The hide is then placed in this solution and kneaded at intervals of ten minutes for one hour, between the intervals the hide is stretched and pulled. Then it is allowed to soak over night, followed by more kneading and stretching until dry.

When nearly dry it is put away for several weeks or more to season, then smoked with a slow fire of dead wood. After smoking the hide is scoured in lukewarm water, rinsed but not wrung and then hung up by the hind shanks to dry.

It is then dipped in water for a few seconds, folded and covered for one day, when it is ready to be stretched and dried. The more working the softer the hide.

Vegetable or Bark Tanning

From the bark of many trees tannic acid can be derived which is used to make high quality leather, which will withstand a great amount of wear and not stretch. This substance is an acid, has a bitter astringent taste and becomes yellowish when exposed to the action of light.

In the production of commercial tannin it has been found that nearly all plants contain an astringent principle or tannin. This tannin is derived from the bark, leaves, twigs and from fruit and nuts of certain vegetables in various amounts

The bark of hemlock and white oak give the most tannin and therefore are used to a great extent, some chestnut and sumac are used. Due to the scarcity of bark in this country the tannin is now imported from South America, which is extracted from the Quebracho tree found in Argentine and Paraguay.

The first methods of tanning by this process was to lay alternate layers of hides and bark in a vat and water added. These hides took many months to tan depending on the thickness of the hide. Now the tannin is extracted from the bark and condensed which shortens the time for tanning. But due to the cost of tannin and the time required, only a special kind of leather is tanned this way and the other is now tanned by the chrome methods, which takes less time.

Chrome Tanning

The chrome method of tanning was discovered by a German scientist in 1865 but the first process carried on for commercial purposes was invented in 1884 by Schultz.

This system revolutionized the tanning industry as the old tan bark method was too long and costly. This process consists in treating the skins with a weak solution of bichromate of potash, to which sufficient hydrochloric acid is added to liberate the chromic acid.

After the hides have assumed a bright yellow color throughout they are drained and transferred to a bath of hypo-sulphite of soda, to which some acid is added to liberate sulphurous acid, which reduces the chromic acid to a green chromic oxide. The sulphurous acid is oxidized to sulphuric acid until the whole of the chromic acid is reduced. The leather comes out a pale blueish green. This leather has not the wearing power of bark tanned leather.

Action of Materials Used

SALT is an astringent and is used to prevent bacterial decomposition. It dehydrates or draws the moisture out and also used with alum in alum tanning.

ALUM is an astringent and sets the hair, it works like tannic acid.

SALTPETER has about the same properties as salt. Used with salt and alum in tanning

SOAP used in cleaning sheep pelts and furs. Sometimes used to soften them. Used with borax in cleaning.

BRAN usually scalded, to get the lactic and acetic acid, helps to give a soft and pliable skin.

SALSODA used in soaking and swelling the hides. Used previous to dehairing and fleshing.

BORAX removes tanning solutions after tanning. Softens hard water. Used in retanning by removing part of old tan.

BUTTERMILK is used for its lactic acid and bacteria.

SULPHURIC ACID used mostly with bran for tanning with salt and with milk.

NEATSFOOT OIL used to soften the hides and skins. To stuff the hides. Fish oil, cottonseed oil, cod liver oil tallow, etc., are also used for this purpose.

Useful Equipment for Tanning

The equipment used in the tanning of hides and skins is inexpensive and can be easily made from materials found on the average livestock farm.

Those for the preparing of hides and skins before tanning are; a "beam" which is made from an old hollow log, about five feet long and split in half. The larger the diameter the better, as there will be more surface to work on. One end of the "beam" is placed on the ground and the other raised to the level of the waistline, braced on two legs or held up by a sawhorse or box.

A home made "beam" is shown in Fig. 9. It is used to lay the hides on when removing the excess flesh and fat, laying them flesh side up and scraping them with a dull instrument, as an old butcher knife, skate or draw knife. The "beam" can also be used to advantage in removing salt, combing out the hair, oiling and draining the hides. Later it can be used in softening the hides and skins, by working them over the top edge as you would a cloth in shinning shoes. In other words the "beam" is the tanners work bench.

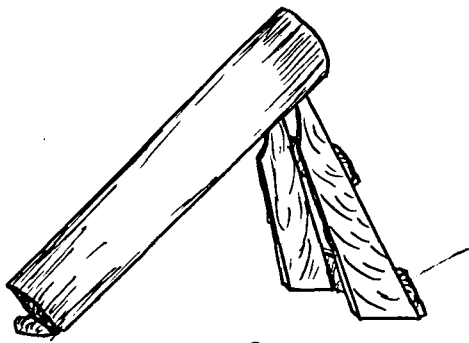


Fig. 9

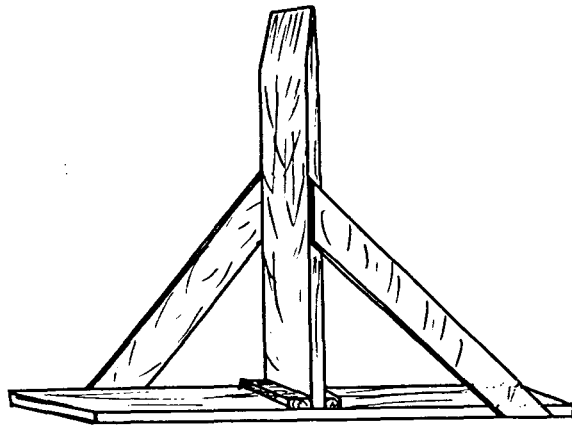


Fig 10

The instruments used in fleshing and softening the hides may be selected from a large variety of articles used on the farm, as old butcher knives, wooden knives made from hardwood or barrel staves, an old draw knife, corn knife or skate, all of which will do very well.

For soaking, cleaning and tanning, large barrels, half barrels and stone jars are convenient. The larger the containers the better for tanning. Metal containers should never be used in tanning when the solutions have acids in them.

In working the hides to a soft and pliable article the end of the "beam" can be used as mentioned, or a home made staker can be made as shown in Fig. 10. Anything with a dull edge as a square fence post or a 2" X 4" so arranged that the hide can be worked over it. It usually requires two men to do the work with heavy hides.

In drying the hides and skins, they can be tacked on an old door frame, side of a barn or shed.

Preparing the Hides and Skins for Tanning

Hides and skins can be tanned as soon as the animal heat has left them and the excess flesh and fat has been removed. If the hides and skins have been salted and are hard they should first be soaked in water, not over 90 degree F, for 12 to 24 hours or longer until they are soft. This soaking also removes the salt and part of the dirt. They should then be removed from the water and allowed to drain, placing them on the beam or hanging them over a fence. When the excess moisture has drained off they should be worked over the beam with a dull instrument, as a dull butcher knife, removing all flesh and fat. The head, legs and all ragged

edges can be cut off as these are worthless and are hard to tan. The hides or skins should then be placed in the tanning solution before they dry, especially so in hot weather, for bacteria soon get to work and cause hair slips.

Tanning

The formula chosen should be carefully read over, it not being necessary to memorize it, as the process usually covers considerable time and each step can be read previous to its manipulation. The chemicals can be easily obtained from drug stores and other ingredients from their respective sources. If a liquid formula is used the larger the barrel or container the better, for the tanning will be more even if the hide or skin is not cramped up, as it would be in a small tub.

Frequent stirring will insure an evenly, well tanned hide or skin. When the time is up the hide or skin should be removed and allowed to drain for a few hours. Most formulas then require a thorough washing to remove all the tanning liquid before they are worked and dried.

Working and Softening

The working and softening is the most important factor in making a soft and pliable article. It requires considerable work, especially at the proper time. The best results are obtained by working the hides as they dry over a sharp edge, as around a square fence post or over a staker as shown in Fig. 10.

The more working the better will be the finished product. If after the hide is dry it is not soft as desired, it should be dampened by applying a coat of wet sawdust or bran and laying it away in a cool place until evenly damp throughout. The hide or skin should then be worked and stretched as before and when almost dry, a coat of neatsfoot oil should be applied and allow to dry slowly. This should give a soft and pliable article. Heavy hides require more working as they are thicker than sheep pelts or calf hides.

After the hide or pelt is dry and soft, it can be worked over with sandpaper or pumice stone to remove all roughness and also helps to make the hide or skin white. .

Methods of Tanning

The method of tanning is very similar to that of the preceding work done by H. A. Sandhouse, only that instead of trying all the formulas collected, only the ones that gave the best results last year were used, along with a few new likely ones. This year instead of only tanning one piece of hide in each formula, we have selected four pieces, all from different hides thus affording us more accurate deductions from the results obtained.

Hides and Pelts Used

The hides and pelts used for this work were accumulated from the animals slaughtered in connection with the

instructional work in the Meat Laboratory. These hides and skins were mostly removed by the students and so scores and holes were prevalent. This condition did not affect the tanning, but would have affected them for commercial purposes. The hides were from steers and heifers not over 18 months old. The sheep pelts were of better quality as to holes and scores for most of the skinning was done with the fist. The pelts came from sheep of all ages and sex.

Preparatory Treatment

To supply enough hides and skins for this experiment it was necessary to start collecting at the beginning of the year. Therefore when the work started, the hides and skins were in all stages of cure, from salt hard to freshly removed hides and skins. All were well cured and stored in an ideal room.

The heads, legs, tails and ragged edges were all trimmed off as only square pieces were desired. The hides were ripped up the line of the backbone, and these sides were cut in half, thus making four pieces from each hide. Sheep pelts were trimmed as the hides and then ripped up the line of the backbone, giving two sides.

These pieces were then placed in the scalding vat in warm water, for 24 hours to soak. Due to the hard water 1 pound of borax was added to every 50 gallons of water to soften it. After they were sufficiently softened they were

removed and drained free from excess water.

Each piece was then put on the beam and all surplus fat and flesh removed with the aid of a dull instrument, by scraping downward and holding the hide on the beam by the pressure of the body. This scraping operation should not remove any of the hide proper, for these spots will show up after the hides are tanned. With very thin skins such as wild animals, the scraping should be omitted and the surplus flesh and fat removed after the tanning has been completed. With delicate skins, sandpaper or pumice stone, will give better results, than a dull instrument, as the chance of tearing is too great in the latter case.

With sheep pelts that have a full fleece, they should be well cleaned by washing in warm water and soap, using a wash board. All soap should be well rinsed out before they are placed in the tanning solution. Soft water will prove more satisfactory than hard but the latter may be used if borax is added to soften it.

Formulas and Allotments

For each formula for tanning beef hides, four pieces of hide were used, each piece coming from a different hide. This limited the possibility of error in case one hide was inferior, for the other pieces could be judged and the mates to the poor one traced and their condition compared.

With sheep pelts only two pieces were used, one with full pleece and the other shorn, this made a great saving

in pelts, material and labor. With both shorn and full fleeced pelts the most desirable strenght for tanning could be noted.

Equipment Used

For soaking the hides and pelts, the hog scalding vat in the Meat Laboratory was used, because of its large size. All flesh and fat was removed on a home made beam, using regular fleshing knives, as these gave the best results and the maximum speed.

The formulas, which required a liquid, were placed in barrels and large stone jars, the latter being used mostly for sheep pelts, as the hides needed plenty of room to insure an even tanning. Those that required a paste were placed on a shelf in a cool room.

The hides and skins were stretched on ready made frames for the purpose, and a warm room was used for drying. Sandpaper No. 2 and powdered pumice stone was used in working down and smoothing the hides. All oiling was done with neats-foot oil.

Tanning Formulas

The formulas which were used were chosen from the ones recommended from last year, along with additional ones from other sources. The formulas were copied down as found and followed out as directed.

The Tanning of Beef Hides

Formula No. 1 Tanning Hides for Robes and Rugs (1)

4 bars soap Used to clean the hides
4 lbs. soad

12 lbs bran
4 lbs alum Tanning formula
2 lbs salt
1 lb borax

Cost about \$1.55

Instructions

Salt green hides heavily on the flesh side, fold and leave in this condition for at least one week, or until ready to do the tanning.

The salted hides are soaked in warm water until soft, then cleaned and all flesh and fat removed. The hides are cleaned with the soap and soda in lukewarm water.

Take the liquor from twelve pounds of scalded bran, by adding ten gallons of boiling water to the bran. To the liquor add the four pounds of alum, two pounds of salt and one pound of borax and stir until completely dissolved. If the hide was not salted as directed the amount of salt can be doubled. The time for tanning is about two weeks for light hides and four weeks for heavy hides.

Work the hides while drying. This process of working and stretching is considered as important as the tanning solution if good results are expected. The hides are stretched on the side of a barn and with a dull knife they are worked until soft. To finish use sandpaper and pumice stone.

Formula No. 2 Tanning Beef Hides for Robes and Rugs(2)

7 lbs salt	:	
2 1/2 lbs alum	:	
1 3/4 lbs arsenic	:	Soaking solution
8 gal. water	:	
	:	
1 lb salt	:	
1/2 lb alum	:	Tanning powder
1/4 lb arsenic	:	

Cost about \$1.49

Instructions

The same amount of the above mixture is used for two small calf hides.

The hides should be fleshed and cleaned. The the above solution is made up by dissolving the salt, alum and arsenic in warm water. The hide is soaked in this solution for 24 hours, then removed and allowed to drain. Then it is stretched and laid out on the floor and the above mixture of powder is rubbed in all over the hide. The hide is then folded up flesh to flesh and left in a warm room for about four days.

The hide is then unrolled and the above powdered mixture well rubbed in again all over the hide. The hide is the packed away for another four days. This is repeated until the mixture has worked through the hide. It usually three to five rubbings to tan a hide.

Wash the hide free from the tanning mixture in warm water and using plenty of soap. Wring the hide dry and then stretch on the side of a barn. When still damp give it a vigorous working and stretching until dry.

Formula No. 3 Tanning Hair Skins (3)

5 lbs alum
6 lbs salt Tanning liquid
12 gal. water

2 lbs alum
1/2 lb salt Tanning paste
2 lbs flour
1/2 lb egg yolk
1/2 lb olive oil

Cost about \$1.63

Instructions

The skins are cleaned and fleshed and placed in the tanning liquid made by dissolving the alum and salt in twelve gallons of warm water. The skins should be left in this solution for twenty four hours, being removed several times to insure a more even tanning. After this they are removed and drained thoroughly.

The skin is then stretched out on the floor, flesh side up and the above tanning paste is added. The object of the flour is to form a paste so that the mixture will adhere to the skin. Egg yolk and olive oil soften the skin.

The skins should be allowed to lay for some time until the tanning process has worked completely through the skin. When tanned they are worked and stretched while drying. The more working and stretching done the more pliable will be the finished product.

Formula No. 4 Tanning a Beef Hide (4)

10 gal. water
7 lbs salt
1/2 bu. bran or 16 lbs.
2 1/2 lbs sulphuric acid Cost about \$.71

Instructions

If the hides have been previously salted, they should be soaked and then fleshed. After it has been cleaned it is then placed in the solution of the above mixture for at least twenty-four hours. The hide should be moved about frequently to insure an even tan.

The hide is then removed and washed free from the tanning solution. While drying it should get a vigorous stretching and working to insure a soft and pliable product.

Formula No. 5 Tanning Fur Hides on the Farm (5)

6 lbs salt
8 oz saltpeter
4 oz borax
16 qts water
16 qts sour buttermilk
1 qt sulphuric acid Cost about \$1.31

Instructions

The salt, saltpeter and borax should be mixed and the dissolved in the water, after which the buttermilk is added. When adding the acid the solution should be stirred continually. If sour buttermilk is not available, twice the amount of skim milk may be used.

The skins are cleaned and put in the solution for one hour, after which they are pulled up over the barrel for a short time to drain. Following this they are put back in the solution for another hour, hung up again and the put back. This process is repeated until the hide is tanned. The number of soakings required is dependent upon the thickness of the hide. Usually three to five soakings will do.

After the hides are tanned, they are removed and washed in suds made from eight gallons of water and one fourth of a pound of soda. The skins are then rinsed well and hung up to dry. Plenty of working and stretching is necessary to insure a good soft skin.

* Formula No. 6 Chrome Tanned Leather(6)

3 1/3 lbs soda crystals
6 lbs salt
3 gal. water

12 lbs chromium potassium sulphate
9 gal. cool water

Cost about \$2.35

Instructions

First prepare the hides by soaking them until soft and removing all excess fat and flesh. Mix the soda and salt in three gallons of water and dissolve thoroughly. Then dissolve the chrome alum in the nine gallons of water. Then pour the soda solution slowly into the chrome solution, stirring continually. Too rapid mixing will cause the solution to turn white or milky and it will not tan.

Now take a barrel and pour in 30 gallons of water and to this add 4 gallons of the stock tanning solution. Put the hide in this and leave for three days, then remove and pour in 4 more gallons of the stock solution. Place the hide back in and leave for another period of three days. Remove and pour in the rest of the solution, replace then again in the barrel and leave for four days. Then cut a piece of hide of from the thickest place and note if the blue color has gone completely through. If so boil this piece and if it does not curl up and crack it is well tanned.

After tanned, remove and allow to drain. Clean the barrel out and fill with water in which the hide is soaked for twenty-four hours. Then remove and drain. Stretch the hide on a side of a barn and when nearly dry give it a good working and apply a coat of neatsfoot oil. Allow to dry and then moisten thoroughly and work while drying. Plenty of working will give a soft and well tanned article.

Tanning Sheep Skins

Formula No. 1 Tanning Sheep Pelts (7)

1 bar soap
2 lbs alum
1 lb saltpeter
6 lbs bran
1 pt neatsfoot oil Cost about \$.83

Instructions

Before putting the pelt into the formula, it should first be thoroughly washed with soap and water. All suds should be rinsed out well after the washing.

Mix the salt and alum well together then add the bran, the whole mixture plus the saltpeter is then thoroughly mixed, and while the skins are wet, this mixture is rubbed in well. When no more can be worked in the rest is put on the skin, about one half an inch thick. Lay away in a cool place for ten days at the end of which the skins should be tanned. Then remove the bran and apply a coat of neatsfoot oil. Work the skin with the hands until soft as desired. Finally finish it with sandpaper.

Formula No. 2 Tanning a Pelt for a Robe or Rug(8)

1 bar soap 1 lb alum
1 lb salsoda 1/2 lb salt
3 lbs bran 1/4 lb borax Cost about \$.38

Instructions

Soak the skin well in soft water to make it soft and pliable, then scrape off any flesh and fat.

Wash the skins with soap and salsoda in soft water to get the wool clean. Remove all suds by rinsing.

Take the liquor from three pounds of scalded bran,

using two gallons of hot water. To this liquid add one gallon of soft water and dissolve the salt, alum and borax in it.

Place the skins in this solution and leave for about two to three weeks depending on the size of the skin. After the skin is tanned, remove and rinse well and hang up to drain. As the pelt dries work it frequently, the more, the better will be the finished product. After the skin is dry it should be gone over with sandpaper to make it smooth and soft.

Formula No. 3 Tanning a Sheep Skin

7 lbs salt
7 lbs alum
12 lbs water

Cost about \$1.73

Instructions

Soak the skins in soft water to make soft, then remove all flesh and fat. Wash the fleece with soap until clean and rinse well in clean water. Then mix the salt and alum and dissolve them in the water. This solution should be enough to cover one pelt. Put the skin in this solution for two days, then remove, stretch and place back in the brine. Leave for two more days and remove and rinse. Hang up to dry. Stretch it on the side of a building. When dry, remove add a coat of neatsfoot and cover with a damp coat of sawdust. When evenly damp, remove the sawdust and work the pelt as it dries.

Formula No. 4 Tanning Woolskins (9)

2 gal. water
1 lb alum
1/2 lb salt
1 lb oatmeal

Cost about \$.26

Instructions

After the skins have been washed and all flesh removed, the tanning is done by adding the above paste to the flesh side.

Heat two gallons water, stir in alum and salt, mix in the oatmeal and allow the paste to come to a boil. After it has boiled for a few minute, remove and cool so that it will not burn the hand.

Spread a coat about one half an inch thick on the pelt and leave for for one day in a cool place. Remove this coat and add another. Apply this three or four times and then the pelt is washed free of the mixture. The pelt is then stretched on a side or a building, and as it is drying it should be worked around a fence post frequently until dry. This should give a soft pelt.

Formula No. 6 Tanning a Sheep Pelt (10)

11lb salt
2 lbs alum
2 lbs saltpeter

Cost about \$1.31

Instructions

The hide should be thoroughly fleshed and cleaned
Then stretched out flat on a table and the above mixture

rubbed in well all over, and left with a covering about a quarter of an inch thick. The pelt is folded up and laid away in a cool place for five days. It is then cleaned by washing with soap and then stretched on the side of a barn to dry. When it is drying it should be worked frequently. Rubbing between the hands or over a plank will help.

¹
Formula No. 7 Tanning a Sheep Pelt (11)

1/2 lb salt
1/2 lb alum
3 pts boiling water Cost about \$.22

Instructions

Wash the hide in strong soap suds until the wool is clean. Rinse the pelt well with clean water.

The pelt is then placed in the tanning solution and enough water is added to cover the pelt. After the pelt is soaked for twenty-four hours it is tacked on the side of a barn. A mixture of equal parts salt and alum is then rubbed in well all over the pelt. Then it is rolled up and layed away to dry. Continue rubbing this with the mixture till tanned, usually three or four rubbings will do. Then work the hide over a beam until soft.

A little neatsfoot oil will help to make the pelt soft and pliable.

Formula No. 8 Tanning a Sheep Pelt

10 gal soft water

7 lbs salt

1/2 bu. bran or 16 lbs.

1 1/2 pt sulphuric acid

Cost about \$.71

Instructions

The pelts should be soaked to soften them if they are hard. Then they are washed in soap and water to clean the fleece. The pelt is then placed in a solution made from the above materials and left for twelve hours. It should be stirred frequently to insure even tanning. The pelt is then removed and rinsed in clean water. Stretched out and allowed to dry. As it dries it should get plenty of working, the more working and stretching the softer the finished pelt will be.

Summary

In making the deductions from these trials carried out with the numerous formulas, it must be realized that the results are not positive criterions of the value of each formula.

These results can be only compared with those of the previous years work and so the following deductions have been formulated from the small amount of data thus far compiled.

The work thus far has shown conclusively that heavy cow and steer hides can not be worked up, on the farm, into soft and pliable articles. The farmer must therefore use thin hides and skins, such as calf hides, sheep pelts and furs, if he expects a soft and usable product.

There was a large variation in the time required to tan the hides and skins, the results seem to indicate that those that required the least amount of time gave the most satisfactory products. From the practical side, the farmer would much prefer a quick method as compared to one that required weeks, for there would be more chance of failure in the latter case.

Results in Tanning Sheep Pelts

1. From the standpoint of quality of tanned pelts, the formulas would be ranked as follows; 7-3-6-3. Formulas 2-4-1 did not give satisfactory results.

2. Formulas 3 and 6 were the cheapest, required less time and labor, and gave very good results.

3. Formulas 7 and 3 gave the most satisfactory results but they both required more time and labor than formulas 8 and 6. Also the cost was a little higher.

4. From the standpoint of cost, time, labor, and ease in tanning along with excellent results, formula 8 excels all others for both sheep pelts and hides.

Results in Tanning Beef Hides

1. All hides were tanned with the hair on.

2. It is advisable not to tan hides taken from animals during the months of April and May as the hair is shedding.

3. Formulas were ranked according to the quality of hide produced as follows; 4-6-5-2-1-3.

4. Formulas 4-6-5 gave the best results,

5. Formula 4 seems to be the best for both hides and skins, for it requires materials easily obtained on the average farm at little expense.

6. Formula 6 advocated by the Dept. of Agriculture at Washington D. C. gave good results but required careful technique.

8. Formulas that required pastes for tanning did not give good results and required more time and labor than the average farmer is willing to devote to it.

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